Regional Development Assessment Panel Agenda

Meeting Date and Time: Thursday, 18 April 2024; 9.30am
Meeting Number: RDAP/9
Meeting Venue: 140 William Street, Perth
Public Observing: Online

A live stream will be available at the time of the meeting, via the following link:
RDAP/9 - 18 April 2024 - Shire of Merredin - City of Busselton - Shire of Harvey

This DAP meeting will be live streamed open to the public rather than requiring attendance in person.

PART A – INTRODUCTION

1. Opening of Meeting, Welcome and Acknowledgement
2. Apologies
3. Members on Leave of Absence
4. Noting of Minutes

PART B – SHIRE OF MERREDIN

1. Declarations of Due Consideration
2. Disclosure of Interests
3. Form 1 DAP Applications
   - 3.1 Lot 5 Robartson Road, Merredin – Battery Energy Storage System – DAP/24/02631
4. Form 2 DAP Applications
5. Section 31 SAT Reconsiderations

PART C – CITY OF BUSSELTON

1. Declarations of Due Consideration
2. Disclosure of Interests
3. Form 1 DAP Applications
   - 3.1 Lot 101 Wildwood Road, Yallingup – Rural Holiday Resort – DAP/23/02617
4. Form 2 DAP Applications
5. Section 31 SAT Reconsiderations

PART D – SHIRE OF HARVEY

1. Declarations of Due Consideration
2. Disclosure of Interests
3. Form 1 DAP Applications
   - 3.1 Lot 565 Paris Road, Australind – Convenience Store – DAP/23/02586
4. Form 2 DAP Applications
5. Section 31 SAT Reconsiderations

PART E – OTHER BUSINESS

1. State Administrative Tribunal Applications and Supreme Court Appeals
2. General Business
3. Meeting Closure

Please note, presentations for each item will be invited prior to the items noted on the agenda and the presentation details will be contained within the additional information documentation

ATTENDANCE

DAP Members

Tony Arias (Presiding Member)
Lindsay Baxter (Deputy Presiding Member)
Neema Premji (Specialist Member)

Part B – Shire of Merredin
Cr Megan Simmonds (Local Government Member, Shire of Merredin)
Cr Renee Manning (Local Government Member, Shire of Merredin)

Part C – City of Busselton
Cr Kate Cox (Local Government Member, City of Busselton)
Cr Anne Ryan (Local Government Member, City of Busselton)

Part D – Shire of Harvey
Cr Craig Carbone (Local Government Member, Shire of Harvey)
Cr Michelle Campbell (Local Government Member, Shire of Harvey)

Minute Secretary

Billy Sijan (DAP Secretariat)

Officers in Attendance

Zoe Hendry (DAP Secretariat)

PART A – INTRODUCTION

1. Opening of Meeting, Welcome and Acknowledgement

The Presiding Member declares the meeting open and acknowledges the traditional owners and pay respects to Elders past and present of the land on which the meeting is being held.

This meeting is being recorded and livestreamed on the DAP website in accordance with regulation 40(2A) of the *Planning and Development (Development Assessment Panels) Regulations 2011*. Members are reminded to announce their name and title prior to speaking.

2. Apologies

Nil.

3. Members on Leave of Absence

Nil.

4. Noting of Minutes

Signed minutes of previous meetings are available on the DAP website.

PART B – SHIRE OF MERREDIN

1. Declarations of Due Consideration

Any member who is not familiar with the substance of any report or other information provided for consideration at the DAP meeting must declare that fact before the meeting considers the matter.

2. Disclosure of Interests

Nil.

3. Form 1 DAP Applications

3.1 Lot 5 Robartson Road, Merredin – Battery Energy Storage System – DAP/24/02631

4. Form 2 DAP Applications

Nil.

5. Section 31 SAT Reconsiderations

Nil.

Lot 5 Robartson Road, MERREDIN
Battery Energy Storage System (BESS)

Form 1 – Responsible Authority Report

(Regulation 12)

DAP Name:	Regional Development Assessment Panel (DAP)	
Local Government Area:	Shire of Merredin	
Applicant:	Rebekah Hampson, Land Insights	
Owner:	Ross Milton Robartson	
Value of Development:	$220 million ☒ Mandatory (Regulation 5) ☐ Opt In (Regulation 6)	
Responsible Authority:	Shire of Merredin	
Authorising Officer:	Chief Executive Officer	
LG Reference:	MDPA002(2024)	
DAP File No:	DAP/24/02631	
Application Received Date:	21 December 2023	
Report Due Date:	5 April 2024	
Application Statutory Process Timeframe:	90 Days	
Attachment(s):	1. DA application (Attachment 12.2A) 2. Shire of Merredin covering correspondence confirming the Shire of Merredin Council resolution 3. Unconfirmed minutes from Ordinary Council meeting held 26 March 2024.	
Is the Responsible Authority Recommendation the same as the Officer Recommendation?	☒ Yes ☐ N/A	Complete Responsible Authority Recommendation section
	☐ No	Complete Responsible Authority and Officer Recommendation sections

RESPONSIBLE AUTHORITY RECOMMENDATION

That the Regional Development Assessment Panel resolves to:

1. **Accept** that the DAP Application reference DAP/24/02631 is appropriate for consideration as a "Use not listed" land use and compatible with the objectives of the zoning table in accordance with Clause 3.4.2 (b) of the Shire of Merredin Local Planning Scheme No. 6;

2. **Approve** DAP Application reference DAP/24/02631 and accompanying plans (Attachment 12.2A) in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of **Clause** 3.4.2 (b) of the Shire of Merredin Local Planning Scheme No. 6, subject to the following conditions:

CONDITIONS

1. The submission and approval of a dedicated Construction Management Plan (CMP), including a transport impact assessment, details showing the proposed interim and longer-term facilities including building/structure setbacks, carparking facility, landscaping/ screening etc, to the satisfaction of the local government.

2. The removal of all construction infrastructure once the facility has been completed to the satisfaction of the local government.

3. The preparation and lodgement of a Drainage Management Plan (DMP) to contain all drainage on site to the satisfaction of the local government.

4. The design and location of on-site effluent systems for the construction phase as well as the longer term to be designed and located to the satisfaction of the local government.

5. Compliance with the Bushfire Management Plan (BMP) dated 14 December 2023 recommendations (including the Bushfire Risk Assessment & Management Report).

6. Any new crossover to Robartson Road shall be located and constructed to the satisfaction of the local government.

Advice Notes

1. If the development, the subject of this approval, is not substantially commenced within a period of 24 months from the date of the approval, the approval will lapse and be of no further effect. For the purposes of this condition, the term "substantially commenced" has the meaning given to it in the *Planning and Development (Local Planning Schemes) Regulations 2015* as amended from time to time.

2. If an applicant or owner is aggrieved by this determination, there is a right of review by the State Administrative Tribunal in accordance with the *Planning and Development Act 2005* Part 14. An application must be made within 28 days of the determination.

3. The applicant is advised that granting of development approval does not constitute a building permit and that an application for relevant building permits must be submitted to the Shire of Merredin and be approved before any work requiring a building permit can commence on site.

REASONS FOR RESPONSIBLE AUTHORITY RECOMMENDATION

The proposed development is in accordance with the local government and State position of encouraging and supporting the development of renewable energy sources.

The Council's Scheme was amended to allow wind power renewable energy projects at a time when solar power was in its infancy. Solar projects were therefore not included in the said amendment.

A current omnibus amendment to allow solar and other renewable power infrastructure in the rural areas of the Scheme is supported by the local government.

DETAILS: OUTLINE OF DEVELOPMENT APPLICATION

Region Scheme	Not applicable
Region Scheme - Zone/Reserve	Not applicable
Local Planning Scheme	Shire of Merredin Local Planning Scheme No 6
Local Planning Scheme - Zone/Reserve	General farming
Structure Plan/Precinct Plan	Not applicable
Structure Plan/Precinct Plan - Land Use Designation	Not applicable
Use Class and permissibility:	Service utility - 'D' use in General farming zone
Lot Size:	61.5 hectares
Existing Land Use:	Rural
State Heritage Register	No
Local Heritage	☒ N/A ☐ Heritage List ☐ Heritage Area
Design Review	☒ N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other

Bushfire Prone Area	Yes – BMP prepared
Swan River Trust Area	No

PROPOSAL:

The proposed development will consist of the Battery Energy Storage System (BESS) facility comprised of battery packs, inverters, transformers and control systems. The development will include a high voltage substation and additional switch room(s)/control building(s), laydown areas, staff car parking, required firefighting equipment, internal roads and a perimeter fence.

Proposed Land Use	Battery energy storage system (BESS)
Proposed Net Lettable Area	Not applicable
Proposed No. Storeys	Not applicable
Proposed No. Dwellings	Nil

BACKGROUND:

The site is located approximately 7.5km south-west of the centre of the town of Merredin and comprises a land area of approximately 61.51ha. Only a small portion (approximately 4ha) of this lot, immediately adjacent to the Merredin Terminal sub-station, will be utilised for the development.

The subject site is an agricultural property, does not contain any areas of remnant vegetation and is currently used for cropping and sheep grazing purposes.

Figure 1 provides a location plan of the site.

FIGURE 1 - LOCATION PLAN



Source: Planwest, ESRI

The proposed development is costed at $220m and consists of the Battery Energy Storage System (BESS) facility that is comprised of battery packs, inverters, transformers and control systems, and the associated high voltage substation and additional switch room(s)/control building(s), laydown areas, staff car parking, firefighting equipment, internal roads and a perimeter fence. The BESS project will be connected to Western Power's transmission network at the adjacent Merredin Terminal.

The Shire of Merredin has become the renewable energy focus for the wheatbelt and Western Australia. It pioneered wind turbines and solar farms generating green energy to replace greenhouse gas emitting sources, and now the next iteration is in the storage and redistribution of this energy via battery energy storage systems (BESS).

Nomad Energy (the owner of the project) is an Australian company that has developed more than 500MW of renewable energy projects globally, including Western Australia's largest operational solar farm (Merredin Solar Farm).

Nomad Energy has partnered with Atmos Renewables on this project, that is one of the top 5 largest owner/operators of utility-scale renewable energy facilities in Australia and currently holds generation assets with a gross capacity in excess of 1.7GW. A core feature of the Nomad – Atmos partnership is the intent to develop, build, own and operate the assets they develop. This strategy demonstrates their long-term approach to the assets, the local communities in which they are situated and to the electricity market this project will ultimately support.

The partnership has offices in Perth, Melbourne and Sydney and has over 30 employees across Australia.

The proximity to Western Power's Merredin Terminal substation was a key consideration when selecting the site location and will result in relatively minor works being required to connect the proposed facility to the South West Interconnector System (SWIS). The BESS facility will be accessed off Robartson Road and will be securely fenced.

The land is surrounded predominantly by other agricultural properties to the north and west, Western Power's Merredin Terminal to the south and Merredin Solar Farm to the east/ southeast. The subject site is near other energy infrastructure assets being the Merredin Energy dual-fuel peaking plant and Merredin Solar Farm (the largest operating solar farm in Western Australia).

The site comprises one single freehold lot. An easement affects a portion of the lot, and there is one reserve (Merredin Nature Reserve) abutting the eastern boundary.

Surrounding land uses include energy infrastructure (Western Power's Merredin Terminal), energy generation facilities (Merredin Energy peaking plant and Merredin Solar Farm) as well as agricultural (cropping and grazing) land. The closest sensitive receptor is over 2km away from the site. To the south and west of the subject site sits the energy infrastructure assets mentioned previously, to the north east of the subject site at Lot 15490 is a Parks and Recreation reserve under the Shire of Merredin Local Planning Scheme No.6, known as Merredin Nature Reserve. The applicant considers that, given the nature of the facility it is unlikely that there will be any offsite impacts with the balance of the Lot being retained for rural/agricultural purposes.

This application and supporting planning report presents the merits and suitability of the Nomad Energy BESS facility for the location on a portion of Lot 5 Robartson Road, Merredin and located adjacent to the existing Merredin Terminal station.

This report and its appendices comprehensively demonstrate that the proposed development is consistent with the applicable planning framework and the proposed facility can be approved and is consistent with the objectives of the General Faming zone within the Shire.

The proposal warrants approval for the following reasons:

1. The subject site is cleared and relatively flat with no remnant vegetation contained on the subject site.
2. The proposed development will also not have any adverse impacts on surrounding land or vegetation once the facility is operational.
3. The proposed development will only occur on a small portion of agricultural land leaving the majority of the lot to continue to be used for rural purposes.
4. As outlined under the visual assessment and due to the location of the neighbouring existing Merredin Terminal, Merredin Energy peaking plant and Merredin Solar Farm, the proposed development will not have a detrimental effect on the visual landscape within the immediate surrounds.

LEGISLATION AND POLICY:

The current JDAP application for Development Approval (DA) is lodged in accordance with the *Planning and Development (Development Assessment Panel) Regulations 2011* (DAP regulations). These regulations are part of the *Planning and Development Act 2005* that operates in conjunction with the *Planning and Development (Local Planning Schemes) Regulations 2015* (that include the Deemed provisions).

Regulation 7 of the DAP regulations provides for the applicant to elect to have the DA determined by the JDAP.

Regulation 10 of the DAP regulations provides for the application form and sets out an application fee schedule.

State Government Policies

The WA Planning Commission has prepared a Position Statement on Renewable energy facilities. (Mar 2020). The policy identifies assessment measures to facilitate appropriate development of renewable energy facilities. It seeks to ensure these facilities are in areas that minimise potential impact upon the environment, natural landscape and urban areas while maximising energy production returns and operational efficiency.

The current proposal for a battery storage facility is not discussed in the position statement, presumably as it is considered as a component of a renewable energy facility.

Structure Plans/Activity Centre Plans

There are no Structure Plans or Activity Centre Plans associated, or affected by, this proposal.

LOCAL POLICIES

There are no local policies associated, or affected by, this proposal.

CONSULTATION:

Public Consultation

A notice was published in the West Australian newspaper on 3 February 2024 inviting submissions to the BESS proposal before 26 February 2024.

There were no submissions received other than those from the servicing agencies discussed below.

Referrals/consultation with Government/Service Agencies

In addition to the public invitation, several agencies were specifically contacted regarding the proposed development.

Four responses were received including, CASA (Civil Aviation Safety Authority), DPIRD (the Department of Primary Industries and Regional Development) and DBCA (Department of Biosecurity, Conservation and Attractions).

DFES (Department of Fire and Emergency Services) requested an extension to the submission period due to its extreme demand for emergency services during this period. The Council granted this extension.

A subsequent email (dated 11 March 2024) from DFES indicates that it has not reviewed the BMP as it has not formally been referred to the Department. Referrals are only received by DFES where the development is affected by the Bushfire Prone mapping.

CASA and DBCA indicated that they had no issues with the proposed development, whilst DPIRD requested that a drainage management plan be prepared for the site.

Schedule A contains details of the submissions.

Issue Raised	**Officer comments**
Drainage	DPIRD noted that the nearby Merredin Terminal sub-station effectively handles surface water by channelling excess water to a dam, while the drain/creek to the north manages surface water from the surrounding area. As a precautionary measure, DPIRD recommends managing surface water from this facility to mitigate water erosion and potential contaminant movement during heavy summer or winter rainfall.

Although the owners, operators, Department of Water and Environmental Regulation (DWER), Western Power (WP) and the Environmental Protection Authority (EPA) were also notified, they have not responded.

Design Review Panel Advice

Not applicable.

Swan Valley Planning

Not applicable.

Other Advice

No other advice has been received.

PLANNING ASSESSMENT:

The proposed development has a relatively small footprint as it is only a component of a renewable energy facility. The WA Planning Commission's Position statement on renewable energy facilities generally deals with complete facilities from the energy generation to the feeding into the grid system.

The battery storage is positioned between these components and requires a relatively small area with minimal impacts.

The proximity to Western Power's Merredin Terminal substation was a key consideration when the site was selected and will result in relatively minor works being

required to connect the proposed facility to the South West Interconnector System (SWIS). The BESS facility will be accessed off Robartson Road and will be securely fenced.

The land is surrounded predominantly by other agricultural properties to the north and west, Western Power's Merredin Terminal to the south and Merredin Solar Farm to the east/ southeast. The subject site is in close to other energy infrastructure assets being the Merredin Energy dual-fuel peaking plant and Merredin Solar Farm (the largest operating solar farm in Western Australia).

Figure 2 shows the site plan with Bushfire Prone mapping data (DFES), a 150m assessment area and the battery development extent area.

The potential impacts include;

- Visual
- Fire risk, and
- Loss of agricultural land or vegetation.

FIGURE 2 - EXTRACT FROM DA SITE PLAN



Source: LandInsights, Bushfire Prone Planning, DFES, Planwest

Visual

The closest sensitive receptor is over 2km away from the site. To the south and west of the subject site sits the energy infrastructure assets mentioned previously, to the north east of the subject site at Lot 15490 is a lot reserved for Parks and Recreation under the Shire of Merredin Local Planning Scheme No.6, known as Merredin Nature Reserve. The applicant considers that, given the nature of the facility, it is unlikely that

there will be any offsite impacts and the balance of the Lot will be retained for rural / agricultural purposes.

A **Visual Impact Landscape Assessment** (VILA) has been prepared as part of the DA.

The assessment concludes that the BESS, whilst visible as part of the scenery of the place would not be visible from all but two points. That view is described as part of the overall assembly of switchyard and dam and transmission lines.

In the circumstances therefore the visual impact of the battery is very limited overall and likely to be viewed as a changing part of the rural scene - including solar and wind farms. The VILA considered the merit of managing the surroundings of the BESS and/or its design, and suggests the potential to explore the following mitigations:

- Install the BESS on a low pad
- Select lighter and muted colours such as sage green, sky blue, white or beige
- Limited screen planting to the road reserve especially areas closest to the BESS although it is noted views are not strongly influenced.

Fire risk.

The DA is accompanied by a comprehensive Bushfire Management Plan (BMP) prepared by Bushfire Prone Planning. Although Lot 5 is affected by the Bushfire Prone mapping, the proposed development site is about 200m from the nearest mapped area (as per DFES data). Notwithstanding this distance, the BMP is deemed necessary as the proposed use class is considered a high-risk land use.

The BMP deals with risk issues that are better assessed by agencies specialising in these areas rather than from a planning perspective. During the advertising, the DA will be forwarded to FESA, amongst others, for comment.

The BMP looks at

- Assessment of potential bushfire impact,
- Environmental conservation,
- Assessment of the development's ability to acceptably mitigate bushfire risk through application of required and/or additional bushfire protection measures, and
- Creation of responsibilities to implement and maintain protection measures.

Loss of agricultural land or vegetation

As can be seen in **Figure 2**, the land is currently cleared and cropped, so no vegetation will need to be cleared. Due to the very small footprint of the facility the loss of land for agricultural purposes in minimal. The balance of the property not required for the batteries will continue to be used for agricultural purposes.

Other potential impacts

These include noise, dust, odour and waste. Some of these risks may occur during construction, however these will be managed through an accepted construction management plan. On completion of the construction, it is anticipated that these impacts will be negligible.

CONCLUSION

The proposed development of the BESS (Battery Energy Storage System) requires a very small footprint in the General Agricultural zone of the Shire of Merredin. In summary, the key considerations include;

- The State and local government's support for renewable energy projects,
- the proposal's visual impact on rural landscape,
- the risk of the development,
- the impact on the local vegetation, drainage and road system, and
- the minimal loss of agricultural land.

The local government has exercised its discretion by using the 'uses not listed' provisions of clause 3.4.2 (b) of the Scheme and subsequently advertising the proposed development.

This support for the BESS development is reinforced through the Council's backing to an Omnibus Amendment to the Scheme that seeks to list the use class and permit further renewable energy projects in the Scheme area.

Alternatives

There are no alternatives.

SCHEDULE A – SUBMISSIONS FROM ADVERTISING

SUB No	SUBMITTOR	SUMMARY OF SUBMISSION	COMMENT	RECOMMENDATION
1 13/2/24	Civil Aviation Safety Authority (CASA)	CASA advises that the proposal will not present a hazard to aircraft operations.	As CASA has no objection to the proposal as presented and no aviation related conditions apply.	That the Council notes the submission.
2 26/2/24	Department of Biodiversity, Conservation and Attractions (DBCA)	DBCA advises that there are no known conservation values onsite.	DBCA recommends that the proponent needs to implement best management practises to avoid any direct/indirect offsite impacts (for eg ground water impacts) on the nearby Nature Reserve.	That the Council notes the submission and advise DBCA that it will require a DMS as a condition of development.
3 26/2/24	Department of Primary Industries and Regional Development (DPIRD)	DPIRD supports the proposal for the following reasons: • project is within a potential energy precinct, adjacent to existing energy facilities. • The footprint of the facility is small. • The site is cleared. DPIRD recommends managing surface water.	The Council has given notice that it will require the applicant to prepare a Drainage Management Strategy (DMS) to its satisfaction.	That the Council notes the submission and advise DPIRD that it will require a DMS as a condition of development.
4 11/3/24	Department of Fire and Emergency Services (DFES)	DFES has not reviewed the BMP as the development is not impacted by the Bushfire Prone mapping.	Development site is located more than 200m from the nearest Bushfire Prone area.	That the Council notes the submission.

Copies of these submissions are attached in Schedule B

SCHEDULE B – COPIES OF SUBMISSIONS

SUBMISSION 1 - CASA

OFFICIAL

Good morning Mr Zenni,

In response to your referral letter dated 1 February, regarding DAP/24/02631, Address of Proposal: Lot 5 Robartson Road, Merredin WA 6415, Proposal Type: Battery Energy Storage System (BESS), CASA advises that the proposal will not present a hazard to aircraft operations.

CASA has no objection to the proposal as presented and no aviation related conditions apply.

Regards

Matthew Windebank

Aerodrome Engineer | Airspace Protection

Air Navigation, Airspace & Aerodromes Branch
CASA\ Aviation Group
p: (02) 6217 1183
e: matthew.windebank@casa.gov.au

Australian Government
Civil Aviation Safety Authority



Meg Wyatt

From: David Jolliffe <david.jolliffe@dbca.wa.gov.au>
Sent: Monday, 26 February 2024 11:22 AM
To: Admin Officer; Lisa Clack
Subject: DBCA comments - Proposed Battery storage facility : Development Assessment Panel Application DAP/2402631
Attachments: CEO68-24.pdf; Proposed-Battery-Energy-Storage-System.pdf

Importance: High

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Dear Mr Peter Zenni,

Your attached correspondence A9722 dated 1 February 2024 refers.

A GIS desktop assessment using the Department of Biodiversity, Conservation & Attractions (DBCA) corporate data, has revealed that there are no known conservation values onsite at Lot 5, Robartson Road, Merredin (proposed site for the Battery Energy Storage System - BESS). The site appears to be a cleared paddock and devoid of remnant vegetation.

Please note that the DBCA-managed Class A Merredin Nature Reserve (A19476 & 90.75 ha in size) is located directly adjacent (eastern boundary) to the proposed BESS site. . The proponent for the BESS will need to implement best management practises to avoid any direct / indirect offsite impacts (for eg ground water impacts) on the Nature Reserve.

The DBCA Environmental Management Branch in Perth is aware that there is considerable interest for renewable industry projects for the Wheatbelt region (amongst others). A working group from the Department of Jobs, Tourism, Science & the Environment are currently in the process of developing a Western Australian Handbook on Electricity generation and storage. This should be available soon for use by the public and current / potential developers.

Please contact me if you require any additional information / clarification.

Kind regards

David Jolliffe

Conservation Coordinator (Flora)

Parks & Wildlife Service : Wheatbelt Region

Department of Biodiversity, Conservation & Attractions

75 York Road Northam WA 6401

PO Box 1012 Northam WA 6401

Mobile 0427228947

Email: David.Jolliffe@dbca.wa.gov.au

Website: http://www.dbca.wa.gov.au/



SUBMISSION 3 - DPIRD

Department of
Primary Industries and Regional Development
GOVERNMENT OF WESTERN AUSTRALIA

Your reference: DAP/24/02631
Our reference: LUP 1800
Enquiries: Greg Doncon

Leah Boehme
Acting Chief Executive Officer
Shire of Merredin
PO Box 42
Merredin WA 6415

Email: admin@merredin.wa.gov.au

Date: 26 February 2024

Dear Leah

Development Assessment Panel Application DAP/24/02631
Address of Proposal: Lot 5 Robartson Road, Merredin WA 6415
Proposal Type: Battery Energy Storage System (BESS)

Thank you for advertising the above proposal, which provides the Department of Primary Industries and Regional Development (DPIRD) the opportunity to provide comment.

DPIRD supports the proposal for the following reasons:

- This renewable energy project is being located within a potential energy precinct, supporting the adjacent to existing energy facilities.
- The footprint of the facility is small; approximately 4ha.
- The site is cleared, having been used for cropping and grazing purposes

The proposed site is located on the Tandegin / Booraan soil landscape subsystem. These are hillslopes predominantly containing hardsetting, grey to brownish sandy loam over clay soils.

These soils normally have a low to moderate risk of water and wind erosion. While the likelihood of soil disturbance, following construction, should be low, DPIRD is aware of sites where soils, which would normally be considered low risk of water erosion, have suffered serious erosion from constructed features (i.e. roads, pads) concentrating water flow.

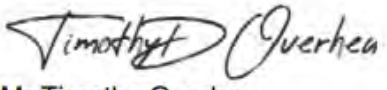
An examination of aerial photography (Figure 3a: Site and Surrounds, p8) reveals that the nearby Merredin Terminal sub-station effectively handles surface water by channeling excess water to a dam, while the drain/creek to the north manages surface water from the surrounding area. As a precautionary measure, DPIRD recommends

444 Albany Highway Albany WA 6330
Telephone 08 9892 8444 landuse.planning@dpird.wa.gov.au
dpird.wa.gov.au

managing surface water from this facility to mitigate water erosion and potential contaminant movement during heavy summer or winter rainfall.

For more information, please contact Greg Doncon on (08) 908 13117 or greg.doncon@dpird.wa.gov.au

Yours sincerely



Mr Timothy Overheu
Acting Director Agriculture Resource Management Assessment
Sustainability and Biosecurity

SUBMISSION 4 - DFES

From: DFES Land Use Planning <advice@dfes.wa.gov.au>
Date: 11/3/24 12:26 pm (GMT+08:00)
To
Subject: A9722 - DAP/24/02631 - Lot 5 Robartson Road, Merredin - Proposed Battery Energy Storage System - DFES Response

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DFES Ref: D33152
Shire Ref: DAP/24/02631

Dear Mr Zenni,

In relation to the above application, the following comments are provided.

DFES note that the application has been advertised only and has not been formally referred as the proposal does not include development within a bushfire prone area (with all development outside of the area classified as bushfire prone) and is therefore not subject to the application of SPP 3.7 and the associated Guidelines. This has been verbally confirmed by Mr Zenni from the Shire, on 8 February 2024.

DFES' Land Use Planning Branch has forwarded the proposal to other internal branches, however, currently has not received any comments provide to the Shire due to operational priorities during the high threat period. If any comments are received in the coming weeks they will be forwarded to the Shire as quickly as possible.

Please note that as the Shire has confirmed that this is not a formal referral, as the application of SPP 3.7 has not been triggered by the Shire, DFES has not undertaken a review of the BMP or additional documents from a Land Use Planning perspective.

Please contact me on 9395 9819 if you have any queries regarding the above.

Kind regards,

Michael Ball
Senior Land Use Planning Officer

20 Stockton Bend, Cockburn Central, Perth WA 6164
T: 08 9395 9819 | E: advice@dfes.wa.gov.au | **W:** dfes.wa.gov.au

DFES FOR A SAFER STATE



Acknowledgement of Country: DFES acknowledges the Traditional Owners of Country throughout Australia, and their connections to land, sea and community. We pay our respects to Elders past and present.

Reply Forward

PROPOSED

BATTERY ENERGY STORAGE SYSTEM

PREPARED FOR NOMAD ENERGY

LOT 5 ROBARTSON ROAD, MERREDIN

DECEMBER 2023



landinsights
PLANNING DESIGN ENVIRONMENT

Prepared by:
Land Insights
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Mt Lawley WA 6929

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Document Name: 1130b_MerredinBESS_RH_Rev1
Document History:

Date	Document Revision	Document Manager	Summary of Document Revision	Client Delivered
Dec-23	0	RH	Initial Draft	Dec-23
Dec-23	1	RH	Client comments incorporated	Dec-23

Important Note:

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COVER PHOTO:

Proposed BESS site, with Western Power Merredin Terminal, Merredin Energy Peaking Plant and Merredin Solar Farm in the background.

Photo credit: Land Insights, November 2023

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APPENDIX A - APPLICATION FORM AND TITLE

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1.0 introduction

1.1 BACKGROUND AND CONTEXT

Land Insights act for Nomad Energy, who are seeking development approval to establish a Battery Energy Storage System (BESS) at Lot 5 (on Diagram 67824) Robartson Road, Merredin (the "subject site"). The proposed development will consist of the BESS facility (comprised of battery packs, inverters, transformers and control systems) and the associated high voltage substation and additional switch room(s)/control building(s), laydown areas, staff car parking, required firefighting equipment, internal roads and a perimeter fence. The BESS project will connect to Western Power's transmission network at the adjacent Merredin Terminal.

The Shire of Merredin has become the renewable energy focus for the wheatbelt and Western Australia. It pioneered wind turbines and solar farms generating green energy to replace greenhouse gas emitting sources, and now the next iteration is in the storage and redistribution of this energy via battery energy storage systems (BESS). The area is continuing to advance the cooperative practices of energy farms and conventional farming.

The subject site is an agricultural property, does not contain any areas of remnant vegetation and is currently used for cropping and sheep grazing purposes It is located approximately 7.5km south-west of the centre of the town of Merredin and comprises a land area of approximately 61.51ha. Only a small portion (approximately 4ha) of this lot, immediately adjacent to the Merredin Terminal sub-station, will be utilised for the development. The proximity to Western Power's Merredin Terminal substation was a key consideration when selecting the site location, and will result in relatively minor works being required to connect the proposed facility to the South West Interconnector System (SWIS). The BESS facility will be accessed off Robartson road and will be securely fenced.

1.2 ABOUT NOMAD ENERGY

Nomad Energy is an Australian company who has developed more than 500MW of renewable energy projects globally, including Western Australia's largest operational solar farm (Merredin Solar Farm). Nomad Energy has partnered with Atmos Renewables on this project, who are one of the top 5 largest owner / operators of utility-scale renewable energy facilities in Australia and currently hold generation assets with a gross capacity in excess of 1.7GW. A core feature of the Nomad – Atmos partnership is the intent to develop, build, own and operate the assets we develop. This strategy demonstrates our long-term approach to the assets, the local communities in which they are situated and to the electricity market this project will ultimately support. The partnership has offices in Perth, Melbourne and Sydney and has over 30 employees across Australia.

1.3 LAND DESCRIPTION

The subject site is approximately 260km east of Perth and 7.5 kilometres southwest of Merredin. It is surrounded predominantly by other agricultural properties to the north and west, Western Power's Merredin Terminal to the south and Merredin Solar Farm to the east/ southeast. The subject site is in close proximity to other energy infrastructure assets being the Merredin Energy dual-fuel peaking plant and Merredin Solar Farm (the largest operating solar farm in Western Australia).

The site comprises one single freehold land. An easement (refer to yellow hatch) affects a portion of the lot, and there is one reserve (Merredin Nature Reserve, green hatch) abutting the eastern boundary. Table 1 below outlines the Certificate of Title details for the subject site that forms part of this application, and a copy of the Title can be found at Appendix A of this report.

Table 1 – Certificate of Title details

Lot	Volume / Folio	Registered Proprietor
Lot 5	1695 / 263	Ross Milton Robartson

EXISTING USE

The site is located on cleared and disturbed land which is currently used as a rural farming property, predominantly for cropping and sheep grazing.

As shown below in Figure 1 & 2 – Site Context/Location the site is cleared of vegetation, will have minimal visual impact on neighbouring properties and is located adjacent to the north of the Western Power terminal, making this site highly suitable for the proposed BESS facility.

SURROUNDING LAND

Surrounding land uses include energy infrastructure (Western Power's Merredin Terminal), energy generation facilities (Merredin Energy peaking plant and Merredin Solar Farm) as well as agricultural (cropping and grazing) land. The closest sensitive receptor is over 2km away from the site. To the south and east of the subject site sits the energy infrastructure assets mentioned previously, to the north east of the subject site at Lot 15490 is a lot reserved Parks and Recreation under the Shire of Merredin Local Planning Scheme No.6, known as Merredin Nature Reserve. Given the nature of the facility it is unlikely that there will be any offsite impacts and the balance of the Lot will be retained for rural / agricultural purposes.

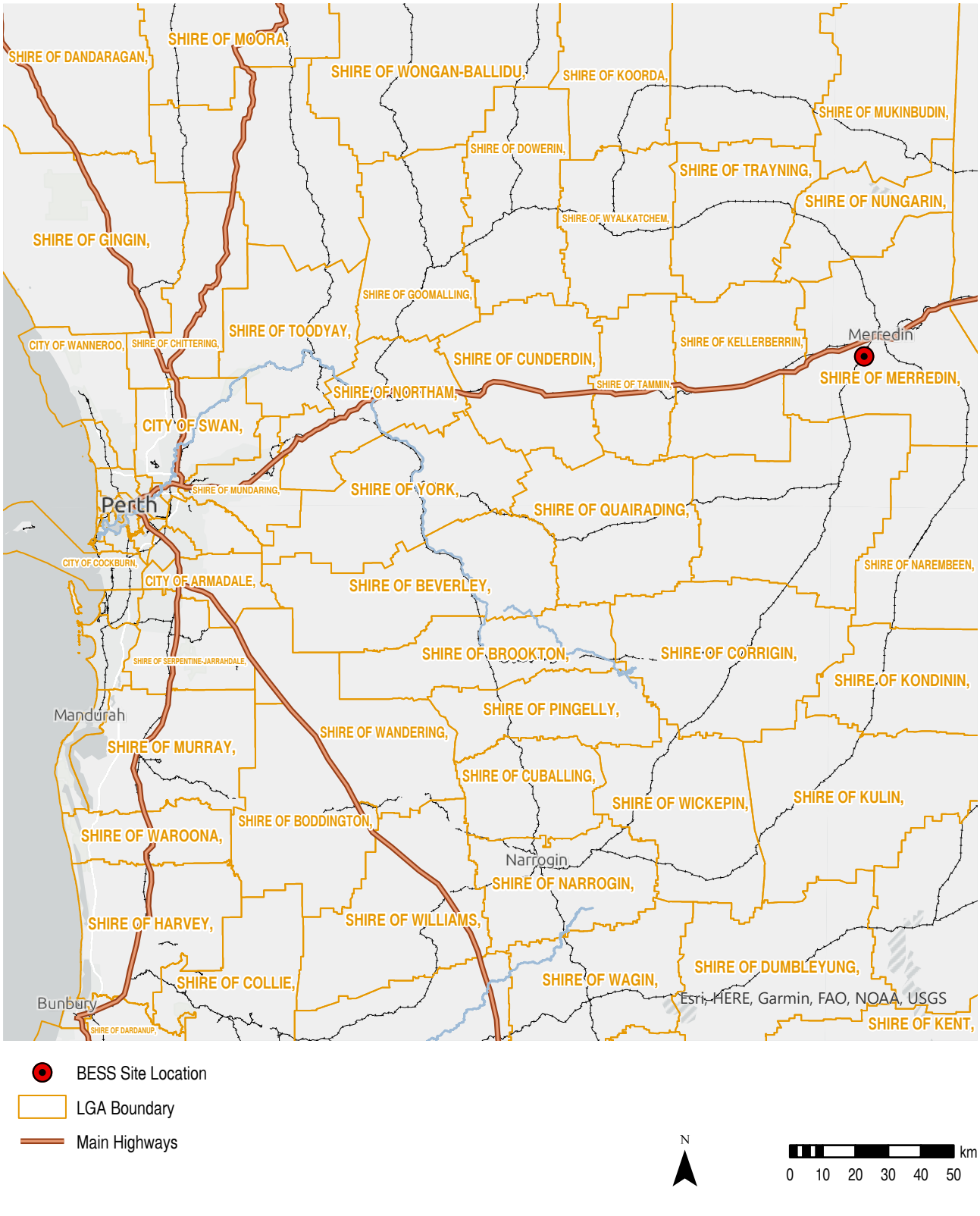


Figure 1: Site Location

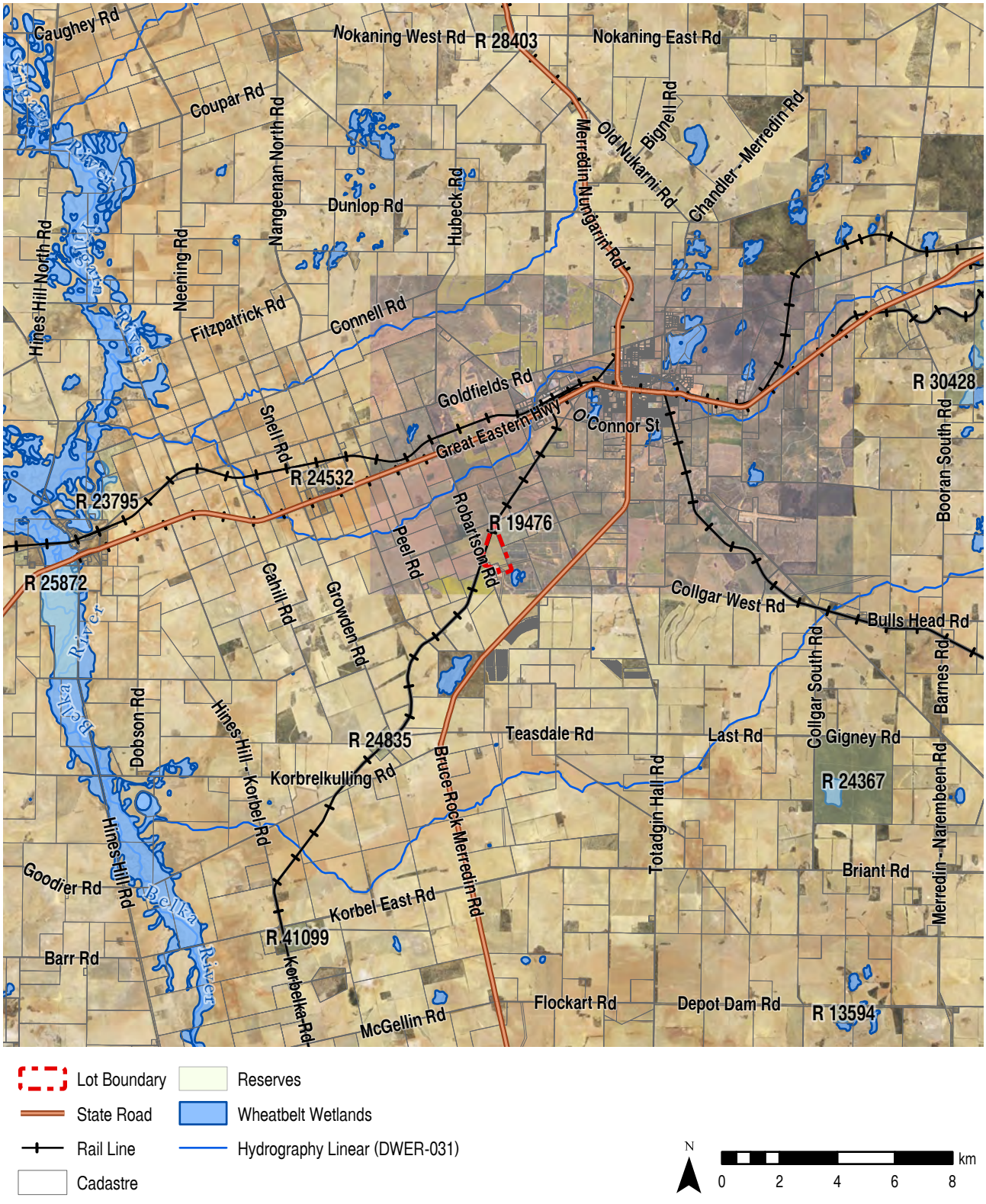


Figure 2: Site Context



Figure 3a: Site and Surrounds



Figure 3b: Site Detail

2.0 the proposal

2.1 OVERVIEW

The proposed BESS facility and associated sub-station and ancillary infrastructure will have an export capacity of approximately 100MW / 400MWh. The proposed BESS is located adjacent to the existing Merredin Terminal Substation, which facilitates a least-impact connection to the South West Interconnected System (SWIS), and with access via a new internal road off Robartson Road, Merredin. The proposed BESS facility will take approximately 12 – 18 months to construct, with a peak construction workforce of approximately 50. The connection of the proposed onsite substation to the adjoining Merredin Terminal is a separate matter to this application and is currently being negotiated by the proponent and Western Power.

2.2 PRE-LODGEMENT LIAISON & CONSULTATION

A pre-lodgement conversation was undertaken with the Shire Administration to inform them of the upcoming project. This discussion indicated that the Shire is keen to facilitate renewable energy projects, particularly where they can be located in a precinct, adjacent to existing facilities, subject to normal planning and assessment processes. Am informal pre-application meeting was also undertaken with the Shire representative on the 23rd of November in relation to the application.

The proponent has also been in ongoing discussions with Western Power regarding the project parameters and the proposed connection to the adjoining Merredin Terminal.

No pre-lodgement consultation was deemed necessary with surrounding landowners in this instance as the surrounding land is owned by either the Registered Proprietor of the subject site or that of the adjoining solar farm in this emerging energy precinct, coupled with the small footprint of the BESS and limited potential impacts to the amenity of the area from its development. Relevant parties will have an opportunity to comment on the proposal during the statutory advertising period.

2.3 COMPONENTS

As stated above the BESS facility will have an export capacity of approximately 100MW/400MWh and the subject site infrastructure will include:

- 110-120 Battery containers
- 28-30 Ring Main Units (RMU's) – containing transformers and switchrooms
- A HV/MV Switchyard
- A Control Room building
- A Western Power relay room
- Substation (with bunding to approved standards)
- Parking for workers for both the construction and post construction phase
- Operation & Maintenance building
- Spare parts building
- Internal roads (built to the required standards of both the Shire and Bushfire Requirements)
- Firefighting infrastructure (to standards outlined in the Bushfire Management Plan)
- Development to support the construction phase - construction compound containing an ablution block, meeting room and crib room for onsite construction



workforce.

Appendix B – Layout Plans and Specifications of Equipment (Drawings MBB-GA-00 to MBB-GA) shows how the facility will be laid out over the subject site and the specification and elevations for the components that will be installed. The battery container units and ring-main units (RMU's) will sit on top of concrete pads. The switchyard /control room building is shown in drawing MBB-EL-231012 as a combined substation, these buildings may become separate structures following detail design. The switchyard/control room building is currently designed to be raised off the ground, however, it should be noted that this structure may be constructed on concrete plinths similar to the battery containers and RMU's. The layout as depicted in Appendix B is to be refined once an agreement with the battery manufacturer has been finalised and a construction contractor appointed.

2.4 CONSTRUCTION

The construction phase will take approximately 12 – 18 months and the peak workforce on site at any one time is anticipated to be 50 workers. Construction will commence with site preparation works (levelling, grubbing as required) and creating the access to the Robartson Road. A lay down area and construction staff parking area as well as temporary site offices, ablutions and welfare will be installed during this phase, as shown on plan MBB-GA-01 *HV Substation General Arrangement*.

As shown on plan MBB-GA-01 there is sufficient room on the subject site for the parking of private vehicles associated with the workforce to park on site, there is also sufficient area on the subject site for laydown areas during the construction period.

Nomad Energy will appoint a contractor to construct and install the facility with the contractor being responsible for adherence to all approvals and relevant standards along with an approved Construction Management Plan, which will be reviewed and endorsed by the Shire prior to development commencing. The principal construction contractor will be the Construction Design and Management (CDM) coordinator for the project and will be responsible for all site access and health and safety inductions.

Temporary development will be required during the construction phase of the project. This may include:

- Main office and meeting room
- Ablution block
- Crib room
- Water tanks (both for use onsite and bushfire)
- Car Park
- Construction laydown area.

During the construction phase it is expected that both a local and specialist/technical workforce will be utilised. The specialist/technical workforce will be sourced from outside of the Shire, however local workers will be used where possible. The workforce will be accommodated within the townsite during the 12 – 18 month construction phase.

2.5 OPERATIONS

The facility will be largely autonomous and unmanned once operational, with locally based contractors/ employees responsible for the ongoing management of the site. Remote monitoring of the facility will also occur to ensure that the facility is operating in accordance with Western Power's technical rules and in accordance with AEMO guidelines. The site operation and maintenance workforce will ensure the facility is operating as intended.

Once operational, only occasional maintenance personnel visits to the site will be required.

2.6 ACCESS

Access to the subject site will be via Robartson Road, utilising an existing farm crossing adjacent to the farm dam and firebreak. An upgraded crossover and access road will be constructed in this location, and will be built to both Shire and required bushfire standards. The subject site will be fully fenced for security reasons with only those who need to be on site for operations or maintenance permitted access once the facility is operational.

2.7 STAFFING

It is estimated that up to 150 people will be employed during the full construction phase, with a peak manpower requirement of approximately 50 people onsite. Once the project is complete operation will be largely autonomous and the site will be unmanned, with only operation and maintenance personnel visiting the site a few times a year or as required if an unplanned maintenance activity is required. There is sufficient room on the subject site for the

parking of staff that might visit the site and any additional workers that may be required on site for maintenance and upgrades that may be required during the life of the facility.

2.8 COMMUNITY AND ECONOMIC BENEFITS

The project is a major investment in the State and local economy, as well as a step towards a lower carbon future. It will benefit both local and wider communities.

Contract negotiations with Western Power are underway and will continue however these are of a commercial nature and not central to the consideration of the development application and from an implementation perspective.

The facility will use local, regional or Western Australian labour and materials as much as possible. However, the batteries will be made overseas and technical specialists will be needed for their installation and commissioning.

The project will create economic and employment opportunities for Merredin residents, including accommodation/housing and local goods and services during the construction period. The proponent will invite local companies to bid for jobs such as electrical, security, ground work, and mechanical work. This will provide work for local companies and their employees during the construction phase. The facility will also create local jobs for maintenance and monitoring after the development.

3.0 strategic considerations

3.1 STATE PLANNING STRATEGY 2050

The State Planning Strategy "highlights the principles, strategic goals and strategic directions that are important to the land-use planning and development of Western Australia".

The strategy further states under point 2.3 Energy that:

- Effective and flexible planning, policy and regulatory frameworks provide an enabling environment for investment and the uptake of new technologies.
- Existing and emerging industries are encouraged to locate in appropriate regional areas to encourage economic diversification.
- With global and domestic pressures likely to cause further increases in the cost of fossil fuels, it is in Western Australia's long-term interest to develop a diverse energy supply mix, including the use of renewable fuel sources.
- Renewable energy initiatives help to mitigate the risks from climate change, lessen fossil fuel use and reduce greenhouse emissions.

The development of the proposed BESS facility meets the objectives of the State Planning Strategy 2050 in that the facility will provide a source of clean energy within the Shire and the broader SWIS.

3.2 STRATEGY UPDATE: WESTERN AUSTRALIA'S FUTURE BATTERY AND CRITICAL MINERALS INDUSTRIES NOVEMBER 2020 – NOVEMBER 2022

This strategy was developed by the Department of Jobs, Tourism, Science and Innovation (JTSI) and states at Priority 4 to support energy storage applications that consider or address:

- Increasing the uptake of battery energy storage will support new industry development opportunities.
- Large and small-scale batteries offer opportunities for low cost, low emissions energy, and will form a large part of Western Australia's energy transformation into the future.
- The increasing uptake of batteries in rural and remote communities, as well as emerging applications in mining, defence and other advanced manufacturing industries will help to create new jobs, skills and technological capabilities in the assembly, installation and management of energy storage in Western Australia

With the next steps to be to:

- Promote the uptake and integration of batteries across a range of settings and industries in Western Australia.
- Support enhanced workforce capability in the assembly, installation, and management of batteries.

The proposed development of this facility within a rural area energy hub is delivering the priorities outlined within the strategy in relation to development of the proposed BESS facility.

4.0 Planning Framework

4.1 POSITION STATEMENT: RENEWABLE ENERGY FACILITIES

This policy identifies assessment measures to facilitate appropriate development of renewable energy facilities. It seeks to ensure that proposed facilities are located in areas that are suitable and minimise the impact on the environment, natural landscape and urban areas while maximising energy production and operational efficiency.

The objectives of the position statement are to:

- Outline key planning and environmental considerations for the location, siting and design of renewable energy facilities.
- Promote the consistent consideration and assessment of renewable energy facilities
- Facilitate appropriate development of renewable energy facilities while minimising any potential impact upon the environment, natural landscape, and urban areas
- Encourage informed public engagement early in the renewable energy facility planning process

Under Clause 6 of the position statement a definition of a Renewable Energy Facility is outlined and is as follows:

Renewable energy facility means premises used to generate energy from a renewable energy source and includes any building or other structure used in, or relating to, the generation of energy by a renewable resource. It does not include renewable energy electricity generation where the energy produced principally supplies a domestic and/or business premises and any on selling to the grid is secondary.

Clause 5.3 of the position statement relates to renewable energy facility proposals and includes matters that should be considered when assessing proposals, these include:

- Community consultation
- Environmental Impact
- Visual and Landscape impact
- Noise Impact
- Public and aviation safety
- Heritage
- Construction impact

The clauses and matters that are applicable to this application are detailed in the Table 2 below:

Table 2 – Response to Position Statement on Renewable Energy

Clause	Response
5.3.1 Community consultation Early consultation with the community and stakeholders by the proponents is encouraged to ensure that the proposal is compatible with existing land uses on and near the site.	Given the location of the facility adjacent to the existing Merredin Terminal Station and its location on existing cleared agricultural land, consultation with the community was not seen as required in this instance. Further, the economic benefit to the Shire and the community along with the greater benefit to the residents within the Shire in being able to source clean energy to power their homes and businesses is seen as a benefit to the community.
The local government should be consulted with respect to the community consultation program.	Land Insights has been consulting with the Shire in regard to the proposed development and met with the Shire on the 23rd of November 2023 to discuss the proposed facility.
5.3.2 Environmental Impact An environmental survey of the site should be conducted prior to the commencement of the renewable energy facility design. The type, location and significance of flora and fauna, particularly rare and endangered or threatened communities that may be impacted, should be described and mapped so that remnant vegetation and sensitive areas can be avoided.	The subject site is currently used for cropping and grazing and is cleared with no pockets of remnant vegetation contained on site. The facility will not have a detrimental affect on the environment rather the facility provides a greater capacity for renewable energy for not only the Shire but also the State to meet its proposed renewable targets for 2050. A qualified botanist reviewed the site, and it was determined that there was no requirement for a flora/fauna survey in this instance.

Clause	Response
Facilities should be located near the grid to minimise clearing of vegetation for grid connection power lines. Solar arrays over a large area may have significant effect on the clearing of native vegetation. Already cleared farming land may offer a practical solution to minimise any environmental impact.	The proposed facility is adjacent to the existing Merredin Terminal Station so there is no requirement for the clearing of vegetation for a grid connection. The site is already cleared for agricultural purposes meaning that the proposed development will have minimal, if any, environmental impact.
5.3.3 Visual and Landscape impact The location and siting of a renewable energy facility may require a visual and landscape impact assessment that addresses: • landscape significance and sensitivity to change, site earthworks, topography, extent of cut and fill, the extent and type of vegetation, clearing and rehabilitation areas, land use patterns, built form character, public amenity and community values.	The subject site is cleared, and the proposed development application will sit approximately 140m from Robartson Road (to the east) behind an existing dam and adjacent to the Merredin Terminal station. There are no residential buildings within the immediate surrounds of the subject site which means that the impact of the facility on its surrounds will be minimal. The closest house is over 2km away meaning there are no sensitive receptors nearby. A visual assessment of the proposal has been undertaken (refer to section 6 of this document), which concluded minimal, if any, visual impact.
• likely impact on views including the visibility of the facility using view shed analysis and simulations of views from significant viewing locations including residential areas, major scenic drives and lookouts	Given the location of the proposed development within an area that is largely cleared for agricultural purposes and adjacent to the existing Merredin Terminal station the proposed development will not have an impact on any significant views and it not located near any residential houses nor major scenic drives.

Clause	Response
• layout of the facility including the number, height, scale, spacing, colour, surface reflectivity and design of components, including any ancillary buildings, signage, access roads, and incidental facilities • measures proposed to minimise unwanted, unacceptable or adverse visual impacts. • Visual Landscape Planning in WA: a manual for evaluation, assessment, siting and design, (November 2007) and the Australian Wind Energy Association and the Australian Council of National Trusts Publication Wind Farms and Landscape Values (2005) provide detailed guidance on visual landscape impact assessments.	Plans of the proposed development are provided with this application. Given the proposed development is adjacent with the existing Merredin Terminal station which already has infrastructure in place of a similar nature it is unlikely that the additional infrastructure proposed to be located on site will have an unacceptable or adverse visual affect. A visual assessment of the proposal has been undertaken (refer to section 6 of this document), which concluded minimal, if any, visual impact.

Clause	Response
Some locations may hold Aboriginal heritage, natural or historic heritage significance which may impact site suitability. An assessment should address: • local archaeological and ethnographic records • any impact upon the natural environment that have aesthetic, historical, scientific or social significance or other special value for the present and future community • any impact upon the historic heritage characteristics of adjoining/nearby places with an impact assessment of the proposal undertaken where relevant. Consultation with the Department of Planning, Lands and Heritage may be required if heritage issues are identified. Appropriate consultation should be undertaken with respect to Aboriginal heritage matters.	A review of the relevant layers of the Department for Planning Lands and Heritage databases and other relevant documentation did not find any areas of Aboriginal Heritage, natural and historic significance. As such the trigger for consultation with the DPLH at this stage has not been reached. The DPLH will likely be consulted during the statutory advertising period.

Clause	Response
5.3.7 Construction impact It is important to accommodate the full scope of works to occur on the site in the development of a renewable energy facility. Consideration needs be given to potential staging that may occur including one type of renewable energy being subsequently complemented by a second type of renewable energy to supplement continuity of feed into the grid, for example, wind turbines supplemented by solar arrays on the same site. Key matters that should be addressed during the construction phase are:	The construction impact will not be as significant as when the adjoining solar farm was constructed. It is predicted that over the period of 12 to 18 months that there will be an estimated 300 truck movements in total, delivering the batteries and associated infrastructure for the site. The majority of these deliveries will occur in the early to mid stages of the construction phase. During the construction phase it is expected that, at the peak, there will only need to be 50 workers arriving (between 6-8am) and leaving (between 4-6pm) the subject site.
a site construction management plan that identifies standards and procedures for the construction of the development including the management of environmental emissions such as dust and noise	A Construction Management Plan (CMP) can be implemented as a Condition of Approval by the Shire and the Joint Development Assessment Panel. The CMP will be in line with the Shire's requirements and will include the standards and procedures for the construction of the proposed development including the environmental emissions such as dust and noise that might occur during the construction phase. The CMP will also deal with matters such as traffic movements and stormwater that can be assessed once final detailed design has been undertaken.

Clause	Response
site disturbance should be minimised during construction through careful siting and measures to address erosion, drainage run-off, flooding, water quality, retention of remnant vegetation, stabilisation of top soil, and weed and disease hygiene.	The proposed development has been designed to sensitively respond to the subject site and site disturbance will be minimised during the construction phase. The design reflects the best possible use of the subject site taking into account all of the various matters outlined under this point.
vehicle and machinery access and movement. A decommissioning program should be separately developed in relation to removal of the facility and any rehabilitation requirements.	A Traffic Impact Statement has not been produced for this development given the low level of vehicle movements that are proposed over the construction timeframe and it should be noted, as mentioned previously, truck movements will be significantly less than during the construction of the surrounding solar farm. The internal roads will be constructed to a standard that will allow for easy onsite movement of the trucks delivering the battery packs and associated infrastructure and for ease of turnaround and access and egress. Further as shown on the plans there is sufficient area for the required staff to park on the subject site. The life of the proposed facility is expected to be up to 30 years. If/when the facility is decommissioned the infrastructure can be removed and the land returned for farming purposes - it is unlikely that rehabilitation will be required.

4.2 STATE PLANNING POLICY 2.0 – ENVIRONMENT AND NATURAL RESOURCES (SPP2.0)

The policy states that:

> *Western Australia is one of the most biologically diverse regions in the world, home to a broad range of ecological communities and species, and natural landscapes. The States vast areas encompass rich and extensive agricultural, pastoral, marine and mineral resources. The protection and wise management of the environment and natural resources of the State are of paramount importance if we are to maintain our lifestyle now and into the future.*

SPP 2.0 further states that:

> *Careful assessment will be required to resolve conflicts between land use and protection of natural resources, giving consideration to the potential impacts on the environment, community lifestyle preferences, and economic values. This requires an understanding of the competing pressures of development and environmental protection, together with the economics of sustainable land use and management practices, advances in technology, and the priorities of the community.*

Clause 5.6 of SPP 2.0 relates to Agricultural Land and Rangelands and states that:

> *Planning strategies, schemes and decision making should:*
>
> - *Protect and enhance areas of agricultural significance, having regard to State, regional and local issues and characteristics, and to the requirements of Statement of Planning Policy No.11: Agricultural and Rural Land Use Planning*
> - *Consider the natural resource capability of rangelands and agricultural lands*
> - *Diversify compatible land use activities in agricultural areas and rangelands based on principles of sustainability and recognizing the capability and capacity of the land to support those uses.*

The proposed development meets these objectives in that the subject site is already cleared and used for broad acre cropping and grazing and is not in an area of agricultural significance with the balance of the subject site still used

for existing agricultural purposes. Further, the proposed development will allow the diversification of land use on the principle of sustainability by providing a green energy facility within the locality and broader surrounds.

Clause 5.10 of SPP 2.0 relates to Greenhouse Gas Emission and Energy Efficiency and states:

> *There is a widespread awareness of the need to increase the efficiency with which energy is used in Western Australia, including the need to reduce our reliance on energy produced from non-renewable resources such as fossil fuels. The primary objective is to reduce greenhouse gas emission by means (but not limited to) increasing energy efficiency, decreasing reliance on non-renewable fuels, and increasing usage of renewable energy sources.*
>
> *Planning strategies, schemes and decision making should:*
>
> - *Promote energy efficient development and urban design incorporating such issues as energy efficient building design, walkable neighbourhoods, higher densities in areas accessible to high quality public transport, local access to employment, retail and community facilities, and orientation of building lots for solar efficiency.*
> - *Support the retention of existing vegetation and revegetation in subdivision and development proposals.*
> - *Support the use of alternative energy generation, including renewable energy, where appropriate.*
> - *Support the adoption of adaptation measures that may be required to respond to climate change.*

The proposed development meets the objectives outlined under the Greenhouse Gas Emission and Energy efficiency clause in that the development of the BESS facility does not involve the removal of any remnant vegetation and is a form of alternative energy generation and storage which is a form of renewable energy and is a measure that is responding to climate change.

Clause 6 of SPP2.0 relates to the Implementation of the policy and states that:

Implementation will also occur through the day-to-day process of decision-making on subdivision and development applications, and the actions of other State agencies in carrying out their responsibilities. Local Governments and State agencies will need to take account of these policy measures to ensure integrated decision-making and in the planning and management of the environment and natural resources.

The proposed development meets the requirements of SPP 2.0 in that the proposed development will help reduce the need to rely on traditional energy forms and the introduction of a renewable facility. Further as the proposed development is adjacent to the existing Merredin Terminal station.

4.3 STATE PLANNING POLICY 2.5 – RURAL PLANNING (SPP2.5)

The purpose of this policy is to protect and preserve Western Australia's rural land assets due to the importance of their economic, natural resource, food production, environmental and landscape values. In terms of the proposed solar farm development compliance with SPP2.5 and compatibility with surrounding rural land uses.

The objectives of SPP2.5 are outlined and addressed in the Table 3 below:

Table 3 – Response to Objectives of SPP2.5

Objective	Response
Support existing, expanded and future primary production through the protection of rural land, particularly priority agricultural land and land required for animal premises and/or the production of food;	The subject site is not identified as priority agricultural land in the Local Planning Strategy or other applicable documents. Once the BESS facility and associated substation and infrastructure is operational, the remainder of the lot can be used for cropping and grazing. The facility will be fully fenced to ensure that it is protected.
Provide investment security for existing, expanded and future primary production and promote economic growth and regional development on rural land for rural land uses;	The proposed BESS facility will promote economic growth and regional development through the development of a new land use and the protection of energy for the region. The proposed farm will increase the workforce during the construction phase, this will occur in terms of accommodation options but also the workers spending money within the Shire.
Outside the Perth and Peel planning regions, secure significant basic raw material resources and provide for their extraction	Extraction of basic raw materials is not proposed.
Provide a planning framework that comprehensively considers rural land and land uses, and facilities consistent and timely decision-making	The local planning framework is addressed under Section 3.2 of this report.
Avoid and minimise land use conflicts	Surrounding land uses are typically broad acre farming and grazing, the Merredin Terminal station and an operating solar farm. It is considered that the proposed BESS facility will not result in significant land use conflicts within the broader area instead being located in a precinct with existing power generation infrastructure.
Promote sustainable settlement in, and adjacent to, existing urban areas; and	The subject site is not proposing urban development.
Protect and sustainably manage environmental, landscape and water resource assets.	The proposed development will not have any detrimental effects on the environment, landscape, water nor resource assets. Instead, the proposed development the proposed facility will allow for the protection of the environment through the production of green energy.

Section 5.5 of SPP2.5 relates to regional variation, economic opportunities and regional development it states that:

> *Western Australia is a large and diverse State with regional variations of climate, economic activity, cultural values, demographic characteristics and environmental conditions. The WAPC's decisions will be guided by the need to provide economic opportunities for rural communities and to protect the States primary production and natural resource assets. WAPC policy is to:*
>
> > *(a) continue to promote rural zones in schemes as flexible zones that cater for a wide range of land uses that may support primary production, regional facilities, environmental protections and cultural pursuits*

The proposed BESS facility meets the above Section 5.5 of the policy in that:

- The proposal is providing economic opportunities for the Shire and will not have a detrimental effect on the State's primary production and natural resource

assets.

- The proposal represents a regional facility and therefore flexibility within the General Farming Zone considered by both the Shire and the WAPC can be supportive of this land use.

Section 5.12 relates to preventing and managing impacts in land use planning and states that:

> *Planning decision makers need to consider the broad suitability of land uses and the ability to manage offsite impacts prior to determining whether the use of a buffer is necessary.*

Section 5.12.1 relates to Avoiding Land Use conflict and outlines the matters that planning decision makers shall take to avoid lad use conflict which are outlined in the Table 4 below:

Table 4 – Objectives of Avoiding Land Use Conflict

Objective	Response
Where an existing land use that may generate impacts is broadly compatible with surrounding zones and land uses, a separation distance should be indicated in a local planning strategy so there is broad awareness of the land use	The subject site is not identified as priority agricultural land in the Local Planning Strategy nor any other associated documents. The BESS facility is expected to generate little to no impact on its surrounds and therefore a separation distance from the solar farm to other uses within the General Farming zone is highly unlikely to be required. Further, no farmhouses are located within close proximity of the project, coupled with it being adjacent to the Merredin Terminal station, means that the location is highly suitable as the development will blend in with the existing operating development.
Where a development is proposed for a land use that may generate offsite impacts, there should be application of the separation distances used in environmental policy and health guidance, prescribed standards, accepted industry standards and/or Codes of Practice, followed by considering Whether the site is capable of accommodating the land use and/or Whether surrounding rural land is suitable, and can be used to meet the separation distances between the nearest sensitive land use and/or zone, and would not limit future rural land uses; and Whether if clauses (i) and/or (ii) are met, a statutory buffer is not required	The subject site is capable of accommodating the proposed land use and suitable separation distances in regard to bushfire and other requirements are adhered to. The proposed development meets both clauses (i) and (ii) and therefore a statutory buffer is not required.
where a development is proposed for a land use that may generate off-site impacts and does not meet the standard outlined in clause 5.12.1 (b) then more detailed consideration of off-site impacts will be required, in accordance with clause 5.12.3 of this policy; and	It is unlikely that the proposed BESS facility will generate offsite impacts. Rather, the proposed facility will enhance and reduce off site impacts by providing green energy to Shire and the State to meet Net Zero targets.
where a development is proposed that could be contemplated in the zone, and has been assessed under clause 5.12.3 as having unacceptable off-site impacts that cannot be further mitigated or managed, the proposal should be refused	Not applicable to this proposal

4.4 STATE PLANNING POLICY 3.7 – PLANNING IN BUSHFIRE PRONE AREAS (SPP3.7)

Although the subject site is not within a bushfire prone area as shown in Figure 4 – Bushfire Prone Areas shown below, given the nature of the proposed development and for safety reasons a bushfire management plan and risk assessment has been undertaken to ensure that all safety measures are complied with and so that the correct recommended firefighting equipment can be kept on site should an incident occur.

The intent of SPP3.7 is to:

> *Implement effective, risk-based land use planning and development to preserve life and reduce impact of bushfire on property and infrastructure.*
>
> *Policy measure 5 of SPP3.7 relates to the policy objectives and are as follows:*
>
> *5.1 Avoid any increase in the threat of bushfire to people, property and infrastructure. The preservation of life and the management of bushfire impact are paramount.*
>
> *5.2 Reduce vulnerability to bushfire through the identification and consideration of bushfire risks in decision making at all stages of the planning and development process.*
>
> *5.3 Ensure that higher order strategic planning documents, strategic planning proposals, subdivision and development application take into account bushfire protection requirements and include specified bushfire protection measures.*
>
> *5.4 Achieve an appropriate balance between bushfire risk management measures and, biodiversity conservation values, environmental protection and biodiversity management and landscape amenity, with consideration of the potential impacts of climate change.*

The proposed development meets the objectives of the policy in that it will:

- Not increase the threat of bushfire to people, property and infrastructure and as part of the application the preservation of life and the management of the possible bushfire impact are paramount.
- It will reduce the vulnerability of bushfire over the subject site through the identification and consideration of bushfire risks through all stages of the planning and development process.
- The proposed development application will take into account bushfire protection requirements, and it will include specified bushfire protection measures within the applicable Bushfire Management Plan.
- The proposed development is aiming to achieve through careful design, a balance between bushfire risk management measures, biodiversity and conservation values, environmental protection and biodiversity management and landscape amenity.
- A specialist risk assessment has been undertaken in regard to the BESS facility with appropriate measures identified in relation to risk and management of the facility in relation to bushfire.

Policy measure 6.2 of SPP3.7 relates to development applications and states that:

> - *Strategic planning proposals, subdivision and development applications within designated bushfire prone areas relating to land that has or will have a Bushfire Hazard Level (BHL) above low and/or where a Bushfire Attack Level (BAL) rating above BAL-LOW apply, are to comply with these policy measures.*
> - *Any strategic planning proposal, subdivision or development application in an area to which policy measure 6.2 a) applies, that has or will, on completion, have a moderate BHL and/ or where BAL-12.5 to BAL-29 applies, may be considered for approval where it can be undertaken in accordance with policy measures 6.3, 6.4 or 6.5.*
> - *This policy also applies where an area is not yet designated as a bushfire prone area but is proposed to be developed in a way that introduces a bushfire hazard, as outlined in the Guidelines.*

Although the subject site does not contain any areas mapped as bushfire prone, given the nature of the proposed facility it was considered best practice to undertake both a bushfire assessment and a risk assessment so that all relevant safety

measures are considered and addressed.

Policy measure 6.5 relates to information that is required to accompany a development application and states that:

> *Any development application to which policy measure 6.2 applies is to be accompanied by the following information in accordance with the Guidelines:*
>
> *a) (i) a BAL assessment. BAL assessments should be prepared by an accredited Level 1 BAL Assessor or a Bushfire Planning Practitioner unless otherwise exempted in the Guidelines; or*
>
> *(ii) a BAL Contour Map that has been prepared for an approved subdivision clearly showing the indicative acceptable BAL rating across the subject site, in accordance with the Guidelines. BAL Contour Maps should be prepared by an accredited Bushfire Planning Practitioner*
>
> *b) the identification of any bushfire hazard issues arising from the BAL Contour Map or the BAL assessment; and c) an assessment against the bushfire protection criteria requirements contained within the Guidelines demonstrating compliance within the boundary of the development site*
>
> *This information can be provided in the form of a Bushfire Management Plan or an amended Bushfire Management Plan where one has been previously endorsed.*

Under Clause 6.6 of SPP3.7 relates to vulnerable or high-risk land uses in areas where BAL-12.5 to BAL-29 apply and although the subject site is not within a bushfire prone area clause 6.6.1 states that:

> *Development applications should include an emergency evacuation plan for proposed occupants and/or risk management plan for any flammable on-site hazards.*

Given the above the appropriate risk assessment has been undertaken for the subject site.

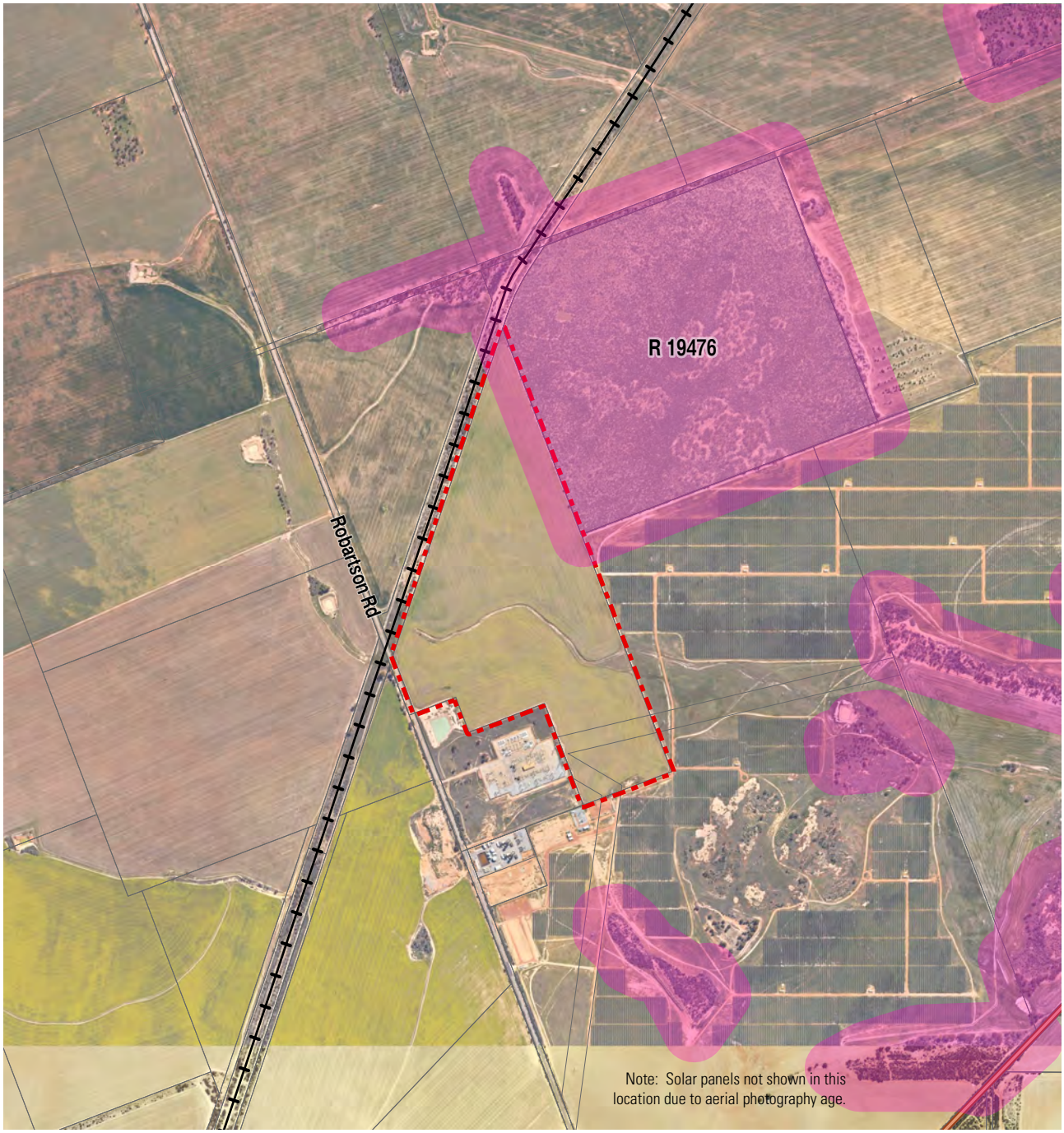


Figure 4: Bushfire Prone Areas

4.5 OTHER MATTERS TO BE CONSIDERED (C67 DEEMED PROVISIONS)

Clause 67(2) of the Deemed Provisions of the Planning and Development (Local Planning Schemes) Regulations 2015 (Regulations) sets out the matters for which due regard is to be given when considering a development application. Refer to Table 5 below for an assessment against the matters to be considered.

Table 5 – Other Matters to be Considered

Matters to be considered	Response
the aims of the provisions of this Scheme and any other local planning scheme operating within the Scheme area;	This section outlines in detail how the proposed development meets the aims and provisions of the Shire's Local Planning Scheme No.6 (LPS6).
the requirements of orderly and proper planning including any proposed local planning scheme or amendment to this Scheme that has been advertised under the Planning and Development (Local Planning Scheme) Regulations 2015 or any other proposed planning instrument that the local government is seriously considering adopting or approving;	The proposed development meets the requirements of orderly and proper planning in that it meets the aims and objectives of the current local planning scheme. The Shire does not currently have any local planning policies applicable to the current development. The proposed development also meets the aims and objectives of both Federal and Commonwealth objectives for Australia and Western Australia to become net zero.
any approved State Planning Policy	As outlined in Section 3.1 of this report the proposed development meets the requirements of the State's planning policies applicable to this development.
any environmental protection policy approved under the Environmental Protection Act 1986 section 31(d)	There are no relevant EPP's applicable to this area.
any policy of the Commission	All applicable policies and position statements of the Commission have been addressed under Section 4 of this report.
any policy of the State	All applicable planning policies of the State have been addressed under Section 4 of this report. Further the proposed development meets the requirements of the State Governments aim to be net zero by 2050.
any local planning policy for the Scheme area	All applicable local planning policies have been addressed under Section 4 of this report.
any structure plan, activity centre plan or local development plan that relates to the development	There are no applicable structure plans, activity centre plans or local development plans in regard to the proposed development.
any report or review of the local planning scheme that has been published under the Planning and Development (Local Planning Schemes) Regulations 2015	Not Applicable
in the case of land reserved under this Scheme, the objectives for the reserve and the additional and permitted uses identified in this Scheme for the reserve	Not applicable
the built heritage conservation of any place that is of cultural significance	A search of the applicable databases and documentation did not identify any built heritage nor any place that is of cultural significance.
the effect of the proposal on the cultural heritage significance of the area in which the development is located	The proposed development will have no detrimental effect on the cultural heritage significance of the area.
the compatibility of the development with its setting including the relationship of the development on adjoining land or on other land in the locality including, but not limited to, the likely effect of height, bulk, scale, orientation and appearance of the development	The proposed development is compatible with its setting in that the proposed development is adjacent to with the Merredin Terminal station and is compatible with that already existing built form.

Matters to be considered	Response
The amenity of the locality including the following – • Environmental impacts of the development • The character of the locality • Social impacts of the development	The proposed development will have negligible environmental impact over the subject site. The site is currently cleared of remnant vegetation and used for grazing and cropping purposes. The proposed development will not have an impact on the character of the locality. The broadacre farming that surrounds the subject site will not be affected by the development and the character of the rural area will not be affected. Further, as mentioned previously, the siting of the development adjacent to the existing Merredin Terminal means that the development is well sited within the area. There will be no social impacts of the proposed development. In the long term only a small number of workers will be required to maintain the development which will provide employment opportunities for residents of the Shire.
The likely effect of the development on the natural environment or water resources and any means that are proposed to protect or to mitigate impacts on the natural environment or the water resource	As stated previously the proposed development has been carefully designed so that the BESS facility will be located on cleared cropping and grazing land adjacent to the Merredin Terminal.
Whether adequate provision has been made for the landscaping of the land to which the application relates and whether any trees or other vegetation on the land should be preserved	The subject site has already been wholly cleared.

Matters to be considered	Response
The suitability of the land for the development taking into account the possible risk of flooding, tidal inundation, subsidence, landslip, bushfire, soil erosion, land degradation or any other risk	The land has been selected by the proponent due to the suitability of the site for the proposed development and its location near the Merredin Terminal station. A bushfire management plan and risk management has been undertaken to ensure that the proposed development is suitable on the subject site. The subject site is not subject to any of the other identified risks.
The suitability of the land for the development taking into account the possible risk to human health or safety	There is no risk to human health in regard to the proposed development
The adequacy of - • The proposed means of access and egress from the site; and • Arrangements for the loading, unloading, manoeuvring and parking of vehicles	Access and egress to the subject site will be upgraded to suitable standards to allow for private and truck movements during the construction phase and the subsequent operation phase. Requirements will be confirmed once a construction manager is appointed, with upgrades done to the Shire of Merredin requirements. There is sufficient room on the subject site for loading and unloading of trucks and laydown areas and the parking of vehicles.

Matters to be considered	Response
The amount of traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect on traffic flow and safety	It is expected that over the construction period of 12 – 18 months that there will be approximately 300 truck movements to and from the site. It is estimated that there will be a construction workforce of approximately 150 workers over the course of the project, with a peak workforce of no more than 50 people. The peak numbers of movements for these workers will be during the am period of approximately 7 – 8am and then the pm period between 4 – 6 pm as workers arrive in the morning to commence working and then leave in the pm period.
The availability and adequacy for the development of the following – • Public transport services • Public utility services • Storage, management and collection of waste • Access for pedestrians and cyclists (including end of trip storage, toilet and shower facilities) • Access by older people with disability	There are no public transport options to the subject site as it is located remotely outside the town of Merredin.
The potential loss of any community service or benefit resulting from the development other that the potential loss that may result from economic competition between new and existing businesses	There will be no loss of any community service or benefit.
The history of the site where development is to be located	The site is a multigeneration agricultural property used for cropping and grazing. This agricultural land use will continue on the majority balance of the site once the BESS is operational.

Matters to be considered	Response
The impact of the development on the community as a whole notwithstanding the impact of the development on particular individuals	The proposed development will not have a detrimental effect on the community or any particular individuals. The development is seen as adding value to the community with the Shire potentially becoming a green hub in the Wheatbelt region. There will be opportunities for short-term and long-term employment as a result of the project.
Any submissions received on the application	
Za) the comments or submissions received from an authority consulted under clause 66	
Zb) any other planning consideration the local government considers appropriate	All planning considerations have been addressed.

4.6 SHIRE OF MERREDIN LOCAL PLANNING SCHEME NO.6

Under LPS6 the subject site is zoned General Farming zone.

The Shire of Merredin's LPS6 was gazetted by the Minister for Planning in June 2011. Under LPS6 the subject site is zone 'General Farming' zone with the objectives of the General Farming zone outlined under Clause 3.2.11 being:

3.2.11.1 To provide for a range of rural pursuits that are compatible with the capability of the land and retain the rural character and amenity of the locality.

3.2.11.2 To protect land from urban uses that may jeopardise the future use of that land for other planned purposes that are compatible with the zoning.

3.2.11.3 To support sustainable farming practices and the retention of remnant vegetation.

3.2.11.4 To prevent any development that may affect the viability of a holding.

3.2.11.5 To encourage small scale, low impact tourist accommodation in rural locations.

3.2.11.6 To encourage a diversification of rural activities that will reduce the dependency of the rural sector on traditional crops.

3.2.11.7 To support the creation of homestead lots in accordance with adopted Local Planning Policy.

3.2.11.8 To support mining activities where an environmental management plan has been prepared and is acceptable to the local government and the Environmental Protection Authority.

3.2.11.9 To preclude the disposal of used tyres or any other material that may be detrimental to the quality of the land.

The proposed battery facility and associated works meet the objectives of the General Rural zone in that the proposed development is:

- Compatible with the capability of the land and will not have a detrimental affect on the rural character of the area nor the amenity of the locality.
- The facility will not jeopardise the future use of the land for other planned purposes that are compatible with the zoning.
- The subject site is cleared of remnant vegetation and will have no effect on sustainable farming practices.
- The development will not have any affect on the viability of land holdings.

Clause 4.13 of the Shire's LPS6 relates to development in the General Farming zone and states:

All proposals for development in the General Faming zone must have regard to both on-site and off-site impacts and, where necessary, should be accompanied by information identifying –

- *Environmental values and environmental risks*
- *The potential for land use conflict*
- *The potential impacts and restrictions on allowed uses on adjacent or nearby locations*
- *The separation distances and/or buffer relating to a potentially incompatible land use which needs to be provided on- site and the appropriate conditions relating to subdivision and development.*

The proposed BESS facility meets these requirements as:

- The location of the BESS facility on cleared land that contains no pockets of remnant vegetation, and the facility will not have any detrimental environmental effect with on-site or off-site. Rather the proposed facility within a precinct with the existing Merredin Terminal station will provide the Shire and the state with a source of clean green energy as the State moves towards net zero and therefore the environmental value that will be produced offsite is of an extremely high value.
- There is no potential for land use conflict as the proposed facility is within a power generation precinct with energy related infrastructure.
- There are no potential impacts nor proposed restrictions on allowed uses on adjacent land broad acre cropping, grazing and other farming practices will be able to continue to occur on the surrounding land.
- Appropriate buffers will be put in place in relation to the BESS facility in regard to applicable separation distances and these will be contained within the

fence that will protect the facility.

LAND USE CLASSIFICATION UNDER LPS6

Under the Shire LPS6 renewable energy facility is not a use that is listed within the zoning table, Clause 3.4.2 of LPS6 addresses this matter by stating that:

If a person proposes to carry out on land any use that is not specifically mentioned in the Zoning Table and cannot reasonably be determined as falling within the type, class or genus of activity of any other use category the local government may –

- determine that the use is consistent with the objectives of the particular zone and is therefore permitted;
- determine that the use may be consistent with the objectives of the particular zone and thereafter follow the advertising procedures of clause 64 of the deemed provisions in considering an application for development approval; or AMD 5 GG 04/07/17
- determine that the use is not consistent with the objectives of the particular zone and is therefore not permitted.

Land Insights and the proponent request that the Shire and the Joint Development Assessment Panel consider that the proposed use of the subject site is either consistent or may be consistent with the General Farming zone and therefore allow this application to be considered. In support of this request it should be noted that the siting of the proposed facility is adjacent to similar energy-related infrastructure, Merredin Solar Farm, Merredin Terminal and Merredin Energy dual fuel peaking plant. The rationale for determining the consistency with the General Farming zone are outlined within this report.

4.7 LOCAL PLANNING STRATEGY (LPS)

The subject site is located within the General Agriculture category under the Shire of Merredin's Local Planning Strategy which was endorsed in 2007. Under the LPS no objectives are provided for this use and simply states under Clause 4.3.4 in relation to rural areas within the Shire that:

> *rural land should be protected from proposals that might compromise agricultural viability such as ad-hoc subdivision and incompatible use or development.*

The proposed facility within an energy precinct comprising Merredin Solar Farm, Merredin Terminal and Merredin Energy dual fuel peaking plant As such it will not compromise agricultural viability and is not an incompatible use or development.

5.0 site conditions

5.1 SITE SELECTION

The proposed site was selected for the following key reasons:

- It is adjacent to Western Power's Merredin Terminal – a 33kV, 66kV, 132kV and 220kV terminal substation which has numerous existing energy infrastructure, including the 220kV transmission line which feeds the Goldfields and runs back to Muja.
- This part of the SWIS may benefit from a utility-scale BESS facility offsetting potential augmentation works otherwise required by Western Power.
- The close proximity of Merredin Terminal means that the cable route to connect the proposed BESS facility to the SWIS is less than 100m, resulting in minimal impacts and requirements from required transmission infrastructure.
- The site is cleared and has been used for cropping and grazing for over 100 years, meaning there's negligible impact to neighbouring native vegetation and biodiversity.
- The site is adjacent to other generation facilities, being the Merredin Energy dual fuel peaking plant and Merredin Solar Farm (the State's largest operational solar farm).
- There is good access to the site from existing public highways, minimising disruption to the community during construction as no new roads will need to be constructed.

Within the proposed site boundary, there is adequate space to accommodate future expansion if required, the infrastructure layout has been designed to optimise space whilst preserving a suitable Asset Protection Zone and keeping the transmission cable route back to Merredin Terminal to a minimum.

No clearing is required within the site and given the relatively flat nature of the site, minimal cut and fill earthworks will be required to effectively prepare the site for the proposed infrastructure.

5.2 TOPOGRAPHY AND LANDSCAPE

The subject site is essentially flat with very little change in the landscape over the subject site and in particular where the BESS facility is proposed to be located. Further, as mentioned previously in this report the subject site is currently fully cleared and is currently used for cropping and grazing. Further the location of the BESS facility adjacent to the existing Merredin Terminal substation will mean that the proposed facility will blend in to the already existing use. This is considered further in Section 6 of this report (Visual Assessment).

5.3 AGRICULTURAL LAND USE

The subject site is not identified in the Shire LPS nor Strategy as of being a high agricultural value. The proposed facility will only impact a small portion of the subject site, being approximately 4ha of a 61.5ha site. This means that the existing agricultural land use can keep operating over the majority (>93%) of the subject site with only a small loss of agricultural land.

Figures 6a and 6b show the land capability for these agricultural land uses across the site, along with an assessment of agricultural land to be lost to the Wheatbelt region as a result of the proposal.

An assessment of land qualities relevant to the construction phase of the project (wind erosion and water erosion) indicate that the site is not significant susceptible to these potential impacts.

5.4 VEGETATION AND ECOLOGICAL COMMUNITIES

The subject site contains no remnant vegetation and is cleared and used for grazing and cropping purposes. The Wheatbelt Threatened Ecological Community is present in the area, and additionally, past flora surveys have identified threatened and rare species within areas of remnant vegetation as shown in Figure 7.

The site and proposal were discussed with a qualified botanist (who has previously assessed the Merredin Solar Farm site) in regards to potential impacts of the project, and it was determined that no spring surveys were required due the cleared agricultural nature of the site and surrounding areas. The establishment of the BESS facility is not expected to have any impact on any TEC.

5.5 WATER RESOURCES

A creek runs to the north of the proposed development however this does not impact the subject site. An existing farm dam is located directly to the west of the proposed BESS facility on Western Power land, and the owner of the subject site will grant an easement across the access track to provide ongoing access to the dam for agricultural purposes. The landowner

has agreed to the form of easement, and this will be implemented following receipt of Development Approval.

5.6 HERITAGE

A review of the Department for Planning Lands and Heritages found no Aboriginal Heritage sites on the subject site nor are there any areas of European Heritage on or near the subject site. An archaeological and ethnographic survey was undertaken on the adjoining site prior to the development of the Merredin Solar Farm. This survey concluded that there were no Aboriginal sites of interest on the property – and given the similar nature of the land adjacent a similar conclusion is expected. Development that has the potential to impact on any Aboriginal heritage site (whether discovered or not) is currently governed by the Aboriginal Heritage Act 1972, which could require additional consideration.

5.7 SEPARATION DISTANCES

At this stage no separation distances are prescribed under legislation or policy for the proposed facility other than for bushfire requirements which can easily be accommodated on the subject site. As shown on Figure 8 – Nearby Houses – Sensitive Receptors a 2km buffer has been placed around the proposed facility with the nearest houses falling outside of this buffer.

5.8 BUSHFIRE

Although the subject site is not covered by an identified bushfire prone area as shown in Figure 4 – Bushfire Prone Areas above, an appropriate and applicable risk assessment has been undertaken to ensure that appropriate emergency plans and equipment are on site should any issues arise in relation to the BESS facility.

5.9 TRAFFIC AND TRANSPORT

A traffic impact assessment has not been undertaken for the proposed facility due to the small number of traffic movements, both by truck and private vehicles that will be undertaken throughout the 12-18 month construction phase of the project, with at most 5-6 movements per day at the peak construction period. Once the technical details of the proposal are finalised, a construction manager and contractor appointed, a detailed Traffic Impact Assessment will be prepared for the Shire to review and approve.

Post the construction phase there will be minimal car movements to and from the site with the facility largely being monitored autonomously and unmanned.

During the life of the project there will be periods when the infrastructure on the subject site will need to be maintained, serviced and in some instances upgraded. During these periods there will be a slight increase in traffic movements however it will not have a significant impact on the surrounding road network nor on the access and egress to the subject site.

5.10 CONSTRUCTION MANAGEMENT PLAN

It is suggested that a Construction Management Plan be prepared prior to on-site work commencing. This will ensure that the management of the site is appropriate for the construction phases and methodologies required to implement the project. The Construction Management will review the management actions identified as part of the Development Assessment process, and provide further details on site-specific management as required.

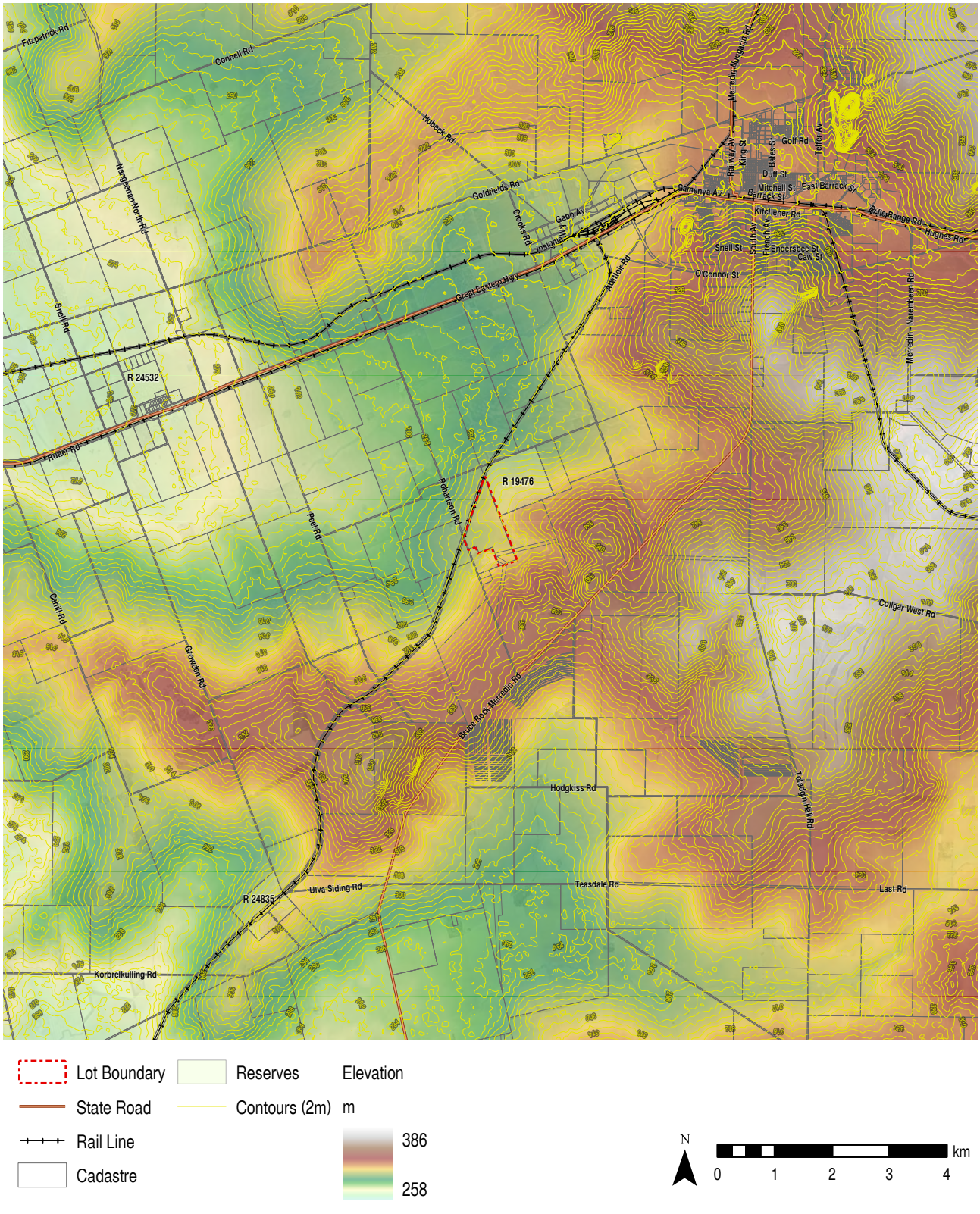
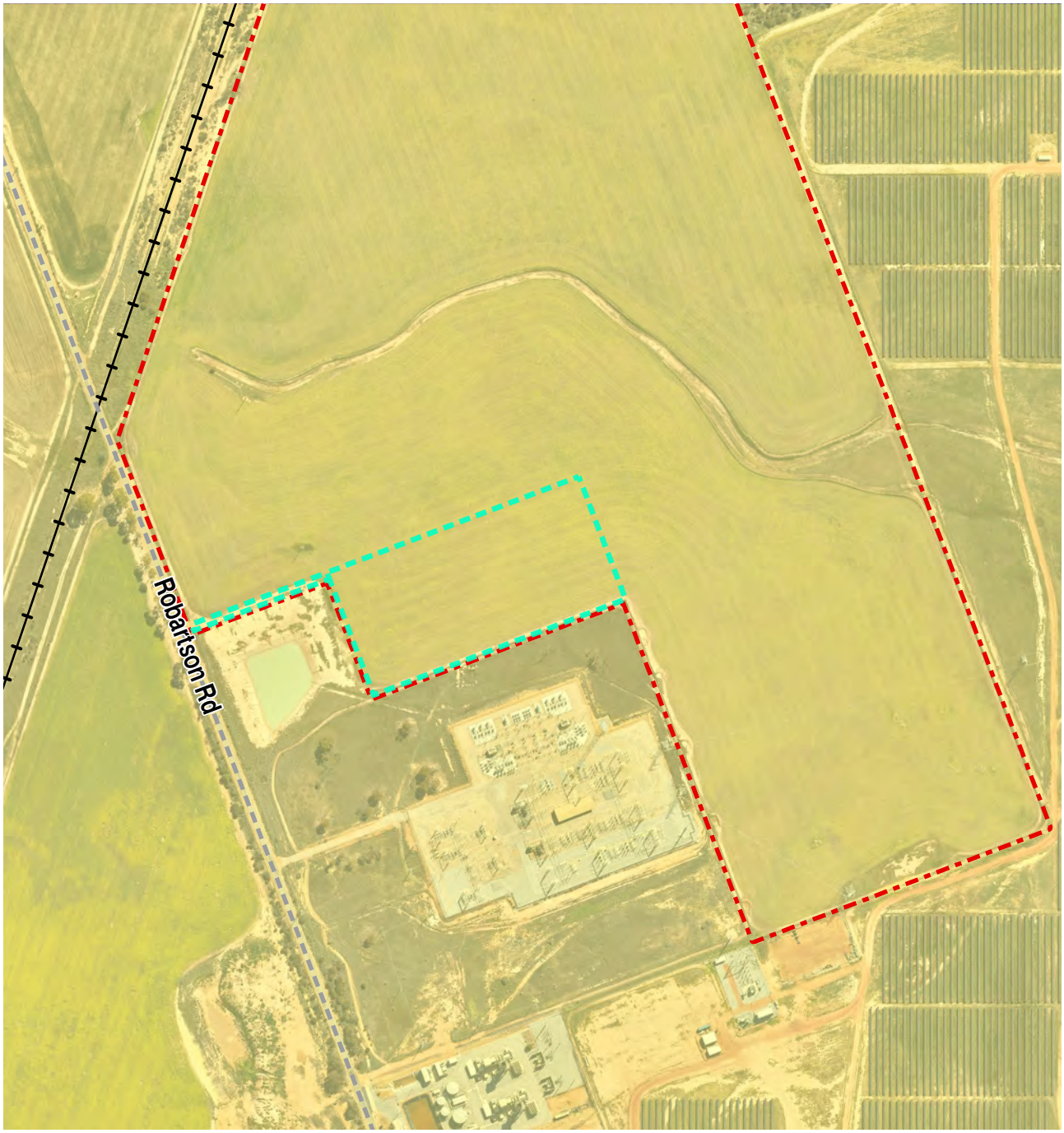


Figure 5: Topography



Battery Project Area
Lot Boundary
Rail Line
Local Road

Grazing Land - Shire of Merredin

A1 - >70% of the land has high to very high capability
A2 - 50-70% of the land has high to very high capability
B1 - >70% of the land has moderate to very high capability
B2 - 50-70% of the land has moderate to very high capability
C1 - 50-70% of the land has low to very low capability
C2 - >70% of the land has low to very low capability

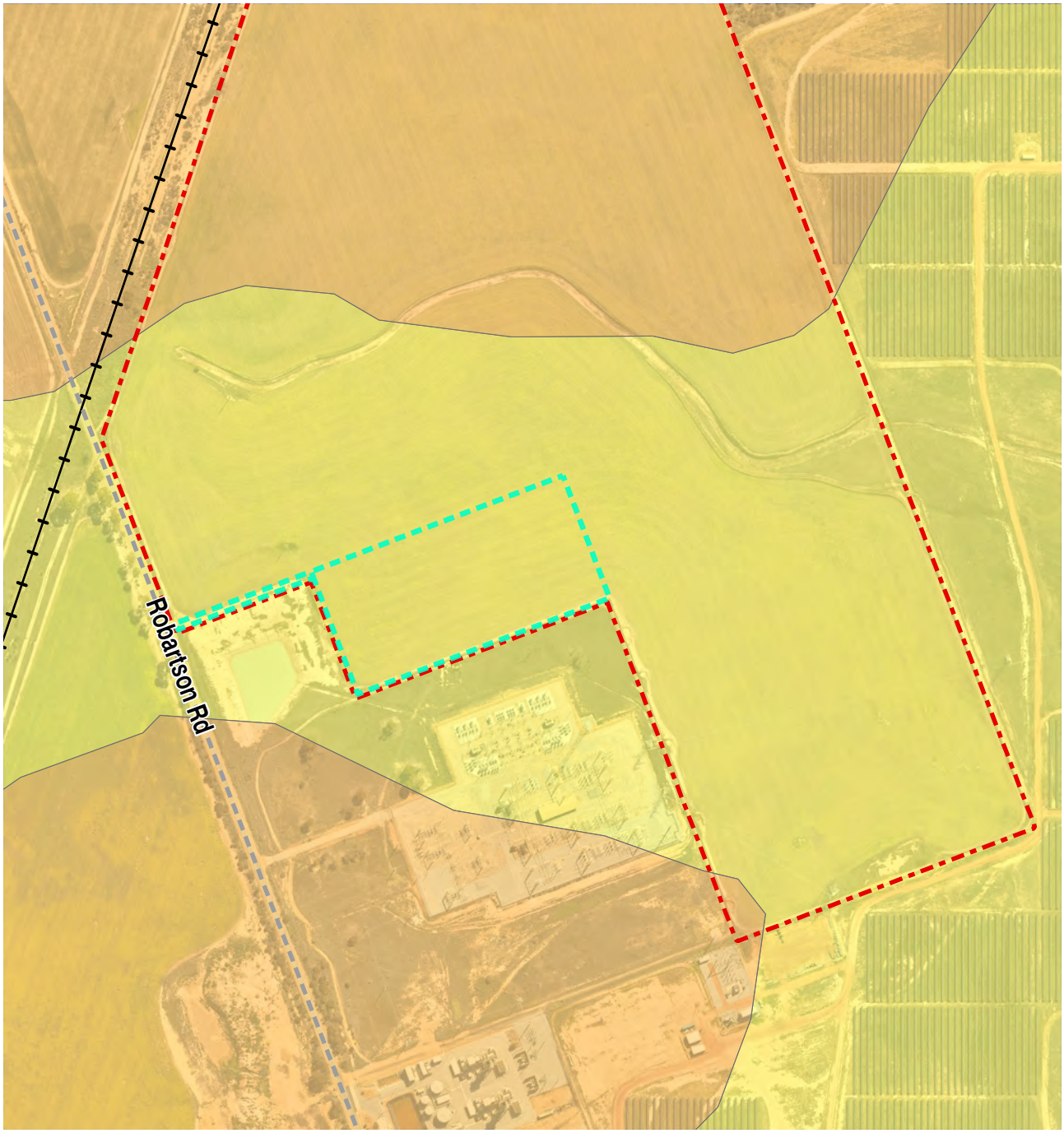
Battery Site-Grazing Area Percentage

Land Type	Area (ha)	Area %
Battery Site	**3.38**	
Agricultural land	329223.90	0.0010
B1/B2 land	235570.79	0.0014
C1/C2 land	72597.48	0.0047

N

0 50 100 150 200 m

Figure 6a: Land Capability - Grazing



Battery Project Area
Lot Boundary
Rail Line
Local Road

Cropping Land - Shire of Merredin

B1 - >70% of the land has moderate to very high capability

B2 - 50-70% of the land has moderate to very high capability

C1 - 50-70% of the land has low to very low capability

C2 - >70% of the land has low to very low capability

Battery Site-Cropping Area Percentage

Land Type	Area (ha)	Area %
Battery Site	**3.38**	
Agricultural land	329223.90	0.0010
B1/B2 land	247337.55	0.0014
C1/C2 land	81886.35	0.0041

N

0 50 100 150 200 250 m

Figure 6b: Land Capability - Cropping

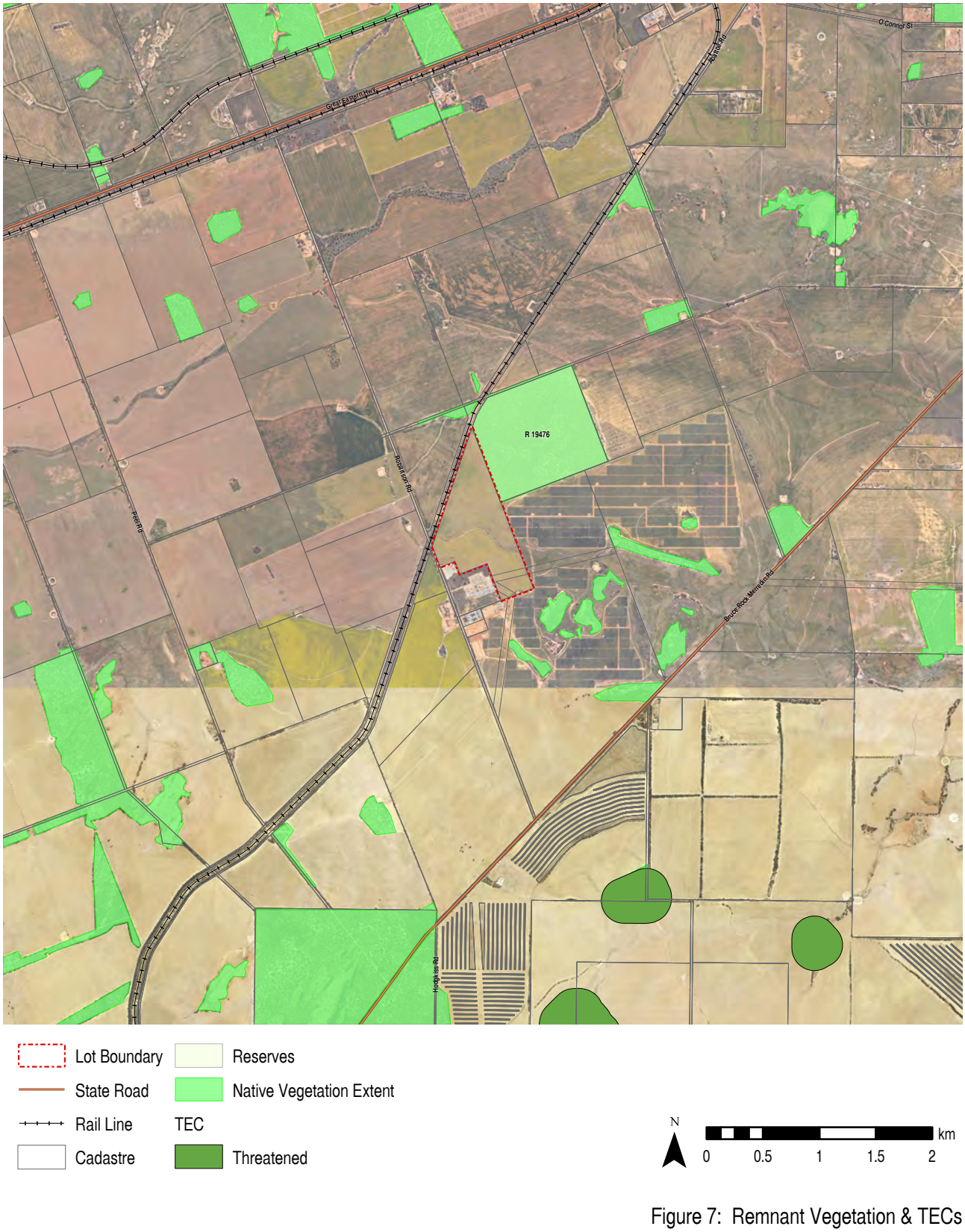


Figure 7: Remnant Vegetation & TECs

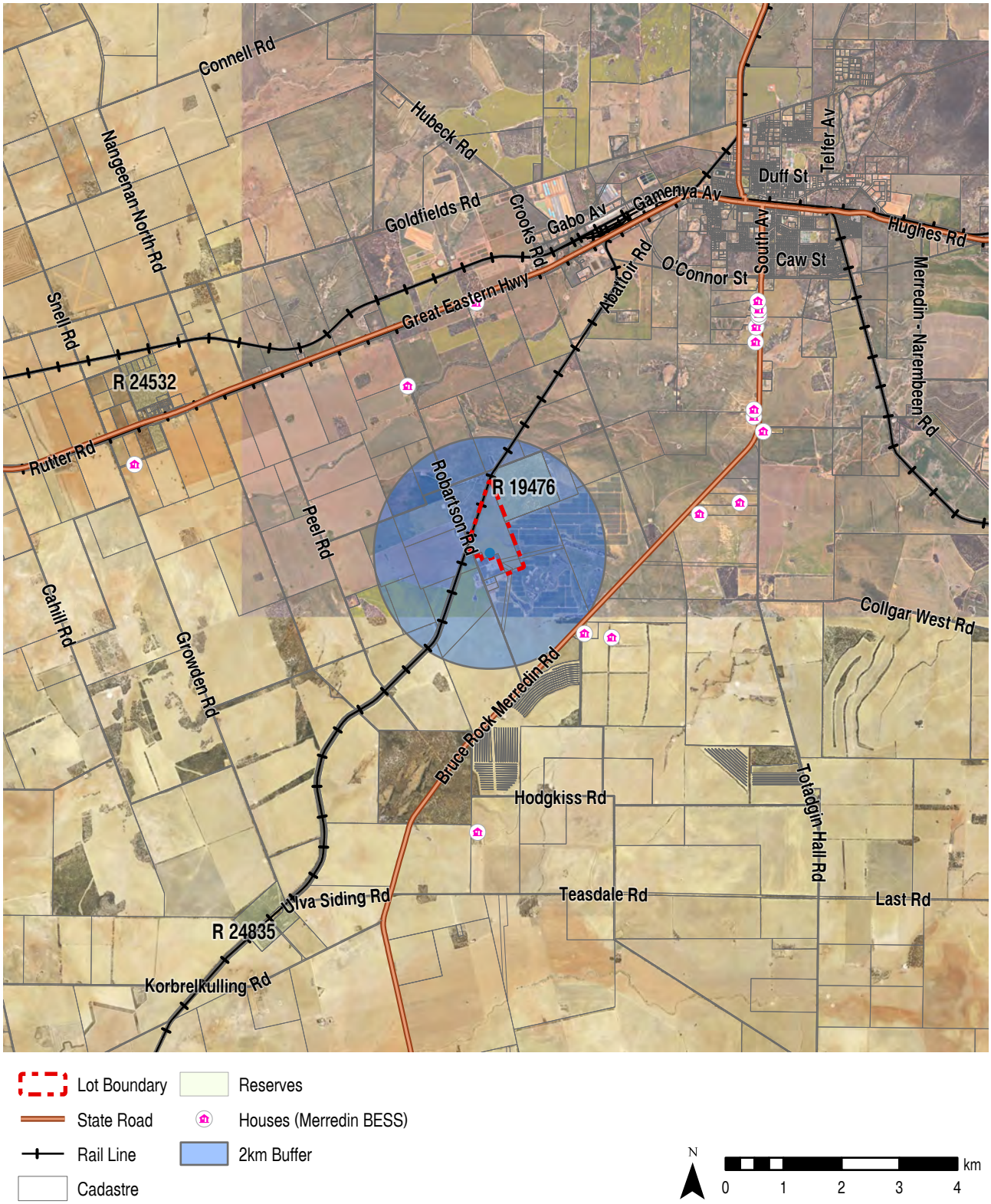


Figure 8: Nearby Houses

6.0 Visual assessment

6.1 VISUAL ASSESSMENT CONTEXT

The Merredin townsite is in the eastern Wheatbelt region of WA. This area is in an agricultural area of predominant cropping lands with the landscape having been heavily cleared of native vegetation for this purpose. The landscape is now rolling with a visually strong horizontal scale for many of the significant views. These views are often dominated by skylines (views of big skies) and flat or slightly sloping fields. Trees are sparse with many relegated to fringing fields, roads or rail corridors. Patches of remnant vegetation provide skyline borders. The adjoining solar farm is visible but is viewed as part of a modified rural landscape.

It is not a natural landscape, but in its modified form represents the impact of clearing on a broad scale to create large broad acre farms.

In such a landscape it is not always possible to visually hide or blend a large infrastructure element, however the large scale of fields and views provides a dilution of impacting elements, and in this context the locality of the BESS is adjacent to a dam, energy infrastructure (Western Power's Merredin Terminal) and energy generation facilities (Merredin Energy peaking plant and Merredin Solar Farm). These elements are prescribing a 'new' landscape for the locality, one of green or renewable energy generation, distribution and storage.

The facility is contained in modular format as an array of containers. There are spaced for the purposes of cooling and related operational considerations however this will also result in the facility being seen as one element of modules sitting on the land. In a similar way, a number of farming properties in this locality have stored objects in open viewed areas, many of these are assessed to be visible from the public domain.

The terrain is rolling and there are few trees. The actual site of the BESS is however screened on the west and south by the dam and the switchyard which separate it from Robartson Road which is the closest public road. The Perth - Adelaide Railway runs to the northwest but is almost 0.5 km away.

There are already a number of visual elements such as the dam, the solar farm and the switchyard which occupy views across the land and so the BESS might be considered just another, the next instalment to the transformed landscape.

6.2 TECHNIQUE

The viewing points to be identified as the basis for determining visual aesthetic impact are part of the scene analysis technique. This technique has 5 steps:

- This describes the aesthetic qualities and overall scenery of the place;
- Identifies points where views would be taken to hold representative public values for the landscape aesthetics;
- Describes scenes from each Viewing Point in terms of the pre and post development scenery, values and sensitivity.
- The change between pre and post development represents the impact which is described in terms of low, medium or high acceptability of impact.
- Analysis of the impact leads to the consideration of management or mitigation as the opportunity or capability of the surroundings to be modified, or the design to be revised to reduce impact.

Five viewing points are identified as the basis for undertaking the Visual Assessment Landscape Impact study, given the nature of the project and the

- Context of the location
- Adjacent structures and features
- Limited public access in surrounding areas
- Altered landscape scenery in existence.

6.3 ASSESSMENT OF THE PROJECT AND THE SETTING

A simple assessment can be completed as follows.

CONTEXT OF THE LOCATION

The site and surroundings are extensively cleared cropping land. It is therefore already heavily modified and has several instances of structures and industrial scale installation.

ADJACENT STRUCTURES AND FEATURES

The site is located adjacent to a farm dam, and a switching and transformer yard. These structures already introduce a discordant change to what was a flat agricultural field landscape character. The large solar farm to the east introduces a monumental scale to the area which is not a dominant visual element because PV are horizontal and follow the terrain. The BESS is therefore a small additional shift in scenery change.

LIMITED PUBLIC ACCESS TO VICINITY

The site is separated from the public viewing domain which is largely limited to sections along Robartson Road.

ALTERED LANDSCAPE

The development of renewable energy facilities into the Merredin landscape heralds a scenery transformation of which there may be emerging a new synonymity of this technology, its aesthetic and the place values of Merredin.

VIEWPOINT DESCRIPTIONS

- VP 1 – from rail reserve noting this is no longer used.
- VP 2 – from an internal farm track east of the BESS.
- VP 3 – from road to the south of the farm.
- VP 4 – Robartson Rd south of the BESS.
- VP 5 - Robartson Rd near rail crossing

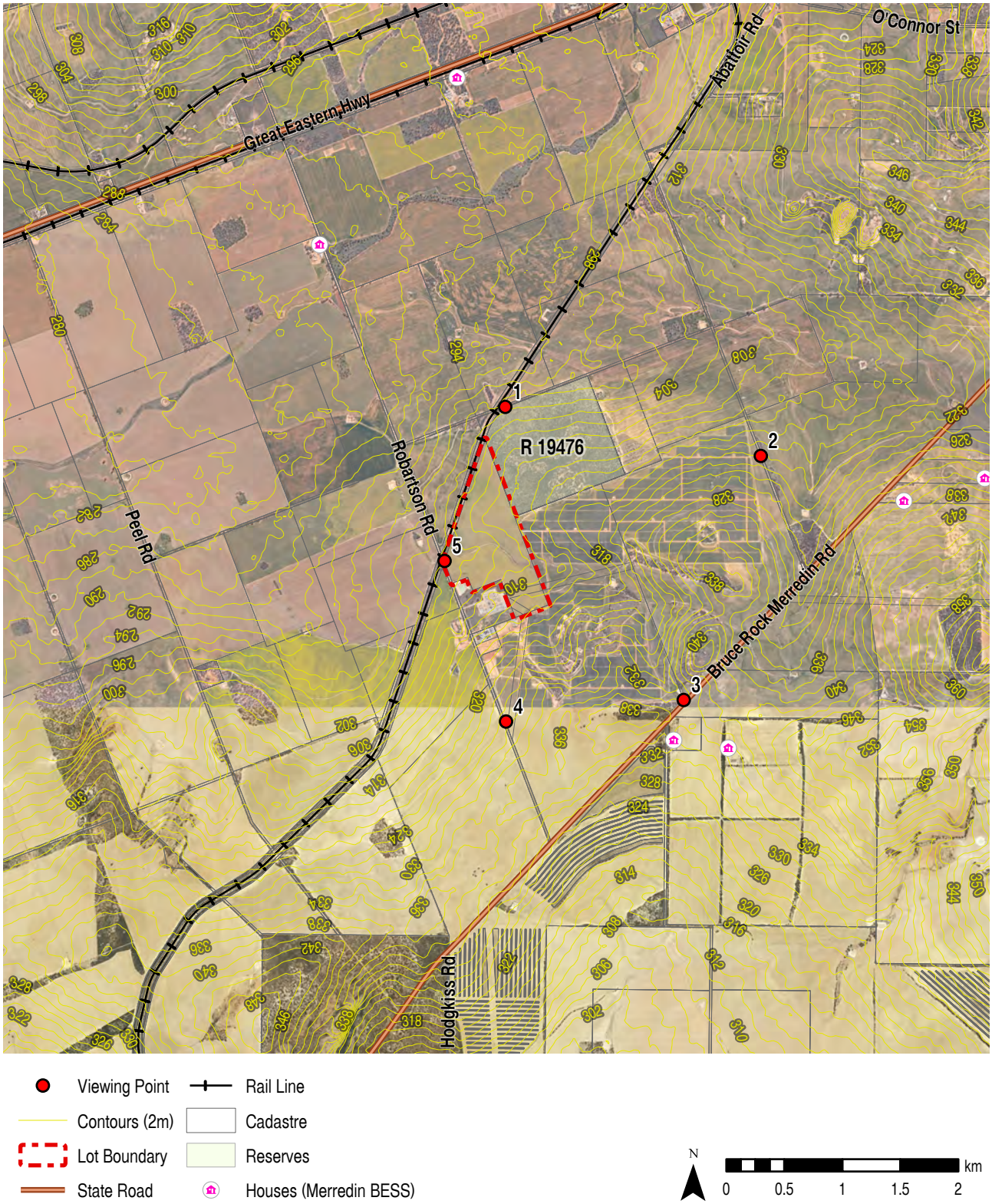


Figure 9: Viewpoints

6.4 ASSESSMENT OUTCOMES

The following table summarises the assessment of visual impact from each of the designated viewing points.

VP	Visual Experience	Public Sensitivity	Acceptability L, M, H	Management/Mitigation
1	Possible glimpses of BESS however intervening scrub and physical distance may relegate it to a minor component of any scene from VP 1	Low	Not visible and therefore unlikely to cause perceptible visual impact issues. H	None needed.
2	Direct views of BESS unlikely	Low	Not visible and unlikely to cause perceptible visual impact issues. H	None needed.
3	Direct views of BESS structure across fields.	Low	Not visible and unlikely to cause perceptible visual impact issues. H	None needed.
4	Scenery may have long middle ground visibility of BESS as a glimpse and minor part of the current collective view of dam and switching yard.	Medium	Possibly visible but unlikely to cause unacceptable visual impact issues. H	Improve the density of planting along the Robartson Road reserve.
5	Closest to BESS, will be seen in front of the switchyard and may be seen as part of an ensemble of the current collective view of dam and switching yard.	Medium	Solar panels visible in middle ground beyond highway screening vegetation. M-H	Screen planting along the reserve of Robartson Road will reduce visibility.



VP4 looking towards the site



VP5 looking towards the site



Proposed BESS site (approx, orange) within existing visual context

6.5 CONCLUSION

The Visual Impact Landscape Assessment concludes that the BESS, whilst visible as part of the scenery of the place would not be visible from all but VP 4 & 5. That view is described as part of the overall assembly of switchyard and dam and transmission lines for VP 5 and as a glimpse from VP 4.

In the circumstances therefore the visual impact of the battery is very limited overall and likely to be viewed as an additional industrial element of a recently changed rural scene, and a small part of that scene at that.

Should the VILA be considered to merit management the surroundings of the BESS and/or its design could be reviewed to explore the following mitigations:

- Install the BESS on a low pad
- Select lighter and muted colours such as sage green, sky blue, white or beige
- Limited screen planting to the road reserve especially where VP is closest (VP 5) to the BESS although it is noted views are not strongly influenced.

7.0 Assessment and management

7.1 RISK AND MITIGATION FRAMEWORK

A risk assessment has been undertaken to review the environmental and amenity risks potentially associated with the project. The assessment is based on the criteria in the Department of Water and Environmental Regulation's Guidance Statement: Risk Assessments (2017). The risk rating will be determined in accordance with the risk matrix below.

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

Source: DWER, 2017

The following criteria has been used to determine the likelihood and consequence of the risk occurring.

Likelihood		Consequence	
Almost certain	The risk event is expected to occur in most circumstances.	Severe	On-site impacts: catastrophic (significant impact to the environment) Off-site impacts local scale: high level or above Off-site impacts wider scale: mid-level or above Mid to long term or permanent impact to an area of high conservation value or special significance^ Significant long-term damage/loss of ecosystem function and loss of individuals of species locally
Likely	The risk event will probably occur in most circumstances.	Major	On-site impacts: high level (moderate impact to the environment) Off-site impacts local scale: mid-level Off-site impacts wider scale: low level Short term impact to an area of high conservation value or special significance^ Moderate damage to ecosystem function and major loss of individuals of species locally.
Possible	The risk event could occur at some time.	Moderate	On-site impacts: mid-level (Minor adverse effect to the environment) Off-site impacts local scale: low level Off-site impacts wider scale: minimal Moderate loss of individuals of species locally.
Unlikely	The risk event will probably not occur in most circumstances.	Minor	Off-site impacts local scale: minimal Off-site impacts wider scale: not detectable Minor number of individuals of species may be affected locally.
Rare	The risk event may only occur in exceptional circumstances.	Slight	On-site impact: minimal (No discernible adverse impact).

Source: DWER, 2017

^ Determination of areas of high conservation value or special significance should be informed by the Guidance Statement: Environmental Siting.

*'onsite' means within the Lot boundary.

In considering the response or mitigation and residual risk associated with the project, the EPA mitigation hierarchy for environmental factors has been followed. This proposes the following:

AVOID

Avoid the adverse environmental impact altogether. This may include reducing the footprint or changing the location of the footprint to avoid areas with high environmental values.

MINIMISE

Limit the degree or magnitude of the adverse impact. This may include reducing the footprint or carefully selecting technologies, processes (such as re-use of waste products) and management measures (such as bunding or dust and noise control measures) to reduce the impact.

REHABILITATE

Repair, rehabilitate or restore the impacted site as soon as possible. Adequate rehabilitation information is integral to the mitigation hierarchy to ensure early identification of knowledge gaps and risk as well as development of criteria and research to meet objectives.

OFFSET

Undertake a measure or measures to provide a compensatory environmental benefit or reduction in environmental impact to counterbalance significant adverse environmental impacts from implementation of a proposal. The measure(s) are taken after all reasonable mitigation measures have been applied and a significant environmental risk or impact remains. Offsets are not appropriate for all proposals and will be determined on a proposal-by-proposal basis.

7.2 POTENTIAL IMPACTS, MITIGATION AND RESIDUAL RISK

The outcomes of an Impact Assessment are described below, including a response or mitigation to potential impacts. Based on the outcomes of the assessment, it is considered that there are no significant residual impacts as a result of the proposed development.

Feature	Potential Impact	Response or mitigation	Residual Risk
Landscape and Visual Impact	Potential for impact on visual amenity for nearby sensitive land uses (houses) and the surrounding rural area.	The Visual Analysis of Landscape impact concludes that the BESS, whilst visible as part of the scenery of the place would not be visible from all but VP 4 & 5. That view is described as part of the overall assembly of switchyard and dam and transmission lines for VP 5 and as a glimpse from VP 4. In the circumstances therefore the visual impact of the battery is very limited overall and likely to be viewed as an additional industrial element of a recently changed rural scene, and a small part of that scene at that. The panels themselves are a minor element, visible but aligned to the terrain from most vantages.	Low
Soil management	Potential for erosion and degradation of soil qualities.	Construction of the BESS will result in some soil disturbance through movement of machinery across the land and during construction work. There may be some potential for soil erosion as the soil becomes disturbed, however the soil types on the property have low potential for wind and water erosion and instability which will help manage this issue. Soil disturbance and erosion can be managed during the construction phase using water to suppress the creation of dust (and wind erosion). Following construction, the likelihood of soil disturbance will be low.	Low
Vegetation and habitat	Removal and degradation of native vegetation and habitat for native fauna. Potential impact to threatened species including Threatened and Priority Flora, Threatened and Priority Fauna and Threatened Ecological Communities.	The site is already cleared of native vegetation. Therefore, it is concluded that the proposed development will not have a significant impact to native flora and fauna.	Low

Feature	Potential Impact	Response or mitigation	Residual Risk
Water resources and drainage	Modification and degradation of surface and groundwater features and modification to drainage flow (either increase or decrease in flow) which can have impacts downstream.	There are no concerns about flooding on the property (flood risk and waterlogging risk is low) and natural flow of water will continue in the existing arrangements, utilising the existing drainage lines across the site. Runoff from the site will be retained and prevented from leaving the site. This is particularly important in regard to the adjoining farm dam, and it will be a priority to protect this water source. A detailed technical drainage plan will be prepared to complement a construction management plan.	Low
Separation distances	Small separation distances can affect nearby sensitive land uses (such as residential dwellings).	The closest sensitive receptor is located over 2km to the site. As can be seen below, the potential impacts associated with noise, dust, visual amenity, odour and reflection will be minimal and, as such, impacts to nearby sensitive land uses will be low.	Low
Dust	The potential for the creation of dust from the operation which may reach adjoining properties and sensitive land uses.	There is the potential for some dust during the construction phase of the project, however given the surrounding agricultural/industrial land uses this is likely to have minimal impact. The closest sensitive receptor is located over 2km to the site. Once the site if fully constructed there will be no dust generated. Dust mitigation will be addressed in the Construction Management Plan.	Low
Noise	The potential for the creation of noise from the operation which may reach adjoining properties and sensitive land uses.	Some noise will be emitted during construction, largely from machinery and vehicles. The battery system will generate some noise once operational – largely from the BESS containers and cooling systems. The final technical details of the battery system are to be refined, and these will come with relevant noise data sheets. Once received, a detailed Noise Assessment can be undertaken. It should be noted however that the nearest sensitive receptor is over 2km away from the site, and the adjoining electrical generation infrastructure can also emit noise. On an initial assessment is it not considered noise will be a significant issue.	Medium
Odour	The potential for the creation of odours which may reach adjoining properties.	There will be no odour emitted from the site during either the construction or operational phase. Onsite temporary toilet facilities will be maintained as per the standard required. They will only be located on site for a short time (during the construction phase) and will be removed afterwards.	Low

Feature	Potential Impact	Response or mitigation	Residual Risk
Fire	Impacts from bushfire or equipment fires	Although the subject site is not designated as bushfire prone under SPP3.7 (as shown in the mapping) the proposal has been assessed under Clause 6.6 of SPP3.7 as the proposal is seen as high risk and triggers the need for assessment and reporting in relation to a Bushfire Management Plan (BMP) and an additional Risk Assessment. This has been completed and is attached at Appendix C. Post the construction phase the proposed development will be largely autonomous with people only located on the site during periods of scheduled/unscheduled maintenance and therefore the proposed development will not be habitable and not occupied for substantial extended periods of time.	Low
Traffic and access	Impact on local roads from construction traffic	The construction period is between 12-18 months, and a maximum of only 5-6 heavy vehicle movements per day will be accessing the site at peak construction periods. Once the technical details of the proposal are finalised, a construction manager and contractor appointed, a detailed Traffic Impact Assessment will be prepared for the Shire to review and approve.	Low
Heritage	Impact on Aboriginal or European Heritage sites.	There are no known or registered heritage sites on or nearby to the site. Furthermore, the site has been heavily disturbed by cropping activities over a long period of time, reducing the likelihood of any Aboriginal archaeological being present. Nevertheless, should any archaeological sites be uncovered during the construction phase, work will need to stop and appropriate action undertaken in accordance with relevant legislation.	Low
Waste Management	Waste from the site not being appropriate controlled or disposed of.	The construction contractor will identify and store any recyclable materials in appropriate on-site bins for removal from the site as required. Other waste management measures will be outlined in the Construction Management Plan. There will be minimal waste generation once the site is operational. This will be managed by the site operator as required.	Low

8.0 Conclusion

This application and supporting planning report presents the merits and suitability of the Nomad Energy BESS facility for the location on a portion of Lot 5 Robartson Road, Merredin and located adjacent to the existing Merredin Terminal station.

This report and its appendices comprehensively demonstrate that the proposed development is consistent with the applicable planning framework and the proposed facility can be approved and is consistent with the objectives of the General Faming zone within the Shire.

The proposal warrants approval for the following reasons:

- The subject site is cleared and relatively flat with no remnant vegetation contained on the subject site.
- The proposed development will also not have any adverse impacts on surrounding land or vegetation once the facility is operational.
- The proposed development will only occur on a small portion of agricultural land leaving the majority of the lot to continue to be used for rural purposes.
- As outlined under the visual assessment and due to the location of the neighbouring existing Merredin Terminal, Merredin Energy peaking plant and Merredin Solar Farm, the proposed development will not have a detrimental affect on the visual landscape within the immediate surrounds.

appendix a

Application Form & Certificate of Title

Government of **Western Australia**
Development Assessment Panels

DAP FORM 1

Notice of Development Application to be Determined by a Development Assessment Panel

Planning and Development Act 2005
Planning and Development (Development Assessment Panel) Regulations 2011 – regulations 7, 10 and 21

Application Details

To	*Name of local government and/or Western Australian Planning Commission* Shire of Merredin	
Planning Scheme(s)	*Name of planning scheme(s) that applies to the prescribed land* Local Planning Scheme No.6	
Land	*Lot number, street name, town/suburb* Lot 5 Robartson Road, Merredin	
Certificate of Title (provide copy)	*Volume Number* 1695	*Folio* 263
	Location Number	*Plan / Diagram Number*
Details of development application made to responsible authority	*Summary of Proposal* Battery Energy Storage System (BESS)	
Development Use	*Residential / Commercial / Industrial / Rural / Mixed Use / Other* Other	
Estimated cost of development (GST Exc)	$ 220 million	

Part A – Acknowledgement by Applicant and Landowner

Mandatory Application	☑ I give notice that I understand that this is a mandatory Development Assessment Panel application *(regulation 5)*
Optional Application	☐ I give notice that I have elected to have the development application that accompanies this form determined by a Development Assessment Panel *(regulation 6)*
Delegated Application	☐ I give notice that I understand that this is an application of a class delegated to a Development Assessment Panel for determination *(regulation 9)*

Applicant Details (to be completed and signed by applicant)

- By completing this notice, I declare that all the information provided in this application is true and correct.
- I understand that the information provided in this notice, and attached forming part of the development application will be made available to the public on the Development Assessment Panel and local government websites.

Name	Rebekah Hampson	
Company	Land Insights	
Address	*Street Number/PO Box number, street name, suburb, state, postcode* Level 6/191 St Georges Tce, Perth WA 6000	
Contact Details	*Email* rebekah@landinsights.com.au	*Phone* 1300 725 522
Signature	Rebekah Hampson	*Date* 21/12/23

Landowner Details (to be completed and signed if landowner is different from applicant)

- By completing this notice, consent is provided to submitting this application.
- If there are more than two landowners, please provide all relevant information on a separate page.
- Signatures must be provided by all registered proprietors or by an authorised agent as shown on the Certificate of Title.
- Alternatively, a letter of consent, which is signed by all registered proprietors or by the authorised agent, can be provided.
- Companies, apart from sole directors, are required to provide signatories for two directors, a director and the company seal or a director and a company secretary.

Company (if applicable)	N/A	
Contact Details	*Email* rossrobartson@bigpond.com	*Phone* 0428 411 516
Address	*Street Number/PO Box number, street name, suburb, state, postcode* PO Box 109, Merredin, Western Australia	
Name/s	Ross Milton Robartson	
Title/s	*Landowner/~~Sole Director/Director (registered agent)~~*	*Additional Landowner/ Director/Secretary (if applicable)*
Signature/s	RM Robartson	
Date	13th December 2023	

Part B – Acknowledgement by Local Government

Responsible Authority	☐ Local Government (LG) ☐ * Western Australian Planning Commission (WAPC) ☐ * Dual – Local Government and Western Australian Planning Commission ☐ Department of Finance – *Public Primary School Applications*	
* WAPC/DUAL reporting details	*If WAPC or DUAL is selected, please provide details of relevant provision (or within covering letter)*	
Fees for applications *(DAP Regulations - Schedule 1)*	$ Amount that has been paid by the applicant $ Amount to be paid by local government *(delegated applications only - regulation 22)*	
Statutory Timeframe *(regulation 12)*	☐ 60 days (advertising not required) ☐ 90 days (advertising required or other scheme provision)	
LG Reference Number		
Name of planning officer *(Report Writer)*		
Position/Title		
Contact Details	*Email*	*Phone*
Planning Officer's Signature		*Date*

Please refer to the Guidance Note: Lodging a DAP Application for further information.

WESTERN AUSTRALIA

TITLE NUMBER	
Volume	Folio
1695	**263**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 5 ON DIAGRAM 67824

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

ROSS MILTON ROBARTSON OF POST OFFICE BOX 109, MERREDIN

(A D029376) REGISTERED 24/5/1985

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. C734820 EASEMENT TO THE STATE ENERGY COMMISSION OF WESTERN AUSTRALIA. SEE SKETCH ON VOL 1695 FOL 263. REGISTERED 22/3/1984.
2. P650004 CAVEAT BY NOMAD ENERGY PTY LTD LODGED 4/8/2023.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

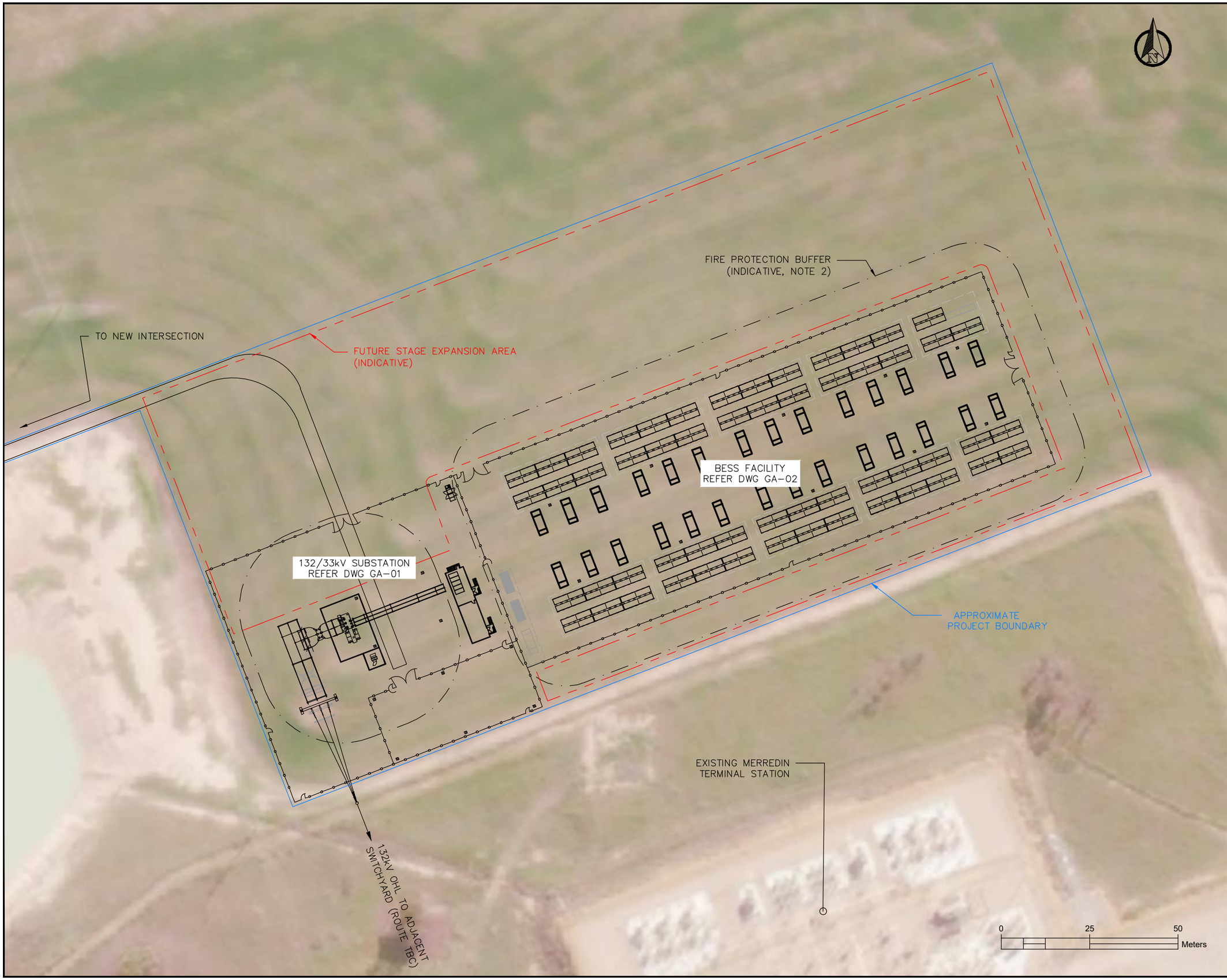
SKETCH OF LAND:	1695-263 (5/D67824)
PREVIOUS TITLE:	1629-196
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF MERREDIN

LANDGATE COPY OF ORIGINAL NOT TO SCALE 20/12/2023 01:56 PM Request number: 66016319

Landgate
www.landgate.wa.gov.au

appendix b

Site Plans & Elevations



NOTES:

1. CONCEPT ONLY, SUBJECT TO CHANGE DURING DETAILED DESIGN.
2. PLANT & EQUIPMENT DIMENSIONS INDICATIVE, PROJECT AREA MAY EXPAND. SETBACKS AND OVERALL FOOTPRINT TO BE ADJUSTED WITHIN PROJECT BOUNDARY FOLLOWING DETAILED FIRE STUDY.
3. CAR PARKING, EARTHWORKS, INTERSECTION UPGRADES, DRAINAGE, EARTHING, PITS, CULVERTS, SPARE PARTS STORAGE AND TEMP CONSTRUCTION COMPOUND NOT SHOWN.
4. FIRE WATER ASSUMED CO-LOCATED WITH EXISTING SOLAR FARM.

REV:	DESCRIPTION:	BY:	DATE:
A	FIRST DRAWN (CONCEPT)	ABC	19.10.23

STATUS: NOT FOR CONSTRUCTION

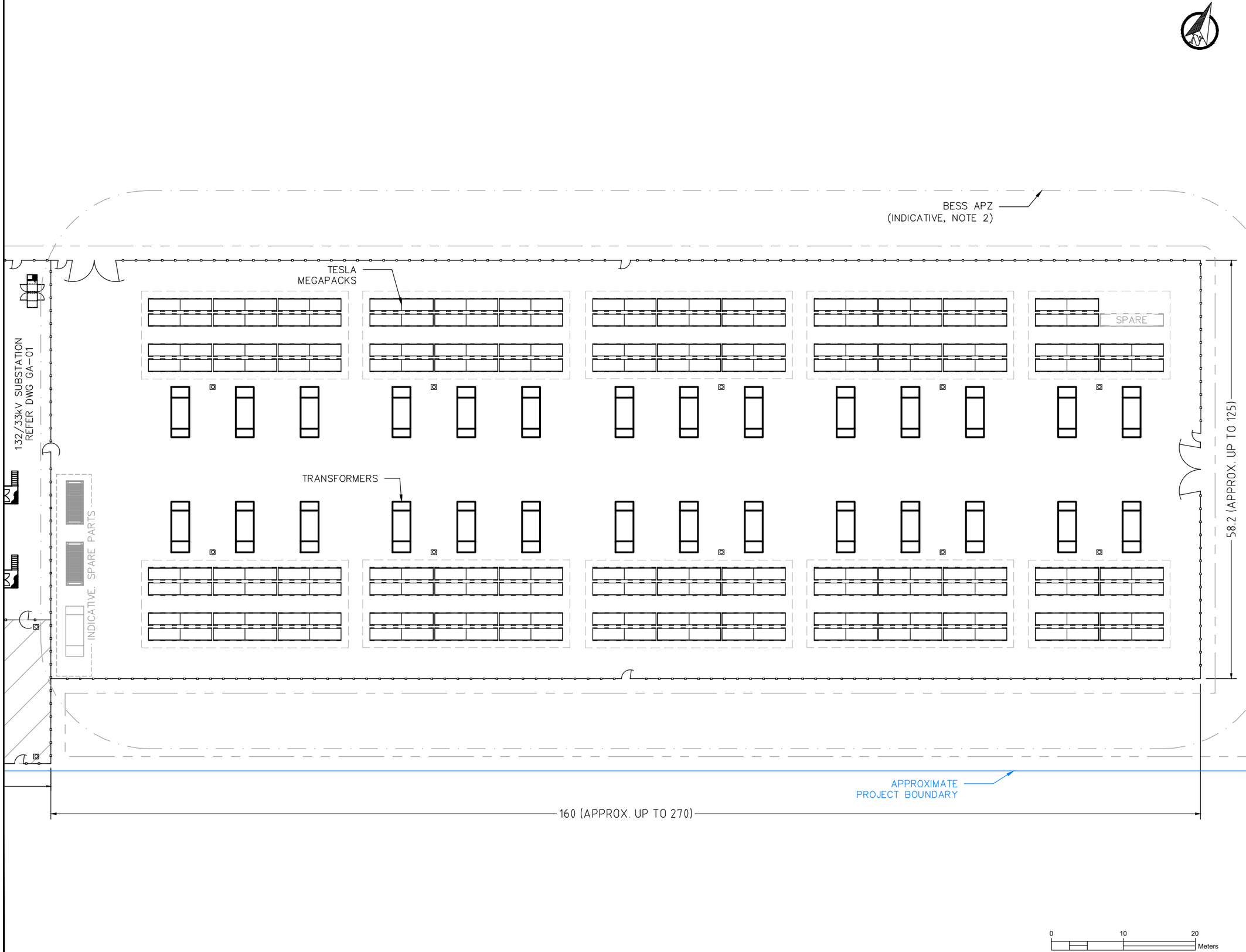
BRIGHTY ENERGY

NOMAD ENERGY

PROJECT: MERREDIN BESS

TITLE: OVERALL PROJECT GENERAL ARRANGEMENT PLAN

SCALE AT A3:	DRAWN:	CHECKED:	APPROVED:
1:1000	ABC	-	-
PROJECT NO:	DRAWING NO:		REVISION:
NMD01	MBB-GA-00		A



NOTES:

1. CONCEPT ONLY, SUBJECT TO CHANGE DURING DETAILED DESIGN.
2. PLANT & EQUIPMENT DIMENSIONS INDICATIVE, PROJECT AREA MAY EXPAND. 'ASSET PROTECTION ZONE' SETBACKS TO BE ADJUSTED FOLLOWING DETAILED FIRE STUDY.
3. ASSUMES BESS TRANSFORMERS SELF-BUNDED.
4. LIGHT/LIGHTNING POLE PLACEMENT AND QUANTITY SUBJECT TO CHANGE AFTER LIGHTING/LIGHTNING STUDY.
5. CAR PARKING, EARTHWORKS, ROADS/ACCESS TRACKS/INTERSECTION UPGRADES, DRAINAGE, EARTHING, PITS, CULVERTS, SPARE PARTS STORAGE AND TEMP CONSTRUCTION COMPOUND NOT SHOWN.

REV:	DESCRIPTION:	BY:	DATE:
A	FIRST DRAWN (CONCEPT)	ABC	19.10.23

STATUS: NOT FOR CONSTRUCTION

BRIGHTY ENERGY

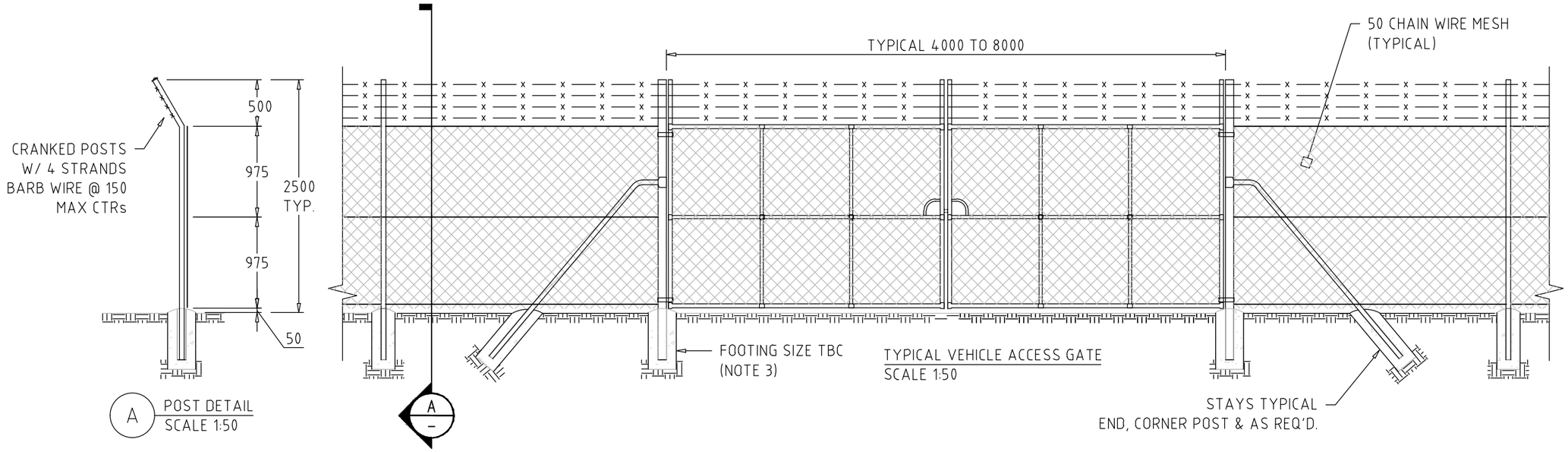
NOMAD ENERGY

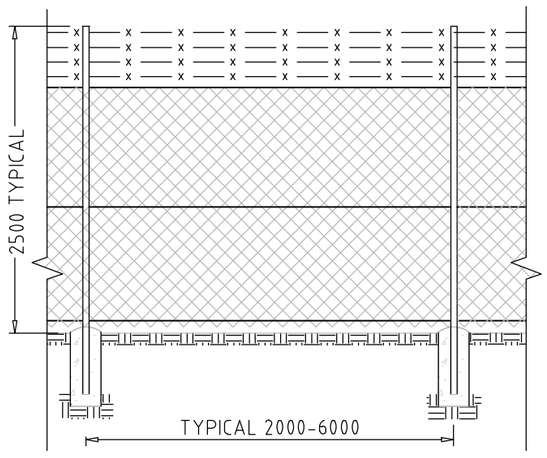
PROJECT: MERREDIN BESS

TITLE: BATTERY ENERGY STORAGE SYSTEM GENERAL ARRANGEMENT PLAN

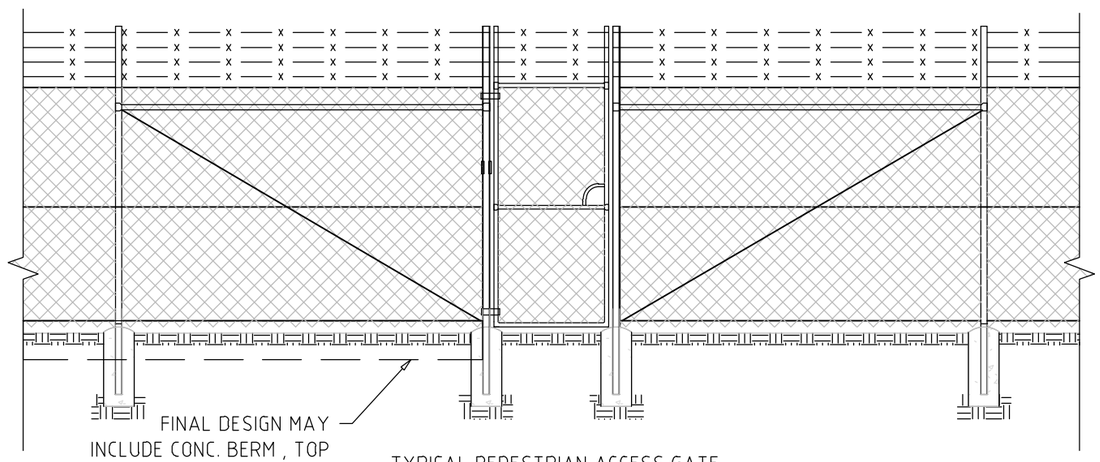
SCALE AT A3:	DRAWN:	CHECKED:	APPROVED:
1:500	ABC	-	-

PROJECT NO:	DRAWING NO:	REVISION:
NMD01	MBB-GA-02	A





NON-SUPPORTED INTERMEDIATE PANEL
SCALE 1:50



TYPICAL PEDESTRIAN ACCESS GATE
SCALE 1:50

NOTES:

1. CONCEPT ONLY, FOR DEVELOPMENT APPROVAL PURPOSES, NOT FOR CONSTRUCTION.
2. SUBJECT TO AMENDMENT DURING DETAILED DESIGN AND FOLLOWING SELECTION OF EPC CONTRACTOR.
3. FOUNDATION DESIGN TO BE COMPLETED FOLLOWING COMPLETION OF GEOTECHNICAL TESTING.
4. ALL FENCING COMPLIANT WIITH AS2067.
5. CONCRETE KERBING MAY BE USED, NOT SHOWN.
6. ALL GATES TO SWING INWARDS.

REV:	DESCRIPTION:	BY:	DATE:
A	FIRST DRAWN	ABC	11.10.2023

STATUS: NOT FOR CONSTRUCTION

NOMAD ENERGY

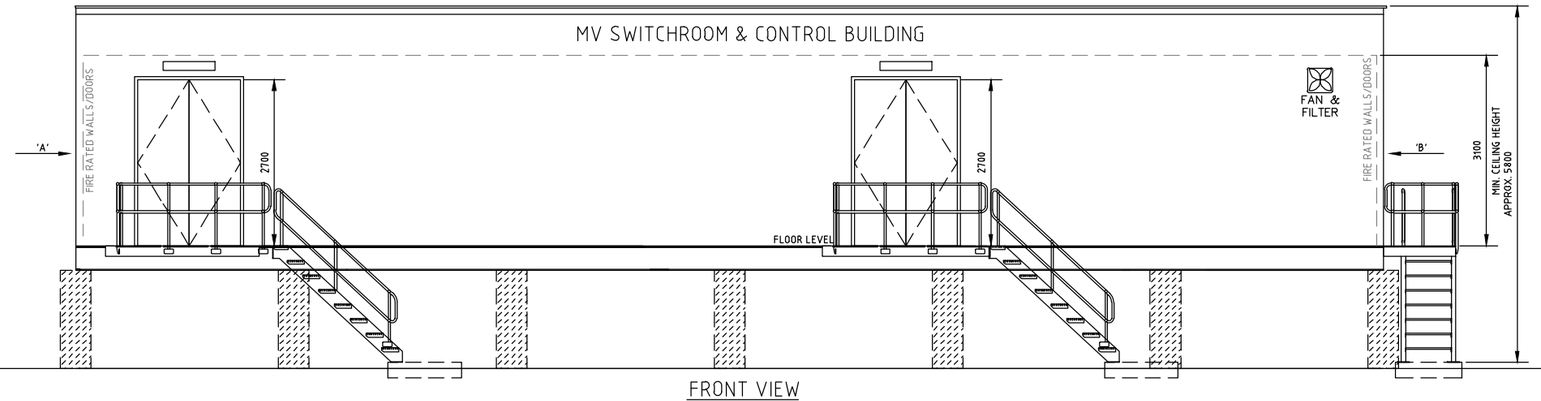
BRIGHTY ENERGY
L2, 384 Hunter St, Newcastle, NSW
www.brighty.energy

PROJECT: MERREDIN BESS

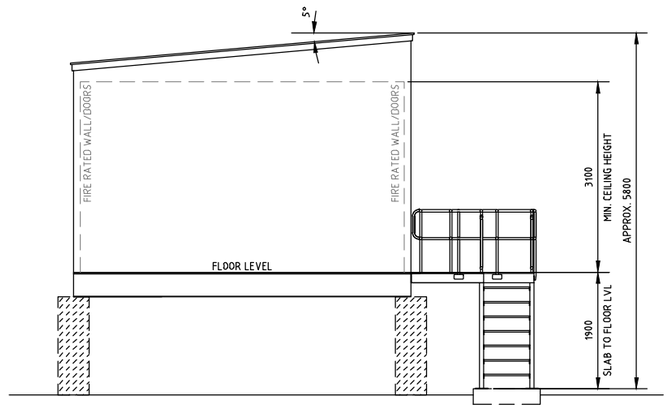
TITLE: EXTERIOR FENCE AND GATES TYPICAL ELEVATION

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:50	11.10.2023	ABC	-

PROJECT NO:	DRAWING NO:	REVISION:
NMDO1	MBB-EL-231011	A



FRONT VIEW



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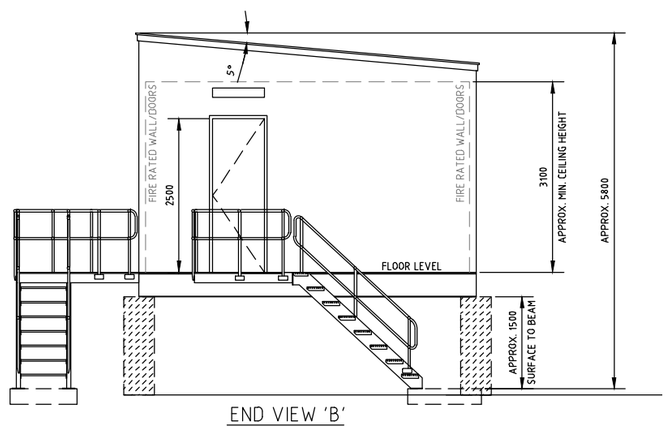

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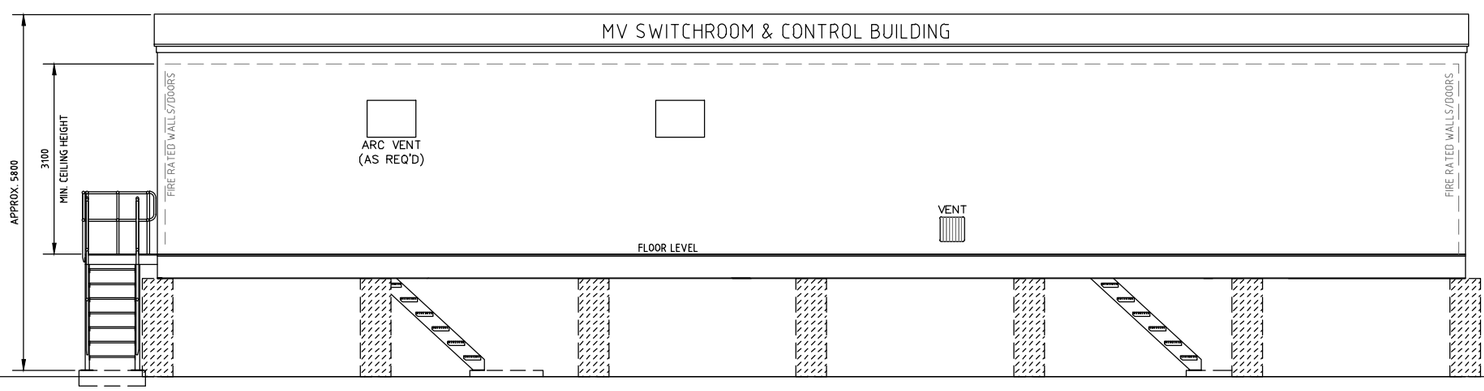


REAR VIEW

NOTES:

1. CONCEPT ONLY, SUBJECT TO CHANGE DURING DETAILED DESIGN.
2. HVAC AND FIRE PROTECTION PLANT NOT SHOWN.
3. MAY BE ON ELEVATED FOUNDATIONS AND/OR DELIVERED IN MULTIPLE SECTIONS.
4. EXACT DIMENSIONS DEPEND ON FINAL EQUIPMENT SELECTION TO BE COMPLETED DURING DETAILED DESIGN.
5. TO BE LOCATED WITHIN SWITCHYARD AND SUBSTATION FACILITIES.
6. FOUNDATIONS INDICATIVE ONLY, TO BE SPECIFIED AFTER SITE INVESTIGATIONS DURING DETAILED DESIGN.
7. QUANTITY OF DOORS AND ARRANGEMENT SUBJECT TO CHANGE.

REV:	DESCRIPTION:	BY:	DATE:
A	FIRST DRAWN	ABC	17.10.2023

STATUS: NOT FOR CONSTRUCTION

NOMAD ENERGY

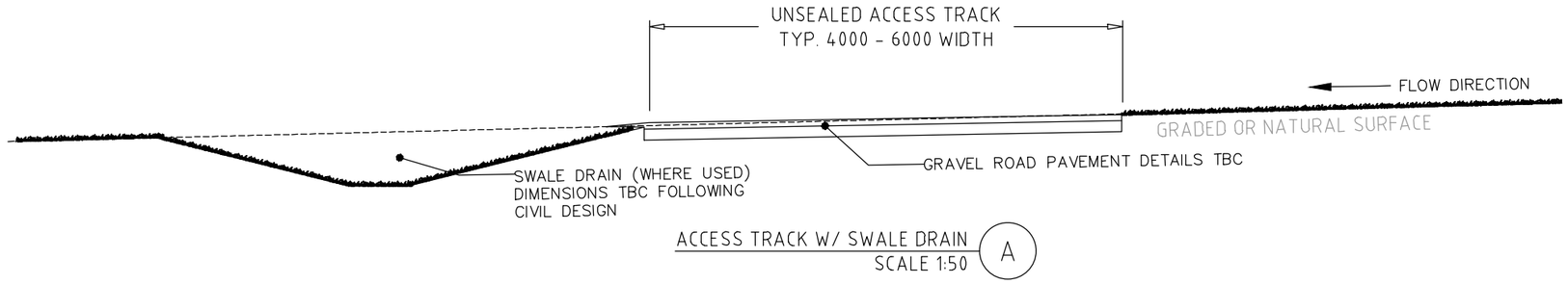
BRIGHTY ENERGY
WWW.BRIGHTY.ENERGY

PROJECT: MERREDIN BESS
-

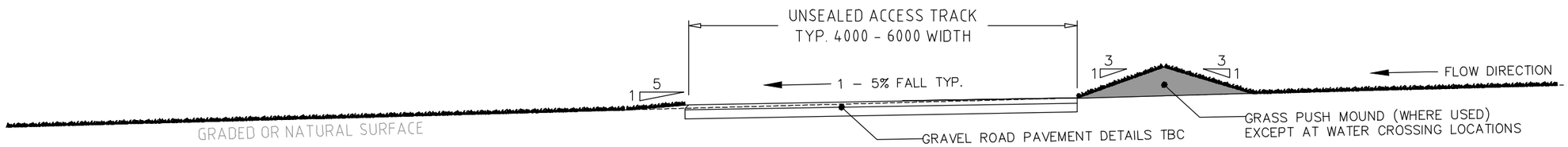
TITLE: SWITCHROOM/CONTROL BUILDING CONCEPT ELEVATION

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:100	17.10.2023	ABC	-

PROJECT NO:	DRAWING NO:	REVISION:
NMD01	MBB-EL-231012	A



ACCESS TRACK W/ SWALE DRAIN (A)
SCALE 1:50



ACCESS TRACK W/ PUSH MOUND (B)
SCALE 1:50

NOTES:

1. CONCEPT ONLY, SUBJECT TO CHANGE DURING DETAILED DESIGN.
2. PAVEMENT THICKNESS, COMPACTION AND COMPOSITION TO GEOTECHNICAL ENGINEER SPECIFICATION.
3. DRAINAGE DETAILS TO VARY SUBJECT TO CIVIL AND ENVIRONMENTAL DESIGN.
4. SEDIMENT AND EROSION CONTROLS NOT SHOWN.
5. TURNING RADII, WIDTH LOADING CAPACITY TO COMPLY WITH TRANSPORT AND CRANE REQUIREMENTS FOR SWITCHROOM, TRANSFORMER AND TESLA MEGAPACK DELIVERIES. REFER TO TESLA DOCUMENTATION.
6. DIRECTION AND EXTENT OF CROSSFALL TO SUIT NATURAL SURFACE.
7. SWALE DISCHARGE DETAILS NOT SHOWN.

REV:	DESCRIPTION:	BY:	DATE:
A	FIRST DRAWN (CONCEPT)	ABC	19.10.23

STATUS: NOT FOR CONSTRUCTION

BRIGHTY ENERGY

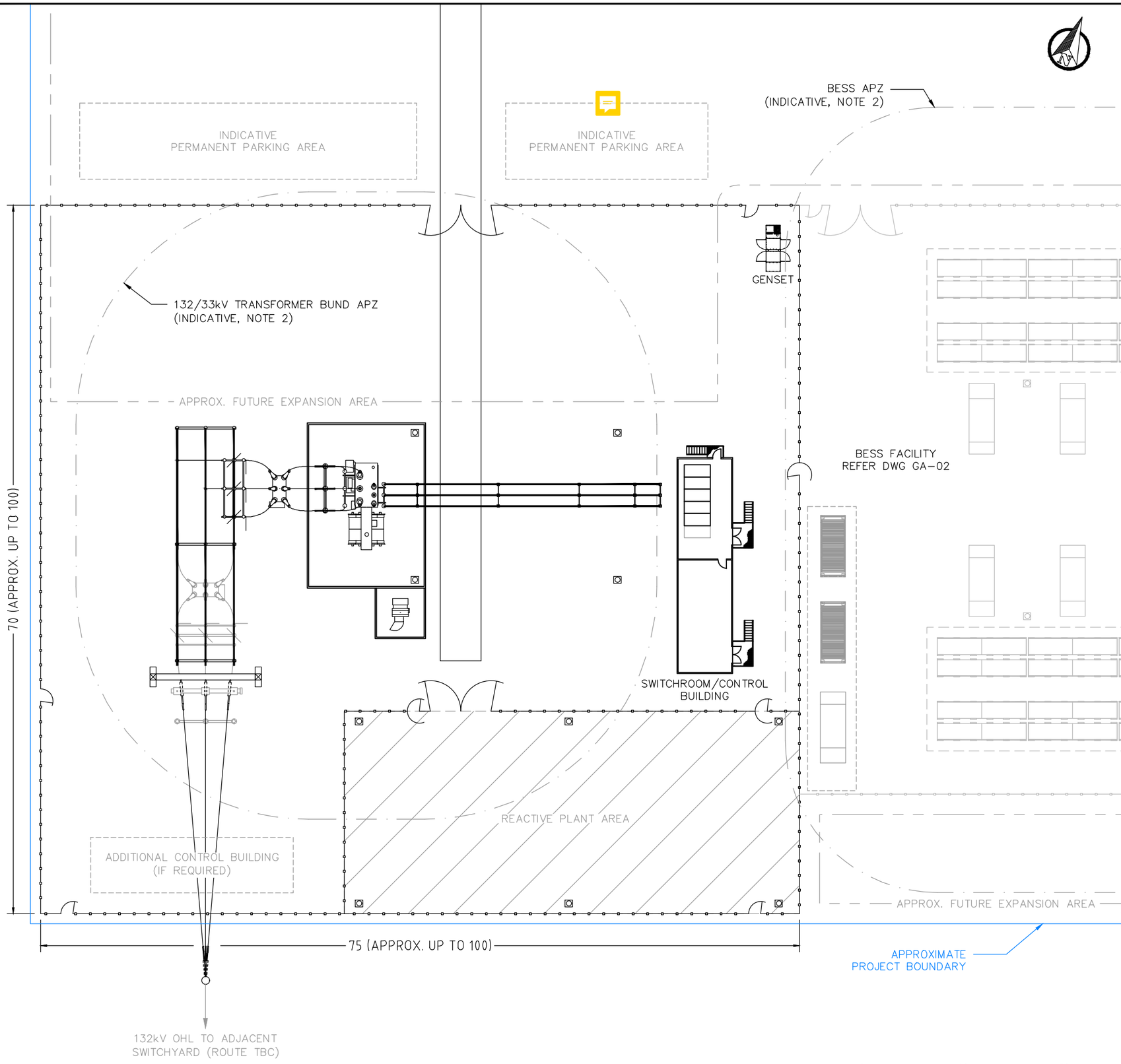
NOMAD ENERGY

PROJECT: MERREDIN BESS

TITLE: TYPICAL ACCESS TRACK CROSS SECTION DETAILS

SCALE AT A3:	DRAWN:	CHECKED:	APPROVED:
AS MARKED	ABC	-	-

PROJECT NO:	DRAWING NO:	REVISION:
NMD01	MBB-EL-231019	A



NOTES:

1. CONCEPT ONLY, SUBJECT TO CHANGE DURING DETAILED DESIGN.
2. PLANT & EQUIPMENT DIMENSIONS INDICATIVE, PROJECT AREA MAY EXPAND. SETBACKS TO BE ADJUSTED FOLLOWING DETAILED FIRE STUDY.
3. TRANSFORMER BUND AND OIL/WATER SEPARATION REQUIREMENTS SUBJECT TO CHANGE AFTER AS1940/AS2067 STUDY. BELOW GROUND OR ABOVE GROUND OIL/WATER SEPARATION UNIT MAY BE USED.
4. BUS HEIGHT DESIGN TO ALLOW SECTION SAFETY CLEARANCE FOR INSTALLATION OF FUTURE EQUIPMENT SHOWN IN GREY.
5. LIGHT/LIGHTNING POLE PLACEMENT AND QUANTITY SUBJECT TO CHANGE AFTER LIGHTING/LIGHTNING STUDY.
6. AERIAL 33kV BUS FROM TX TO SWITCHROOM MAY BE REPLACED WITH CABLES.
7. SEPARATE WESTERN POWER PROTECTION/COMMS BUILDING OR O&M BUILDING IF REQUIRED. OTHERWISE COMBINED WITH MV SWITCHROOM/CONTROL BUILDING.
8. CAR PARKING, EARTHWORKS, INTERSECTION UPGRADES, DRAINAGE, EARTHING, PITS, CULVERTS, SPARE PARTS STORAGE AND TEMP CONSTRUCTION COMPOUND NOT SHOWN.

REV:	DESCRIPTION:	BY:	DATE:
A	FIRST DRAWN (CONCEPT)	ABC	19.10.23

STATUS: NOT FOR CONSTRUCTION

BRIGHTY ENERGY

NOMAD ENERGY

PROJECT: MERREDIN BESS

TITLE: 132/33kV SUBSTATION GENERAL ARRANGEMENT PLAN

SCALE AT A3:	DRAWN:	CHECKED:	APPROVED:
1:400	ABC	-	-

PROJECT NO:	DRAWING NO:	REVISION:
NMD01	MBB-GA-01	A

appendix c

Bushfire Management Plan

Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details

Site Address / Plan Reference: Lot 5 Robartson Road		
Suburb: Merredin	**State:** WA	**P/code:** 6415
Local government area: Shire of Merredin		
Description of the planning proposal: Development Application		
BMP Plan / Reference Number: 169042	**Version:** v1.0	**Date of Issue:** 15/12/2023
Client / Business Name: Land Insights		

Reason for referral to DFES	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	☐	☒
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	☐	☒
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	☐	☒
Strategic planning proposal (including rezoning applications)	☐	☒
Minor development (in BAL-40 or BAL-FZ)	☐	☒
High risk land-use	☒	☐
Vulnerable land-use	☐	☒

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

The land is considered High-Risk as it will use and store combustible materials and/or flammable hazardous materials onsite that may be exposed and vulnerable to ignition from the direct attack mechanisms of bushfire.

Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

Name	Accreditation Level	Accreditation No.	Accreditation Expiry
Kathy Nastov	Level 3	BPAD 27794	01/08/2024
Company Bushfire Prone Planning		**Contact No.** 6477 1144	

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct

Signature of Practitioner **Date** 15/12/2023

BUSHFIRE PRONE PLANNING

Merredin Battery Project

Bushfire Management Plan (BMP)



Produced to meet the relevant requirements of STATE PLANNING POLICY 3.7 Planning in Bushfire Prone Areas & Guidelines

Lot 5 Robartson Road, Merredin

Shire of Merredin

Development Application - High Risk Land Use

14 December 2023

Job Reference No: 169042

BPP GROUP PTY LTD T/A BUSHFIRE PRONE PLANNING

ACN: 39 166 551 784 | ABN: 39 166 551 784

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VERSION HISTORY		
Version	Status/Details	Date
1.0	Original	14 December 2023
-	-	

BMP (Master) Template v9.16

DISTRIBUTION					
Destination		Version	No. Copies	Hard Copy	Electronic Copy
Person	Email				
Rebekah Hampson	rebekah@landinsights.com.au	1.0		☐	☒
		-		☐	☐

Limitations: The protection measures that will be implemented based on information presented in this Bushfire Management Plan are minimum requirements and they do not guarantee that buildings or infrastructure will not be damaged in a bushfire, persons injured, or fatalities occur either on the subject site or off the site while evacuating.

This is substantially due to the unpredictable nature and behaviour of fire and fire weather conditions. Additionally, the correct implementation of the required protection measures (including bushfire resistant construction) and any other required or recommended measures, will depend upon, among other things, the ongoing actions of the landowners and/or operators over which Bushfire Prone Planning has no control.

All surveys, forecasts, projections and recommendations made in this report associated with the proposed development are made in good faith based on information available to Bushfire Prone Planning at the time. All maps included herein are indicative in nature and are not to be used for accurate calculations.

Notwithstanding anything contained therein, Bushfire Prone Planning will not, except as the law may require, be liable for any loss or other consequences whether or not due to the negligence of their consultants, their servants or agents, arising out of the services provided by their consultants.

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SUMMARY STATEMENTS

THIS DOCUMENT – STATEMENT OF PURPOSE

The Bushfire Management Plan (BMP)

The BMP sets out the required package of bushfire protection measures to lessen the risks associated with a bushfire event. It establishes the responsibilities to implement and maintain these measures.

The BMP also identifies the potential for any negative impact on any environmental, biodiversity and conservation values that may result from the application of bushfire protection measures or that may limit their implementation.

Risks Associated with Bushfire Events

The relevant risks are the potential for loss of life, injury, or destroyed or damaged assets which results in personal loss and economic loss. For a given site, the level of that risk to persons and assets (the exposed elements) is a function of the potential threat levels generated by the bushfire hazard, and the level of exposure and vulnerability of the at risk elements to the threats.

Bushfire Protection Measures

The required package of protection measures is established by *State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7)*, its associated *Guidelines* and any other relevant guidelines or position statements published by the Department of Planning, Lands and Heritage. These measures are limited to those considered by the WA planning authorities as necessary to be addressed for the purpose of land use planning. They do not encompass all available bushfire protection measures as many are not directly relevant to the planning approval stage. For example:

- Protection measures to reduce the vulnerability of buildings to bushfire threats is primarily dealt with at the building application stage. They are implemented through the process of applying the Building Code of Australia (Volumes 1 and 2 of the national Construction Code) in accordance with WA building legislation and the application of construction requirements based on a building's level of exposure - determined as a Bushfire Attack Level (BAL) rating); or
- Protection measures to reduce the threat levels of consequential fire (ignited by bushfire and involving combustible materials surrounding and within buildings) and measures to reduce the exposure and vulnerability of elements at risk exposed to consequential fire, are not specifically considered.

The package of required bushfire protection measures established by the Guidelines includes:

- The requirements of the bushfire protection criteria which consist of:
  - Element 1: Location (addresses threat levels).
  - Element 2: Siting and Design of Development (addresses exposure levels of buildings).
  - Element 3: Vehicular Access (addresses exposure and vulnerability levels of persons).
  - Element 4: Water (addresses vulnerability levels of buildings).
  - Element 5: Vulnerable Tourism Land Uses (addresses exposure and vulnerability as per Elements 1-4 but in use specific ways and with additional considerations of persons exposure and vulnerability).
- The requirement to develop Bushfire Emergency Plans / Information for 'vulnerable' land uses for persons to prepare, respond and recover from a bushfire event (this addresses vulnerability levels).
- The requirement to assess bushfire risk and incorporate relevant protection measures into the site emergency plans for 'high risk' land uses (this addresses threat, exposure and vulnerability levels).

Compliance of the Proposed Development or Use with SPP 3.7 Requirements

The BMP assesses the capacity of the proposed development or use to implement and maintain the required 'acceptable' solutions and any additionally recommended bushfire protection measures - or its capacity to satisfy the policy intent through the justified application of additional bushfire protection measures as supportable 'alternative' solutions.

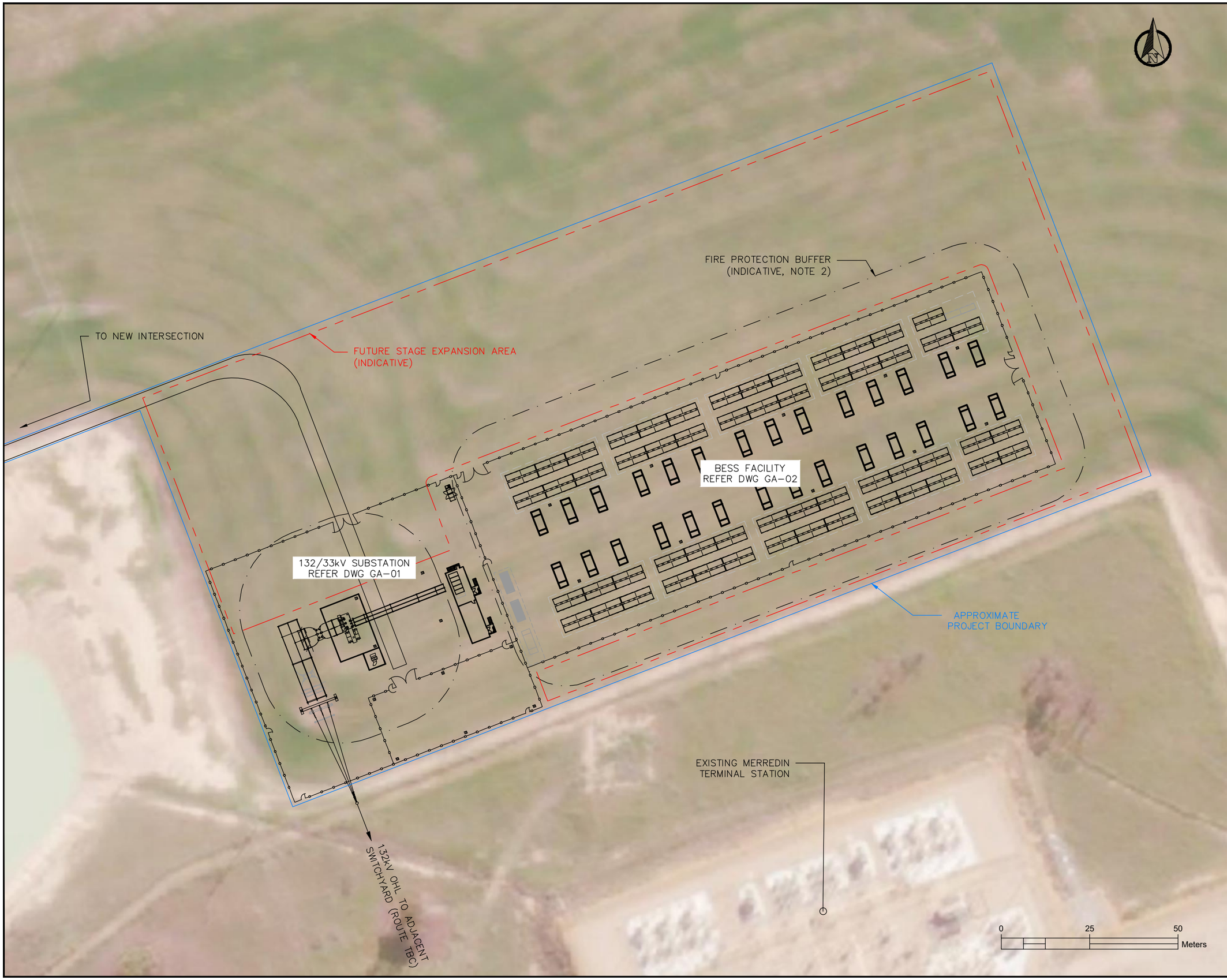
THE PROPOSED DEVELOPMENT/USE – BUSHFIRE PLANNING COMPLIANCE SUMMARY		
Environmental Considerations		Assessment Outcome
Will land with identified environmental, biodiversity and conservation values limit the full application of the required bushfire protection measures?		No
Will land with identified environmental, biodiversity and conservation values need to be managed in the implementation and maintenance of the bushfire protection measures - but not limit their application?		No
Required Bushfire Protection Measures The Acceptable Solutions of the Bushfire Protection Criteria (Guidelines)		Assessment Outcome
Element	The Acceptable Solutions	
1: Location	A1.1 Development location	Fully Compliant
2: Siting and Design of Development	A2.1 Asset Protection Zone (APZ)	Fully Compliant
3: Vehicular Access	A3.1 Public roads	Fully Compliant
	A3.2a Multiple access routes	Fully Compliant
	A3.2b Emergency access way	N/A
	A3.3 Through-roads	N/A
	A3.4a Perimeter roads	N/A
	A3.4b Fire service access route	N/A
	A3.5 Battle-axe legs	N/A
	A3.6 Private driveways	Fully Compliant
4: Water	A4.1 Identification of future water supply	N/A
	A4.2 Provision of water for firefighting purposes	Fully Compliant
The Methodology Applied to the Development of an Alternative Solution The necessity for an alternative solution is in response to non-compliance with the applicable acceptable solutions.		Applied
Development of a Bushfire Risk Assessment and Management Report - an assessment of proposed development/use risk levels associated with a bushfire event to indicate or determine the residual risk levels that will apply to all elements exposed to a bushfire hazard.		Yes
Summary Statement: The Bushfire Risk Report has been developed concurrently with this BMP.		
Other '**Bushfire Planning**' Documents to Be Produced This necessity for additional documents is determined by the proposed development/use type and the requirements established by SPP 3.7 and the associated Guidelines (as amended). They may be produced concurrently or subsequent to the BMP. Relevant actions will be identified within Section 6 'Responsibilities for Implementation of Bushfire Protection Measures.		Required

Bushfire Risk Assessment and Management Report:	Yes
Summary Statement: The proposed development is considered a 'high-risk' land use as defined by SPP 3.7 and its associated Guidelines. This triggers the requirement, through the development of a Risk Assessment and Management Report to: • Identify the level of exposure and vulnerability of any onsite stored materials and liquids to bushfire attack mechanisms (threats); • Identify any potential source of ignition threat the use may present to adjoining and/or adjacent bushfire prone vegetation; and • Recommend protection measures that can be incorporated into the site operations emergency plan as necessary. The requirement for this report to be developed and any variation to content, can be decided by the planning approval decision maker (e.g., the local government). Otherwise, SPP 3.7 states it 'should' be produced.	

1 PROPOSAL DETAILS AND THE BUSHFIRE MANAGEMENT PLAN

1.1 The Proposed Development/Use Details, Plans and Maps

The **Proposal's** Planning Stage For which certain bushfire planning documents are required to accompany the planning application.		Development Application
The Subject Land/Site		Part of Lot 5, Robartson Road, Merredin in the Shire of Merredin
Total Area of Subject Lot/Site		Lot 5: 61.5116 hectares
Primary Proposed Construction	Type(s)	Electricity generation/infrastructure
	NCC Classification	N/A
The 'Specific' Land Use Type for Bushfire Planning When applicable, this classification establishes a requirement to conduct assessments and develop documents that are additional to this Bushfire Management Plan.		High Risk Land Use
Factors Determining the 'Specific **Bushfire Planning**' Land Use Type		The land use will store combustible materials and/or flammable hazardous materials onsite that may be exposed and vulnerable to ignition from the direct attack mechanisms of bushfire (flame contact, radiant heat and embers). Business operations/activities may include those that are a potential source of ignition for onsite or offsite combustible/flammable materials, including bushfire prone vegetation.
Description of the Proposed Development/Use		
Development of a 'BESS' (Battery Energy Storage System) and Substation adjacent to Merredin's existing Solar Farm and Power Station. The battery development area will occupy approximately 7150m^2 within Lot 5.		



NOTES:

1. CONCEPT ONLY, SUBJECT TO CHANGE DURING DETAILED DESIGN.
2. PLANT & EQUIPMENT DIMENSIONS INDICATIVE, PROJECT AREA MAY EXPAND. SETBACKS AND OVERALL FOOTPRINT TO BE ADJUSTED WITHIN PROJECT BOUNDARY FOLLOWING DETAILED FIRE STUDY.
3. CAR PARKING, EARTHWORKS, INTERSECTION UPGRADES, DRAINAGE, EARTHING, PITS, CULVERTS, SPARE PARTS STORAGE AND TEMP CONSTRUCTION COMPOUND NOT SHOWN.
4. FIRE WATER ASSUMED CO-LOCATED WITH EXISTING SOLAR FARM.

REV:	DESCRIPTION:	BY:	DATE:
A	FIRST DRAWN (CONCEPT)	ABC	19.10.23

STATUS: NOT FOR CONSTRUCTION

BRIGHTY ENERGY

NOMAD ENERGY

PROJECT: MERREDIN BESS

TITLE: OVERALL PROJECT GENERAL ARRANGEMENT PLAN

SCALE AT A3:	DRAWN:	CHECKED:	APPROVED:
1:1000	ABC	-	-
PROJECT NO:	DRAWING NO:		REVISION:
NMD01	MBB-GA-00		A

Figure 1.2

Proposed Development

Lot 5 on Plan D067824, Area : 61.5116ha
Robartson Road
MERREDIN
SHIRE OF MERREDIN

ROBARTSON RD

------ LEGEND ------

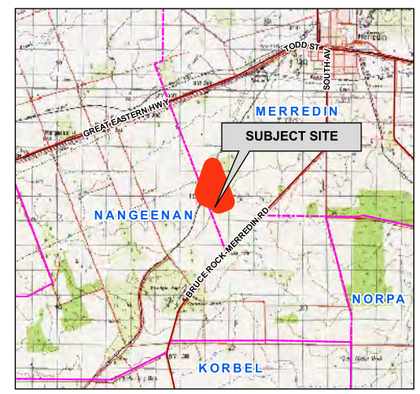
Development

- Battery Development Extent
- Subject Lot (Lot 5)
- Proposed Infrastructure

0 20 40 60 80 100 m

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

N

BUSHFIRE PRONE PLANNING

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Elissa Edward 01-11-2023
SCALE (A3): 1 : 1750

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Figure 1.3

Location Map

Lot 5 on Plan D067824, Area : 61.5116ha
Robartson Road
MERREDIN
SHIRE OF MERREDIN

------ LEGEND ------

- Lot 5
- Battery Development Extent
- Reserves

DFES Stations

- Bush Fire Brigade
- State Emergency Service Unit
- Volunteer Fire & Rescue Service

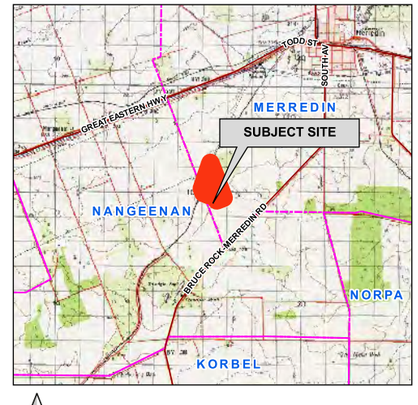
DBCA Legislated Lands and Waters

- Conservation Park
- Nature Reserve

0 1 2 3 4 km

Kilometres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Elissa Edward 25-10-2023
SCALE (A3): 1 : 75000

169042_Fig-1-3-LOC_Merredin-Battery.qgz

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WHERE SPP 3.7 AND THE GUIDELINES ARE TO APPLY – DESIGNATED BUSHFIRE PRONE AREAS

All higher order strategic planning documents, strategic planning proposals, subdivisions and development applications located in designated bushfire prone areas need to address SPP 3.7 and its supporting Guidelines. This also applies where an area is not yet designated as bushfire prone but is proposed to be developed in a way that introduces a bushfire hazard.

For development applications where only part of a lot is designated as bushfire prone and the proposed development footprint is wholly outside of the designated area, the development application will not need to address SPP 3.7 or the Guidelines. (Guidelines DPLH 2021 v1.4, s1.2).

For subdivision applications, if all the proposed lots have a BAL-LOW indicated, a BMP is not required. (Guidelines DPLH 2021 v1.4, s5.3.1).

Figure 1.4

Bushfire Prone Area

Lot 5 on Plan D067824, Area : 61.5116ha
Robartson Road
MERREDIN
SHIRE OF MERREDIN

------ LEGEND ------

- Lot 5
- Battery Development Extent
- Bushfire Prone Area (2021)

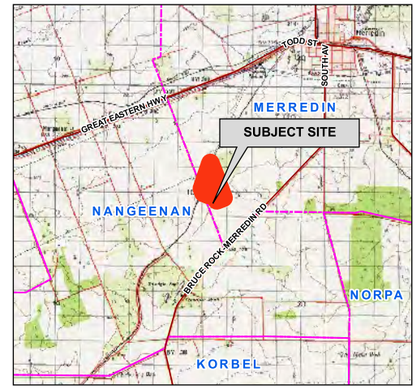
DFES Stations

- State Emergency Service Unit
- Volunteer Fire & Rescue Service

0 500 1,000 m

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Elissa Edward 25-10-2023
SCALE (A3): 1 : 30000

BUSHFIRE PRONE PLANNING

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1.2 The Bushfire Management Plan (BMP)

1.2.1 Commissioning and Purpose

Landowner / proponent:	Land Insights
Bushfire Prone Planning commissioned to produce the BMP by:	Rebekah Hampson of Land Insights
Purpose of the BMP:	To assess the proposal's ability to meet all relevant requirements established by State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7), the associated 'Guidelines and any relevant Position Statements; and To satisfy the requirement for the provision of a Bushfire Management Plan to accompany the development application.
BMP to be submitted to:	WA Planning Commission (WAPC) and Shire of Merredin

1.2.1 Other Documents with Implications for Development of this BMP

This section identifies any known assessments, reports or plans that have been conducted and prepared previously, or are being prepared concurrently, and are relevant to the planned proposal for the subject. They potentially have implications for the assessment of bushfire threats and the identification and implementation of the protection measures that are established by this Bushfire Management Plan.

Table 1.4: Other relevant documents that may influence threat assessments and development of protection measures.

RELEVANT DOCUMENTS					
Document	Relevant	Currently Exists	To Be Developed	Copy Provided by Proponent / Developer	Title
Structure Plan	No	No	No	N/A	-
Bushfire Management Plan	Yes	Yes	N/A	N/A	*This document*
Bushfire Emergency Plan or Information	No	No	No	N/A	-
Bushfire Risk Assessment and Management Report	Yes	Yes	N/A	N/A	*169042 – Merredin Battery Facility (BRR) v1.0, Bushfire Prone Planning, December 2023*
Implications for the BMP: Developed concurrently with this BMP.					
Environmental Asset or Vegetation Survey	No	No	No	N/A	-
Landscaping and Revegetation Plan	No	No	No	N/A	-
Land Management Agreement	No	No	No	N/A	-

2.1 Environmental Considerations – 'Desktop' Assessment

This 'desktop' assessment must not be considered as a replacement for a full Environmental Impact Assessment. It is a summary of potential environmental values at the subject site, inferred from information contained in listed datasets and/or reports, which are only current to the date of last modification.

These data sources must be considered indicative where the subject site has not previously received a site-specific environmental assessment by an appropriate professional.

Many bushfire prone areas also have high biodiversity values. Consideration of environmental priorities within the boundaries of the land being developed can avoid excessive or unnecessary modification or clearing of vegetation. Approval processes (and exemptions) apply at both Commonwealth and State levels.

Any 'modification' or 'clearing' of vegetation to reduce bushfire risk is considered 'clearing' under the *Environmental Protection Act 1986* (EP Act) and requires a clearing permit under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations) – unless for an exempt purpose.

Clearing native vegetation is an offence, unless done under a clearing permit or the clearing is for an exempt purpose. Exemptions are contained in the EP Act or are prescribed in the Clearing Regulations (note: these do not apply in environmentally sensitive areas).

The *Department of Water and Environmental Regulation* (DWER) is responsible for issuing 'clearing' permits and the framework for the regulation of clearing. Approvals under other legislation, from other agencies, may also be required, dependent on the type of flora or fauna present.

Local Planning Policy or Local Biodiversity Strategy: Natural areas that are not protected by the above Act and Regulation (or any other National or State Acts) may be protected by a local planning policy or local biodiversity strategy. Permission from the local government will be required for any modification or removal of native vegetation in these Local Natural Areas (LNA's). Refer to the relevant local government for detail.

For further Information refer to Guidelines v1.4, the Bushfire and Vegetation Factsheet - WAPC, Dec 2021 and https://www.der.wa.gov.au/our-work/clearing-permits

2.1.1 Declared Environmentally Sensitive Areas (ESA)

IDENTIFICATION OF RELEVANT ENVIRONMENTALLY SENSITIVE AREAS							
ESA Class	Relevant to Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Relevant Dataset	Information Source(s) Applied to Identification of Relevant Vegetation			Further Action Required
				Dataset	Landowner or Developer	Environmental Asset or Vegetation Survey	
Wetlands and their 50m Buffer (Ramsar, conservation category and nationally important)	No	No	DBCA-010 and 011, 019, 040, 043, 044	☒	☐	☐	None
Bush Forever	No	No	DPLH-022, SPP 2.8	☒	☐	☐	None
Threatened and Priority Flora + 50m Continuous Buffer	Unknown	Unknown	DBCA-036	Restricted Scale of Data Available (security)	☐	☐	Data not available - confirm with relevant agency
Threatened Ecological Community	Unknown	Unknown	DBCA-038		☐	☐	
Heritage Areas National / World	No	No	Relevant register or mapping	☒	☐	☐	None
Environmental Protection (Western Swamp Tortoise) Policy 2002	No	No	DWER-062	☒	☐	☐	None

2.1.2 Other Protected Vegetation on Public Land

IDENTIFICATION OF PROTECTED VEGETATION ON PUBLIC LAND							
Land with Environmental, Biodiversity, Conservation and Social Values	Relevant to Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Relevant Dataset	Information Source(s) Applied to Identification of Relevant Vegetation			Further Action Required
				Dataset	Landowner or Developer	Environmental Asset or Vegetation Survey	
Legislated Lands (tenure includes national park/reserve, conservation park, crown reserve and state forest)	No	No	DBCA-011	☒	☐	☐	None
Conservation Covenants	Unknown	Unknown	DPIRD-023	Only Available to Govt.	☐	☐	Data not available - confirm with relevant agency
National World Heritage Areas	No	No	-	☒	☐	☐	None
Designated Public Open Space	No	No	-	☒	☐	☐	None

2.1.3 Locally Significant Conservation Areas – Local Natural Areas (LNA)

IDENTIFICATION OF LOCALLY SIGNIFICANT CONSERVATION AREAS							
Land with Environmental, Biodiversity and Conservation Values	Relevant to Proposal	Influence on Bushfire Threat Levels and / or Application of Bushfire Protection Measures	Relevant Dataset	Information Source(s) Applied to Identification of Relevant Vegetation			Further Action Required
				Dataset	Landowner or Developer	Environmental Asset or Vegetation Survey	
Native Vegetation / Remnant Vegetation	No	No	Site assessment	☐	☐	☒	None
Riparian Zones / Foreshore Areas	No	No		☐	☐	☒	None
Habitat Vegetation and Wildlife Corridors	No	No		☐	☐	☒	None

2.2 Bushfire Assessment Considerations

2.2.1 Planned Onsite Vegetation Landscaping

Identification of areas of the subject site planned to be landscaped, creating the potential for increased or decreased bushfire hazard for proposed development.

PLANNED LANDSCAPING	
Relevant to Proposal:	No

2.2.2 Planned / Potential Offsite Rehabilitation or Re-Vegetation

Identification of areas of land adjacent to the subject site on which re-vegetation (as distinct from natural re-generation) will or may occur and is likely to present a greater bushfire hazard for proposed development.

POTENTIAL RE-VEGETATION PROGRAMS		
Land with Environmental, Biodiversity, Conservation and Social Values	Relevant to Proposal	Description
Riparian Zones / Foreshore Areas	No	No planned re-vegetation within or surrounding project development area.
Wetland Buffers	No	
Legislated Lands	No	
Public Open Space	No	
Road Verges	No	
Other	No	

2.2.3 Identified Requirement to Manage, Modify or Remove Onsite or Offsite Vegetation

Identification of native vegetation subject to management, modification or removal.

REQUIREMENT TO MANAGE, MODIFY OR REMOVE NATIVE VEGETATION	
Has a requirement been identified to manage, modify or remove onsite native vegetation to establish the required bushfire protection measures on the subject site?	No
Is approval, from relevant state government agencies and/or the local government, to modify or remove onsite native vegetation required? (Note: if 'Yes' evidence of its existence should be provided in this BMP).	N/A
Has a requirement been identified to manage, modify or remove offsite native vegetation to establish the required bushfire protection measures on the subject site?	No
Is written approval required, from relevant state government agencies and/or the local government, that permits the landowner, or another identified party, to modify or remove offsite bushfire prone vegetation and/or conduct other works, to establish an identified bushfire protection measure(s)? If 'Yes', appropriate evidence of the approval or how it is to be established, shall be provided in this BMP as an addendum.	N/A

Is a written management agreement required that states the obligation of the landowner, or another responsible party, to manage defined areas of **offsite** bushfire prone vegetation, in perpetuity, to ensure the conditions of no fire fuels and/or low threat vegetation and/or vegetation managed in a minimal fuel condition, continue to be met? If 'Yes', appropriate evidence of the agreement or how it is to be established, shall be provided in this BMP as an addendum.	N/A

2.2.4 Variations to Assessed Areas of Classified Vegetation to be Applied

FOR THE PROPOSED DEVELOPMENT SITUATIONS TO BE ACCOUNTED FOR IN ASSESSING THE POTENTIAL BUSHFIRE IMPACT (BAL)	
Area(s) of land will be subject to future vegetation rehabilitation or re-vegetation that will require a change to a higher threat classification of vegetation on that land to. (Note: this is not regeneration to the mature natural state which is accounted for in the 'existing state' assessment in accordance with AS 3959:2018).	No
Modification of existing area(s) of classified vegetation due to the implementation of the proposed development and/or prior to the site's occupancy or use. This modification will require a change to a lower threat classification (or exclusion from classification) for that area of vegetation.	Yes
Refer to Figure 3.1.1 'Post Development Classified Vegetation' and Appendix A1.2 for justification details supporting the change. The subject vegetation is not native vegetation, it is sown pasture/Grassland.	
Complete removal of existing area(s) of classified vegetation due to the implementation of the proposed development and/or prior to the site's occupancy or use. This modification will require an exclusion from classification for that area of vegetation.	No

3 BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT

BUSHFIRE ATTACK LEVELS (BAL) - UNDERSTANDING THE RESULTS

The potential transfer (flux/flow) of radiant heat from the bushfire to a receiving object is measured in kW/m^2. The AS 3959:2018 BAL determination methodology establishes the ranges of radiant heat flux that correspond to each bushfire attack level. These are identified as BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ.

The bushfire performance requirements for certain classes of buildings are established by the Building Code of Australia (Vol. 1 & 2 of the NCC). The BAL will establish the bushfire resistant construction requirements that are to apply in accordance with AS 3959:2018 - ***Construction of buildings in bushfire prone areas*** and the NASH Standard – ***Steel framed construction in bushfire areas (NS 300 2021)***, whose solutions are deemed to satisfy the NCC bushfire performance requirements.

DETERMINED BAL RATINGS

A BAL Certificate can be issued for a determined BAL. A BAL can only be classed as 'determined' for an existing or future building/structure when:

1. It's final design and position on the lot are known and the stated separation distance from classified bushfire prone vegetation exists and can justifiably be expected to remain in perpetuity; or

2. It will always remain subject to the same BAL regardless of its design or position on the lot after accounting for any regulatory or enforceable building setbacks from lot boundaries as relevant and necessary (e.g., R-codes, restrictive covenants, defined building envelopes) or the retention of any existing classified vegetation either onsite or offsite.

If the BMP derives determined BAL(s), the BAL Certificate(s) required for submission with building applications can be provided, using the BMP as the assessment evidence.

INDICATIVE BAL RATINGS

A BAL Certificate cannot be issued for an indicative BAL. A BAL will be classed as 'indicative' for an existing or future building/structure when the required conditions to derive a determined BAL are not met.

This class of BAL rating indicates what BAL(s) could be achieved and the conditions that need to be met are stated.

Converting the indicative BAL into a determined BAL is conditional upon the currently unconfirmed variable(s) being confirmed by a subsequent assessment and evidential documentation. These variables will include the future building(s) location(s) being established (or changed) and/or classified vegetation being modified or removed to establish the necessary vegetation separation distance. This may also be dependent on receiving approval from the relevant authority for that modification/removal.

BAL RATING APPLICATION – PLANNING APPROVAL VERSUS BUILDING APPROVAL

1. **Planning Approval:** SPP.3.7 establishes that where BAL- LOW to BAL-29 will apply to relevant future construction (or existing structures for proposed uses), the proposed development may be considered for approval (dependent on the other requirements of the relevant policy measures being met). That is, BAL40 or BAL-FZ are not acceptable on planning grounds (except for certain limited exceptions).

   Because planning is looking forward at what can be achieved, as well as looking at what may currently exist, both determined and indicative BAL ratings are acceptable assessment outcomes on which planning decisions can be made (including conditional approvals).

2. **Building Approval:** The Building Code of Australia (Vol. 1 & 2 of the NCC) establishes that relevant buildings in bushfire prone areas must be constructed to the bushfire resistant requirements corresponding to the BAL rating that is to apply to that building. Consequently, a determined BAL rating and the BAL Certificate is required for a building permit to be issued - an indicative BAL rating is not acceptable.

3.1 BAL Assessment Summary (Contour Map Format)

INTERPRETATION OF THE BAL CONTOUR MAP

The BAL contour map is a diagrammatic representation of the results of the bushfire attack level assessment.

The map presents different coloured contours extending out from the areas of classified vegetation. Each contour represents a set range of radiant heat flux that potentially will transfer to an exposed element (building, person or other defined element), when it is located within that contour.

Each of the set ranges of radiant heat flux corresponds to a different BAL rating as defined by the AS 3959:2018 BAL determination methodology.

The width of each shaded BAL contour will vary dependant on both the BAL rating and the relevant parameters (calculation inputs) for the subject site. Their width represents the minimum and maximum vegetation separation distances that correspond to each BAL rating (refer to the relevant table below for these distances).

The areas of classified vegetation to be considered in developing the BAL contours, are those that will remain at the intended end state of the subject development once earthworks, clearing and/or landscaping and re-vegetation have been completed. Variations to this statement that may apply include:

- Both pre and post development BAL contour maps are produced; and/or
- Each stage of a development is assessed independently.

3.1.1 BAL Determination Methodology and Location of Data and Results

LOCATION OF DATA & RESULTS					
BAL Determination Methodology		Location of the Site Assessment Data			Location of the Results
AS 3959:2018	Applied to Assessment	Classified Vegetation and Topography Map(s)	Calculation Input Variables		Assessed Bushfire Attack Levels and/or Radiant Heat Levels
			Summary Data	Detailed Data with Explanatory and Supporting Information	
Method 1 (Simplified)	Yes	Figure 3.1 and Figure 3.1.1	Table 3.2	Appendix A1	Table 3.1 Table 3.3 / BAL Contour Map

3.1.2 BAL Ratings Derived from the Contour Map

Table 3.1: Indicative and determined BAL(s) for proposed building works.

BUSHFIRE ATTACK LEVEL FOR EXISTING/PLANNED BUILDINGS/STRUCTURE [1]		
Building/Structure Description	Indicative BAL [2]	Determined BAL [2]
BESS Facility	BAL-12.5 *	Not Determined
Substation	BAL-29	Not Determined
[1] The assessment data used to derive the BAL ratings is sourced from Table 3.1 and Figure 3.2 'BAL Contour Map'. [2] Refer to the start of Section 3 for an explanation of indicative versus determined BAL ratings.		

*Subject to 10kW per square meter radiant heat levels due to increased separation distance by 10kW APZ as recommended due to the high-risk nature of the development.

3.1.3 Site Assessment Data Applied to Construction of the BAL Contour Map(s)

RELEVANT CLASSIFIED VEGETATION	
Identification of Classified Vegetation that is Relevant to the Production of the BAL Contour Map(s)	Relevant Vegetation Map
The relevant vegetation for the post-development BAL contour map will be any area of classified vegetation - both within the subject site (onsite) and external to the subject site (offsite) - that will remain at the intended end state of the subject development once earthworks, any clearing and/or landscaping and re-vegetation have been completed.	Figure 3.2
Supporting Assessment Details: None required.	

Table 3.2: The calculation inputs applied to determining the site specific separation distances corresponding to levels of potential radiant heat transfer (including BAL's).

SUMMARY OF CALCULATION INPUT VARIABLES APPLIED TO THE DETERMINATION OF SEPARATION DISTANCES CORRESPONDING TO RADIANT HEAT LEVELS [1]												
Applied BAL Determination Method		METHOD 1 - SIMPLIFIED PROCEDURE (AS 3959:2018 CLAUSE 2.2)										
The Calculation Variables Corresponding to the BAL Determination Method Applied												
Methods 1 and 2		Method 1	Method 2									
Vegetation Classification		FDI	Effective Slope		Site Slope	FFDI or GFDI	Flame Temp.	Elevation of Receiver	Flame Width	Fireline Intensity	Flame Length	Modified View Factor
			Applied Range	Measured								
Area	Class		degree range	degrees	degrees		K	metres	metres	kW/m	metres	% Reduction
1	(G) Grassland	110	Downslope >0-5	N/A								
2	(G) Grassland	110	Upslope or flat 0									
3	(G) Grassland	110	Upslope or flat 0									
4	Excluded cl 2.2.3.2(e)	N/A	N/A									

[1] All data and information supporting the determination of the classifications and values stated in this table and any associated justification, is presented in Appendix A.

Where the values are stated as 'default' these are either the values stated in AS 3959:2018, Table B1 or the values calculated as intermediate or final outputs through application of the equations of the AS 3959:2018 BAL determination methodology. They are not values derived by the assessor.

Table 3.3: Vegetation separation distances corresponding to the radiant heat levels illustrated as BAL contours in Figure 3.2.

THE CALCULATED VEGETATION SEPARATION DISTANCES CORRESPONDING TO THE STATED LEVEL OF RADIANT HEAT [1]									
Vegetation Classification		Separation Distances Corresponding to Stated Level of Radiant Heat (metres)							
		Bushfire Attack Level						Maximum Radiant Heat Flux	
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW	10 kW/m^2	2 kW/m^2
1	(G) Grassland	<7	7-<9	9-<14	14-<20	20-<50	>50	21.8	-
2	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50	21.2	-
3	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50	21.2	-
4	Excluded cl 2.2.3.2(e)	-	-	-	-	-	-	-	-

[1] All calculation input variables are presented in Table 3.2. A copy of radiant heat calculator output for each area of classified vegetation are presented in Appendix A2.

Figure 3.1

Classified Vegetation & Topography (Existing)

Lot 5 on Plan D067824, Area : 61.5116ha
Robartson Road
MERREDIN
SHIRE OF MERREDIN

AREA 1
Class (G) Grassland
Effective Slope >0-5°

Lot 5

AREA 2
Class (G) Grassland
Effective Slope 0°

AREA 3
Class (G) Grassland
Effective Slope 0°

AREA 3
Class (G) Grassland
Effective Slope 0°

AREA 4
Excluded

AREA 4
Excluded

ROBARTSON RD

304m

306m

308m

310m

312m

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

------ LEGEND ------

- Lot 5
- Battery Development Extent
- Proposed Infrastructure
- 150m Assessment Area
- Photo & Direction

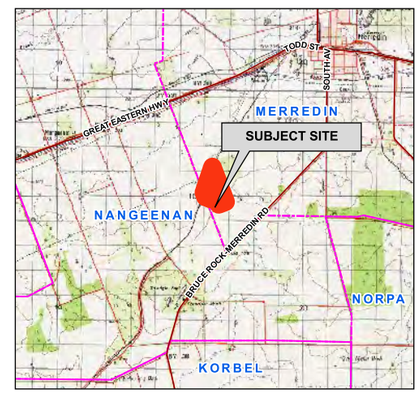
Classified Vegetation

- Class G - Grassland
- Exclusion 2.2.3.2

0 20 40 60 80 100 m

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Elissa Edward 01-11-2023
SCALE (A3): 1 : 2000

BUSHFIRE PRONE PLANNING

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

169042_Fig-3-1-VEG_Merredin-Battery.qgz

Figure 3.1.1

Classified Vegetation & Topography (Post -Development)

Lot 5 on Plan D067824, Area : 61.5116ha
Robartson Road
MERREDIN
SHIRE OF MERREDIN

AREA 1
Class (G) Grassland
Effective Slope >0-5°

AREA 1
Class (G) Grassland
Effective Slope >0-5°

AREA 2
Class (G) Grassland
Effective Slope 0°

AREA 3
Class (G) Grassland
Effective Slope 0°

AREA 3
Class (G) Grassland
Effective Slope 0°

AREA 4
Excluded

AREA 4
Excluded

22 m

8 m

22 m

8 m

ROBARTSON RD

------ LEGEND ------

- Lot 5
- Battery Development Extent
- Proposed Infrastructure
- 150m Assessment Area

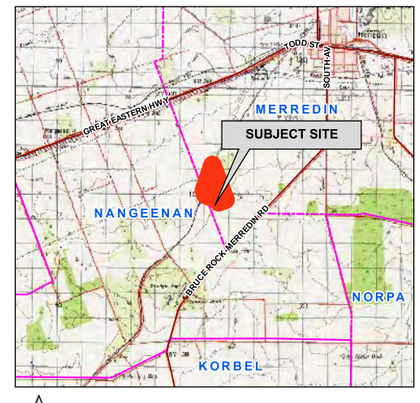
Classified Vegetation

- Class G - Grassland
- Exclusion 2.2.3.2

0 20 40 60 80 100 m

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

N

BUSHFIRE PRONE PLANNING

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Elissa Edward 14-12-2023
SCALE (A3): 1 : 2000

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Figure 3.2

BAL Contour Map

Lot 5 on Plan D067824, Area : 61.5116ha
Robartson Road
MERREDIN
SHIRE OF MERREDIN

------ LEGEND ------

- Lot 5
- Battery Development Extent
- Proposed Infrastructure
- 100m Assessment Area

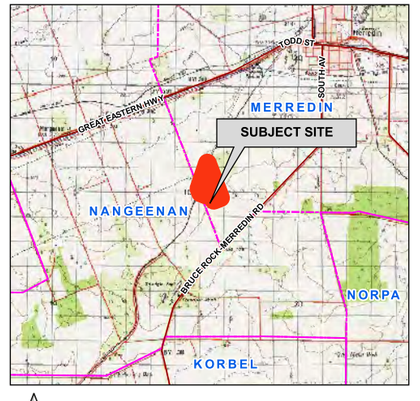
Bushfire Attack Levels

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

0 20 40 60 80 100 m

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Elissa Edward 14-12-2023
SCALE (A3): 1 : 1500

BUSHFIRE PRONE PLANNING

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4 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

The Guidelines for Planning in Bushfire Prone Areas (WAPC 2021 v1.4), Appendix 5, establish that the application of this section of the BMP is intended to support ***strategic planning*** proposals. At the strategic planning stage there will typically be insufficient proposed development detail to enable all required assessments, including the assessment against the bushfire protection criteria.

Strategic Planning Proposals

For strategic planning proposals this section of the BMP will identify:

- Issues associated with the level of the threats presented by any identified bushfire hazard;
- Issues associated with the ability to implement sufficient and effective bushfire protection measures to reduce the exposure and vulnerability levels (of elements exposed to the hazard threats), to a tolerable or acceptable level; and
- Issues that will need to be considered at subsequent planning stages.

All Other Planning Proposals

For all other planning stages, this BMP will address what are effectively the same relevant issues but do it within the following sections:

- Section 2 – Bushfire Prone Vegetation - Environmental and Assessment Considerations: Assess environmental, biodiversity and conservation values;
- Section 3 – Potential Bushfire Impact: Assess the bushfire threats with the focus on flame contact and radiant heat; and
- Section 5 – Assessment Against the Bushfire Protection Criteria (including the guidance provided by the *Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2'):* Assess the ability of the proposed development to apply the required bushfire protection measures thereby enabling it to be considered for planning approval for these factors.

Is the proposed development a strategic planning proposal?	No

5 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA (GUIDELINES V1.4)

5.1 Bushfire Protection Criteria Elements Applicable to the Proposed Development/Use

APPLICATION OF THE CRITERIA, ACCEPTABLE SOLUTIONS AND PERFORMANCE ASSESSMENT

The criteria are divided into five elements – location, siting and design, vehicular access, water and vulnerable tourism land uses. Each element has an intent outlining the desired outcome for the element and reflects identified planning and policy requirements in respect of each issue.

The example acceptable solutions (bushfire protection measures) provide one way of meeting the element's intent. Compliance with these automatically achieves the element's intent and provides a straightforward pathway for assessment and approval.

Where the acceptable solutions cannot be met, the ability to develop design responses (as alternative solutions that meet bushfire performance requirements) is an alternative pathway that is provided by addressing the applicable performance principles (as general statements of how best to achieve the intent of the element).

A merit based assessment is established by the SPP 3.7 and the Guidelines as an additional alternative pathway along with the ability of using discretion in making approval decisions (sections 2.5, 2.6 and 2.7). This is formally applied to certain development (minor and unavoidable – sections 5.4.1 and 5.7). Relevant decisions by the State Administrative Tribunal have also supported this approach more generally.

Elements 1 – 4 should be applied for all strategic planning proposals, subdivision or development applications, except for vulnerable tourism land uses which should refer to Element 5. Element 5 incorporates the bushfire protection criteria in Elements 1 – 4 but caters them specifically to tourism land uses. (Guidelines DPLH 2021v1.4)

The Bushfire Protection Criteria	Applicable to the Proposed Development/Use
Element 1: Location	Yes
Element 2: Siting and Design	Yes
Element 3: Vehicular Access	Yes
Element 4: Water	Yes
Element 5: Vulnerable Tourism Land Uses	No

5.2 Local Government Variations to Apply

Local governments may add to or modify the acceptable solutions to recognise special local or regional circumstances (e.g., topography / vegetation / climate). These are to be endorsed by both the WAPC and DFES before they can be considered in planning assessments. (Guidelines DPLH 2021v1.4).	
Do endorsed regional or local variations to the acceptable solutions apply to the assessments against the Bushfire Protection Criteria for the proposed development /use?	No

5.3 Assessment Statements for Element 1: Location

LOCATION					
Element Intent	To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.				
Proposed Development/Use – Relevant Planning Stage	(Do) Development application other than for a single dwelling, ancillary dwelling or minor development				
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.				
Pathway Applied to Provide an Alternative Solution	N/A				
Acceptable Solutions - Assessment Statements *All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.*					
Solution Component Check Box Legend	☑ Relevant & met	☒ Relevant & not met	⃠ Not relevant		
A1.1 Development location	Applicable:	Yes	Compliant:	Yes	
ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES					
☑ ☐ ☐ The development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL-29 or below.					
Supporting Assessment Details: Refer to Figure 3.1.1 and Figure 3.2 showing the BAL-29 APZ around the substation and the 10kW APZ around the BESS Facility that can and will be established around the proposed development on the subject lot upon completion.					
ASSESSMENTS APPLYING THE GUIDANCE ESTABLISHED BY THE WAPC ELEMENT 1 & 2 POSITION STATEMENT (2019)					
"Consideration should be given to the site context where 'area' is the land both within and adjoining the subject site. The hazards remaining within the site should not be considered in isolation of the hazards adjoining the site, as the potential impact of a bushfire will be dependent on the wider risk context, including how a bushfire could affect the site and the conditions for a bushfire to occur within the site." Strategic Planning Proposals: Consider the threat levels from any vegetation adjoining and within the subject site for which the potential intensity of a bushfire in that vegetation would result in it being classified as an Extreme Bushfire Hazard Level (BHL). Identify any proposed design strategies to reduce these threats. Structure Plans (lot layout known) and Subdivision Applications: As for strategic planning proposals but within the subject site the relevant threat levels to consider are the radiant heat levels represented by BAL-FZ and BAL-40 ratings.					
The planning proposal is a development application, consequently the referenced position statement is not applicable to the Element 1 assessment.					

5.4 Assessment Statements for Element 2: Siting and Design

SITING AND DESIGN OF DEVELOPMENT	
Element Intent	To ensure that the siting and design of development minimises the level of bushfire impact. (BPP Note: not building/construction design)
Proposed Development/Use – Relevant Planning Stage	(Do) Development application other than for a single dwelling, ancillary dwelling or minor development
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.
Pathway Applied to Provide an Alternative Solution	N/A

Acceptable Solutions - Assessment Statements

All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.

Solution Component Check Box Legend	☑ Relevant & met	☒ Relevant & not met	⃠ Not relevant

A2.1 Asset Protection Zone (APZ)	Applicable:	Yes	Compliant:	Yes

APZ DIMENSIONS – DIFFERENCES IN REQUIREMENTS FOR PLANNING ASSESSMENTS COMPARED TO IMPLEMENTATION

A key required bushfire protection measure is to reduce the exposure of buildings/infrastructure (as exposed vulnerable elements at risk), to the direct bushfire threats of flame contact, radiant heat and embers and the indirect threat of consequential fires that result from the subsequent ignition of other combustible materials that may be constructed, stored or accumulate in the area surrounding these structures. This reduces the associated risks of damage or loss.

This is achieved by separating buildings (and consequential fire fuels as necessary) from areas of classified bushfire prone vegetation. This area of separation surrounding buildings is identified as the Asset Protection Zone (APZ) and consists of no vegetation and/or low threat vegetation or vegetation continually managed to a minimal fuel condition. The required separation distances will vary according to the site specific conditions and local government requirements.

The APZ dimensions stated and/or illustrated in this Report can vary dependent on the purpose for which they are being identified.

> *Note: Appendix B 'Onsite Vegetation Management' provides further information regarding the different APZ dimensions that can be referenced, their purpose and the specifications of the APZ that are to be established and maintained on the subject lot.*

THE **'PLANNING BAL-29' APZ** DIMENSIONS

Purpose: To provide evidence of the development or use proposal's ability to achieve minimum vegetation separation distances. To achieve 'acceptable solution' planning approval for this factor, it must be demonstrated that the minimum separation distances corresponding to a maximum level of radiant transfer to a building of 29 kW/m^2, either exist or can be implemented (with certain exceptions). These separation distances are the 'Planning BAL-29' APZ dimensions.

*T**he 'Planning BAL-29' APZ is not necessarily the** size of the APZ that must be physically implemented and maintained by a landowner. Rather, its sole purpose is to identify if an acceptable solution for planning approval can be met.*

THE **'REQUIRED'** APZ DIMENSIONS

Purpose: Establishes the dimensions of the APZ to be physically implemented by the landowner on their lot: These will be the minimum required separation distances from the subject building(s) to surrounding bushfire prone vegetation (identified by type and associated ground slope). These are established by:

A. The 'BAL Rating APZ' of the subject building(s) when distances are greater than 'B' below (except when 'B' establishes a maximum distance); or

B. The 'Local Government' APZ' derived from the Firebreak/Hazard Reduction Notice when distances are greater than 'A' above, other than when a maximum distance is established, in which case this will apply; or

C. A combination of 'A' and 'B'.

> *Within this Report/Plan it is the **'Planning BAL-29' APZ** that will be identified on maps, diagrams and in tables as necessary – unless otherwise stated.*
>
> *The **'Required'** APZ dimension information will be presented in Appendix B1.1 and on the Property Bushfire Management Statement, when required to be included for a development application.*

ASSESSMENT AGAINST THE REQUIREMENTS ESTABLISHED BY THE GUIDELINES

☑ ☐ ☐	APZ Width: The proposed (or a future) habitable building(s) on the lot(s) of the proposed development - or an existing building for a proposed change of use – can be (or is) located within the developable portion of the lot and be surrounded by a 'Planning BAL-29' APZ of the required dimensions (measured from any external wall or supporting post or column to the edge of the classified vegetation), that will ensure their exposure to the potential radiant heat impact of a bushfire does not exceed 29 kW/m^2. Note: When established by the relevant decision maker, the meeting of this requirement may also apply to proposed non-habitable buildings and other structures.
☐ ☐ ⊘	Restriction on Building Location: It has been identified that the current developable portion of a lot(s) provides for the proposed future (or a future) building/structure location that will result in that building/structure being subject to a BAL-40 or BAL-FZ rating. Consequently, it may be considered necessary to impose the condition that a restrictive covenant to the benefit of the local government pursuant to section 129BA of the Transfer of Land Act 1893, is to be placed on the certificate(s) of title of the proposed lot(s) advising of the existence of a restriction on the use of that portion of land (refer to Code F3 of Model Subdivision Conditions Schedule, WAPC June 2021 and Guidelines s5.3.2).
☐ ☐ ⊘	APZ Location: The required dimensions for a 'Planning BAL-29' APZ can be contained solely within the boundaries of the lot(s) on which the proposed (or a future) habitable building(s) - or an existing building(s) for a proposed change of use – is situated.
☑ ☐ ☐	APZ Location: The required dimensions for a 'Planning BAL-29' APZ can be partly established within the boundaries of the lot(s) on which the proposed (or a future) habitable building(s) - or an existing building(s) for a proposed change of use – is situated. The balance of the APZ would exist on adjoining land that satisfies the exclusion requirements of AS 3959:2018 cl 2.2.3.2 for non-vegetated areas and/or low threat vegetation and/or vegetation managed in a minimal fuel condition.
☑ ☐ ☐	APZ Location: It can be justified that any adjoining (offsite) land forming part of a 'Planning BAL-29' APZ will: • If non-vegetated, remain in this condition in perpetuity; and/or

	• If vegetated, be low threat vegetation or vegetation managed in a minimal fuel condition in perpetuity.
☑ ☐ ☐	APZ Management: The area of land (within each lot boundary), that is to make up the required 'Landowner' APZ dimensions (refer to Appendix B, Part B1), can and will be managed in accordance with the requirements of the Guidelines Schedule 1 'Standards for Asset Protection Zones' (refer to Appendix B).
☐ ☐ ⊘	Staged Subdivision: The subdivision proposes development in stages and each stage is to comply with the relevant bushfire protection criteria. A balance lot is created or classified vegetation within a subsequent stage will be removed and/or modified and/or be subject to ongoing management, to ensure that proposed lots within the current stage of the subdivision achieve a development site subject to 29 kW/m^2 or below. The planned approach for achieving the required outcome is described in the supporting assessment details below.
☑ ☐ ☐	Firebreak/Hazard Reduction Notice: Any additional requirements established by the relevant local government's annual notice to install firebreaks and manage fuel loads (issued under s33 of the Bushfires Act 1954), can and will be complied with.
Supporting Assessment Details: Refer to Figure 3.1.1 showing the APZs and dimensions for the proposed non-habitable development. This figure shows the required APZ dimensions for this development. The current site plans provided by the proponent, cannot accommodate the required APZ dimensions within the development boundaries. For this development to be compliant with Element 2 within this BMP, the site plans need to be revised in order to fit the required APZ or a management agreement needs to be established between Western Power the developer / operator to manage the land outside the developable boundaries.	
ASSESSMENTS APPLYING THE GUIDANCE ESTABLISHED BY THE WAPC ELEMENT 1 & 2 POSITION STATEMENT (2019)	
Strategic Planning Proposals: "At this planning level there may not be enough detail to demonstrate compliance with this element. The decision-maker may consider this element is satisfied where A1.1 is met." Structure Plans (lot layout known) and Subdivision Applications: "Provided that Element 1 is satisfied, the decision-maker may consider approving lot(s) containing BAL-40 or BAL-FZ under the following scenarios.	
The planning proposal is a development application, consequently the referenced position statement is not applicable to the proposed development.	

5.5 Assessment Statements for Element 3: Vehicular Access

VEHICULAR ACCESS	
Element Intent	To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.
Proposed Development/Use – Relevant Planning Stage	(Do) Development application other than for a single dwelling, ancillary dwelling or minor development
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.
Pathway Applied to Provide an Alternative Solution	N/A

Acceptable Solutions - Assessment Statements

All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.

The technical construction requirements for access types and components, and for each firefighting water supply component, are also presented in Appendices C and D. The local government will advise the proponent where different requirements are to apply and when any additional specifications such as those for signage and gates are to apply (these are included in the relevant appendix if requested by the local government).

Solution Component Check Box Legend ☑ Relevant & met ☒ Relevant & not met ⊘ Not relevant

A3.1 Public roads	Applicable: Yes	Compliant: Yes

☑ ☐ ☐ The technical construction requirements of vertical clearance and weight capacity (Guidelines, Table 6) can and will be complied with (Refer also to Appendix C in this BMP).

☑ ☐ ☐ All other applicable technical requirements of trafficable width, gradients and curves, are required to be in "accordance with the class of road as specified in the IPWEA Subdivision Guidelines, Liveable Neighbourhoods, Ausroad Standards and/or any applicable standard in the local government area" (Guidelines, Table 6 and E3.1. Refer also to Appendix C in this BMP).

The assessment conducted for the bushfire management plan indicates that it is likely that the proposed development can and will comply with the requirements.

However, the applicable class of road, the associated technical requirements and subsequent proposal compliance, will need to be confirmed with the relevant local government and/or Main Roads WA.

☑ ☐ ☐ A traversable verge is available adjacent to classified vegetation (Guidelines, E3.1), as recommended.

Supporting Assessment Details: No new public roads are proposed as part of the development. Existing public road, Robartson Road, provides access to the development. Robartson Road is a sealed, approximately 7 metre width, trafficable surface, with approximately 2 metre gravel trafficable shoulders.

A3.2a Multiple access routes	Applicable: Yes	Compliant: Yes

☑ ☐ ☐ For each lot, two-way public road access is provided in two different directions to at least two different suitable destinations with an all-weather surface.

☐ ☐ ⊘	The two-way access is available at an intersection no greater than 200m from the relevant boundary of each lot, via a no-through road.
☐ ☐ ⊘	The two-way access is not available at an intersection within 200m from the relevant boundary of each lot. However, the available no-through road satisfies the established exemption for the length limitation in every case. These requirements are: • Demonstration of no alternative access (refer to A3.3 below); • The no-through road travels towards a suitable destination; and • The balance of the no-through road that is greater than 200m from the relevant lot boundary is within a residential built-out area or is potentially subject to radiant heat levels from adjacent bushfire prone vegetation that correspond to the BAL-LOW rating (<12.5 kW/m^2).
Supporting Assessment Details: Robartson Road provides two-way access for the development. Robartson Road provides access in a northerly direction to its intersection with major route Great Eastern Highway. Robartson Road provides access in a southerly direction to its intersection with Bruce Rock-Merredin Road. Bruce Rock-Merredin Road continues north to the townsite of Merredin, and continues south to the townsite of Bruce Rock, allowing multiple suitable destinations which can be accessed from the development site.	
A3.2b Emergency access way — Applicable: No — Compliant: N/A	
☐ ☐ ⊘	The proposed or existing EAW provides a through connection to a public road.
☐ ☐ ⊘	The proposed or existing EAW is less than 500m in length and will be signposted and gated (remaining unlocked) to the specifications stated in the Guidelines and/or required by the relevant local government.
☐ ☐ ⊘	The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.2b. Refer also to Appendix C in this BMP), can and will be complied with.
☐ ☐ ⊘	The subdivision proposes development in stages and each stage is to comply with the relevant bushfire protection criteria. A temporary EAW is planned to facilitate the staging arrangements of a subdivision as an interim second access route until the required second access route is constructed as a public road in a subsequent stage. The planned approach for achieving the required outcome is described in the supporting assessment details below.
Supporting Assessment Details: A3.2b does not apply to the development because A3.2a can be achieved.	
A3.3 Through-roads — Applicable: No — Compliant: N/A	
☐ ☐ ⊘	A no-through public road is necessary as no alternative road layout exists due to site constraints.
☐ ☐ ⊘	The no-through public road length does not exceed the established maximum of 200m to an intersection providing two-way access (Guidelines, E3.3).
☐ ☐ ⊘	The no-through public road exceeds 200m but satisfies the exemption provisions of A3.2a as demonstrated in A3.2a above.
☐ ☐ ⊘	The public road technical construction requirements (Guidelines, Table 6 and E3.1. Refer also to Appendix C in this BMP), can and will be complied with as established in A3.1 above.

☐ ☐ ⊘	The turnaround area requirements (Guidelines, Figure 24) can and will be complied with.
Supporting Assessment Details: None required.	
A3.4a Perimeter roads	Applicable: No Compliant: N/A
☐ ☐ ⊘	The proposed greenfield or infill development consists of 10 or more lots (including those that are part of a staged subdivision) and therefore should have a perimeter road. This is planned to be installed.
☐ ☐ ⊘	The proposed greenfield or infill development consists of 10 or more lots (including those that are part of a staged subdivision). However, it is not required on the established basis of: • The vegetation adjoining the proposed lots is classified Class G Grassland; • Lots are zoned rural living or equivalent; • It is demonstrated that it cannot be provided due to site constraints; or • All lots have existing frontage to a public road.
☐ ☐ ⊘	The technical construction requirements of widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.4a) can and will be complied with.
Supporting Assessment Details: None required.	
A3.4b Fire service access route	Applicable: No Compliant: N/A
☐ ☐ ⊘	The FSAR can be installed as a through-route with no dead ends, linked to the internal road system every 500m and is no further than 500m from a public road.
☐ ☐ ⊘	The technical construction requirements of widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.4b. Refer also to Appendix C in this BMP), can and will be complied with.
☐ ☐ ⊘	The FSAR can and will be signposted. Where gates are required by the relevant local government, the specifications can be complied with.
☐ ☐ ⊘	Turnaround areas (to accommodate type 3.4 fire appliances) can and will be installed every 500m on the FSAR.
Supporting Assessment Details: None required.	
A3.5 Battle-axe access legs	Applicable: No Compliant: N/A
☐ ☐ ⊘	A battle-axe leg cannot be avoided due to site constraints.
☐ ☐ ⊘	The proposed development is in a reticulated area and the battle-axe access leg length from a public road is no greater than 50m. No technical requirements need to be met.
☐ ☐ ⊘	The proposed development is not in a reticulated area. The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.5. Refer also to Appendix C in this BMP), can and will be complied with.
☐ ☐ ⊘	Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.

Supporting Assessment Details: None required.				
A3.6 Private driveways	Applicable:	Yes	Compliant:	Yes
☐ ☐ ⊘	The private driveway to the most distant external part of the development site is within a lot serviced by reticulated water, is accessed via a public road with a speed limit of 70 km/hr or less and has a length is no greater than 70m (measured as a hose lay). No technical requirements need to be met.			
☑ ☐ ☐	The technical construction requirements for widths, clearances, capacity, gradients and curves (Guidelines, Table 6 and E3.6. Refer also to Appendix C in this BMP), can and will be complied with.			
☑ ☐ ☐	Passing bays can and will be installed every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m.			
☑ ☐ ☐	The turnaround area requirements (Guidelines, Figure 28, and within 30m of the habitable building) can and will be complied with.			
Supporting Assessment Details: The proposed private driveway is approximately 225m in length (from Robartson Road to Substation entrance). This driveway will need to be constructed to the requirements within table 6 (Appendix C of this report) to provide adequate road width that will allow overtaking of emergency vehicles, therefore removing the requirement for over taking bays. To accommodate any future expansion and provide adequate access to the BESS facility, a looped driveway will need to be installed around the BESS facility.				

5.6 Assessment Statements for Element 4: Water

FIREFIGHTING WATER	
Element Intent	To ensure water is available to enable people, property and infrastructure to be defended from bushfire.
Proposed Development/Use – Relevant Planning Stage	(Do) Development application other than for a single dwelling, ancillary dwelling or minor development
Element Compliance Statement	The proposed development/use achieves the intent of this element by being fully compliant with all applicable acceptable solutions.
Pathway Applied to Provide an Alternative Solution	N/A

Acceptable Solutions - Assessment Statements

All details of acceptable solution requirements are established in the Guidelines for Planning in Bushfire Prone Areas, DPLH v1.4 (Guidelines) and apply the guidance established by the Position Statement: 'Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design' (WAPC Nov 2019) and the 'Bushfire Management Plan Guidance for the Dampier Peninsula' (WA Department of Planning, Lands and Heritage, 2021 Rev B) as relevant. These documents are available at https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas.

The technical construction requirements for access types and components, and for each firefighting water supply component, are also presented in Appendices C and D. The local government will advise the proponent where different requirements are to apply and when any additional specifications such as those for signage and gates are to apply (these are included in the relevant appendix if requested by the local government).

Solution Component Check Box Legend	☑ Relevant & met	☒ Relevant & not met	⃠ Not relevant

A4.1 Identification of future firefighting water supply	Applicable:	No	Compliant:	N/A

☐ ☐ ⃠	It can be demonstrated that reticulated or sufficient non-reticulated water for firefighting can be provided at the subdivision and/or development application stage in accordance with the specifications of the relevant water supply authority or the requirements of Schedule 2.

Supporting Assessment Details: None required.

A4.2 Provision of water for firefighting purposes	Applicable:	Yes	Compliant:	Yes

☐ ☐ ⃠	A reticulated water supply is available to the proposed development. The existing hydrant connection(s) are provided in accordance with the specifications of the relevant water supply authority.
☐ ☐ ⃠	A reticulated water supply will be available to the proposed development. Hydrant connection(s) can and will be provided in accordance with the specifications of the relevant water supply authority.
☑ ☐ ☐	A static water supply (tank) for firefighting purposes will be installed on the lot that is additional to any water supply that is required for drinking and other domestic purposes.
☐ ☐ ⃠	A strategic water supply (tank or tanks) for firefighting purposes will be installed within or adjacent to the proposed development that is additional to any water supply that is required for drinking and other domestic purposes. The required land will be ceded free of cost to the local government and the lot or road reserve where the tank is to be located will be identified on the plan of subdivision.

☐ ☐ ⊘	The strategic static water supply (tank or tanks) will be located no more than 10 minutes travel time from a subject site (at legal road speeds).
☑ ☐ ☐	The technical requirements (location, number of tanks, volumes, design, construction materials, pipes and fittings), as established by the Guidelines (A4.2, E4 and Schedule 2) and/or the relevant local government, can and will be complied with.
Supporting Assessment Details: Due to the high-risk nature of the development static water supply tank of 288,000L will be installed upon completion of the project in accordance with the requirements established in the BRR and Section 5.7 of this document. This water supply is intended to address bushfire and non-bushfire emergencies.	

5.7 Additional Bushfire Protection Measures to be Implemented

The following bushfire protection measures are recommended to be implemented and maintained. They are additional to, or a variation of, those established by the relevant acceptable solutions applied to the proposed development/use within Sections 5 of this BMP (as applicable to the proposed development).

The intent of their application is to improve the bushfire performance of the proposed development/use and reduce residual risk levels to persons and property from a bushfire event.

The development of these additional and/or varied protection measures originates the following potential sources (not exhaustive):

1. Out of the relevant merit based assessment when the Section titled 'Non-compliance – Additional Assessments' has been used in this BMP;
2. Out of the relevant performance based assessment when Section titled 'Non-compliance – Additional Assessments' has been used in this BMP;
3. Out of the development of any other required bushfire planning documents. These include a Bushfire Emergency Plan and the Bushfire Risk Assessment and Management Report;
4. Out of any additional bushfire planning guidance documents or position statements issued by the WA Department of Planning, Lands and Heritage;
5. From any 'Conditions' which may be applied to a 'Planning Approval' or a 'Notice of Determination; or
6. As a recommendation from the bushfire consultant.

The following table summarises the requirements/recommendations with the detail provided in the following sections.

When necessary, the implementation responsibility for these additional protection measures will be stated in Section 6 of this BMP and included in other operational documents as relevant.

SUMMARY OF ADDITIONAL BUSHFIRE PROTECTION MEASURES TO BE IMPLEMENTED					
No.	Description of the Protection Measure to Apply to the Proposed Development	Risk Reducing Component Being Applied		The Assessment or Document Establishing the Application of the Protection Measure	Application Status
		Type	Protection Principle		
1	A BAL-29 APZ is required for planning approval. A 10kW/m2 APZ is additionally required so BESS units and infrastructure (electrical components) are unlikely to be compromised due to radiant heat during a bushfire. There is no native vegetation on site, therefore permission by the decision maker and local government is not required.	Threat Reduction	Prevent bushfire ignition and/or severity by controlling the fuel.	Bushfire Risk Assessment and Management Report	Required and will form part of the relevant responsibilities established in Section 6.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	N/A		
2	It is required that all fine fuels are removed or maintained below 2t/ha within the APZ.	Threat Reduction	Prevent bushfire ignition and/or severity by controlling the fuel.	Bushfire Risk Assessment and Management Report	Required and will form part of the relevant responsibilities established in Section 6.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	N/A		

3	Operating procedures have not yet been prepared. No ongoing works are proposed which could ignite a bushfire, except during an accident or component failure. It is advised that any hot/hazardous works are not undertaken during a Total Fire Ban or on a day with a Fire Danger Rating of Extreme or Catastrophic or under a Local Govt imposed Harvest, Vehicle movement and hot works ban.	Threat Reduction	Prevent bushfire ignition by controlling heat energy source and fuel interactions	Bushfire Risk Assessment and Management Report	Recommended only. Future inclusion in relevant responsibilities established in Section 6 will be dependent on the planning decision maker establishing a condition of approval.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	N/A		
4	BESS units and associated infrastructure are comprised of metal exterior. Electrical cabling to and from the BESS units and associated infrastructure are underground, and any exposed cables can be shielded by non-combustible material.	Threat Reduction	Prevent bushfire ignition by controlling heat energy source and fuel interactions	Bushfire Risk Assessment and Management Report	Recommended only. Future inclusion in relevant responsibilities established in Section 6 will be dependent on the planning decision maker establishing a condition of approval.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	N/A		
5	Fire within the facility (infrastructure, batteries or stored equipment) ignited by site operation/accident/failure may ignite vegetation. The 10kW/m2 APZ to be applied around the infrastructure is considered appropriate in reducing the risk of igniting a bushfire. The removal of consequential fire hazards within the APZ minimises the potential for spread of fire beyond the asset.	Threat Reduction	Prevent bushfire ignition by controlling heat energy source and fuel interactions	Bushfire Risk Assessment and Management Report	Required and will form part of the relevant responsibilities established in Section 6.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		

		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	N/A		
6	An APZ is to be established around electrical components and infrastructure. This APZ will ensure exposure to the bushfire hazard threat of radiant heat will be limited to a maximum radiant heat flux of 10 kW/m2 (calculated with an assumed flame temperature of 1090K) by providing the required separation distances from the bushfire hazard. The 10m portion of the APZ immediately around BESS infrastructure must be entirely and permanently non-vegetated (sealed, compacted limestone, gravel, mineral earth etc). A BAL-29 APZ is required for all Class 1-10 buildings onsite. It is possible to locate the buildings within the 10kW/m2 APZ applied to BESS infrastructure such that additional vegetation clearing is not required.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Required and will form part of the relevant responsibilities established in Section 6.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	Separation from Bushfire Threats		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	N/A		
7	All non-structural combustible materials are to be removed within 10m of assets. This includes but is not limited to; waste, leaf litter, machinery, grasses, vehicles, fuel, furniture, and timber. When storage of flammable items or materials are stored on site temporarily (for maintenance etc), separation distances must be complied with. This requirement is to be included in the Site Operating Procedures document.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Required and will form part of the relevant responsibilities established in Section 6.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	Separation from Bushfire Threats		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	N/A		
8	Ensure all subfloor spaces are sealed or enclosed with non-combustible solid material or ember screening	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Required and will form part of the relevant
		Exposure Reduction - Persons	N/A		

	mesh (corrosion-resistant steel, bronze, or aluminium with an aperture <2mm).	Exposure Reduction – Buildings/Structures	N/A		responsibilities established in Section 6.
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	Applies Design and Construction (Materials) to Improve Resilience to Bushfire Threats		
9	Exposed electrical cabling to be shielded from radiant heat and consequential fire by burying underground or shielding with non-combustible material – common electrical cabling reaches its critical point at >10kWm2. Exposed plumbing (poly pipe) is to be buried or shielded with non-combustible material – maximum exposure 120 degrees Celsius.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Recommended only. Future inclusion in relevant responsibilities established in Section 6 will be dependent on the planning decision maker establishing a condition of approval.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	Shielding from Bushfire Threats		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	N/A		
10	The site Emergency Management Plan (document title pending), is to include responses to bushfire emergencies. The immediately procedure is to evacuate in the appropriate direction away from the fire, and inform DFES Comcen of the status of the BESS facility.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Required and will form part of the relevant responsibilities established in Section 6.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	Provision of Bushfire Emergency Information and Education		
		Vulnerability Reduction – Buildings/Structures	N/A		
11	The development is proposed to be unstaffed. It is recommended that the staff member managing emergency procedures has training in general	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Recommended only. Future inclusion in relevant
		Exposure Reduction - Persons	N/A		

	bushfire emergency procedures, and has specific knowledge of the site procedures in response to bushfire. This staff member should be easily contactable.	Exposure Reduction – Buildings/Structures	N/A		responsibilities established in Section 6 will be dependent on the planning decision maker establishing a condition of approval.
		Vulnerability Reduction - Persons	Provision of Bushfire Emergency Information and Education		
		Vulnerability Reduction – Buildings/Structures	N/A		
12	It is recommended that the Merredin Volunteer Fire and Rescue Service are to be invited to inspect and familiarise with the site. Provide information in site fire response procedures. This invitation may be annual or ad-hoc.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Recommended only. Future inclusion in relevant responsibilities established in Section 6 will be dependent on the planning decision maker establishing a condition of approval.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	Establish/Improve Firefighting Capability		
13	Class 1-10 buildings: The construction of proposed structures is currently unknown. They will likely be primarily masonry, steel, aluminium and cement sheeting. It is recommended non-combustible elements are included where practical.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Recommended only. Future inclusion in relevant responsibilities established in Section 6 will be dependent on the planning decision maker establishing a condition of approval.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	Applies Design and Construction (Materials) to Improve Resilience to Bushfire Threats		
14	BESS cabinets and infrastructure: Use non-combustible or products with high heat ratings to assist with maintaining their operability.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Recommended only. Future inclusion in relevant
		Exposure Reduction - Persons	N/A		

		Exposure Reduction – Buildings/Structures	N/A		responsibilities established in Section 6 will be dependent on the planning decision maker establishing a condition of approval.
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	Applies Design and Construction (Materials) to Improve Resilience to Bushfire Threats		
15	Where the electrical cabling contacts the ground or any arrangement of associated structures creates a 'pocket' for accumulation of debris, this should be rectified by design or filling with non-combustible material such as mineral earth. Consideration should be given to making the arrangement self-cleaning through wind action to the greatest extent possible. These measures will reduce accumulation and/or make the management (clearing) of accumulated debris easier. E.g. cable raking to be ≥100mm above ground.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Recommended only. Future inclusion in relevant responsibilities established in Section 6 will be dependent on the planning decision maker establishing a condition of approval.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	Applies Design and Construction (Materials) to Improve Resilience to Bushfire Threats		
16	All Class 1-10 buildings (including non-habitable structures) must have ember screening/sealants installed on any gaps and penetrations.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Required and will form part of the relevant responsibilities established in Section 6.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	Applies Design and Construction (Materials) to Improve Resilience to Bushfire Threats		
17		Threat Reduction	N/A		

	The manufacturer or appropriate engineers should be contacted to enquire if it is possible to apply ember screening to intake/exhaust vents and other paths of entry to the interior cavity or accessing any combustible elements of BESS cabinets. This ember screening would be applicable to the exterior of the battery cabinet, not internal components. The intention is to prevent both ember ingress and debris accumulation. Ember screening mesh is corrosion-resistant steel, bronze, or aluminium with an aperture <2mm.	Exposure Reduction - Persons	N/A	Bushfire Risk Assessment and Management Report	Recommended only. Future inclusion in relevant responsibilities established in Section 6 will be dependent on the planning decision maker establishing a condition of approval.
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	Applies Design and Construction (Materials) to Improve Resilience to Bushfire Threats		
18	Any security fences or other potential fuel loads should be constructed using non-combustible material.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Recommended only. Future inclusion in relevant responsibilities established in Section 6 will be dependent on the planning decision maker establishing a condition of approval.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	Applies Design and Construction (Materials) to Improve Resilience to Bushfire Threats		
19	The following requirements apply to the firefighting water supply. The specifications will be confirmed at the detailed design stage. <u>Access</u> • Firefighting water access points (hydrants, hard suction, or drafting) must be clearly identifiable, visible from internal roads, and unobstructed. • The water tank(s) must be located at the vehicle access point to the development (northern entry gate).	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Required and will form part of the relevant responsibilities established in Section 6.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	Establish/Improve Firefighting Capability		

	• An all-weather hardstand turnaround area meeting the requirements of the Guidelines for Planning in Bushfire Prone Areas v1.4 (Explanatory Note E3.3) must be provided within 4 metres of both the static water storage tank(s) and any independent hard suction points (hydrants). • Site Operating Procedures must include that access routes must be unobstructed at all times. <u>Siting</u> • The water tank(s) must be positioned >10m from BESS cabinets and associated infrastructure. • The water tank(s) should apply a BAL-29 APZ at a minimum. It is possible to locate the tank within the 10kW/m2 APZ applied to BESS infrastructure such that additional vegetation clearing is not required. <u>Construction</u> • The static firefighting water supply must be calculated per AS 2419. Based on the submitted layout the required supply will be 288,000L. This water supply is intended to address bushfire and non-bushfire emergencies. • The static water storage tank(s) must be an above-ground water tank constructed of concrete or steel. • An external water level indicator must be installed on static water storage tank(s) and be visible from internal roads and the adjoining turnaround area. • Signage indicating 'FIRE WATER' and the tank capacity must be fixed to each tank.				

	• The hard-suction point must be protected from mechanical damage (eg. bollards) where vehicle contact is possible. • Couplings at hard suction points are required to be 125mm Storz fittings (*Guidelines* v1.4 s2.2.2.1). DFES Built Environment and the Merredin Volunteer Fire and Rescue Service should be contacted for input on appropriate couplings and adaptors.				
20	The BESS units have active monitoring and electrical fault safety devices which ensure the units only remain operational within their intended operating environment, with an automated shut-down system. It is recommended that automatic fire suppression systems are installed and maintained, as appropriate to the BESS details and recommended by the manufacturer.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Recommended only. Future inclusion in relevant responsibilities established in Section 6 will be dependent on the planning decision maker establishing a condition of approval.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	Establish/Improve Firefighting Capability		
21	Operating and maintenance procedures are to be developed to ensure regular maintenance of firefighting supply and infrastructure.	Threat Reduction	N/A	Bushfire Risk Assessment and Management Report	Required and will form part of the relevant responsibilities established in Section 6.
		Exposure Reduction - Persons	N/A		
		Exposure Reduction – Buildings/Structures	N/A		
		Vulnerability Reduction - Persons	N/A		
		Vulnerability Reduction – Buildings/Structures	Ensure Effectiveness Of Applied Protection Measures is Maintained		

6 BUSHFIRE PROTECTION MEASURES - RESPONSIBILITY FOR IMPLEMENTATION CHECKLIST

6.1 Developer / Landowner Responsibilities – Prior to Building and Operation

DEVELOPER/LANDOWNER RESPONSIBILITIES – PRIOR TO BUILDING AND OPERATION	
No.	Implementation Actions
1	Prior to relevant building work, inform the builder of the existence of this approved Bushfire Management Plan (BMP). The plan identifies that the development site is within a designated bushfire prone area and states the indicative (or determined) BAL rating(s) that may (or will) be applied to buildings/structures. A BAL assessment report may be required to confirm determined ratings and will be required when ratings are indicative. BAL certificates will need to be issued to accompany building applications. The BMP may also establish, as an additional bushfire protection measure, that construction requirements to be applied will be those corresponding to a specified higher BAL rating. Compliance with the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), will require certain bushfire resistant construction requirements be applied to residential buildings in bushfire prone areas (i.e., Class 1, 2 and 3 and associated Class 10a buildings and decks). Other classes of buildings may also be required to comply with these construction when established by the relevant authority or if identified as an additional bushfire protection measure within the BMP. The deemed to satisfy solutions that will meet the relevant bushfire performance requirements are found in AS 3959 – Construction of Building in Bushfire Prone Areas (as amended) and the NASH Standard - Steel Framed Construction in Bushfire Areas (as amended).
2	Building design and construction is to implement the bushfire protection measures that have been established within Section 5.7 of this BMP as measures additional to those established by the acceptable solutions.
3	Prior to occupancy/operation establish the 'Required' Asset Protection Zone (APZ) around habitable buildings (and other structures as required) to satisfy: • The minimum required dimensions established in Appendix B1; and • The standards established by the Guidelines DPLH, 2021 v1.4, Schedule 1, or as varied by the local government through their annually issued firebreak / hazard reduction notice when the variations have been endorsed by the WAPC and DFES as per s4.5.3 of the Guidelines. If native vegetation is required to be modified or removed, ensure that approval has been received from the relevant authority (refer to the applicable local government for advice).
4	Prior to occupancy, construct the private driveways and battle-axe legs to comply with the technical requirements referenced in the BMP.
5	Prior to occupancy, install the required firefighting static water supply to comply with the technical requirements stated in the BMP.
6	For the 'high risk land use' there is an outstanding obligation, created by Guidelines and consequently this Bushfire Management Plan, for a 'Bushfire Risk Assessment and Management Report' to be produced. Additional protection measures that have been identified in the Report, are to be incorporated into the operation's site emergency plan (produced by the operator to address all potential emergencies).

6.2 Landowner / Occupier Responsibilities – Ongoing Management

LANDOWNER/OCCUPIER – ONGOING MANAGEMENT	
No.	Management Actions
1	Maintain the 'Required' Asset Protection Zone (APZ) around habitable buildings (and other structures as required) to satisfy: • The minimum required dimensions established in Appendix B1; and • The standards established by the Guidelines DPLH, 2021 v1.4, Schedule 1, or as varied by the local government through their annually issued firebreak / hazard reduction notice when the variations have been endorsed by the WAPC and DFES as per s4.5.3 of the Guidelines.
2	Comply with the Shire of Merredin Firebreak and Burning Notice issued under s33 of the Bush Fires Act 1954. Check the notice annually for any changes.
3	Maintain vehicular access routes within the lot to comply with the technical requirements referenced in the BMP and the relevant local government's annual firebreak / hazard reduction notice.
4	Maintain the 288,000L static firefighting water supply tank and associated pipes/fittings/pump and vehicle hardstand in good working condition.
5	Ensure that builders engaged to construct dwellings/additions and/or other relevant structures on the lot, are aware of the existence of this approved Bushfire Management Plan (BMP). The plan identifies that the development site is within a designated bushfire prone area and states the indicative (or determined) BAL rating(s) that may (or will) be applied to buildings/structures. A BAL assessment report may be required to confirm determined ratings and will be required when ratings are indicative. BAL certificates will need to be issued to accompany building applications. Compliance with the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), will require certain bushfire resistant construction requirements be applied to residential buildings in bushfire prone areas (i.e., Class 1, 2 and 3 and associated Class 10a buildings and decks). The deemed to satisfy solutions that will meet the relevant bushfire performance requirements are found in AS 3959 – Construction of Building in Bushfire Prone Areas (as amended) and the NASH Standard - Steel Framed Construction in Bushfire Areas (as amended). As an additional bushfire protection measure, other classes of buildings may also be required to comply with these construction requirements when established by the relevant authority or if identified as an additional bushfire protection measure within the BMP. The BMP may also establish that construction requirements to be applied will be those corresponding to a specified higher BAL rating. When applicable, these requirements will be identified in Section 5.7.
6	Ensure all future buildings the landowner has responsibility for, are designed and constructed in full compliance with: • The bushfire resistant construction requirements of the Building Code of Australia (Volumes 1 and 2 of the National Construction Code), as established by the Building Regulations 2012 (WA Building Act 2011); and • Any additional bushfire protection measures this Bushfire Management Plan has established are to be implemented.

7	Maintain the bushfire protection measures that have been established within Section 5.7 of this BMP as measures additional to those established by the acceptable solutions.
8	The bushfire specific content of the operation's site emergency plan must be reviewed annually, relevant information updated and ensure all bushfire related preparation procedures are carried out.

6.3 Local Government Responsibilities – Ongoing Management

LOCAL GOVERNMENT – ONGOING MANAGEMENT	
No.	Management Actions
1	Monitor landowner compliance with the annual Shire of Merredin Firebreak and Burning Notice and with any bushfire protection measures that are: • Established by this BMP; • Are required to be maintained by the landowner/occupier; and • Are relevant to local government operations.
2	To be aware of the potential consequences of any significant changes in the local government's management of land, of which they have vested control (including re-vegetation), that could have an adverse impact on the determined BAL ratings that apply to adjacent existing or future buildings and where: • The determined BAL ratings have been established by an existing BMP or a BAL Assessment; and • The BAL has been correctly determined with appropriate consideration of what might reasonably be expected to potentially change in the future with regards to the classification of the vegetation being altered and/or management of the relevant area of vegetation.

APPENDIX A: DETAILED BAL ASSESSMENT DATA AND SUPPORTING INFORMATION

A1: BAL Assessment Inputs Common to the Method 1 and Method 2 Procedures

A1.1: FIRE DANGER INDICES (FDI/FDI/GFDI)

When using Method 1 the relevant FDI value required to be applied for each state and region is established by AS 3959:2018, Table 2.1. Each FDI value applied in Tables 2.4 – 2.7 represents both the Forest Fire Danger Index (FFDI) and a deemed equivalent for the Grassland Fire Danger Index (GFDI), as per Table B2 in Appendix B. When using Method 2, the relevant FFDI and GFDI are applied.

The values may be able to be refined within a jurisdiction, where sufficient climatological data is available and in consultation with the relevant authority.

Relevant Jurisdiction:	WA	Region:	Whole State	Method 1	Applied FDI:	80
				Method 2	Applied FFDI:	N/A
					Applied GFDI:	N/A

A1.2: VEGETATION ASSESSMENT AND CLASSIFICATION

Vegetation Types and Classification

In accordance with AS 3959:2018 clauses 2.2.3 and C2.2.3.1, all vegetation types within 100 metres of the 'site' (defined as "the part of the allotment of land on which a building stands or is to be erected"), are identified and classified. Any vegetation more than 100 metres from the site that has influenced the classification of vegetation within 100 metres of the site, is identified and noted. The maximum excess distance is established by AS 3959: 2018 cl 2.2.3.2 and is an additional 100 metres.

Classification is also guided by the Visual Guide for Bushfire Risk Assessment in WA (WA Department of Planning February 2016) and any relevant FPA Australia practice notes.

Modified Vegetation

The vegetation types have been assessed as they will be in their natural mature states, rather than what might be observed on the day. Vegetation destroyed or damaged by a bushfire or other natural disaster has been assessed on its expected re-generated mature state. Modified areas of vegetation can be excluded from classification if they consist of low threat vegetation or vegetation managed in a minimal fuel condition, satisfying AS 3959:2018 s2.2.3.2(f), and there is sufficient justification to reasonable expect that this modified state will exist in perpetuity.

The Influence of Ground Slope

Where significant variation in effective slope exists under a consistent vegetation type, these will be delineated as separate vegetation areas to account for the difference in potential bushfire behaviour, in accordance with AS 3959:2018 clauses 2.2.5 and C2.2.5.

THE INFLUENCE OF VEGETATION GREATER THAN 100 METRES FROM THE SUBJECT SITE	
Vegetation area(s) within 100m of the site whose classification has been influenced by the existence of bushfire prone vegetation from 100m – 200m from the site:	None
Assessment Statement:	No vegetation types exist close enough, or to a sufficient extent, within the relevant area to influence classification of vegetation within 100 metres of the subject site.

VEGETATION AREA 1						
Classification	G. GRASSLAND					
Types Identified	Dense sown pasture G-25 Sown pasture G-26					
Effective Slope	Measured	d/slope 1 degrees	Applied Range (Method 1)	Downslope >0-5 degrees		
Foliage Cover (all layers)	N/A	Shrub/Heath Height	N/A	Tree Height	N/A	
Additional Justification:	Sown pasture less than 30 centimetres in height. No trees or other overstorey cover.					
Post Development Assumptions:	Vegetation is classified as worst-case scenario.					



PHOTO ID: 1



PHOTO ID: 2



PHOTO ID: 3



PHOTO ID: 4

VEGETATION AREA 2						
Classification	G. GRASSLAND					
Types Identified	Dense sown pasture G-25 Sown pasture G-26					
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees		
Foliage Cover (all layers)	N/A	Shrub/Heath Height	N/A	Tree Height	N/A	
Additional Justification:	Sown pasture less than 30 centimetres in height. No trees or other overstorey cover.					
Post Development Assumptions:	Vegetation is classified as worst-case scenario.					



PHOTO ID: 5



PHOTO ID: 6

VEGETATION AREA 3						
Classification	G. GRASSLAND					
Types Identified	Tussock grassland G-22					
Effective Slope	Measured	flat 0 degrees	Applied Range (Method 1)	Upslope or flat 0 degrees		
Foliage Cover (all layers)	N/A	Shrub/Heath Height	N/A	Tree Height	Up to 30m	
Additional Justification:	Unmanaged grasses approximately 1 metre in height. Scattered trees up to 10m in height for which canopy cover is <10% of the total area.					
Post Development Assumptions:	Vegetation is classified as worst-case scenario.					



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VEGETATION AREA 4	
Exclusion Clause	2.2.3.2 (e) non-vegetated area
Additional Justification:	Non-vegetated areas include a sealed public road, sealed and sand private roads/driveways, dam, and power station.
Post Development Assumptions:	Non vegetated areas are reasonably expected to remain in a low threat state in perpetuity.



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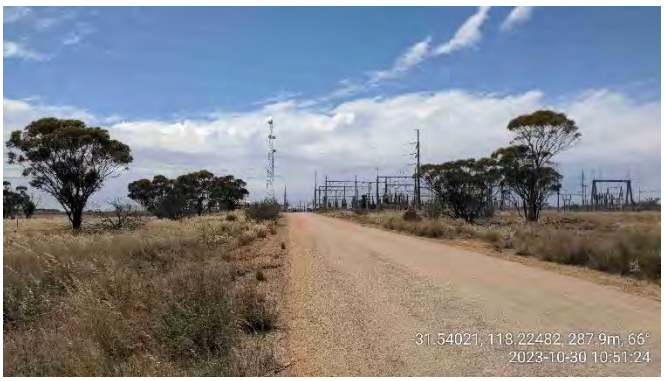

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A1.3: EFFECTIVE SLOPE

Measuring

Effective slope refers to the slope "under the classified vegetation which most significantly influences bushfire behaviour (AS 3959:2018, clause B4, CB4). It is not the average slope.

It is described as upslope, flat or downslope when viewed from the exposed element (e.g., building) looking towards the vegetation – and measured in degrees. Ground slope has a direct and significant influence on a bushfire's rate of spread and intensity, which increases when travelling up a slope.

The slope under the vegetation in closest proximity to the exposed element(s), over the distance that will most likely carry the entire depth of the flaming front, will be a significant consideration in the determination of the effective slope. This distance is determined as a function of the potential quasi-steady rate of spread and expected residence time (i.e., the flaming combustion period at a single point on the ground), of a bushfire in the specific vegetation type/landscape scenario.

Slope Variation Within Areas of Vegetation

Where a significant variation in effective slope exists under a consistent vegetation type, these will be delineated as separate vegetation areas to account for the difference in potential bushfire behaviour, in accordance with AS 3959:2018 clauses 2.2.5 and C2.2.5.

Slope Variation Due to Multiple Development Sites

When the effective slope, under a given area of bushfire prone vegetation, will vary significantly relative to multiple proposed development sites (exposed elements), then the effective slopes corresponding to each of the different locations, are separately identified.

The relevant (worst case) effective slope is determined in the direction corresponding to the potential directions of fire spread towards the subject building(s).

Differences in Application of Effective Slope - AS 3959:2018 Method 1 versus Method 2 Procedures

The Method 1 procedure provides five different slope ranges from flat (including all upslopes) to 20 degrees downslope to define the effective slope and bushfire behaviour model calculations apply the highest value in each range (i.e., 0^0, 5^0, 10^0, 15^0 or 20^0).

The Method 2 procedure requires an actual slope (up or down in degrees) to be determined. AS 3959:2018, clause B1 limits the effective slope that can be applied to 30 degrees downslope and 15 degrees upslope. Where any upslope is greater than 15 degrees, then 15 degrees is to be used.

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

The effective slopes determined from the site assessment are recorded in Table 3.2 of this Bushfire Management Plan. When their derivation requires additional explanation and justification, this is provided below.

None required.

A1.4: SEPARATION DISTANCE

Measuring

The separation distance is the distance in the horizontal plane between the receiver (building/structure or area of land being considered) and the edge of the classified vegetation (AS 3959:2018, clause 2.2.4)

The relevant parts of a building/structure from which the measurement is taken is the nearest part of an external wall or where a wall does not exist, the supporting posts or columns. Certain parts of buildings are excluded including eaves and roof overhangs.

The edge of the vegetation, for forests and woodlands, will be determined by the unmanaged understorey rather than either the canopy (drip line) or the trunk (AS 3959:2018, clause C2.2.5).

Measured Separation Distance as a Calculation Input

If a separation distance can be measured because the location of the building/structure relative to the edge of the relevant classified vegetation is known, this figure can be entered into the BAL calculation. The result is a determined BAL rating.

Assumed Separation Distance as a Calculation Input

When the building/structure location within the lot is not known, an assumed building location may be applied that would establish the closest positioning of the building/structure relative to the relevant area of vegetation.

The assumed location would be based on a factor that puts a restriction on a building location such as:

- An established setback from the boundary of a lot, such as a residential design code setback or a restrictive covenant; or
- Within an established building envelope.

The resultant BAL rating would be indicative and require later confirmation (via a Compliance Report) of the building/structure actual location relative to the vegetation to establish the determined BAL rating.

Separation Distance as a Calculation Output

With the necessary site specific assessment inputs and using the AS 3959:2018 bushfire modelling equations, the range of separation distances that will correspond to each BAL rating (each of which represents a range of radiant heat flux), can be calculated. This has application for bushfire planning scenarios such as:

- When the separation distance cannot be measured because the exact location of the exposed element (i.e., the building, structure or area), relative to classified vegetation, is yet to be determined.

  In this scenario, the required information is the identification of building locations onsite that will correspond to each BAL rating. That is, indicative BAL ratings can be derived for a variety of potential building/structure locations; or

- The separation distance is known for a given building, structure or area (and a determined BAL rating can be derived), but additional information is required regarding the exposure levels (to the transfer of radiant heat from a bushfire), of buildings or persons, that will exist at different points within the subject site.

The calculated range of separation distances corresponding to each BAL rating can be presented in a table and/or illustrated as a BAL Contour Map – whichever is determined to best fit the purpose of the assessment.

For additional information refer to the information boxes in Section 3 'Bushfire Attack Levels (BAL) - Understanding the Results and Section 3.2. 'Interpretation of the BAL Contour Map'.

SITE ASSESSMENT DETAILS - EXPLANATION & JUSTIFICATION

For the subject development/use the applicable separation distances values are derived from calculations applying the assessed site data. They are an output value, not an input value and therefore are not presented or justified in this appendix.

The derived values are presented in Section 3, Table 3.1 and illustrated as a BAL contour map in Figure 3.2.

A2: BAL Calculator – Copy of Input/Output Values

Method 2 principles have been used to determine Recommended APZ dimensions for the proposed infrastructure, corresponding to radiant heat flux of 10 kW/m^2 for Grassland vegetation types. Note that 1090K flame temperature was used because the development is not a vulnerable land use.

DETERMINING 10 kW/m^2 SEPARATION DISTANCES

Vegetation Classification	G. GRASSLAND	Slope: Flat 0°

FLAMESOL FPA AUSTRALIA

Calculated November 6, 2023, 2:52 pm (MDc v.4.9)

Grassland 0°

Minimum Distance Calculator - AS3959-2018 (Method 2)

Inputs		Outputs	
Grassland Fire Danger Index	110	Rate of spread	14.3 km/h
Vegetation classification	Grassland	Flame length	6.87 m
Understorey fuel load	4.5 t/ha	Flame angle	54 °, 64 °, 73 °, 78 °, 80 ° & 85 °
Total fuel load	4.5 t/ha	Elevation of receiver	2.78 m, 3.08 m, 3.28 m, 3.36 m, 3.38 m & 3.42 m
Vegetation height	n/a	Fire intensity	33,247 kW/m
Effective slope	0 °	Transmissivity	0.887, 0.877, 0.861, 0.841, 0.829 & 0.755
Site slope	0 °	Viewfactor	0.5823, 0.4291, 0.29, 0.1946, 0.158 & 0.0434
Flame width	100 m	Minimum distance to < 40 kW/m²	5.8 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	7.9 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	11.7 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m²	17.3 m
		Minimum distance to < 10 kW/m²	21.2 m

Rate of Spread - Noble et al. 1980

Flame length - Purton, 1982

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Required vegetation separation distance:	21.2 metres

Vegetation Classification	G. GRASSLAND	Slope: Downslope 1°



Calculated November 6, 2023, 2:53 pm (MDc v.4.9)

Grassland 1°

Minimum Distance Calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Grassland Fire Danger Index	110	Rate of spread	15.32 km/h
Vegetation classification	Grassland	Flame length	7.11 m
Understorey fuel load	4.5 t/ha	Flame angle	55 °, 65 °, 74 °, 79 °, 81 ° & 86 °
Total fuel load	4.5 t/ha	Elevation of receiver	2.8 m, 3.08 m, 3.2 m, 3.17 m, 3.13 m & 2.48 m
Vegetation height	n/a	Fire intensity	35,622 kW/m
Effective slope	1 °	Transmissivity	0.887, 0.876, 0.859, 0.839, 0.827 & 0.754
Site slope	1 °	Viewfactor	0.5878, 0.4304, 0.2888, 0.195, 0.1583 & 0.0434
Flame width	100 m	Minimum distance to < 40 kW/m²	5.9 m
Windspeed	n/a	Minimum distance to < 29 kW/m²	8.1 m
Heat of combustion	18,600 kJ/kg	Minimum distance to < 19 kW/m²	12.1 m
Flame temperature	1,090 K	Minimum distance to < 12.5 kW/m²	17.8 m
		Minimum distance to < 10 kW/m²	21.8 m

Rate of Spread - Noble et al. 1980

Flame length - Purton, 1982

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Required vegetation separation distance: 21.8 metres

APPENDIX B: ADVICE - ONSITE VEGETATION MANAGEMENT - THE APZ

THE ASSET PROTECTION ZONE (APZ) - DESCRIPTION

This is an area surrounding a habitable building containing low threat fire fuel fuels (including vegetation), or vegetation managed in a minimal fuel condition, no fire fuels or any combination. The primary objectives include:

- To ensure the building is sufficiently separated from the bushfire hazard to limit the impact of its direct attack mechanisms. That is, the dimensions of the APZ will, for most site scenarios, remove the potential for direct flame contact on the building, reduce the level of radiant heat to which the building is exposed and ensure some reduction in the level of ember attack (with the level of reduction being dependent on the vegetation types of present);
- To ensure any vegetation retained within the APZ is low threat and/or is managed in a minimum fuel condition and prevents surface fire spreading to the building;
- To ensure other combustible materials that can result in consequential fire (typically ignited by embers) within both the APZ and parts of the building, are eliminated, minimised and/or appropriately located or protected. (Note: The explanatory notes in the Guidelines provide some guidance for achieving this objective and other sources are available. Research shows that consequential fire, ignited by embers, is the primary cause of building loss in past bushfire events); and
- To provide a defendable space for firefighting activities.

B1: Asset Protection Zone (APZ) Dimensions

APZ DIMENSIONS – DIFFERENCES IN REQUIREMENTS FOR PLANNING ASSESSMENTS COMPARED TO IMPLEMENTATION

THE 'PLANNING BAL-29' APZ DIMENSIONS

The 'Planning BAL-29' APZ is not necessarily the size of the APZ that must be physically *implemented and maintained by a landowner. Rather, its purpose is to identify if an acceptable solution for planning approval can be met i.e., can a specified minimum separation distance from bushfire prone vegetation exist.*

An assessment against the Bushfire Protection Criteria is conducted for planning approval purposes. To satisfy 'A2.1: Asset Protection Zone', it must be demonstrated that certain minimum separation distances between the relevant building/structure and different classes of bushfire prone vegetation, either exist or can be created and will remain in perpetuity. These minimum separation distances determine the 'Planning BAL-29' APZ dimensions.

Dimensions: The minimum dimensions are those that will ensure the potential radiant heat impact on subject buildings does not exceed 29 kW/m^2. These dimensions will vary dependent on the vegetation classification, the slope of the land they are growing on and certain other factors specific to the subject site.

> *Note: For certain purposes associated with vulnerable land uses, the 'Planning BAL-29' APZ may be replaced with dimensions corresponding to radiant heat impact levels of 10 kW/m^2 and 2 kW/m^2 and calculated using 1200K flame temperature.*

Location: The identified 'Planning BAL-29' APZ must not extend past lot boundaries onto land the landowner has no control over either now or potentially at some point in the future. Limited exceptions include:

- When adjoining land is not vegetated (e.g., built out, roads, carparks, drainage, rock, water body etc.);
- When adjoining land currently or, will in the short term, contain low threat vegetation and or vegetation managed in a minimal fuel condition as per AS 3959:2018 cl. 2.2.3.2. It must be reasonable (justifiable) to expect this low threat vegetation and/or level of management will continue to exist or be conducted in perpetuity and require no action from the owner of the subject lot.

  Such areas of land include formally managed areas of vegetation (e.g., public open space / recreation areas / services installed in a common section of land). For specific scenarios, evidence of the formal

commitment to manage these areas to a certain standard may be required and would be included in the BMP.

These areas of land can also be part of the required APZ on a neighbouring lot for which the owner of that lot has a recognised responsibility to establish and maintain; and

- When there is a formalised and enforceable capability and responsibility created for the subject lot owner, or any other third party, to manage vegetation on land they do not own in perpetuity. This would be rare, and evidence of the formal authority would be included in the BMP.

The bushfire consultant's 'Supporting Assessment Detail', that is presented in the assessment against the acceptable solution A2.1, will identify and justify how any adjoining land within the 'Planning BAL-29 APZ will meet the APZ standards. Or otherwise, explain how this condition cannot be met.

THE 'BAL RATING' APZ DIMENSIONS

The applicable BAL rating will have been stated in the BAL Assessment Data section of the BAL Assessment Report or BMP (as relevant). The BAL rating can be assessed as 'determined' or 'indicative' or be 'conditional', dependent of the specific conditions associated with the site and the stage of assessment or planning. It is the eventual assessment of the 'Determined' BAL that will establish both the BAL rating that is to apply and its corresponding 'BAL Rating' APZ dimensions.

Dimensions: The minimum dimensions of the 'BAL Rating' APZ to be established and maintained will be those that correspond to the determined BAL rating for the subject building/structure that has accounted for surrounding vegetation types, the slope of the land they are growing on and certain other factors specific to the subject site and surrounding land.

Establishing the 'BAL Rating' APZ will ensure that the potential radiant heat exposure of the building/structure will be limited to the level that the applied construction requirements are designed to resist when that building/structure is required to be constructed to the standard corresponding to the Determined BAL.

> *Note: For certain purposes associated with vulnerable land uses, the 'BAL Rating' APZ dimensions may be replaced with dimensions corresponding to the specific radiant heat impact levels of 10 kW/m² and 2 kW/m² and calculated using 1200K flame temperature.*

Location: The same conditions will apply as for the 'Planning BAL-29' APZ.

THE 'LOCAL GOVERNMENT' APZ DIMENSIONS

Some Local Government's establish the dimensions of the APZ that must be established surrounding buildings in their annual Firebreak/Hazard Reduction Notice. Or for a specific site they may establish a maximum allowable dimension (typically that corresponding to BAL-29). When established, the landowner will need to be comply with these.

THE 'REQUIRED' APZ DIMENSIONS

This is the APZ that is to be established and maintained by the landowner within the subject lot and surrounding the subject building(s). It will be identified on the Property Bushfire Management Statement when it is required to be included in this Report/Plan.

Dimensions: The 'Required APZ' dimensions are the minimum (or maximum when relevant) distances away from the subject building(s) that the APZ must extend. These distances will not necessarily be the same all around the building(s). They can vary and are dependent on the different vegetation types (and their associated ground slope) that can exist around the building(s), and specific local government requirements. The dimensions to implement are determined by:

A. The 'BAL Rating APZ' of the subject building(s) when distances are greater than 'B' below (except when 'B' establishes a maximum distance); or

B. The 'Local Government' APZ' derived from the Firebreak/Hazard Reduction Notice when distances are greater than 'A' above, other than when a maximum distance is established, in which case this will apply; or

C. A combination of 'A' and 'B'.

Location: The same conditions will apply as for the 'Planning BAL-29' APZ.

B1.1: THE APZ DIMENSIONS REQUIRED TO BE IMPLEMENTED BY THE LANDOWNER

DETERMINATION OF **THE** 'REQUIRED' **APZ DIMENSIONS TO BE** IMPLEMENTED AND MAINTAINED BY LANDOWNER WITHIN THEIR LOT										
Relevant Buildings(s)	Vegetation Classification [Refer to Fig 3.1]		Minimum Required Separation Distances from Building to Vegetation (metres)							
			Established by the 'BAL Rating' APZ Dimension					Established by the "Local Government' APZ Dimension		The 'Required' APZ Dimensions [see note]
			Determined Radiant Heat Impact	Stated 'Indicative' or 'Conditional' BAL				Firebreak / Hazard Reduction Notice	Maximum Allowed	
	Area	Class		BAL-29	BAL-19	BAL-12.5	BAL-LOW			
BESS Cabinets and associated infrastructure	1	(G) Grassland	10 kW/m2	9-<14	14-<20	20-<50	>50	Rural Land: *'Install firebreaks to a width of twenty (20) metres around all buildings, hay sheds and fuel storage areas on the land'*	N/A	22
	2	(G) Grassland		8-<12	12-<17	17-<50	>50			22
	3	(G) Grassland		8-<12	12-<17	17-<50	>50			22
	4	Excluded cl 2.2.3.2(e)		-	-	-	-			-
Substation	1	(G) Grassland	BAL-29	9-<14	14-<20	20-<50	>50			9
	2	(G) Grassland		8-<12	12-<17	17-<50	>50			8
	3	(G) Grassland		8-<12	12-<17	17-<50	>50			8
	4	Excluded cl 2.2.3.2(e)		-	-	-	-			-
Note: The 'Required' APZ Dimension corresponding to each area of vegetation is the greater of the 'BAL Rating' or the 'Firebreak/Hazard Reduction Notice' APZ dimensions - unless a local government maximum distance(s) is established as a result of their environmental assessment of the subject site. The area of the APZ will also be limited to the subject lot boundary unless otherwise justified in this Report/Plan. Final determination of the dimensions will require that any indicative or conditional BAL becomes a 'Determined' BAL.										
Comments: The Shire of Merredin Firebreak and Burning Notice suggests a 20m APZ around specific buildings that do not include the particular infrastructure within this report, therefore it is suggested to follow the recommendations and requirements outlined within this BMP.										

B2: The Standards for the APZ as Established by the Guidelines (DPLH, v1.4)

Within the Guidelines (source: https://www.wa.gov.au/government/document-collections/state-planning-policy-37-planning-bushfire-prone-areas), the management Standards are established by:

- Schedule 1: Standards for Asset Protection Zones (see extract below) established by the Guidelines; and
- The associated explanatory notes (Guidelines E2) that address (a) managing an asset protection zone (APZ) to a low threat state (b) landscaping and design of an asset protection zone and (c) plant flammability.

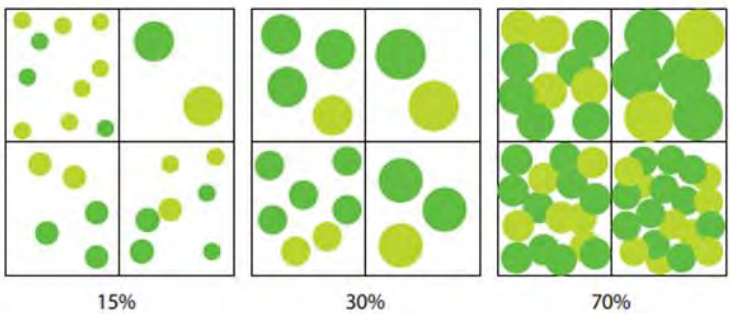


ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ.

Figure 19: Tree canopy cover – ranging from 15 to 70 per cent at maturity



Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	• Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

** Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes*

B3: The Standards for the APZ as Established by the Local Government

Refer to the firebreak / hazard reduction notice issued annually (under s33 of the Bushfires Act 1954) by the relevant local government. It may state Standards that vary from those established by the Guidelines and that have been endorsed by the WAPC and DFES as per Section 4.5.3 of the Guidelines.

A copy of the applicable notice is not included here as they are subject to being reviewed and modified prior to issuing each year. Refer to ratepayers notices and/or the local government's website for the current version.

B4: Vegetation and Areas Excluded from Classification - Ensure Continued Exclusion

AS 3959:2018 establishes the methodology for determining a bushfire attack level (BAL). The methodology includes the classification of the subject site's surrounding vegetation according to their 'type' and the application of the corresponding relevant bushfire behaviour models to determine the BAL.

Certain vegetation can be considered as low threat or managed in a minimal fuel condition and can be excluded from classification. Where this has occurred in assessing the site, the extract from AS3959:2018 below states the requirements that must continue to exist for the vegetation on those areas of land to be excluded from classification (including the size of the vegetation area if relevant to the assessment).

2.2.3.2 *Exclusions—Low threat vegetation and non-vegetated areas*

The following vegetation shall be excluded from a BAL assessment:

(a) Vegetation of any type that is more than 100 m from the site.

(b) Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified vegetation.

(c) Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other or of other areas of vegetation being classified vegetation.

(d) Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified vegetation.

(e) Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings and rocky outcrops.

(f) Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and windbreaks.

NOTES:

1 Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (recognizable as short-cropped grass for example, to a nominal height of 100 mm).

2 A windbreak is considered a single row of trees used as a screen or to reduce the effect of wind on the leeward side of the trees.

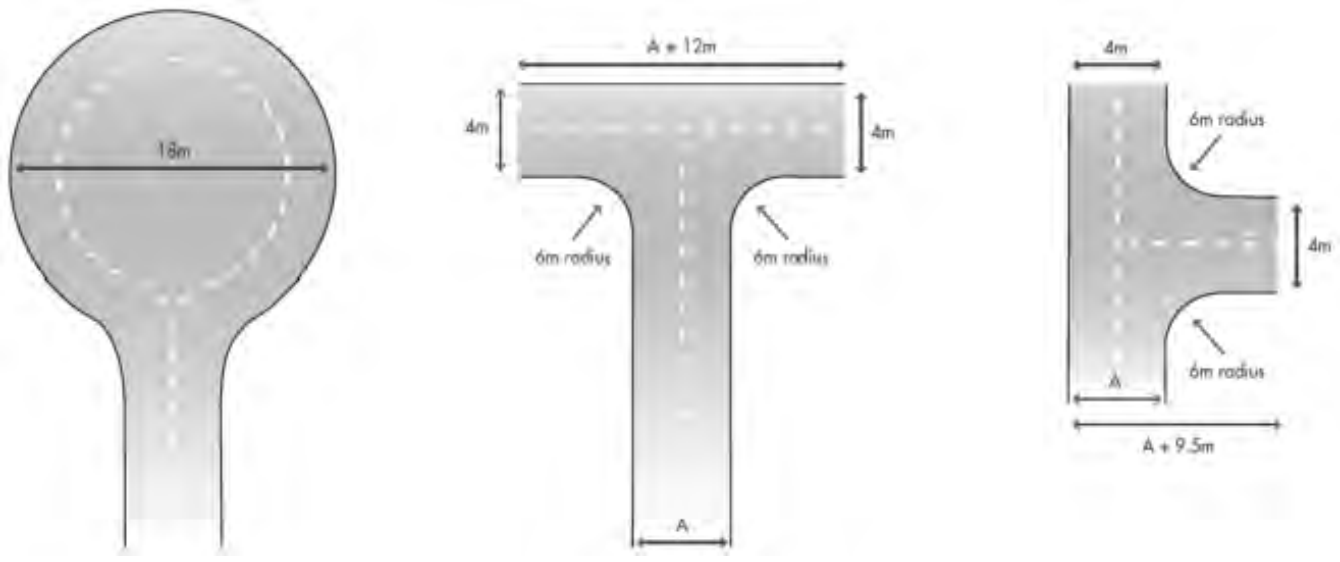
APPENDIX C: TECHNICAL REQUIREMENTS FOR VEHICULAR ACCESS

The design/layout requirements for access are established by the acceptable solutions of the Guidelines (DPLH, 2021 v1.4) Element 3 and vary dependent on the access component, the land use and the presence of 'vulnerable' persons. Consequently, the best reference source are the Guidelines. The technical requirements that are fixed for all components and uses are presented in this appendix.

GUIDELINES TABLE 6, EXPLANATORY NOTES E3.3 & E3.6 AND RELEVANT ACCEPTABLE SOLUTIONS

Technical Component	Vehicular Access Types / Components			
	Public Roads	Emergency Access Way [1]	Fire Service Access Route [1]	Battle-axe and Private Driveways [2]
Minimum trafficable surface (m)	In accordance with A3.1	6	6	4
Minimum Horizontal clearance (m)	N/A	6	6	6
Minimum Vertical clearance (m)	4.5			
Minimum weight capacity (t)	15			
Maximum Grade Unsealed Road [3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum Grade Sealed Road [3]		1:7 (14.3%)		
Maximum Average Grade Sealed Road		1:10 (10%)		
Minimum Inner Radius of Road Curves (m)		8.5		

Turnaround Area Dimensions for No-through Road, Battle-axe Legs and Private Driveways [4]



Passing Bay Requirements for Battle-axe leg and Private Driveway

When the access component length is greater than the stated maximum, passing bays are required every 200m with a minimum length of 20m and a minimum additional trafficable width of 2m (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum 6m).

Emergency Access Way – Additional Requirements

Provide a through connection to a public road, be no more than 500m in length, must be signposted and if gated, gates must be open the whole trafficable width and remain unlocked.

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

[3] Dips must have no more than a 1 in 8 (12.5% or 7.1 degree) entry and exit angle.

[4] The turnaround area should be within 30m of the main habitable building.

D1: Non-Reticulated Areas – Static Supply

For specified requirements, refer to the Guidelines Element 4: Water – Acceptable Solution A4.2 , Explanatory Notes E4 (that provide water supply establishment detail under the headings of water supply; independent water and power supply; strategic water supplies, alternative water sources and location of water tanks) and the technical requirements established by Schedule 2 (reproduced below).

SCHEDULE 2: WATER SUPPLY DEDICATED FOR BUSHFIRE FIREFIGHTING PURPOSES

2.1 Water supply requirements

Water dedicated for firefighting should be provided in accordance with Table 7 below, and be in addition to water required for drinking purposes.

Table 7: Water supply dedicated for bushfire firefighting purposes

PLANNING APPLICATION	NON-RETICULATED AREAS
Development application	10,000L per habitable building
Structure Plan / Subdivision: Creation of 1 additional lot	10,000L per lot
Structure Plan / Subdivision: Creation of 3 to 24 lots	10,000L tank per lot **or** 50,000L strategic water tank
Structure Plan / Subdivision: Creation of 25 lots or more	50,000L per 25 lots or part thereof Provided as a strategic water tank(s) or 10,000L tank per lot

2.2 Technical requirements

2.2.1 Construction and design

An above-ground tank and associated stand should be constructed of non-combustible material. The tank may need to comply with AS/NZS 3500.1:2018.

Below ground tanks should have a 200mm diameter access hole to allow tankers or emergency service vehicles to refill direct from the tank, with the outlet location clearly marked at the surface. The tank may need to comply with AS/NZS 3500.1:2018. An inspection opening may double as the access hole provided that the inspection opening meets the requirements of AS/NZS 3500.1:2018. If the tank is required under the BCA as part of fire hydrant installation, then the tank will also need to comply with AS 2419.

Where an outlet for an emergency service vehicle is provided, then an unobstructed, hardened ground surface is to be supplied within four metres of any water supply.

2.2.2 Pipes and fittings

All above-ground, exposed water supply pipes and fittings should be metal. Fittings should be located away from the source of bushfire attack and be in accordance with the applicable section below, unless otherwise specified by the local government.

2.2.2.1 Fittings for above-ground water tanks:

- Commercial land uses: 125mm Storz fitting; or
- Strategic water tanks: 50mm or 100mm (where applicable and adapters are available) male camlock coupling with full flow valve; or
- Standalone water tanks: 50mm male camlock coupling with full flow valve; or
- Combined water tanks: 50mm male camlock coupling with full flow valve or a domestic fitting, being a standard household tap that enables an occupant to access the water supply with domestic hoses or buckets for extinguishing minor fires.

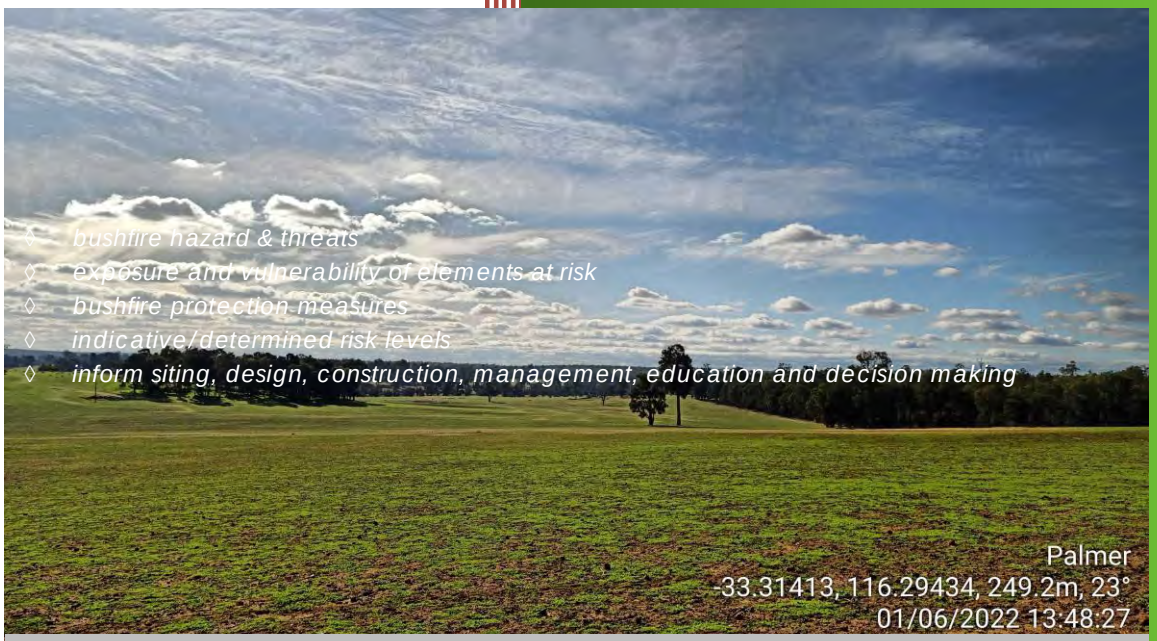
2.2.2.2 Remote outlets

In certain circumstances, it may be beneficial to have the outlet located away from the water supply. In such instances in which a remote outlet is to be used, the applicant should consult the local government and DFES on their proposal.

EXAMPLE CONSTRUCTION AND FITTINGS	
	
Strategic 47,000 Litre Concrete Tank & Protected Fittings	
	
10,000 Litre Concrete Tank	Storz and Camlock Couplings
	
Full Flow 50mm Ball Valve	Full Flow 50mm Gate Valve and Male Camlock

Merredin Battery Facility

Bushfire Risk Assessment & Management Report



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Limitations: The protection measures contained in this Bushfire Risk – Assessment and Management Report, are considered to be minimum requirements and they do not guarantee that buildings or infrastructure will not be damaged in a bushfire, persons injured, or fatalities occur either on the subject site or off the site while evacuating. This is substantially due to the unpredictable nature and behaviour of fire and fire weather conditions. Additionally, the correct implementation of the recommended protection measures will depend upon, among other things, the ongoing actions of the landowners and/or operators over which Bushfire Prone Planning has no control.

All surveys, forecasts, projections and recommendations made in this report associated with the proposed development are made in good faith based on information available to Bushfire Prone Planning at the time. All maps included herein are indicative in nature and are not to be used for accurate calculations.

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1 REPORT USE GUIDANCE - FOR MANAGERS & DECISION MAKERS

LOCATION OF KEY INFORMATION	
The applied risk assessment process as pre-requisite reading to assist with understanding the assessments and the presentation of the results.	Section 2 and Appendix 1
The assessed bushfire risk levels and the relative contribution of each primary factor contributing to that risk.	Section 3
The recommended additional bushfire protection measures and their implementation priority rating.	Section 4.1
Any Identified additional issues and advice provided for consideration by management.	Section 4.2

SECTION 5 - THE ASSESSMENT OF BUSHFIRE RISK

For the proposed Merredin Battery proposal, the risk assessment derives defined levels of risk associated with a bushfire event within the immediate and broader surrounding landscape, to the identified elements at risk (i.e., relevant classes of persons and property).

The adopted assessment approach applies a methodology that considers bushfire risk to be determined as a consequence of the interaction of three factors:

1. The bushfire hazard (which presents varying threats and threat levels);
2. The levels of exposure of each element at risk to those threats; and
3. The levels of vulnerability of each element at risk to those threats.

The assessment considers both the current level of risk (inherent), and the potential level of risk (residual) should proactive management be able to implement the recommended additional bushfire protection measures.

The assessment is largely qualitative in nature but incorporates quantitative processes and information when relevant and available. This results in the derivation of 'indicative' bushfire risk levels.

The assessment is conducted by a bushfire planning consultant with practical bushfire event management experience and relevant accreditation. An important objective is to present understandable and practical protection measures that are able to be justifiably applied by management.

SECTION 6 - THE ASSESSMENT OF BUSHFIRE RISK MANAGEMENT

Assessments are conducted that consider how well two defined pathways for implementing both the required and any additionally recommended bushfire protection measures, are being applied. Guidance for best practice application of these measures is provided. The two pathways are:

1. The application of 'informative' risk management mechanisms which include:
    a. The organised application and maintenance of all applicable bushfire protection measures through a range of operational documents, as relevant to a site and its use; and
    b. The development and application of advice to inform management's planning of future modifications and/or development of a site and its use. This is necessary where bushfire risk mitigation measures are necessary inputs to design and construction.
2. The application of 'regulatory' risk management mechanisms that are to be complied with. These include operating and construction regulations and standards, and relevant planning authority guidelines/standards.

*****

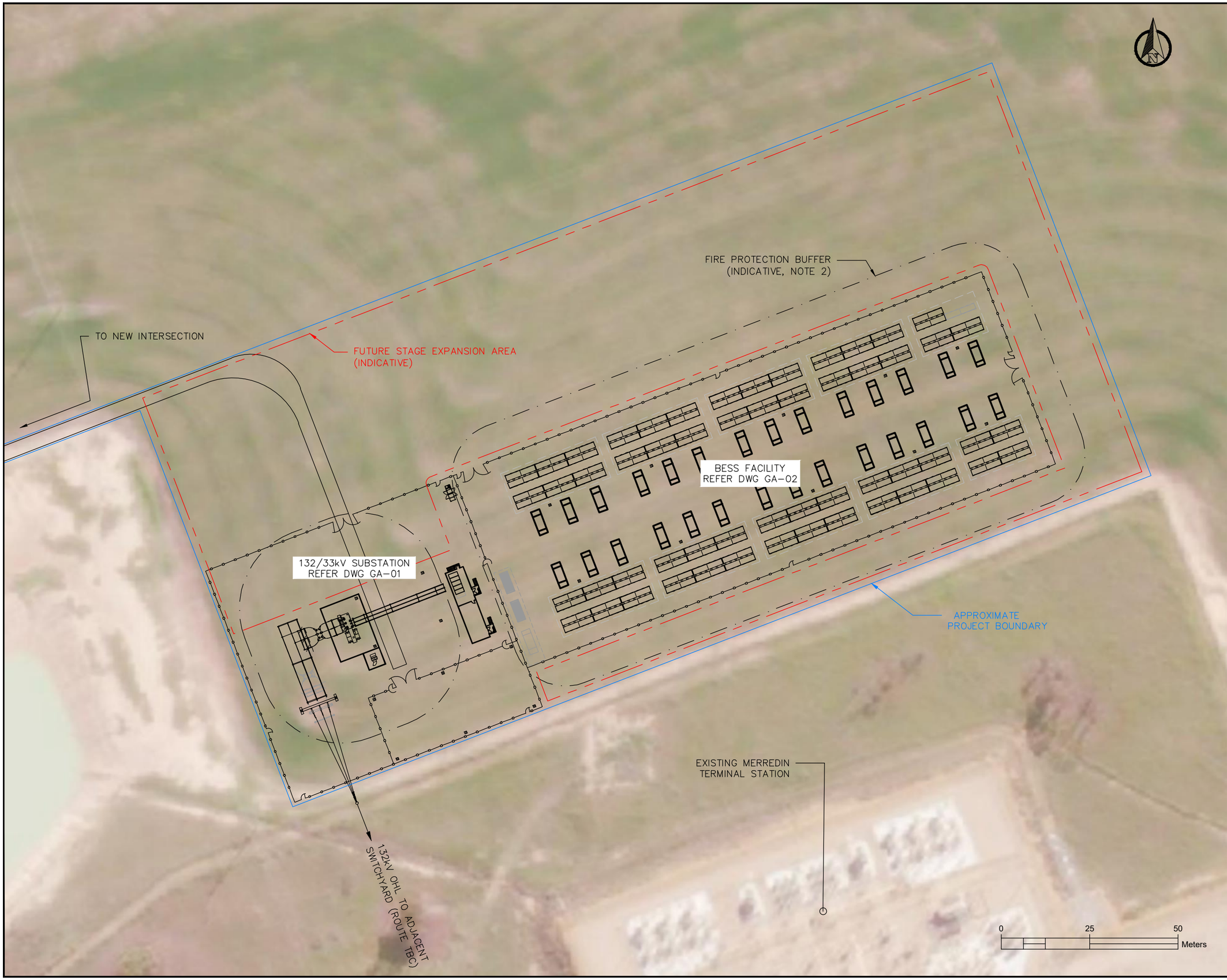
2 INTRODUCTION

2.1 THE ASSET (DEVELOPMENT) AND/OR USE SUBJECT TO ASSESSMENT

Bushfire Prone Planning has been engaged by Land Insights to produce a bushfire risk assessment and management report, specifically for the development of the Merredin Battery, a battery storage initiative proposed approximately 6.50km south west of the Merredin townsite.

The site is intended to be unstaffed, except for inspection and maintenance visits.

Merredin Battery will connect to Western Power's network via the neighbouring station to the south.



NOTES:

1. CONCEPT ONLY, SUBJECT TO CHANGE DURING DETAILED DESIGN.
2. PLANT & EQUIPMENT DIMENSIONS INDICATIVE, PROJECT AREA MAY EXPAND. SETBACKS AND OVERALL FOOTPRINT TO BE ADJUSTED WITHIN PROJECT BOUNDARY FOLLOWING DETAILED FIRE STUDY.
3. CAR PARKING, EARTHWORKS, INTERSECTION UPGRADES, DRAINAGE, EARTHING, PITS, CULVERTS, SPARE PARTS STORAGE AND TEMP CONSTRUCTION COMPOUND NOT SHOWN.
4. FIRE WATER ASSUMED CO-LOCATED WITH EXISTING SOLAR FARM.

REV:	DESCRIPTION:	BY:	DATE:
A	FIRST DRAWN (CONCEPT)	ABC	19.10.23

STATUS: NOT FOR CONSTRUCTION

BRIGHTY ENERGY

NOMAD ENERGY

PROJECT: MERREDIN BESS

TITLE: OVERALL PROJECT GENERAL ARRANGEMENT PLAN

SCALE AT A3:	DRAWN:	CHECKED:	APPROVED:
1:1000	ABC	-	-
PROJECT NO:	DRAWING NO:		REVISION:
NMD01	MBB-GA-00		A

2.2 THE RISK ASSESSMENT OBJECTIVES

Establishing the objectives directs the way the assessment process is conducted, and the type of information reported. Relevant objectives are typically determined by the applicability of one or more of the following three key factors:

1. The type of proposed or existing development. This can include:
    a) Construction or modification of buildings, structures and infrastructure assets; or
    b) Subdivision of land.
2. The type of proposed or ongoing land use. This can include:
    a) Those defined as industrial, commercial or residential; and
    b) Including those that have a planning classification of 'high risk' or 'vulnerable' - including tourism and event uses.
3. The relevant stage of planning. This can include but is not limited to:
    a) An existing development and/or use for which an assessment of the necessity for and the potential to improve bushfire resilience is conducted and the consequent lowering of the associated risks identified.
    b) At the strategic planning stage of new development/use when final details of the proposed development/use are not fully known and therefore relevant protection measures can potentially be identified and incorporated into design.
    c) At the final planning stage that requires approval or a 'decision to proceed'. All relevant details of the proposed development/use are known. The requirement at this stage is to inform decision makers by providing an assessment of the residual bushfire risk.

The primary objectives for the subject development and/or use are collated as a summary in Table 2.1.

Table 2.1: Identifying the risk assessment objectives for the subject development/use.

RISK ASSESSMENT OBJECTIVES - INFORMATION TO BE DERIVED
Identify: The types of bushfire prone vegetation (considering factors that include components, arrangement and fuel loads), that exist onsite and offsite.
Determine: The relative threat levels each bushfire hazard attack mechanism (direct and indirect) presents. Determine if the broader physical landscape surrounding the subject development/use has the potential to increase or decrease the levels of those threats.
Identify: All at risk physical elements that are exposed to the potential threats of the bushfire hazard.
Identify: Assets that owners/operators are prepared to lose from consequential fire resulting from a bushfire event, rather than apply sufficient protection measures i.e., the asset loss risk is to be retained. This may be due to cost or practicability. Consideration the consequent risk from asset abandonment and the availability of person risk mitigation measures.
Identify: All at risk human elements that are exposed to the potential threats of the bushfire hazard.
Identify: Bushfire protection measures that have or can be applied to reduce bushfire hazard threat levels to the greatest extent allowable and practicable.
Identify: Bushfire protection measures that have or can be applied to reduce the exposure and vulnerability of buildings/structures, infrastructure and other physical assets, to the potential threats of the bushfire hazard. The intent being to increase asset resilience to the threats to the greatest extent practicable.

RISK ASSESSMENT OBJECTIVES - INFORMATION TO BE DERIVED
Identify: Bushfire protection measures that have or can be applied to reduce the exposure and vulnerability of persons to the potential threats of the bushfire hazard to the greatest extent practicable.
Applicable to New Development and/or Use: Inform relevant persons (planners / designers / operators / owners), at the appropriate planning stage, of available bushfire protection measures to be incorporated into siting, design, construction, education and management, to optimise bushfire performance. Identify site specific protection measures, from the defined sets of bushfire protection measure principles, that have the potential to be applied as a package of protection measures. The intent is to achieve at least a tolerable level of risk to persons and property by ensuring that: • Buildings, structures and other physical assets are resilient against bushfire hazard threats, to the greatest extent practicable. • Persons have their exposure and vulnerability to bushfire hazard threats reduced, to the greatest extent practicable. Provide implementation advice as necessary.
Applicable to Existing Development and/or Use: Inform relevant persons (planners / designers / operators / owners), regarding the current levels of asset resilience to bushfire threats and person safety to identify the inherent level of risk from a bushfire event. Identify protection measures that can be implemented to improve resilience and safety and result in a lower residual risk. Assess the standard of the current application of any protection measures and provide recommendations to improve as necessary. Identify site specific protection measures (from the defined sets of bushfire protection measure principles) that have the potential to be applied as a package of protection measures to: • Improve the bushfire resilience of buildings, structures and other physical assets to the greatest extent practicable; and • Reduce persons exposure and vulnerability to bushfire hazard threats to the greatest extent practicable. Provide implementation advice as necessary.
Assess: The indicative residual risk levels to inform planners / designers / operators / owners and/or relevant decision makers. This is to be achieved through the application of the following information that has been established by the bushfire consultant: • The process for determining relative threat, exposure and vulnerability levels; • the indicative risk matrix; and • the risk tolerance scale. (Refer to Section 2.3.4, Appendix 2 and the glossary for additional information).

2.3 THE APPLIED RISK ASSESSMENT PROCESS

2.3.1 THE DEFINITION OF RISK

For the applied risk assessment process, the relevant risks are the potential for loss of life, injury, or destroyed or damaged assets which results in personal loss and economic loss due to disruption of services and/or repair or replacement of buildings and infrastructure. The source of the risk is either the bushfire as a natural hazard, or onsite activity/accident which may result in onsite fire.

2.3.2 THE ASSESSMENT PROCESS (FRAMEWORK)

To conduct and report the risk assessment process, Bushfire Prone Planning has adapted the understanding of disaster risk as described by the United Nations Office for Disaster Risk Reduction (UNDRR) and shown in Figure 2.2.

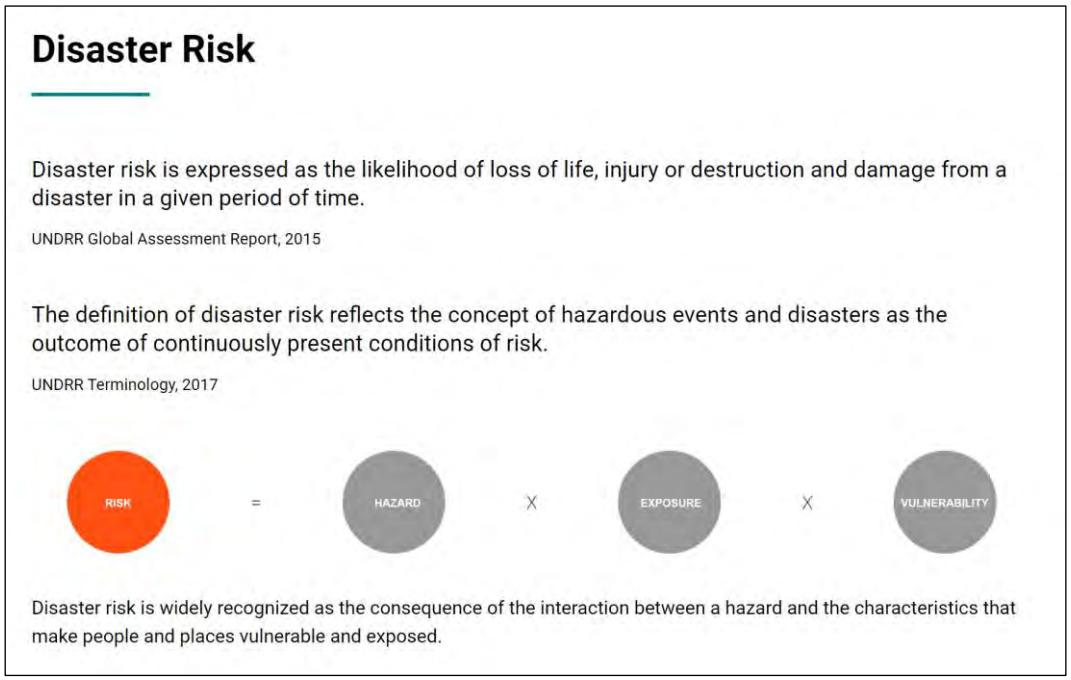


Figure 2.2: Understanding disaster risk (Source: United Nations Office for Disaster Risk Reduction [46]).

Although the UNDRR approach is designed to addresses disaster risk at large scale strategic levels, it can justifiably be applied to all scales of planning because it is focused on natural hazards and establishes a concept that can be readily adapted. The rationale for adopting this approach, rather than the methodology established by the National Emergency Risk Assessment Guidelines (AIDR 2020, NERAG), is provided in Appendix 1.

Also utilised within this assessment approach are relevant principles and measures to be applied in the development of bushfire risk mitigation strategies that are detailed in the Bushfire Verification Method Handbook [14].

PROCESS OVERVIEW

The risk presented by a natural hazard (such as a bushfire) is a consequence of the interaction between the potential threats associated with the hazard and the exposure and vulnerability of any elements at risk from those threats (the 'exposed elements').

The application of available protection measures will lower the risk by:

1. Reducing the number and/or level of the hazard threats; and/or
2. Reducing the level of exposure and/or vulnerability of the elements at risk.

Figure 2.3 illustrates the framework of the adapted risk assessment process (refer to the glossary for terminology information and Appendix 2 provides greater detail of the risk analysis component of the assessment process).

THE FRAMEWORK OF **BUSHFIRE PRONE PLANNING'S** APPLIED RISK ASSESSMENT PROCESS

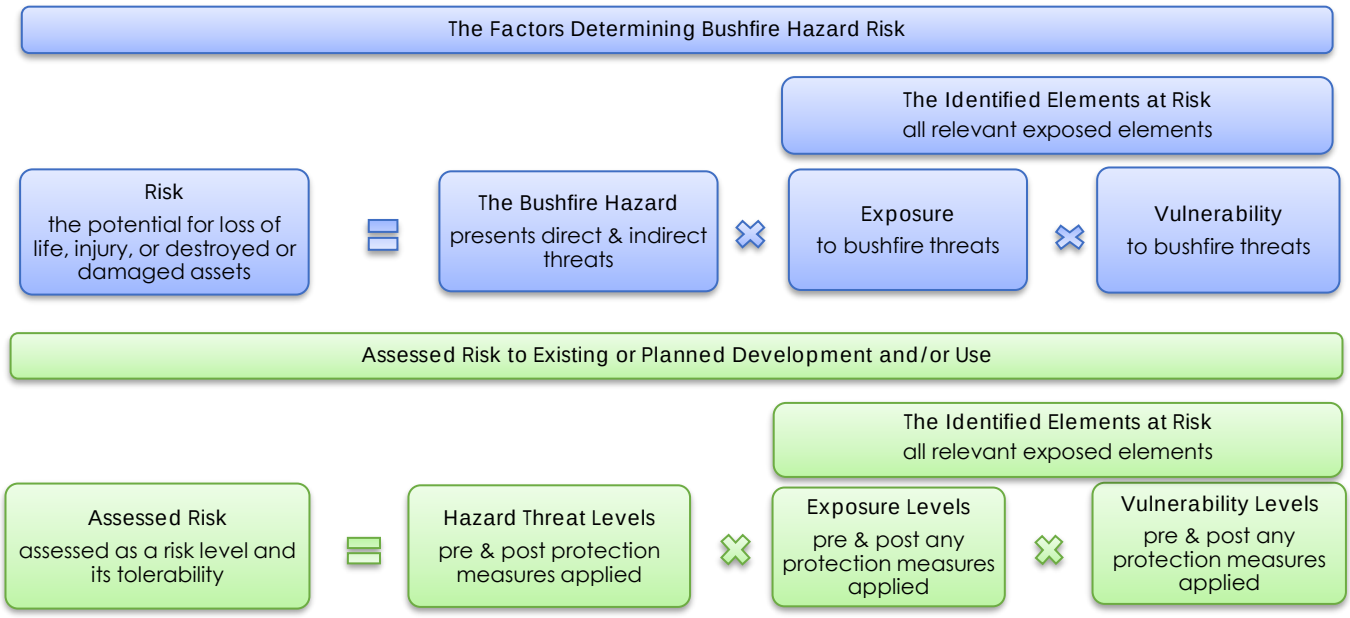


Figure 2.3: Framework of the applied risk assessment process.

2.3.3 RISK LEVEL ANALYSIS

(Refer to Appendix 2 and 3 and the Glossary for additional information.)

When the derivation of risk levels is a stated assessment objective, the risk analysis will derive a risk level as a summary outcome. The required risk level analysis can be conducted for either each exposed element separately and/or the proposed or existing development/use overall.

The risk level can be reported as either indicative or determined:

- Indicative Risk Level: This is derived based on a comparison of the numbers of protection measures able to be applied with the number of possible measures in the protection measure 'universe'. Appropriate weighting is given to the level of effectiveness of each of the measures. The intent is to provide a qualitative understanding of the level of risk that exists, to assist with making the required decisions.
- Determined Risk Level: This is derived using defined sets of risk factor criteria that correspond to each hazard threat level, exposure level and vulnerability level, for the elements at risk. Subsequently, how these defined levels are then applied to establish a determined risk level and its tolerability, is defined by an accepted risk level matrix and risk tolerance scale.

  The risk factor criteria must reflect societies preparedness to tolerate risk and should be determined by regulatory authorities exercising their responsibilities. The criteria will vary dependent on development/use type and scale.

  Consequently, the risk factor criteria (and potentially the risk level matrix and risk tolerance scale) need to be defined by the regulatory authorities before they can be applied in assessing a determined risk level.

Dependent on the stage of development/use, or to meet differing assessment objectives, the risk level can also be reported as:

- Inherent Risk: As the current risk when the assessment has only accounted for the bushfire protection measures that are either already in place (for existing development/use), or are planned to be incorporated into the proposed development/use; or
- Residual Risk: As the remaining risk when the assessment has also accounted for the application of any additional protection measures recommended by this report. If there are none, the residual risk is the same as the inherent risk.

2.3.4 USING THE ASSESSMENT PROCESS TO MEET THE STATED OBJECTIVES

The reporting objectives (established in Section 2.2) will vary for different types and stages of proposed (or existing) development/use. However, the same base framework is able to be utilised and the process can be adapted to achieve the required outcomes. An objective may not apply to a development, however whether and why/why not that objective applies must be considered.

Figure 2.4 provides further detail of the adopted assessment process, based on the framework shown in Figure 2.3.

2.3.5 BUSHFIRE PROTECTION MEASURE EFFECTIVENESS RATINGS

The following effectiveness ratings (refer to Table 2.2)are applied to the applicable bushfire protection measures, as part of the risk assessment process, and as a factor applied in deriving 'relative' threat, exposure and vulnerability levels.

The more effective a bushfire protection measure is, the greater its value in increasing bushfire resilience (buildings/structures), and/or increasing the safety of persons and in decreasing the level of risk associated with bushfire.

The effectiveness ratings incorporate the qualities of:

1. Independence: As a qualitative assessment of the extent to which the protection measure has the capacity to reduce threat, exposure and vulnerability levels as a standalone measure as opposed to requiring the cumulative capacity of additional protection measures (an additional one or more as a package); and
2. Passiveness: The capacity of protection measures to function without the active involvement of persons.

The rating assumes that the greater the independence and passiveness of a protection measure, the greater is its effectiveness.

Table 2.2: Bushfire protection measure effectiveness ratings.

THE APPLIED BUSHFIRE PROTECTION MEASURE EFFECTIVENESS RATINGS	
Rating / Descriptor	Protective Characteristics and Capability
Very High (Independent and Passive)	Very significant risk reduction as an independent (standalone) measure. Impact on risk reduction is immediate and persistent in all scenarios. Operates passively with no or minimal requirement for ongoing implementation, management and maintenance. A priority measure to be implemented wherever possible.
High (Independent and Passive)	Material risk reduction as an independent (standalone)measure; Operates passively with none or minimal requirement for ongoing implementation, management and maintenance.
Effective (Independent and Active)	Material risk reduction as an independent (standalone) measure; Effectiveness relies on active implementation, management, maintenance and/or response.
Moderate (Dependant and Passive or Active)	Alone the measure will have limited impact on risk reduction. It has additive value when combined with other protection measures to create a 'package' of bushfire protection measures. Effectiveness is achieved both passively and/or with active implementation, management, maintenance and/or response.
Not Relevant	The measure is not relevant to the type of development/use. (Note: this is different to not being able to be applied – it is just not relevant to any configuration of the subject development/use).

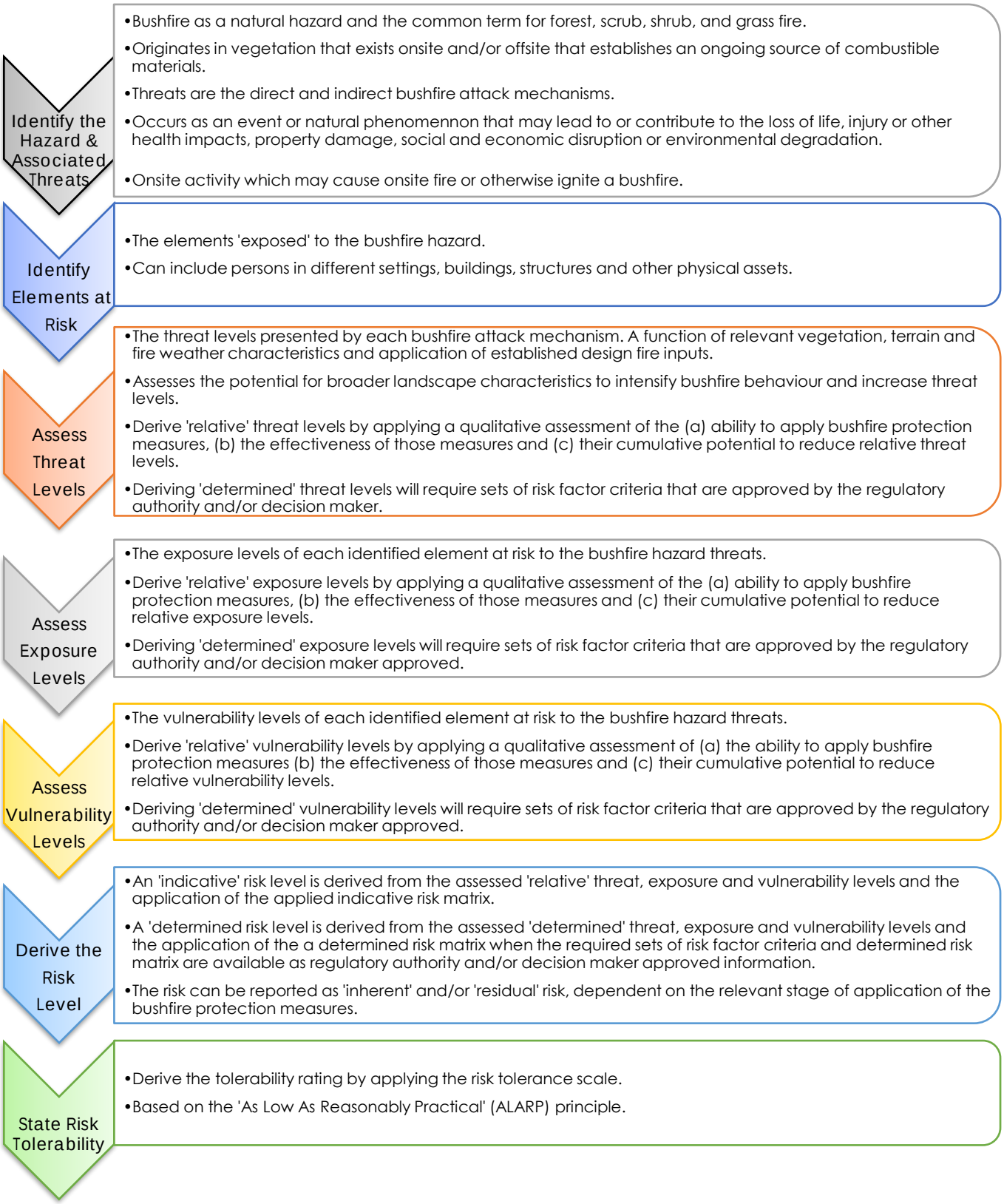


Figure 2.4: Outline of the adapted risk assessment process applied in this report.

2.4 THE BUSHFIRE HAZARD - BEHAVIOUR AND ATTACK MECHANISMS

Information regarding bushfire attack mechanisms and the potential influence of the broader landscape on the intensification of fire behaviour, is provided in Appendix 4 and 5. The content of these appendices is outlined below. Providing this information is intended to:

1. Assist those tasked with making design, construction, planning and management decisions (based on the information and assessments presented in this report), to have a better understanding of bushfire hazards where this may not be within their general field of expertise. This knowledge may also benefit development of innovative protection measures to increase the bushfire resilience of buildings/structures and/or improve persons safety and/or reduce bushfire threat levels; and
2. Assist readers understand why the assessment of the bushfire hazard threats and the presentation of the identified protection measures is organised the way it is in this report. It can also assist with guiding the search for additional information when necessary.

CONTENT OF APPENDIX 4

1. Factors Influencing Bushfire Behaviour
    - Vegetation and other fuels - key characteristics
    - Weather
    - Topography
2. Bushfire Direct Attack Mechanisms
    - Ember attack
    - Radiant heat attack
    - Bushfire flame attack
    - Surface fire attack
3. Bushfire Indirect Attack Mechanisms
    - Debris accumulation
    - Consequential fire
    - Fire driven wind
    - Tree strike and/or obstruction

CONTENT OF APPENDIX 5

1. Recent bushfire research
2. Dynamic Fire Behaviours
    - Spotting
    - Fire whirl/tornado
    - Junction fire
    - Crown fire
    - Eruptive fire
    - Fire channelling (vorticity-driven lateral spread)
    - Conflagrations
    - Downbursts
    - Pyroconvective events.
3. Drivers of deep flaming
4. Extreme bushfire events
5. Physical requirements of terrain, fuel load (and windspeed) for deep flaming.

3 ASSESSMENT SUMMARY

The assessment summary is presented in three parts:

Section 3.1 states the derived bushfire threat levels, and the exposure and vulnerability levels of each element at risk – as the factors from which the risk levels are derived.

Section 3.2 shows the type of risk level that is to be reported, states the derived risk levels and the tolerability of that risk - for each exposed element and each identified area of bushfire prone vegetation.

Section 3.3 presents a summary of the bushfire protection measures that can be applied and are currently implemented or are recommended to be implemented. The operational document in which the measures should be identified is noted.

3.1 THE ASSESSED THREAT, EXPOSURE AND VULNERABILITY LEVELS ESTABLISHING THE RISK LEVEL

Table 3.1: The assessed threat levels of the bushfire hazard.

ASSESSED HAZARD THREAT LEVELS [1]		
Bushfire Prone Vegetation Onsite and Offsite	Relative Threat Level [2]	
	Inherent	Residual
All bushfire prone vegetation within the subject lots, and within 150m of the proposed development. All vegetation within the Lot is considered onsite vegetation and vegetation beyond the Lot boundary is considered off site.	Moderate	Low
All bushfire prone vegetation within the broader locality (10km radius) including along access routes.	Low	
[1] Refer to Section 6 for detailed assessment information. [2] Refer to Appendix 2 for explanatory information.		

Table 3.2: The assessed exposure and vulnerability levels for each exposed element to the stated area of bushfire prone vegetation.

ASSESSED EXPOSURE AND VULNERABILITY LEVELS OF IDENTIFIED ELEMENTS AT RISK [1]				
Vegetation Area / Location	All bushfire prone vegetation within 100m from the Merredin Battery site.			
Elements At Risk[2]	Relative Exposure Level [3]		Relative Vulnerability Level [3]	
Description	Inherent	Residual	Inherent	Residual
Persons located onsite and temporarily offsite	Moderate		Moderate	Low
Persons on access/egress routes (in vehicles) or pathways	High		Moderate	
Buildings/Structures - NCC Classes 1-10	Moderate	Low	Moderate	Very Low
Fixed (hard) infrastructure assets – Merredin Battery (BESS units and associated infrastructure)	Moderate	Very Low	Moderate	Low
[1] Refer to Sections 7 and 8 for detailed assessment information. [2] Refer to their identification in Section 5. [3] Refer to Appendix 2 for explanatory information.				

3.2 THE ASSESSED RISK LEVEL ASSOCIATED WITH A BUSHFIRE EVENT AND ITS TOLERABILITY

Table 3.3: Identifying the 'type' of risk level being assessed and reported in this report.

THE TYPE OF RISK LEVEL DERIVED FROM THE ASSESSMENT [1]			
Indicative Risk		Determined Risk	
Inherent	Residual	Inherent	Residual
✓	✓	☐	☐
[1] Refer to Section 2, Appendix 2 and the glossary for explanatory information (inherent/residual corresponds to the level that available protection measures have been considered in the assessment with 'residual' including recommended measures).			

Table 3.4: The tolerability of the assessed risk levels for each exposed element and corresponding to the identified areas of bushfire prone vegetation.

THE ASSESSED BUSHFIRE RISK LEVEL AND TOLERABILITY [2]					
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.				
Elements At Risk [1]	Indicative Risk Level [2]		Inherent Risk Tolerability (ALARP) [3]	Residual Risk Tolerability (ALARP) [3]	Adjusted Residual Risk Tolerability (ALARP) [4]
Description	Inherent	Residual			
Persons located onsite and temporarily offsite	M7	L5	Tolerable but NOT ALARP	Acceptable	N/A
Buildings/Structures - NCC Classes 1-10	M7	VL3	Tolerable but NOT ALARP	Acceptable	N/A
Fixed (hard) infrastructure assets – Merredin Battery (BESS units and associated infrastructure)	M7	VL3	Tolerable but NOT ALARP	Acceptable	N/A
Vegetation Area / Location	All bushfire prone vegetation within the broader locality (10km radius) including along access routes.				
Elements At Risk [1]	Indicative Risk Level [2]		Inherent Risk Tolerability (ALARP) [3]	Residual Risk Tolerability (ALARP) [3]	Adjusted Residual Risk Tolerability (ALARP) [4]
Description	Inherent	Residual			
Persons on access/egress routes in vehicles	M7		Acceptable as IS ALARP		Acceptable
Supporting Comments: The inherent risk tolerability is considered to be TOLERABLE, however it is 'reasonably practical' for the inherent risk level of 'MODERATE' to be lowered with the application of the assessed available and recommended bushfire protection measures. The residual risk tolerability is considered to be ACCEPTABLE because it is assessed as not being 'reasonably practical' for the residual risk level of 'LOW' or 'VERY LOW' to be further lowered by the application any additional bushfire protection measures. Measures are not available to reduce the indicative inherent risk to persons on access routes. This results in an Acceptable tolerability as it is subject to the ALARP principle. The tolerability is adjusted through Section 3.3 below.					
[1] Refer to their identification in Section 5.					

[2] Refer to Section 2, Appendix 2 and the glossary for explanatory information (inherent/residual corresponds to the level that available protection measures have been considered in the assessment with 'residual' including recommended measures).

[3] Refer to Appendix 3 for information supporting the application of the tolerance scale.

[4] Refer to Section 3.2.1 for adjustment justification when applicable.

3.3 ADJUSTMENT OF RESIDUAL RISK TOLERABILITY

Development/use scenarios can exist where a higher level of residual risk might be considered as tolerable or acceptable. Such a situation may exist when the exposed element is not persons and the economic cost due to the loss or damage of assets and/or disruption of services, is a risk that is retained by the owners as an informed decision. Consideration of the knock-on risk implications to persons who might be associated with these elements, or other nearby elements at risk, will be part of the tolerability adjustment assessment.

There may also be isolated scenarios where the limits for tolerability of risk need to be established at lower residual risk levels i.e. an additional margin of safety is required. The rationale for any residual risk tolerance adjustment is presented below.

ELEMENTS AT RISK SUBJECT TO ADJUSTMENT OF RISK TOLERANCE	
Element At Risk [Section 5.2]	Adjustment Rationale
Persons on access/egress routes in vehicles	The site is intended to be unstaffed. It is unlikely that persons will be present during a bushfire emergency for evacuation to be necessary. Any visitors, contractors, or staff onsite will be accessing temporarily for maintenance, inspections etc and will have vehicles immediately available. The emergency procedure is to evacuate on identification of a bushfire and this has been established as a requirement of site induction.

3.4 INFORMATIVE MECHANISMS – RECOMMENDED ACTIONS

3.4.1 ADDITIONAL BUSHFIRE PROTECTION MEASURES - RECOMMENDED BY BUSHFIRE CONSULTANT

3.4.1.1 THREAT REDUCING MEASURES - BUSHFIRE HAZARD

BUSHFIRE HAZARD THREAT REDUCTION RECOMMENDED ADDITIONAL BUSHFIRE PROTECTION MEASURES			
The Protection Mechanism	Ref No	Brief Description [1]	Recommendation Details
Prevent Bushfire ignition and/or severity by managing the fuels	1.4	Remove onsite bushfire fuel	A BAL-29 APZ is required for planning approval. A 10kW/m2 APZ is additionally required so BESS units and infrastructure (electrical components) are unlikely to be compromised due to radiant heat during a bushfire. There is no native vegetation on site, therefore permission by the decision maker and local government is not required.
	1.7	Reduce onsite consequential fire fine fuels:	It is required that all fine fuels are removed or maintained below 2t/ha within the APZ.
Prevent bushfire ignition by managing heat energy sources	1.10	Operational procedures - fire safe principles	Operating procedures have not yet been prepared. No ongoing works are proposed which could ignite a bushfire, except during an accident or component failure. It is advised that any hot/hazardous works are not undertaken during a Total Fire Ban or on a day with a Fire Danger Rating of Extreme or Catastrophic or under a Local Govt imposed Harvest, Vehicle movement and hot works ban.
Prevent bushfire ignition by managing the interactions of heat energy sources and fuels	1.16	Shielding of ignition sources	BESS units and associated infrastructure are comprised of metal exterior. Electrical cabling to and from the BESS units and associated infrastructure are underground, and any exposed cables can be shielded by non-combustible material.
	1.17	Separation of ignition sources	Fire within the facility (infrastructure, batteries or stored equipment) ignited by site operation/accident/failure may ignite vegetation. The 10kW/m2 APZ to be applied around the infrastructure is considered appropriate in reducing the risk of igniting a bushfire. The removal of consequential fire hazards within the APZ minimises the potential for spread of fire beyond the asset.
[1] The full description of each bushfire protection measure and the detail of the assessment is presented in Section 6.1.			

3.4.1.2 EXPOSURE REDUCING MEASURES – ALL STRUCTURES AND ASSETS

ALL STRUCTURES AND ASSETS EXPOSURE REDUCTION RECOMMENDED ADDITIONAL BUSHFIRE PROTECTION MEASURES			
The Protection Mechanism	Ref No	Brief Description [1]	Recommendation Details
Establish sufficient separation from relevant bushfire hazard threats	4.1, 6.1	Siting of buildings / structures / campsites considering potential high wind exposure	An APZ is to be established around electrical components and infrastructure. This APZ will ensure exposure to the bushfire hazard threat of radiant heat will be limited to a maximum radiant heat flux of 10 kW/m2 (calculated with an assumed flame temperature of 1090K) by providing the required separation distances from the bushfire hazard. The 10m portion of the APZ immediately around BESS infrastructure must be entirely and permanently non-vegetated (sealed, compacted limestone, gravel, mineral earth etc). A BAL-29 APZ is required for all Class 1-10 buildings onsite. It is possible to locate the buildings within the 10kW/m2 APZ applied to BESS infrastructure such that additional vegetation clearing is not required.
	4.7, 6.7	Separation from stored and constructed combustible items (consequential fire fuels)	All non-structural combustible materials are to be removed within 10m of assets. This includes but is not limited to; waste, leaf litter, machinery, grasses, vehicles, fuel, furniture, and timber. When storage of flammable items or materials are stored on site temporarily (for maintenance etc), separation distances must be complied with. This requirement is to be included in the Site Operating Procedures document.
Establish shielding from relevant bushfire hazard threats	4.9 6.9	Constructed barrier – shielding from consequential fire	Ensure all subfloor spaces are sealed or enclosed with non-combustible solid material or ember screening mesh (corrosion-resistant steel, bronze, or aluminium with an aperture <2mm).
	6.12	Shield operation critical non-structural elements	Exposed electrical cabling to be shielded from radiant heat and consequential fire by burying underground or shielding with non-combustible material – common electrical cabling reaches its critical point at >10kWm2. Exposed plumbing (poly pipe) is to be buried or shielded with non-combustible material – maximum exposure 120 degrees Celsius.
[1] The full description of each bushfire protection measure, the detail of the assessment and any recommendation, is presented in Section 7.3.1. and Section 7.4.1.			

3.4.1.3 VULNERABILITY REDUCING MEASURES - PERSONS

PERSONS VULNERABILITY REDUCTION RECOMMENDED ADDITIONAL BUSHFIRE PROTECTION MEASURES			
The Protection Mechanism	Ref No	Brief Description [1]	Recommendation Details
Provision of bushfire emergency information and education	Persons Located Onsite and Temporarily Offsite		
	7.5	Bushfire Protection Measures to be Implemented are Published in the Relevant Operational Documents:	The site Emergency Management Plan (document title pending), is to include responses to bushfire emergencies. The immediately procedure is to evacuate in the appropriate direction away from the fire, and inform DFES Comcen of the status of the BESS facility.
Onsite persons capable of managing a bushfire emergency are available	7.11	Onsite persons available to manage bushfire emergency procedures	The development is proposed to be unstaffed. It is recommended that the staff member managing emergency procedures has training in general bushfire emergency procedures, and has specific knowledge of the site procedures in response to bushfire. This staff member should be easily contactable.
	7.14	External emergency response services available	It is recommended that the Merredin Volunteer Fire and Rescue Service are to be invited to inspect and familiarise with the site. Provide information in site fire response procedures. This invitation may be annual or ad-hoc.
[1] The full description of each bushfire protection measure, the detail of the assessment and any recommendation, is presented in Section 8.1.1 & 8.2.1.			

3.4.1.4 VULNERABILITY REDUCING MEASURES – STRUCTURES AND ASSETS

STRUCTURES AND ASSETS VULNERABILITY REDUCTION RECOMMENDED ADDITIONAL BUSHFIRE PROTECTION MEASURES			
The Protection Mechanism	Ref No	Brief Description [1]	Recommendation Details
Construction design and materials	9.3	Construction materials for external and internal cavity building elements	The construction of proposed structures is currently unknown. They will likely be primarily masonry, steel, aluminium and cement sheeting. It is recommended non-combustible elements are included where practical.
	11.7	Construction materials – non-structural essential elements	Use non-combustible or products with high heat ratings to assist with maintaining their operability.
	9.7, 11.7	Construction of electricity supply	Exposed electrical cabling to be shielded from radiant heat and consequential fire by burying underground or shielding with non-combustible material – common electrical cabling reaches its critical point at >10kWm2. Exposed plumbing (poly pipe) is to be buried or shielded with non-combustible material – maximum exposure 120 degrees Celsius.
	11.8	Minimise re-entrant detail to minimise debris and ember accumulation	Where the electrical cabling contacts the ground or any arrangement of associated structures creates a 'pocket' for accumulation of debris, this should be rectified by design or filling with non-combustible material such as mineral earth. Consideration should be given to making the arrangement self-cleaning through wind action to the greatest extent possible. These measures will reduce accumulation and/or make the management (clearing) of accumulated debris easier. E.g. cable raking to be ≥100mm above ground.
	9.11, 11.11	Minimise construction cavities to minimise debris and ember accumulation	Ensure all subfloor spaces are sealed or enclosed with non-combustible solid material or ember screening mesh (corrosion-resistant steel, bronze, or aluminium with an aperture <2mm).
	9.13	Screen and seal gaps and penetrations	All Class 1-10 buildings (including non-habitable structures) must have ember screening/sealants installed on any gaps and penetrations. It is recommended that ember screens are installed to BESS units and all other cabinets over intake/exhaust vents and other gaps to the interior cavity or accessing any combustible elements. Ember screening mesh is corrosion-resistant steel, bronze, or aluminium with an aperture <2mm.
	11.13	Screen and seal gaps and penetrations	The manufacturer or appropriate engineers should be contacted to enquire if it is possible to apply ember screening to intake/exhaust vents and other paths of entry to the interior cavity or accessing any combustible elements of BESS

STRUCTURES AND ASSETS VULNERABILITY REDUCTION RECOMMENDED ADDITIONAL BUSHFIRE PROTECTION MEASURES			
The Protection Mechanism	Ref No	Brief Description [1]	Recommendation Details
			cabinets. This ember screening would be applicable to the exterior of the battery cabinet, not internal components. The intention is to prevent both ember ingress and debris accumulation. Ember screening mesh is corrosion-resistant steel, bronze, or aluminium with an aperture <2mm.
	9.16, 11.16	Landscaping construction - fences and walls:	Any security fences or other potential fuel loads should be constructed using non-combustible material.
Availability of a firefighting response capability	9.17, 11.17	Firefighting water supply	The following requirements apply to the firefighting water supply. The specifications will be confirmed at the detailed design stage. <u>Access</u> • Firefighting water access points (hydrants, hard suction, or drafting) must be clearly identifiable, visible from internal roads, and unobstructed. • The water tank(s) must be located at the vehicle access point to the development (northern entry gate). • An all-weather hardstand turnaround area meeting the requirements of the Guidelines for Planning in Bushfire Prone Areas v1.4 (Explanatory Note E3.3) must be provided within 4 metres of both the static water storage tank(s) and any independent hard suction points (hydrants). • Site Operating Procedures must include that access routes must be unobstructed at all times. <u>Siting</u> • The water tank(s) must be positioned >10m from BESS cabinets and associated infrastructure. • The water tank(s) should apply a BAL-29 APZ at a minimum. It is possible to locate the tank within the 10kW/m2 APZ applied to BESS infrastructure such that additional vegetation clearing is not required. <u>Construction</u> • The static firefighting water supply must be calculated per AS 2419. Based on the submitted layout the required supply will be 288,000L. This water supply is intended to address bushfire and non-bushfire emergencies. • The static water storage tank(s) must be an above-ground water tank constructed of concrete or steel. • An external water level indicator must be installed on static water storage tank(s) and be visible from internal roads and the adjoining turnaround area. • Signage indicating 'FIRE WATER' and the tank capacity must be fixed to each tank.

STRUCTURES AND ASSETS VULNERABILITY REDUCTION RECOMMENDED ADDITIONAL BUSHFIRE PROTECTION MEASURES			
The Protection Mechanism	Ref No	Brief Description [1]	Recommendation Details
			• The hard-suction point must be protected from mechanical damage (eg. bollards) where vehicle contact is possible. • Couplings at hard suction points are required to be 125mm Storz fittings (*Guidelines* v1.4 s2.2.2.1). DFES Built Environment and the Merredin Volunteer Fire and Rescue Service should be contacted for input on appropriate couplings and adaptors.
	11.19	Firefighting equipment passively operated	The BESS units have active monitoring and electrical fault safety devices which ensure the units only remain operational within their intended operating environment, with an automated shut-down system. It is recommended that automatic fire suppression systems are installed and maintained, as appropriate to the BESS details and recommended by the manufacturer.
	11.20	Firefighting equipment operability maintained	Operating and maintenance procedures are to be developed to ensure regular maintenance of firefighting supply and infrastructure.
[1] The full description of each bushfire protection measure, the detail of the assessment and any recommendation, is presented in Sections 8.3.1 & 8.4.1.			

4 IDENTIFICATION OF THE ELEMENTS AT RISK

Elements at risk are those exposed to the bushfire hazard threats identified in Section 5. This section establishes the generic list of possible elements at risk and identifies the exposed elements of the subject development/use.

Table 4.1: Identification of the elements at risk for which this risk assessment and management report is produced.

THE ELEMENTS AT RISK (THE EXPOSED ELEMENTS)	
Type Description	Identification of Relevant Elements
Persons located onsite: as part of site operations or visitors) and **Persons temporarily offsite as part of site operations:** (e.g. tourism day trips)	✓
Persons on Access/Egress Routes (in Vehicles): i.e., roads, driveways, access ways	✓
Buildings - NCC Class 1 & 2: residential - of a domestic nature	
Buildings - NCC Class 3: residential – of long term or transient nature, for unrelated people	
Buildings – NCC Class 5: offices for professional or commercial purposes	
Buildings – NCC Class 6: shops selling retail goods or services to the public	
Buildings – NCC Class 7: warehouses & carparks - storage – wholesale goods / vehicles	
Buildings – NCC Class 8: factory / workshop / laboratory - in which a process is carried out	
Buildings – NCC Class 9: health care / residential care / assembly	
Buildings or Structures – NCC Class 10: non-habitable – shed / carport / garage / fence / retaining wall etc.	✓
Non-Building Accommodation: caravans / camper trailers / tents etc	
Fixed (Hard) Infrastructure Assets: telecommunications / power generation / transport / water supply / waste management	✓
Livestock/Animals: as part of commercial or private operations (saleyards / events / wildlife sanctuaries).	

Table 4.2: Description of the elements at risk that are subject to assessment for the proposed/existing development and/or use.

ELEMENT AT RISK DETAIL FOR THE SUBJECT DEVELOPMENT/USE	
Elements At Risk	Element Description
Persons located onsite and temporarily offsite	The site is not expected to have permanent staffing. Regular visitation by staff will complete monitoring, cleaning and general maintenance of the Project. Major maintenance that might be required would include replacement of equipment which may include battery modules, inverters, switchgear, transformers, or other infrastructure as needed. This would involve larger numbers of personnel for limited periods as required.
Persons on access/egress routes in vehicles	Staff and/or emergency services accessing to / egressing from the facility.
Buildings/Structures - NCC Classes 1-10	The facility is expected to include maintenance and storage sheds, which may contain valuable/combustible assets. These have been assessed Class 10a buildings.

Fixed (hard) infrastructure assets	BESS developments include battery cabinets, inverters, power skid transformers, and transformers.

5 IDENTIFICATION OF THE BUSHFIRE HAZARD

ONSITE AND OFFSITE VEGETATION – RATIONALE FOR SEPARATE IDENTIFICATION

The approach adopted in this report is to separately identify onsite and offsite bushfire prone vegetation when the distinction exists, and it is necessary.

Onsite Vegetation

This is considered to be vegetation that exists on a given lot or lots or a large area of land that can be considered a tenement (e.g. a mining tenement) and for which the owner or occupier has certain rights to conduct activities upon. The 'onsite' land is the subject site on which the existing or proposed development and/or use is to be conducted.

The existence of these rights makes it more likely that an authority will exist to make and maintain any required changes to the extent and the composition of any bushfire prone vegetation that exists 'onsite'. The only constraint will be any environmental conditions established by relevant authorities.

Offsite Vegetation

This is considered to be vegetation that exists external to what can be considered 'onsite'. For these lands the owner/operator does not normally have any authority to modify or manage this bushfire prone vegetation to reduce threats and maintain that reduction in perpetuity. Rather, the authority for modifying and managing 'offsite' vegetation resides with a third party such as another landowner or a government authority.

Implications for Risk Assessment and Implementation of Relevant Protection Measures

- It is likely to be near certain that a greater number of relevant bushfire protection measures can be established on land identified as 'onsite' compared to land that is identified as 'offsite'.
- A responsibility can be established for owners and/or operators of onsite land to ensure the ongoing maintenance of those protection measures.
- In comparison, management of offsite vegetation requires the establishment of enforceable vegetation management agreements if any reduction in threat level is to be achieved and accounted for in the threat level assessment. These can be problematic to establish.

  The required assessment of the broader landscape's influence on bushfire hazard threat levels will most likely be considering vegetation and terrain that is external to the subject development/use site and therefore needs to be separately identified.

For the proposal (BESS Merredin), the risk assessment will consider the hazard posed by bushfire prone vegetation at two scales:

- The vegetation within the subject lots and within 150m of the proposed development area, which presents the direct bushfire hazard (including following AS3959 BAL Methodology); and
- The vegetation within the broader locality, nominally to a 10km radius. This vegetation impacts access routes, the severity of potential landscape-scale fires impacting the immediate (150m) surrounds, and may impact the site with medium to long range ember attack and smoke.

5.1 ONSITE/LOCAL BUSHFIRE PRONE VEGETATION

<table>
<tr><td>Map I.D. / Area No. / Location</td><td colspan="3">All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.
Refer to Figure 5.1.</td></tr>
<tr><td>Classification or Exclusion Clause</td><td>Class G Grassland</td><td>Effective Slope (deg)</td><td>Upslope or flat 0
Downslope >0-5</td></tr>
<tr><td>Types Identified</td><td colspan="3">Sown pasture G-26 Open herbfield G-27</td></tr>
<tr><td>Description & Classification Justification</td><td colspan="3">The vegetation onsite and the surrounding areas is predominantly open herbfield (crop land) or sown pastures with very small areas mainly onsite that are native grasses and saltbush.</td></tr>
<tr><td>Post Development Assumptions:</td><td colspan="3">APZs will be established as described in the BMP, to limit radiant heat flux exposure to BESS assets to a maximum 10kW/m^2.</td></tr>
<tr><td colspan="4"> 


</td></tr>
<tr><td colspan="2">Herbfield/cultivated pasture</td><td colspan="2">Herbfield/cultivated pasture</td></tr>
<tr><td colspan="4"> 


</td></tr>
<tr><td colspan="2">Native grass and saltbush</td><td colspan="2">Heavy timber (Salmon gum)</td></tr>
</table>

Figure 5.1

Classified Vegetation & Topography (Existing)

Lot 5 on Plan D067824, Area : 61.5116ha
Robartson Road
MERREDIN
SHIRE OF MERREDIN

AREA 1
Class (G) Grassland
Effective Slope >0-5°

Lot 5

AREA 2
Class (G) Grassland
Effective Slope 0°

AREA 3
Class (G) Grassland
Effective Slope 0°

AREA 3
Class (G) Grassland
Effective Slope 0°

AREA 4
Excluded

AREA 4
Excluded

ROBARTSON RD

304m

306m

308m

310m

312m

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

------ LEGEND ------

- Lot 5
- Battery Development Extent
- Proposed Infrastructure
- 150m Assessment Area
- Photo & Direction

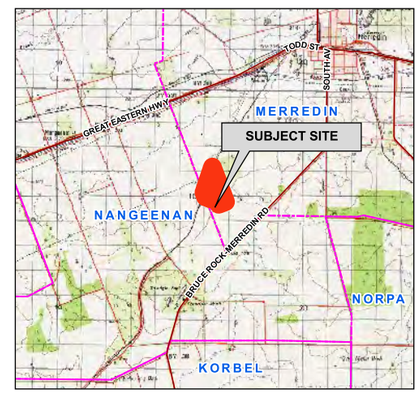
Classified Vegetation

- Class G - Grassland
- Exclusion 2.2.3.2

0 20 40 60 80 100 m

Metres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Elissa Edward 01-11-2023
SCALE (A3): 1 : 2000

BUSHFIRE PRONE PLANNING

Disclaimer and Limitation: This map has been prepared for bushfire management planning purposes only. All depicted areas, contours and any dimensions shown are subject to survey. Bushfire Prone Planning does not guarantee that this map is without flaw of any kind and disclaims all liability for any errors, loss or other consequence which may arise from relying on any information depicted.

5.2 OFFSITE/REGIONAL BUSHFIRE PRONE VEGETATION

Map I.D. / Area No. / Location	All bushfire prone vegetation within the broader locality (10km radius) including along access routes. Refer to Figure 5.2.			
Classification or Exclusion Clause	Class G Grassland		Effective Slope (deg)	Flat 0 Downslope >0-5
	Class B Woodland			
	Class E Mallee			
Types Identified	Open herbfield G-27	Low woodland B-07		Tall shrubland E-15
Description & Classification Justification	The vegetation onsite is largely grassland with small, fragmented sections of scrubland and or mallee. Some adjoining sections are relatively "closed" scrub with some Mallee and/or Salmon gum scattered and would not be considered to increase the threat. The proposed site is surrounded by open fields and the existing solar farm and associated infrastructure. The area is gently undulating and all areas are either upslope or 0-5 degrees downslope relative to development locations.			

Figure 5.2

Location Map

Lot 5 on Plan D067824, Area : 61.5116ha
Robartson Road
MERREDIN
SHIRE OF MERREDIN

------ LEGEND ------

- Lot 5
- Battery Development Extent
- Reserves

DFES Stations

- Bush Fire Brigade
- State Emergency Service Unit
- Volunteer Fire & Rescue Service

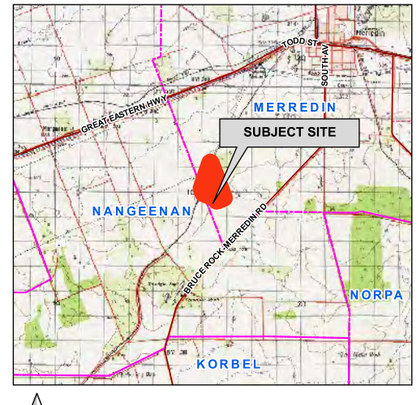
DBCA Legislated Lands and Waters

- Conservation Park
- Nature Reserve

0 1 2 3 4 km

Kilometres

------ LOCALITY ------



AERIAL IMAGERY: Landgate/SLIP

Coordinate System: GDA 1994 MGA Zone 50
Projection: Universal Transverse Merctaor Units: Metre
Map by: Elissa Edward 25-10-2023
SCALE (A3): 1 : 75000

BUSHFIRE PRONE PLANNING

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169042_Fig-1-3-LOC_Merredin-Battery.qgz

5.3 THE BROADER LANDSCAPE/ENVIRONMENT AND ITS POTENTIAL TO INTENSIFY FIRE BEHAVIOUR

More recent research into bushfire propagation has highlighted the role of environmental factors that are responsible for dynamic bushfire propagation and subsequent extreme fire development. Dynamic fire propagation arises from complex interactions between the terrain, the atmosphere and the fire. The intensified fire behaviour of an extreme bushfire event will significantly increase the threat levels generated by the bushfire attack mechanisms. Refer to Appendix 5 for an explanation of dynamic fire behaviours (DFBs) and their involvement in extreme bushfire events.

Consequently, in assessing the bushfire hazard threat levels to which the at risk elements could be exposed, the potential for dynamic bushfire propagation and subsequent development of extreme bushfire events within the broader landscape surrounding a subject site, must be assessed. The results of this assessment are incorporated into the assessed bushfire hazard threat levels for each attack mechanism is Section 5.5.

Table 5.1: Broader landscape assessment – the potential for extreme fire events to increase threat levels.

ASSESSING THE POTENTIAL FOR AN EXTREME BUSHFIRE EVENT TO DEVELOP AND INCREASE THE LEVEL OF THREATS IMPACTING THE SUBJECT SITE			
Relevant Physical Factors [1]	Factor Existence in Surrounding Landscape	Potential to Increase Bushfire Threat Levels	Assessment Comments
Physical factors more typically associated with conflagrations that are more likely to exist as large surface based bushfire events			
Large continuous areas of bushfire prone vegetation	Insignificant / Unlikely to Occur	Low	The proposed site is located in an area surrounded predominantly by open cleared pasture farm land that is managed by grazing and crops, canola and stubble to the south, west and north and the nature reserve 500 metres to the north. The reserve is predominately mulga and other acacia species, mallee and less than 10% trees. The reserve vegetation has the potential to produce short distance embers and firebrands, up to 700 metres (based on Mike Scott's experience). Ember attack will be minimal. There is minor scrub with <10% larger mallee and salmon gum timber which are scattered. Mostly surrounded by grasses and crop residues.
Heavier fuel loads	Insignificant / Unlikely to Occur		Areas on road verge and small pockets of remanent vegetation have heavier fuel loads (<20t/ha), however the surrounding vegetation, pasture and crop supports approximately 4.5t/ha, and scrub approximately <(16t/ha).
Fuel types (bark) that produce significant quantities of embers / firebrands (spotting) and can be long lasting;	Possible to Occur		The reserve vegetation has coarse tight bark and when the bark sheds from some acacias, there is potential to produce short distance embers and firebrands, up to 700 metres (based on Mike Scott's experience).

ASSESSING THE POTENTIAL FOR AN EXTREME BUSHFIRE EVENT TO DEVELOP AND INCREASE THE LEVEL OF THREATS IMPACTING THE SUBJECT SITE			
Relevant Physical Factors [1]	Factor Existence in Surrounding Landscape	Potential to Increase Bushfire Threat Levels	Assessment Comments
Sufficient area of land and vegetation to support multiple fires of scale	Possible to Occur		Significant threat being the risk of fast moving grass fires of large scale due to crop/pasture and native grasses on unmanaged land.
Terrain that can facilitate development of topographically modified winds (e.g. scarp or foehn-like)	Does Not Exist		
Strong synoptic winds (i.e., not fire driven)	Possible to Occur		The landscape is relatively flat. Strong easterly winds are common during the summer.
Physical factors with identified links to deep flaming and the development of pyroconvective, coupled atmosphere, bushfire events			
Terrain slopes of approximately 24^0 or greater - or some degrees lower with greater wind speeds (increases potential for eruptive fire).	Does Not Exist	Low	The local topography is flat with minor undulation.
Rugged terrain with local relief in the order of at least 300m (increases potential for eruptive fire).	Does Not Exist		
Terrain with leeward slopes >20-25 degrees (increases potential for vorticity-driven lateral spread)	Does Not Exist		
Wind speed in excess of approximately 20 km/hr (increases potential for vorticity-driven lateral spread)	Likely to Occur		The wheat belt area will experience seasonal winds that could easily sustain wind speeds greater than 20 km/hr during summer.
Fuel moisture content around 5% or less (associated with vorticity-driven lateral spread)	Likely to Occur		Less than 5% moisture in any fuels will potentially increase the rate of spread.
Sufficiently sized areas (scale) of bushfire prone vegetation to potentially support deep flaming and supply the required quasi-instantaneous energy release.	Does Not Exist		Deep flaming will not be supported in the grass fuels and flat terrain.
Atmospheric instability to create opportunity for atmospheric coupling and violent pyroconvection.	Possible to Occur		It will be assumed, as a minimum, that at most locations, the potential for vertical movement of air without any resistance to that movement (e.g. temperature inversions) can always exist. That is, it is not sufficiently risk averse to assume that atmospheric instability will never exist – different temperature air masses can always interact as a consequence of the passage of different weather systems at any location.

ASSESSING THE POTENTIAL FOR AN EXTREME BUSHFIRE EVENT TO DEVELOP AND INCREASE THE LEVEL OF THREATS IMPACTING THE SUBJECT SITE			
Relevant Physical Factors [1]	Factor Existence in Surrounding Landscape	Potential to Increase Bushfire Threat Levels	Assessment Comments
[1] These are physical terrain / environment factors that are either required for certain dynamic fire behaviours or will enhance the potential for and the development of an extreme bushfire event.			

5.4 ASSESSMENT OF VEGETATION CHARACTERISTICS DRIVING BUSHFIRE ATTACK MECHANISM THREAT LEVELS

This qualitative assessment derives the **base threat levels** of identified areas of bushfire prone vegetation by accounting for:

1. Fuel types, arrangement and quantities; and
2. The existence of relevant characteristics within the broader landscape that have the potential to intensify bushfire behaviour and increase threat levels.

Note: This assessment does not account for the existence or potential application of threat reducing protection measures or the level of exposure and vulnerability of elements at risk. These are accounted for in subsequent steps of the risk assessment process that results in the derivation of inherent and/or residual risk levels.

Table 5.2: The assessed potential for bushfire attack mechanisms originating from vegetation to adversely impact exposed elements.

CHARACTERISTICS ASSESSMENT OF THE BUSHFIRE PRONE VEGETATION AND ITS POTENTIAL TO IMPACT [1] ELEMENTS AT RISK – THE BASE THREAT LEVEL		
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.	
Identified Characteristics that will Contribute to the Severity of the Attack Mechanism and Consequent Base Threat Level to All Elements at Risk		Base Threat Level (the relative potential for adverse impact on exposed elements)
Direct Bushfire Attack Mechanisms		
Ember Attack: This threat level is strongly correlated with the existence of bark fuels. The varied typical rates of spread and residence time for flame fronts in different vegetation types is also incorporated into the threat level assessment (these impact on time available to make decisions and time exposed to threats).	Ember Attack can result from both immediate and regional vegetation. Other attack mechanisms below have not considered vegetation within the broader locality. Within the subject lot: The grass type fuels are finer fuels and will produce very little, short distance small embers with short lives. The majority of these embers will be consumed as part of the flame front which will have a residence time (the flaming phase at a point on the ground) typically less than 10 seconds. Consequently these embers present a limited threat to the BESS units and associated infrastructure, and any accumulated debris. The longer distance woodland fuels present a limited threat due to their distance from the site, the impacting grassfire being unlikely to dislodge firebrands, and the bark types of the local mallee and salmon gum.	Very Low

CHARACTERISTICS ASSESSMENT OF THE BUSHFIRE PRONE VEGETATION AND ITS POTENTIAL TO IMPACT [1] ELEMENTS AT RISK – THE BASE THREAT LEVEL		
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.	
Radiant Heat Attack: This threat level is a function of fuel characteristics (size, shape, quantity, type, arrangement and moisture content) and the landscape and weather factors that can intensify fire behaviour. Larger flame sizes and higher temperatures produce higher levels of heat. The varied typical rates of spread and residence time for flame fronts in different vegetation types is also incorporated into the threat level assessment (these impact on time available to make decisions and time exposed to threats).	Fine fuel loads for the grassland (pasture) vegetation ranges from 2-4 t/ha, with 2 t/ha being more common due to livestock grazing. The location being in the eastern wheatbelt and considered marginal rainfall the grassland vegetation is unlikely to reach the levels near or above 2t/ha The modelled solid portion flame lengths for the identified grassland vegetation type, on land ranging from flat to 0-5 degrees downslope, are up to 7m to 9m. These are shorter to medium flame lengths. The potential impact of the radiant heat transfer is going to be moderated by the short residence time (the flaming phase at a point on the ground) for the flame front. For much of the identified grassland vegetation types, the residence time will typically be less than 10 seconds. The residual radiant heat after the passage of the fire front will be low. There are no areas of woodlands of concern that would have potential to impact the site or facilities/infrastructure in the event of a bush fire.	Low
Bushfire Flame Attack: This threat level is a function of potential flame lengths which are significantly influenced by fine fuel loads and the slope of the land on which the fire is burning. The varied typical rates of spread and residence time for flame fronts in different vegetation types is also incorporated into the threat level assessment (these impact on time available to make decisions and time exposed to threats).	Fine fuel loads for the identified grassland and scrub vegetation types range from 2 – 4.5 t/ha with the lower quantities typically associated with grazed grassland complex. These are low to moderate fine fuel loads. The modelled solid portion flame lengths for the identified grassland types, on land ranging from flat to 0-5 degrees downslope, are up to 7m and 9m. These are shorter to medium flame lengths. The modelled flame lengths for woodland in the same range are 12m to 16m. The setbacks from the grassland vegetation types due to both siting and APZ dimensions provided within the BMP are more than double these flame lengths (<9m length vs >20m setback).	Low
Surface Fire Attack: This threat level is a function of the existence of intermittent surface fuels surrounding and leading up to exposed elements.	Grassland does not accumulate significant surface fuels/debris. All vegetation areas have sufficient setback that this hazard is negligible.	Low
Indirect Bushfire Attack Mechanisms		

CHARACTERISTICS ASSESSMENT OF THE BUSHFIRE PRONE VEGETATION AND ITS POTENTIAL TO IMPACT [1] ELEMENTS AT RISK – THE BASE THREAT LEVEL		
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.	
Debris Accumulation: This threat level is a function of having a source of vegetative debris, its extent and proximity to exposed elements.	There will be limited debris accumulation due to predominantly grassland vegetation. Some debris will exist within treed areas.	Low
Consequential Fire: This threat level is a function of the existence of accumulated debris (fine fuels) and stored or constructed combustible / flammable items that exist either as part of the site use or operations or are adjoining/adjacent buildings/structures (heavy fuels).	The potential for debris accumulation has been assessed. There will be no stored combustible/flammable materials adjacent to the element at risk (the BESS and supporting infrastructure). There are no other structures that could become a consequential fire, excepting those to which the same bushfire protection measures will be applied (APZs, ember screening etc).	Very Low
Fire Driven Wind: This threat level is correlated with the potential for development of extreme bushfire events (refer to Appendix 5).		N/A
Tree Strike and Obstruction: This threat level is a function of the existence of trees, their proximity to exposed elements and an exposed element that can subsequently be vulnerable to other bushfire attack mechanisms due to damage or obstruction.	The proposed location of the facility is relatively clear, but some trees will exist within 50m. The element may be considered at risk where the setback from the tree is <1.5x the mature height of that tree.	N/A
[1] Refer to glossary.		

5.5 THE MODELLED BUSHFIRE - POTENTIAL RADIANT HEAT TRANSFER AND FLAME LENGTH

For the identified vegetation the modelled (design) fire will apply the most applicable fire behaviour and radiant heat models in determining the level of threat presented by the flame contact and radiant heat direct attack mechanisms of fire.

These models will be either those applied to Bushfire Attack Level (BAL) determination within AS 3959:2018 or other models as identified and justified in this report. The information in this section states the levels of radiant heat transfer at the stated distances from the element at risk in either BAL ratings or kW/m^2 (and flame lengths as relevant).

This information is considered in assessing threat levels in Section 5. Refer to Appendix 7 for additional information.

Table 5.3 Vegetation separation distances corresponding to radiant heat transfer levels.

THE CALCULATED VEGETATION SEPARATION DISTANCES CORRESPONDING TO THE STATED LEVEL OF RADIANT HEAT [1]									
Vegetation Classification		Separation Distances Corresponding to Stated Level of Radiant Heat (metres)							
		Bushfire Attack Level						Maximum Radiant Heat Flux	
Area	Class	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL12.5	BAL-LOW	10 kW/m^2	2 kW/m^2
1	(G) Grassland	<7	7-<9	9-<14	14-<20	20-<50	>50	21.8	-
2	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50	21.2	-
3	(G) Grassland	<6	6-<8	8-<12	12-<17	17-<50	>50	21.2	-
4	Excluded cl 2.2.3.2(e)	-	-	-	-	-	-	-	-

[1] All calculation input variables are presented in Table 3.2. A copy of radiant heat calculator output for each area of classified vegetation are presented in Appendix A2.

6 BUSHFIRE HAZARD THREAT LEVELS ASSESSMENT

SUMMARY OF THE QUALITATIVE ASSESSMENT PROCESS

1. Identify all protection measures (grouped by protection principle) that are available to reduce threat levels and rate their effectiveness;
2. Produce a numerical summary of all potential threat reducing protection measures that are available and determine their application status;
3. Assess the potential threat reducing impact of the package of protection measures that is able to be applied. The effectiveness rating weights the potential impact of an individual measure; and

1. Derive the threat level, for each identified area of bushfire prone vegetation, by accounting for:
    - The relevant characteristics of the vegetation as they influence the bushfire attack mechanisms and establish the base threat level;
    - The potential threat increasing influence of the broader landscape; and
    - The impact of the applied package of protection measures in reducing threat levels (refer to Section 2.3.3 and Appendix 2 for additional risk assessment process information).

6.1 PROTECTION MEASURES AVAILABLE TO REDUCE BUSHFIRE THREAT LEVELS AND THEIR APPLICATION STATUS

Table 6.1: For the stated area of vegetation, all available bushfire protection measures for preventing or reducing the potential for fire ignition and eliminating or reducing its threat levels.

PROTECTION MEASURES TO REDUCE BUSHFIRE THREAT LEVELS		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.					
PROTECTION PRINCIPLE - PREVENT FIRE IGNITION AND/OR SEVERITY BY CONTROLLING THE FUEL: Eliminate or reduce vegetation fuel loads, modify their properties (vegetation types and the arrangement of the fuels). Maintain the measures over time to eliminate bushfire or lower the severity of fire behaviours and the consequent threat levels. The measures may conflict with desired / regulated environmental conservation outcomes and this remains a potential limitation.						
1.1	Remove Offsite Bushfire Fuel: Remove fuel permanently by clearing bushfire prone vegetation when an authority exists.	Very High	N/A	N/A	N/A	N/A
1.2	Reduce Offsite Bushfire Fuel: Programmed hazard reduction burning when an authority exists to conduct and maintain (refer to Appendix 6 for additional information).	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: Vegetation types onsite would not respond to hazard reduction burning as minimal debris can accumulate, and burning will encourage weed growth, thereby increasing the hazard.						

PROTECTION MEASURES TO REDUCE BUSHFIRE THREAT LEVELS		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
1.3	**Reduce Offsite Bushfire Fuel**: Mechanical fuel reduction to modify composition of vegetation types and/or the arrangement of fuels and maintain the modification over time e.g. reduce canopy, limit higher threat bark types, minimise 'ladder' fuels' - when an authority exists to conduct and maintain.	High	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: Mechanical fuel reduction (slashing/sprayedl) will be required to maintain the offsite grassland to low threat.						
1.4	**Remove Onsite Bushfire Fuel**: Remove fuel permanently by clearing bushfire prone vegetation when approved.	Very High	Yes	No	Yes	Yes
Informative and/or Site Specific Comment/Assessment: A BAL-29 APZ is required for planning approval. A 10kW/m2 APZ is additionally required so BESS units and infrastructure (electrical components) are unlikely to be compromised due to radiant heat during a bushfire. There is no native vegetation on site, therefore permission by the decision maker and local government is not required.						
1.5	**Reduce Onsite Bushfire Fuel**: Programmed hazard reduction burning (refer to Appendix 6 for additional information).	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: Vegetation (grassland) onsite would not respond to hazard reduction burning as minimal debris can accumulate and burning will encourage weed growth.						
1.6	**Reduce Onsite Bushfire Fuel**: Mechanical fuel reduction to modify composition of vegetation types and/or the arrangement of fuels and maintain the modification over time e.g. reduce canopy, limit higher threat bark types, minimise 'ladder' fuels' - when approved. Refer to the planned APZ.	Effective	Yes	No	Yes	Yes
Informative and/or Site Specific Comment/Assessment: The grassland will be slashed, sprayed or grazed.						
1.7	**Reduce Onsite Consequential Fire Fine Fuels**: Apply the specifications for an Asset Protection Zone (APZ) surrounding the exposed element(s) to ensure this area contains minimal consequential fire fuels and is maintained in a low threat state. The specifications are established in the Guidelines [22] within the *Explanatory Notes for Element 2 of the Bushfire Protection Criteria and Schedule 1: Standards for Asset Protection Zones.*	Effective	Yes	No	No	Yes
Informative and/or Site Specific Comment/Assessment: It is required that all fine fuels are removed or maintained below 2t/ha within the APZ. Land management plans and procedures are to be in place to ensure ongoing compliance by regular maintenance.						
1.8	**Reduce Road Verge Fuel**: Road verges of designated evacuation routes are subject to fuel load reduction, tree management and ongoing maintenance when an authority exists to conduct and maintain.	Not Relevant	N/A	N/A	N/A	N/A
1.9	Greater Enforcement Applied to **Compliance with the Local Government's Fire Break and Fuel Load Notice:** Inform the relevant landowners of the high level of enforcement that will be applied under the authority conferred through Section 33 of the Bush Fires Act 1954, including any amendments.	Effective	Yes	No	No	No

PROTECTION MEASURES TO REDUCE BUSHFIRE THREAT LEVELS		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Informative and/or Site Specific Comment/Assessment: The bushfire protection measures within the BMP far exceed that of the Firebreak Notice and it is a condition of approval that the site must be compliant with the local government firebreak Notice.						
PROTECTION PRINCIPLE – PREVENT FIRE IGNITION BY CONTROLLING HEAT ENERGY SOURCES: Fire prevention focussed on potential ignition sources from human actions and/or faulty or poorly designed equipment. Natural causes of ignition (lightning) cannot be controlled and are a limitation.						
1.10	Operational Procedures: Apply fire safe principles to site operation procedures including: • Eliminating or reducing the potential for open air creation of fire, embers or sparks; and • Closing identified high risk operations when a bushfire event exists. Ensure safe practices are carried out via appropriate guidelines, protocols, signage and education.	Moderate	Yes	No	No	Yes
Informative and/or Site Specific Comment/Assessment: Operating procedures have not yet been prepared. No ongoing works are proposed which could ignite a bushfire, except during an accident or component failure. It is advised that any hot/hazardous works are not undertaken during a Total Fire Ban or on a day with a Fire Danger Rating of Extreme or Catastrophic or under a Local Govt imposed Harvest, Vehicle movement and hot works ban.						
1.11	Operational Procedures: Ensure proper management of hazard reduction burning as an unintended ignition source.	Not Relevant	N/A	N/A	N/A	N/A
1.12	Equipment Design: Apply fire safe design principles to equipment, vehicles, and energy transmission etc. Design to control rate of energy release and eliminate/reduce potential for open air creation of fire, embers or sparks.	Moderate	Yes	No	Yes	No
Informative and/or Site Specific Comment/Assessment: To be included in equipment design at purchase stage. All equipment must meet minimum national standards and standards associated with BESS requirements, and this is considered adequate.						
1.13	Legal Enforcement: Impose restrictions on source of ignition operations by enforcing total fire bans.	Effective	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: Onsite activity capable of igniting a fire is controlled by the Standard Operating Procedures.						
1.14	Legal Enforcement: Reduce arson events by monitoring / enforcement / penalties.	Moderate	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: Unlikely to have any impact given the scale of relevant vegetation and the population density of the region.						
1.15	Education: Educate persons to reduce the occurrence of accidental ignitions in vegetation by persons and/or vehicles, particularly with regard to road reserves.	Moderate	Yes	No	No	No
PROTECTION PRINCIPLE - PREVENT FIRE IGNITION BY CONTROLLING HEAT ENERGY SOURCE AND FUEL INTERACTIONS: Fire prevention focussed on limiting potential ignition sources by preventing a source and a fuel being able to interact.						

PROTECTION MEASURES TO REDUCE BUSHFIRE THREAT LEVELS		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
1.16	**Shielding of Ignition Sources**: Utilise physical barriers (shielding) between bushfire fuels and heat energy sources such as electricity generation / transmission, fuel supplies, stored flammable products etc. Examples include appropriate walls, enclosures, and underground transmission of electricity or liquid/gas fuels.	Moderate	Yes	No	Yes	Yes
Informative and/or Site Specific Comment/Assessment: BESS units and associated infrastructure are comprised of metal exterior. Electrical cabling to and from the BESS units and associated infrastructure are underground, and any exposed cables can be shielded by non-combustible material.						
1.17	**Separation of Ignition Sources**: Establish sufficient separation distance between bushfire fuels and heat energy sources such as electricity generation / transmission, fuel supplies, stored flammable products etc.	Effective	Yes	No	Yes	Yes
Informative and/or Site Specific Comment/Assessment: Fire within the facility (infrastructure, batteries or stored equipment) ignited by site operation/accident/failure may ignite vegetation. The recommended 10kW/m2 APZ to be applied around the infrastructure is considered appropriate in reducing the risk of igniting a bushfire. The likelihood of flame contact in such an event is negligible. Radiant heat flux in battery fires is relatively low, the Victorian Big Battery Fire (July 2021) required only a 20m exclusion zone for personnel. Note the 10kW/m2 APZ proposed is also >20m. The recommendations provided include the removal of consequential fire hazards within the APZ, and thus minimising the potential for spread of fire beyond the asset.						
1.18	**Equipment Design**: Through design and materials, control heat energy transfer via conduction, convection and radiation of heat energy.	Moderate	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: The design of equipment is appropriate. Shielding cables will minimise flame length and help contain a fire.						

[1] **Protection Measure Effectiveness Rating**: Refer to section 2.3.5 for explanation and defining.

[2] **Protection Measure Application Status**:

- **Possible**: Protection measures that can potentially be applied to the proposed development/use;
- **Exists**: Protection measures already implemented by existing components of the proposed development/use. These measures are accounted for in assessing 'inherent' risk levels (refer to Glossary);
- **Planned**: Protection measures that:
  - Are incorporated into the site plans;
  - Exist in an approved Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), alternative solutions and any additional recommended protection measures - for which a responsibility for their implementation has been created and approved; and/or

PROTECTION MEASURES TO REDUCE BUSHFIRE THREAT LEVELS	Effectiveness Rating [1]	Application Status [2]			
		Possible	Exists	Planned	Additionally Recommend

- Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), that can be met and for which a responsibility for their implementation can be created in the BMP.

These planned measures are accounted for in assessing 'inherent' risk levels (refer to Glossary).

- **Additionally Recommend**: Protection measures that:
  - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and comprise alternative solutions and/or additional recommended protection measures (that can and should be implemented in the opinion of the bushfire consultant), and for which a responsibility for their implementation can be created in the BMP; and/or
  - Are developed in the process of producing this risk assessment and management report and for which a responsibility for their implementation can be created in the BMP.

These additionally recommended measures, along with existing and planned measures, are accounted for in assessing 'residual' risk levels (refer to Glossary).

6.2 NUMBER ANALYSIS OF AVAILABILITY VERSUS APPLICATION OF PROTECTION MEASURES

Table 6.2: For the stated area of bushfire prone vegetation, the summarised number of bushfire protection measures that can be applied (and their corresponding effectiveness rating), is compared to the number available.

BUSHFIRE THREAT REDUCING PROTECTION MEASURES – SUMMARY NUMBERS						
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.					
The Protection Principle	Effectiveness Rating [1]	Numbers of Protection Measures				
		Total Available	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Prevent Fire Ignition and/or Severity by Controlling the Fuel	Very High	1	1	-	1	-
	High	-	-	-	-	-
	Effective	3	3	-	1	2
	Moderate	-	-	-	-	-
	Not Relevant	5	-	-	-	-
Prevent Fire Ignition by Controlling Heat Energy (Ignition) Sources	Very High	-	-	-	-	-
	High		-	-	-	-
	Effective	1	1	-	-	-
	Moderate	4	3	-	1	1
	Not Relevant	1	-	-	-	-
Prevent Fire Ignition by Controlling Heat Energy Source and Fuel Interactions	Very High	-	-	-	-	-
	High	-	-	-	-	-
	Effective	-	-	-	-	-
	Moderate	3	3	-	2	2
	Not Relevant	-	-	-	-	-
Total Numbers	Very High	1	1	-	1	-
	High	-	-	-	-	-
	Effective	4	4	-	1	2
	Moderate	7	6	-	3	3
	Not Relevant	6	-	-	-	-
	Totals	18	14	-	4	5

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status: Refer to table footnotes on previous page.

6.3 ASSESSED IMPACT OF APPLIED PROTECTION MEASURES (THREAT REDUCTION)

Table 6.3: The potential impact of the applied protection measures in reducing threat levels in the stated area of bushfire prone vegetation.

ASSESSED IMPACT OF APPLIED PROTECTION MEASURES (THREAT REDUCTION)								
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.							
Threat Reducing Protection Measures Applied to Assessment [1]	The Bushfire Hazard Threats [2]							
	Direct Attack Mechanisms				Indirect Attack Mechanisms			
	Embers	Radiant Heat	Flame	Surface Fire	Debris Accumulation	Consequential Fire	Fire Driven Wind	Tree Strike / Obstruction
Existing and Planned (applied to inherent risk)	Minimal	Medium	Significant	Significant	Minimal	Medium	Minimal	Medium
	Medium				Minimal			
Existing, Planned and Recommended (applied to residual risk)	Medium	Very Significant	Very Significant	Very Significant	Significant	Significant	Minimal	Medium
	Very Significant				Significant			
[1] Corresponds to the stage at which the risk level is to be reported i.e. inherent or residual (refer to Section 2.3.3) [2] Refer to Appendix 4 for explanatory information.								

Assessment Comments:

Ember attack will likely exist regardless of the APZ due to location of the native vegetation reserve to the NNE of the site.

'Existing and Planned' measures include the acceptable solutions to the Bushfire Protection Criteria, and therefore assumes the minimum BAL-29 APZ maintained to Schedule 1 of the *Guidelines*.

6.4 ASSESSED HAZARD THREAT LEVELS

Assessed as a function of the base threat levels of the bushfire hazard (refer to Section 5.5) and the number and effectiveness of protection measures that will be applied and their ability to reduce the base levels of threat from the identified areas of bushfire prone vegetation (Note: This assessment is independent of the exposure level and vulnerability level assessments).

Table 6.4: The assessed threat levels corresponding to the stated area of bushfire prone vegetation.

ASSESSED HAZARD THREAT LEVELS								
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.							
Threat Reducing Protection Measures Applied to Assessment [1]	The Bushfire Hazard Threats [2]							
	Direct Attack Mechanisms				Indirect Attack Mechanisms			
	Embers	Radiant Heat	Flame	Surface Fire	Debris Accumulation	Consequential Fire	Fire Driven Wind	Tree Strike / Obstruction
Existing and Planned (applied to inherent risk)	Low	Very Low	Very Low	Low	Low	Very Low	Moderate	Very Low
	Moderate							
Existing, Planned and Recommended (applied to residual risk)	Very Low	Very Low	Very Low	Very Low	Low	Very Low	Moderate	Very Low
	Low							
Vegetation Area / Location	All bushfire prone vegetation within the broader locality (10km radius) including along access routes.							
Existing and Planned (applied to inherent risk)	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low	Low	Very Low
	Low							

[1] Corresponds to the stage at which the risk level is to be reported i.e. inherent or residual (refer to Section 2.3.3).
[2] Refer to Appendix 2 for explanatory information.

Assessment Comments:

As identified in Section 5.3, there are a number of protection measures that can be applied to reduce the potential bushfire threat levels presented by the bushfire prone vegetation.

The protection measures will ensure the threat levels generated by a bushfire via the direct and indirect bushfire attack mechanisms, will be reduced. This includes the proposed APZ (as described within the associated BMP) and shielding of exposed cables where possible/practical.

There is little aside from the regular removal of accumulated debris against relevant infrastructure and strict management of the APZ, that operations management can do post-construction and during operation. From a preparation as opposed to a response perspective, this will ensure the threat levels generated by a bushfire (via the direct and indirect bushfire attack mechanisms), will be reduced.

For bushfire prone vegetation within the broader locality, inherent risk only is applied as treatments are not available. The ratings are on the base hazard posed, not the exposure or vulnerability of assets to the hazard.

7 EXPOSURE LEVEL ASSESSMENT OF THE ELEMENTS AT RISK

SUMMARY OF THE QUALITATIVE ASSESSMENT PROCESS

4. Identify all protection measures (grouped by protection principle) that are available to reduce exposure levels and rate their effectiveness;
5. Produce a numerical summary of all potential exposure reducing protection measures that are available and determine their application status;
6. Assess the potential exposure reducing impact of the package of protection measures that is able to be applied. The effectiveness rating weights the potential impact of an individual measure; and
7. Derive the exposure level of the identified element at risk, to the threats presented by each identified area of bushfire prone vegetation (refer to Section 2.3.3 and Appendix 2 for additional risk assessment process information).

7.1 PERSONS ONSITE OR TEMPORARILY OFFSITE

7.1.1 PROTECTION MEASURES AVAILABLE TO REDUCE EXPOSURE LEVELS AND THEIR APPLICATION STATUS

Table 7.1: All available protection measures to reduce exposure of the stated element at risk to bushfire hazard threats and their application to the subject development/use.

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
ELEMENT AT RISK: PERSONS LOCATED ONSITE AND TEMPORARILY OFFSITE						
PROTECTION PRINCIPLE – SEPARATION FROM THE HAZARD: To ensure that the persons are located or re-located at a sufficient distance from the bushfire hazard to ensure the level of exposure to the threats, and the associated risk of persons death or injury, is contained within acceptable parameters.						
2.1	Stay Away from the Subject Site: In response to a pre-determined fire danger rating and/or total fire ban or set months of the year (bushfire season), prevent access to, occupancy or operation of the subject site (i.e. closure of use). The relevant conditions and the requirement to stay away will be established through a Bushfire Emergency Plan.	Very High	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: The site does not have regular staffing. Suitable egress and shelter locations are available so the measure is not necessary. Local Govt. imposed Harvest and Vehicle movement, hots works bans will also need to be considered.						
2.2	Stay Within the Subject Site – Remote Hazard: For offsite tourism operations, all associated persons (staff, guests, visitors), in response to a pre-determined fire danger rating and/or total fire ban, will remain on-site as better communication and sheltering options exist on-site. The relevant conditions and the requirement to stay will be established through a Bushfire Emergency Plan.	Not Relevant	N/A	N/A	N/A	N/A

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
2.3	**Relocate Away from Remote Hazard - Safer Offsite Location Available**: For offsite tourism operations (where persons are to be moved offsite as part of operations e.g., tourism day trips), a suitable offsite alternative safer location(s) is identified as a destination should the subject site and/or the route back to the subject site, be impacted by a bushfire event. That is, two safer locations will exist.	Not Relevant	N/A	N/A	N/A	N/A
2.4	**Evacuate from the Subject Site: Safer Offsite Location(s) Available**: A building/area is accessible from the subject site as an evacuation destination. The offsite location exists at a sufficient distance away ensuring that the destination and the subject site are very unlikely to be simultaneously impacted by a bushfire event.	Moderate	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: The site does not have regular staffing. Any attending staff will have their own vehicle immediately available and will self-evacuate. There are multiple directions for evacuation to safer place by road.						
2.5	**Relocate Within the Subject Site - Safer Onsite Area**: Provide an accessible area located in the open (i.e. not in an enclosed building), within the subject site and on which persons can assemble and that will not be subject to radiant heat flux in excess of 2 kW/m^2 (determined using a flame temperature of 1200 K). Consideration must also be given to potential exposure to embers, adverse weather, availability of water / facilities and the relative importance of these to the specific use proposal.	Moderate	Yes	No	Yes	No
Informative and/or Site Specific Comment/Assessment: The site does not have regular staffing. No areas onsite will be subject to <2kW/m2 radiant heat flux.						
2.6	**Relocate Within the Subject Site – Pathway to Safer Onsite Area/Building**: To facilitate the lower risk movement, on foot, of persons and firefighters on the site, heavy fuels are excluded from areas adjacent to pathways used to access designated safer locations onsite. The required minimum separation distances are [13] [31]: • At least 4m from stored heavy fuels (refer to Appendix 4). • At least 6m from stored and constructed large heavy fuels (refer to Appendix 4). • At least 12m from constructed large heavy fuels that are buildings/structures other than the one being evacuated. Additionally: • The pathway/route is constructed of non-combustible materials; • No gas bottles are venting towards the pathway/route; and • Shrubs are separated from the pathway/route corresponding to a distance to minimise the threats to persons on foot with consideration of their flammability and height.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: No heavy fuels are stored onsite.						

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
2.7	Pre-Emptively Relocate Away from the Subject Site: In response to a pre-determined fire danger rating and/or total fire ban or other established conditions, all persons onsite will pre-emptively relocate offsite for the duration of the existence of the conditions. The relevant conditions and the requirement to pre-emptively relocate will be established through a Bushfire Emergency Plan.	Effective	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: The site does not have regular staffing. Suitable egress and shelter locations are available so the measure is not necessary. Local Govt. imposed Harvest and Vehicle movement, hots works bans will also need to be considered.						
PROTECTION PRINCIPLE – SHIELDING FROM THE HAZARD: To utilise constructed or natural shielding to reduce the exposure of persons to the flame, radiant heat, and ember attack from bushfire and consequential fire.						
2.8	On-site Shelter Building – Community Refuge: For a 'vulnerable land use' (defined by SPP 3.7 [43]), provide a building which is constructed in accordance with the NCC and the ABCB Design and Construction of Community Bushfire Refuges – Information Handbook [20]. Note: preferred floor area per person is an increase from 0.75 m^2 to 1.0 m^2 (Guidelines v1.4) [22].	Not Relevant	N/A	N/A	N/A	N/A
2.9	On-site Shelter Building – No Accommodation in the Site Use: For a 'vulnerable land use' (defined by SPP 3.7 [43]), and for which accommodation is not part of the site use, provide a building that will not be subject to radiant heat flux in excess of 10 kW/m^2 (determined using AS 3959 BAL determination methodology [4] and applying a flame temperature of 1200 K) and constructed to the bushfire standard corresponding to the BAL-29 rating (to provide greater resistance to consequential fire).	Not Relevant	N/A	N/A	N/A	N/A
2.10	On-site Shelter Building – Appropriate Threat Resilience: For other than a 'vulnerable land use' (defined by SPP 3.7 [43]), provide a building that incorporates sufficient design and construction protection measures to reduce the building vulnerability to bushfire and consequential fire threats to an appropriate level (refer to the section of this report that identifies bushfire protection measures to reduce the vulnerability of buildings/structures). Alternatively, provide a building that will not be subject to radiant heat flux in excess of 10 kW/m^2 (determined using AS 3959 BAL determination methodology [4] and applying a flame temperature of 1200 K) and constructed to the bushfire standard corresponding to the BAL-29 rating (to provide greater resistance to consequential fire).	Effective	N/A	N/A	N/A	N/A
2.11	On-site Shelter Structure – Class 10c: Provide a private bushfire shelter (Class 10c building) constructed in accordance with the NCC and the *Performance Standard – The design and construction of private bushfire shelter (ABCB 2014).* This is not a standalone measure but an additional measure as a last resort.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: The site does not have regular staffing and no habitable structures are proposed.						

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
2.12	**Constructed Barrier – Shield Persons in the Open**: Construct walls / fences / landforms as shielding structures that are not buildings, applying appropriate fire resistant / non-combustible construction materials (e.g. masonry, steel, earthworks). These are to withstand the impact of direct bushfire attack mechanisms for the required period of time and provide the required reduction in threat levels to persons in the open. Construction requirements will correspond, as a minimum, to the BAL-FZ requirements for walls as established by AS 3959:2018 [4] and/or the NASH Standard [33] and additionally informed by the research report 'Research and Investigation into the Performance of Residential Boundary Fencing Systems in Bushfires' [29].	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: The site does not have regular staffing and safe (early) evacuation will be the bushfire response.						
2.13	**Natural Barrier – Shield Persons in the Open**: Utilise natural landforms that have the potential to shield persons from the bushfire and consequential fire threats.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: No such landforms exist.						
2.14	**Constructed/Natural Barrier – Shielding for Persons on Pathways to Safer Onsite Area/Building**: Where possible, alongside pathways to an on-site shelter building/area, utilise walls / fences / landforms as shielding structures constructed using fire resistant / non-combustible construction materials (e.g. masonry, steel, earthworks). These are to withstand the impact of direct bushfire attack mechanisms for the required period of time and provide the required reduction in threat levels to persons (including firefighters) traversing the pathway. Construction can be informed by the BAL-FZ requirements for walls as established by AS 3959:2018 [4] and/or the NASH Standard [33] and additionally informed by the research report 'Research and Investigation into the Performance of Residential Boundary Fencing Systems in Bushfires' [29].	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: No safer onsite location has been identified.						

[1] **Protection Measure Effectiveness Rating**: Refer to section 2.3.5 for explanation and defining.

[2] **Protection Measure Application Status**:

- **Possible**: Protection measures that can potentially be applied to the proposed development/use;
- **Exists**: Protection measures already implemented by existing components of the proposed development/use. These measures are accounted for in assessing 'inherent' risk levels (refer to Glossary);
- **Planned**: Protection measures that:
    - Are incorporated into the site plans;

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
		Possible	Exists	Planned	Additionally Recommend

- Exist in an approved Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), alternative solutions and any additional recommended protection measures - for which a responsibility for their implementation has been created and approved; and/or
- Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), that can be met and for which a responsibility for their implementation can be created in the BMP.

These planned measures are accounted for in assessing 'inherent' risk levels (refer to Glossary).

- Additionally Recommend: Protection measures that:
  - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and comprise alternative solutions and/or additional recommended protection measures (that can and should be implemented in the opinion of the bushfire consultant), and for which a responsibility for their implementation can be created in the BMP; and/or
  - Are developed in the process of producing this risk assessment and management report and for which a responsibility for their implementation can be created in the BMP.

These additionally recommended measures, along with existing and planned measures, are accounted for in assessing 'residual' risk levels (refer to Glossary).

7.1.2 NUMBER ANALYSIS OF AVAILABILITY VERSUS APPLICATION OF PROTECTION MEASURES

Table 7.2: For the stated element at risk and area of bushfire prone vegetation, the summarised number of bushfire protection measures that can be applied (and their corresponding effectiveness rating), is compared to the number available.

EXPOSURE REDUCING PROTECTION MEASURES – SUMMARY NUMBERS						
Element at Risk	Persons located onsite and temporarily offsite					
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.					
The Protection Principle	Effectiveness Rating [1]	Numbers of Protection Measures				
		Total Available	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Separation from the Hazard	Very High	1	1	-	-	-
	High	-	-	-	-	-
	Effective	1	1	-	-	-
	Moderate	2	2	-	1	-
	Not Relevant	3	-	-	-	-
Shielding from the Hazard	Very High	-	-	-	-	-
	High	-	-	-	-	-
	Effective	-	-	-	-	-
	Moderate	-	-	-	-	-
	Not Relevant	7	-	-	-	-
Total Numbers	Very High	1	1	-	-	-
	High	-	-	-	-	-
	Effective	1	1	-	-	-
	Moderate	2	2	-	1	-
	Not Relevant	10	-	-	-	-
	Totals	14	4	-	1	-

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status: Refer to table footnotes on previous page.

7.1.3 ASSESSED IMPACT OF APPLIED PROTECTION MEASURES (EXPOSURE REDUCTION)

Table 7.3: For the stated element at risk, The potential impact of the applied protection measures in reducing exposure levels to the stated area of bushfire prone vegetation.

ASSESSED IMPACT OF APPLIED MEASURES (EXPOSURE REDUCTION)								
Element at Risk	Persons located onsite and temporarily offsite							
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.							
Exposure Reducing Protection Measures Applied to Assessment [1]	The Bushfire Hazard Threats [2]							
	Direct Attack Mechanisms				Indirect Attack Mechanisms			
	Embers	Radiant Heat	Flame	Surface Fire	Debris Accum.	Conseq. Fire	Fire Driven Wind	Tree Strike / Obstruct
Existing and Planned (applied to inherent risk)	Minimal	Medium	Significant	Medium	Minimal	Medium	Minimal	Medium
	Medium				Medium			
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 4 for explanatory information.								

7.1.4 ASSESSED EXPOSURE LEVELS

Assessed as a function of the capacity to apply sufficient exposure reducing protection measures, their individual effectiveness and their combined impact in reducing the exposure of the identified element at risk (Note: This assessment is independent of the threat level and vulnerability level assessments).

Table 7.4: For the stated element at risk, the assessed exposure level corresponding to the stated area of bushfire prone vegetation.

ASSESSED EXPOSURE LEVELS	
Element at Risk	Persons located onsite and temporarily offsite
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.
Exposure Reducing Protection Measures Applied to Assessment [1]	Relative Exposure Level [2]
Existing and Planned (applied to inherent risk)	Moderate
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 2 for explanatory information.	

Assessment Comments: A shelter building/location has not been identified or recommended as the site is unstaffed.

7.2 PERSONS ON ACCESS/EGRESS ROUTES IN VEHICLES

7.2.1 PROTECTION MEASURES AVAILABLE TO REDUCE EXPOSURE LEVELS AND THEIR APPLICATION STATUS

Table 7.5: All available protection measures to reduce exposure of the stated element at risk to bushfire hazard threats and their application to the subject development/use.

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
ELEMENT AT RISK: PERSONS ON ACCESS/EGRESS ROUTES IN VEHICLES						
Access/Egress Route ID:	All bushfire prone vegetation within the broader locality (10km radius) including along access routes.					
PROTECTION PRINCIPLE - SEPARATION FROM ALL BUSHFIRE THREATS: To utilise distance away from all relevant bushfire hazard threats (direct and indirect attack mechanisms) while traversing an access/egress route in a vehicle to lower the exposure of persons to the threats for the expected time on the route.						
3.1	Locating Routes Away from Adjacent Hazards: Existing or to be installed vehicular access/egress route components (roads, access ways, and driveways) are positioned to maximise the distance away from any adjacent bushfire prone vegetation where possible.	Not Relevant	N/A	N/A	N/A	N/A
3.2	Egress Routes Located to Ensure Driving Away from Hazard: Existing or to be installed vehicular access/egress route components (roads, access ways, and driveways) are positioned so that the direction of egress is away from the hazard into lower threat areas.	Not Relevant	N/A	N/A	N/A	N/A
3.3	Greater Road Width: Wider roads will allow for a greater separation distance between traversing vehicles and the bushfire hazard. The incorporation of non-vegetated and trafficable road verges/shoulders and adjacent footpaths can also safely increase effective separation for slower moving vehicles.	Not Relevant	N/A	N/A	N/A	N/A
3.4	Reduce and Maintain Road Verge Fuel to Low Threat State: Road verges, or part off, have vegetation removed or reduced to a minimal fuel, low threat state annually to increase the separation distance from the bushfire hazard. This is practical when an authority exists to conduct the management and will have greater impact as a protection measure if there is certainty it will be carried out.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: The measures are not under the control of the developer.						
PROTECTION PRINCIPLE - SHIELDING FROM ALL BUSHFIRE THREATS: To utilise constructed or natural shielding to reduce the exposure of persons traversing the access/egress routes to the direct attack mechanisms of bushfire. To assist with ensuring the level of exposure to the threats is survivable for the expected time on the route while travelling in a vehicle.						

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
3.5	**Vehicle Type – Protection Level**: People can only tolerate low levels of radiant heat without some protection. Vehicles provide some protection from low intensity fires (if they stay on cleared area and remain in the vehicle) but they will not protect people in moderate to intense grass fires or in any location where scrub or forest adjoin the road. Protection provided by vehicles with predominantly metal bodies (including roof) and able to be enclosed (glass window), while limited is also still significant. It is particularly significant when compared to other potentially available modes of transport on roads (e.g. open top/backed vehicles, motorbikes, bicycles and being on foot). The availability such vehicles of required capacity can contribute to reduced exposure to the bushfire threats for persons on access/egress routes.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: Most evacuees vehicles will have an enclosed cabin, but it is unreasonable for this to be assumed, expected, or required.						
3.6	**Shelter in Place Procedure**: In most situations, safe (early) evacuation is considered the emergency procedure which poses the least risk to occupants. In some situations, Shelter-in-place may be considered the safer procedure, particularly where: • The type or number of occupants makes evacuation time consuming or otherwise difficult; • The evacuation route(s) available are not suitable for the volume of evacuees; • The route(s) available have poor visibility, gradients, surface quality etc, or; • The routes(s) available are bounded by bushfire prone vegetation of an unacceptable hazard and/or extent.	Very High	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: Two appropriate access/egress routes are available and any potential occupants (staff) will have local awareness and transportation available. The access/egress routes run through farm land and adjacent to the existing solar installation with Robartson Rd access/egress in a north direction towards the Great Eastern Highway and the town of Merredin, and south direction for approx. 750m before meeting the Bruce Rock – Merredin Rd in an east or west direction. *Safe (early) evacuation is the primary procedure for occupants (staff) during bushfire emergencies. Shelter in place has not been established as a secondary procedure as a suitable open location or building is not available.*					

[1] **Protection Measure Effectiveness Rating**: Refer to section 2.3.5 for explanation and defining.

[2] **Protection Measure Application Status**:

- **Possible**: Protection measures that can potentially be applied to the proposed development/use;
- **Exists**: Protection measures already implemented by existing components of the proposed development/use. These measures are accounted for in assessing 'inherent' risk levels (refer to Glossary);
- **Planned**: Protection measures that:
  - Are incorporated into the site plans;

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
		Possible	Exists	Planned	Additionally Recommend

- Exist in an approved Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), alternative solutions and any additional recommended protection measures - for which a responsibility for their implementation has been created and approved; and/or
- Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), that can be met and for which a responsibility for their implementation can be created in the BMP.

These planned measures are accounted for in assessing 'inherent' risk levels (refer to Glossary).

- Additionally Recommend: Protection measures that:
  - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and comprise alternative solutions and/or additional recommended protection measures (that can and should be implemented in the opinion of the bushfire consultant), and for which a responsibility for their implementation can be created in the BMP; and/or
  - Are developed in the process of producing this risk assessment and management report and for which a responsibility for their implementation can be created in the BMP.

These additionally recommended measures, along with existing and planned measures, are accounted for in assessing 'residual' risk levels (refer to Glossary).

7.2.2 NUMBER ANALYSIS OF AVAILABILITY VERSUS APPLICATION OF PROTECTION MEASURES

Table 7.6: For the stated element at risk and area of bushfire prone vegetation, the summarised number of bushfire protection measures that can be applied (and their corresponding effectiveness rating), is compared to the number available.

EXPOSURE REDUCING PROTECTION MEASURES – SUMMARY NUMBERS						
Element at Risk	Persons on access/egress routes in vehicles					
Access/Egress Route ID	All bushfire prone vegetation within the broader locality (10km radius) including along access routes.					
The Protection Principle	Effectiveness Rating [1]	Numbers of Protection Measures				
		Total Available	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Separation from the Bushfire Hazard	Very High	-	-	-	-	-
	High	-	-	-	-	-
	Effective	-	-	-	-	-
	Moderate	-	-	-	-	-
	Not Relevant	4	-	-	-	-
Shielding from the Bushfire Hazard	Very High	1	1	-	-	-
	High	-	-	-	-	-
	Effective	-	-	-	-	-
	Moderate	-	-	-	-	-
	Not Relevant	1	-	-	-	-
Total Numbers	Very High	1	1	-	-	-
	High	-	-	-	-	-
	Effective	-	-	-	-	-
	Moderate	-	-	-	-	-
	Not Relevant	5	-	-	-	-
	Totals	6	1	-	-	-

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status: Refer to table footnotes on previous page.

7.2.3 ASSESSED IMPACT OF APPLIED PROTECTION MEASURES (EXPOSURE REDUCTION)

Table 7.6: For the stated element at risk, The potential impact of the applied protection measures in reducing exposure levels to the stated area of bushfire prone vegetation.

ASSESSED IMPACT OF APPLIED MEASURES (EXPOSURE REDUCTION)								
Element at Risk	Persons on access/egress routes in vehicles							
Access/Egress Route ID	All bushfire prone vegetation within the broader locality (10km radius) including along access routes.							
Exposure Reducing Protection Measures Applied to Assessment [1]	The Bushfire Hazard Threats [2]							
	Direct Attack Mechanisms				Indirect Attack Mechanisms			
	Embers	Radiant Heat	Flame	Surface Fire	Debris Accumulation	Consequential Fire	Fire Driven Wind	Tree Strike / Obstruction
Existing and Planned (applied to inherent risk)	Minimal	Minimal	Minimal	Medium	N/A	N/A	Medium	Minimal
	Minimal				Medium			
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 4 for explanatory information.								

7.2.4 ASSESSED EXPOSURE LEVELS

Assessed as a function of the capacity to apply sufficient exposure reducing protection measures, their individual effectiveness and their combined impact in reducing the exposure of the identified element at risk (Note: This assessment is independent of the threat level and vulnerability level assessments).

Table 7.7: For the stated element at risk, the assessed exposure level corresponding to the stated area of bushfire prone vegetation.

ASSESSED EXPOSURE LEVELS	
Element at Risk	Persons on access/egress routes in vehicles
Access/Egress Route ID	All bushfire prone vegetation within the broader locality (10km radius) including along access routes.
Exposure Reducing Protection Measures Applied to Assessment [1]	Relative Exposure Level [2]
Existing and Planned (applied to inherent risk)	High
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 2 for explanatory information.	

Assessment Comments: The local and regional road network and its proximity to bushfire prone vegetation is not under the control of the landowner. No recommendations have been applied as the development is intended to be unstaffed.

Safe (early) evacuation is the primary procedure for any potential occupants (staff) during bushfire emergencies.

The access/egress routes run through farm land and adjacent to the existing solar installation with Robartson Rd access/egress in a north direction towards the Great Eastern Highway and the town of Merredin, and south direction for approx. 750m before meeting the Bruce Rock – Merredin Rd in an east or west direction.

7.3 BUILDINGS AND STRUCTURES NCC CLASSES 1-10

7.3.1 PROTECTION MEASURES AVAILABLE TO REDUCE EXPOSURE LEVELS AND THEIR APPLICATION STATUS

Table 7.8 All available protection measures to reduce exposure of the stated element at risk to bushfire hazard threats and their application to the subject development/use.

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
ELEMENT AT RISK: BUILDINGS/STRUCTURES - NCC CLASSES 1-10						
PROTECTION PRINCIPLE – SEPARATION FROM ALL BUSHFIRE THREATS (SITING): To locate (site) the buildings and attached/adjacent structures at distances away from the direct and indirect attack mechanisms of bushfire (the hazard threats) to reduce their exposure. The required distances will be dependent on the relative threat levels and the degree of bushfire resilience that is or is planned to be incorporated into the exposed elements through design and construction.						
4.1	Asset Protection Zone (APZ): Ensure an APZ can be established surrounding the exposed element(s) to create the required separation distance from the bushfire hazard and its threats (the direct and indirect attack mechanisms). This is to be an area containing minimal fire fuels and maintained in a low threat state. The *Explanatory Notes for Element 2 of the Bushfire Protection Criteria and Schedule 1: Standards for Asset Protection Zones* established in the Guidelines [22] provides the key requirements for establishing and maintaining an APZ. Additional requirements may exist within a relevant local governments firebreak notice, or the responsibilities established by an applicable Bushfire Management Plan (BMP). The required dimensions of the APZ will correspond to the maximum level of radiant heat the exposed element is to be exposed to – or a greater distance if it is stipulated by a different authority (e.g. firebreak notice of BMP). As a minimum avoid dimensions (separation distances) that correspond to BAL-FZ and BAL-40 ratings for any given site/vegetation combination of relevant the parameters (Note: this will also apply to BAL-29 separation distances if flame length modelling indicates potential contact due to specific site and effective slope configurations). The APZ should be contained solely within the boundaries of each lot, except in instances where the neighbouring lot(s) or adjacent public land will be managed in a low-fuel state on an ongoing basis, in perpetuity. *Note that the APZ does not provide separation from the consequential fire attack mechanism. Separation from consequential fire fuels requires additional assessment and management.*	Effective	Yes	No	Yes	Yes
Informative and/or Site Specific Comment/Assessment: A BAL-29 APZ can be established for all Class 1-10 buildings onsite. The BESS cabinets and associated infrastructure within the facility are required to establish a <10kW/m2 APZ. This will result in a BAL-12.5 APZ being established around most (if not all) Class 1-10 buildings, exceeding the BAL-29 'Planning' APZ.						
4.2	Siting of Buildings/Structures - Wind: Site the buildings and attached/adjacent structures in locations that have lower wind exposure. Avoid the top and sides of ridges which are especially vulnerable to fire driven winds as well as topographically	Not Relevant	N/A	N/A	N/A	N/A

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
	influenced winds. Winds can directly or indirectly (carrying materials/debris) cause damage to the external building envelope potentially allowing flame, radiant heat and ember entry.					
Informative and/or Site Specific Comment/Assessment: Not possible as the local area has consistent topography.						
4.3	Use of Non-Vegetated Areas and/or Public Open Space: Reduce exposure by increasing separation from APZ landscaping vegetation and/or the bushfire hazard by incorporating these lowest threat areas adjacent to buildings/structures and/or adjacent to the bushfire hazard. These lowest threat components of the APZ include non-vegetated areas (e.g. footpaths, paved areas, roads, parking, drainage, swimming pools), formally managed areas of vegetation (public open space and other recreation areas) and services installed in a common section of non-vegetated land. These elements create robust and easier managed asset protection zones.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: There are few such areas existing or proposed.						
4.4	Landscaping - Tree Location: Use separation to minimise the potential for debris accumulation and tree strike damage to the building envelop potentially allowing flame, radiant heat and ember entry to internal spaces. • The buildings/structures are separated from trees (or trees from buildings) by a distance of at least 1.5 times the height of the tallest tree. • Trees that produce significant quantities of debris (fine fuels) during the bushfire season should be located a sufficient distance away from vulnerable exposed elements to ensure debris cannot Drop and accumulate within at least 4m of buildings/structures or be likely to be relocated by wind to closer than 4m to buildings / structures. • If the minimum distance cannot be achieved with an existing tree either remove the tree or at least ensure tree branches are sufficiently separated from buildings and attached/adjacent structures (at a minimum to not overhang) to ensure branches cannot fall onto or be blown onto the buildings/structures.	Moderate	Yes	Yes	Yes	No
Informative and/or Site Specific Comment/Assessment: Trees are not proposed within the APZ.						
4.5	Separation of Stored Flammable Products - Gas in Cylinders: To reduce the potential for gas flaring or explosion (consequential fire), installation of LPG cylinders is to apply as a minimum, the principles and requirements established in AS 1596 and LP Gas cylinder safety in bushfire prone areas (Energy Safety – Govt. of WA). Otherwise, the required separation distance is 6m from any combustible materials.	Not Relevant	N/A	N/A	N/A	N/A

	EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
	Heat from bushfire or consequential fire can be sufficient to cause cylinder pressure to reach critical levels and the pressure relief valve release large quantities of gas (flare). If the cylinder falls over the pressure relief valve may not function correctly, and the cylinder may rupture (explosion).					
Informative and/or Site Specific Comment/Assessment: No gas storage will be on site.						
4.6	Separation from Stored Flammable Products – Fuels / Other Hazardous Materials: Establish sufficient separation distance between the consequential fire fuels and buildings/structures. The required separation distance will be dependent on the fuel and storage type.	Moderate	Yes	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The BESS units will be installed to manufacturers specification, including separation distances. Fuels and other hazardous material will not be stored on site.						
4.7	Separation from Stored and Constructed Combustible Items: These consequential fire fuels include: • Stored Combustible Items - Heavy Fuels e.g. building materials, packaging materials, firewood, sporting/playground equipment, outdoor furniture, rubbish bins etc: • Stored Combustible Items – Large Heavy Fuels e.g. vehicles, caravans, boats and large quantities of dead vegetation materials stored as part of site use. • Constructed Combustible Items – Heavy Fuels e.g. landscaping structures including fences, screens, walls, plastic water tanks. • Constructed Combustible Items – Large Heavy Fuels e.g. adjacent buildings/structures including houses, sheds, garages, carports. (Note: If the adjacent structure is constructed to BAL-29 requirements or greater and can implement a significant number of additional bushfire protection measures associated with reducing exposure and vulnerability, these minimum separation distances could be reduced by 30%) [31]. *Apply the rule of thumb [13] "assume flames produced from a consequential fire source will be twice as high as the object itself … where the consequential fire source is a structure, then the maximum eave height is a reasonable measure of maximum height".* Apply the following separation distances from the subject building/structure as a multiple of the height of the consequential fire source and dependent on the construction standard applied to the building/structure [13 and 31]: • At least six times the height when the building/structure construction incorporates design and materials that is only intended to resist low levels of radiant heat up to 12.5 kW/m^2) and no flame contact;	Moderate	Yes	No	No	Yes

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
	• Between 4 and 6 six times the height when the building/structure construction incorporates design and materials intended to resist radiant heat up to 29 kW/m^2 and no flame contact. • Between 2 and 4 times the height when the building/structure construction incorporates design and materials intended to resist up to 40kW/m^2 and potential flame contact. • Less than 2 times the height when the building/structure construction incorporates design and materials intended to resist extreme levels of radiant heat and flame contact. • Zero separation distance is required if the building/structure is separated by a non-combustible FRL 60/60/60 rated wall or the potential consequential fire source is fully enclosed by the building/structure.					
Informative and/or Site Specific Comment/Assessment: When storage of flammable items or materials are stored on site temporarily (for maintenance etc), separation distances must be complied with.						
PROTECTION PRINCIPLE – SHIELDING FROM ALL BUSHFIRE THREATS: To shield buildings and attached/adjacent structures (or other consequential fire fuels) from the direct bushfire attack mechanisms of flame, radiant heat, surface fire and surface migration of embers. To also reduce exposure to the indirect attack mechanism of debris accumulation against buildings/structures and other consequential fire fuels and wind attack.						
4.8	Constructed Barrier – Shielding from Bushfire: Walls, fences and/or landforms to shield the subject building/structure from direct and indirect bushfire attack mechanisms and reduce the potential impact of these threats to vulnerable exposed elements. Must be constructed using appropriate fire resistant / non-combustible construction materials (e.g. masonry, steel, earthworks). These are to withstand the impact of direct bushfire attack mechanisms for the required period of time. Apply the bushfire construction standards for external walls subject to the assessed level of radiant heat or flame contact to which the barrier will be exposed (or otherwise to BAL-FZ requirements). These are established by AS 3959:2018 [4] and/or the NASH Standard [33] and additionally informed by the research report 'Research and Investigation into the Performance of Residential Boundary Fencing Systems in Bushfires.' [29]	High	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: The measure is not cost-effective or necessary where greater separation distance can be achieved.						
4.9	Constructed Barrier - Shielding from Consequential Fire: Applicable to all consequential fire fuel sources. Install a non-combustible barrier (including complete enclosure when appropriate), of required robustness, that can perform the following as relevant: • Reduce the exposure of the subject building/structure to the threats of consequential fire; and/or • Reduce the exposure of the consequential fire fuels to the bushfire hazard.	Moderate	Yes	No	No	Yes

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Informative and/or Site Specific Comment/Assessment: Ensure all subfloor spaces are sealed or enclosed with non-combustible solid material or ember screening mesh (corrosion-resistant steel, bronze, or aluminium with an aperture <2mm).						
4.10	Natural Barrier - Landforms: Use existing natural landforms to reduce buildings/structures exposure to radiant heat, and lower wind speeds (prevailing synoptic and/or fire driven).	Not Relevant	N/A	N/A	N/A	N/A
4.11	Planted Barrier - Vegetation Barrier: Use appropriate hedges and trees strategically to reduce (to varying extents) buildings/structures exposure to radiant heat, to filter/trap embers and firebrands, and to lower wind speeds (prevailing synoptic and/or fire driven).	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: Sufficiently low radiant heat flux can be achieved through separation distance.						
4.12	Shield Non-Structural Essential Elements: These are elements essential to the continued operation of the building/structure which are potentially exposed to fire attack mechanisms of both bushfire and consequential fire. They include cabling and plumbing associated with power / data transmission and water / fuel transport. When the use of fire rated materials to the degree necessary is not possible or practical, the application of non-combustible shielding can be applied to reduce exposure to the bushfire threats. Shielding includes underground installation.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: The building(s) are unlikely to have external essential elements, other than those related to Merredin BESS operation (addressed as a Fixed (Hard) Infrastructure Asset).						

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status:

- Possible: Protection measures that can potentially be applied to the proposed development/use;
- Exists: Protection measures already implemented by existing components of the proposed development/use. These measures are accounted for in assessing 'inherent' risk levels (refer to Glossary);
- Planned: Protection measures that:
  - Are incorporated into the site plans;
  - Exist in an approved Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), alternative solutions and any additional recommended protection measures - for which a responsibility for their implementation has been created and approved; and/or

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
		Possible	Exists	Planned	Additionally Recommend

- Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), that can be met and for which a responsibility for their implementation can be created in the BMP.

These planned measures are accounted for in assessing 'inherent' risk levels (refer to Glossary).

- **Additionally Recommend**: Protection measures that:
  - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and comprise alternative solutions and/or additional recommended protection measures (that can and should be implemented in the opinion of the bushfire consultant), and for which a responsibility for their implementation can be created in the BMP; and/or
  - Are developed in the process of producing this risk assessment and management report and for which a responsibility for their implementation can be created in the BMP.

These additionally recommended measures, along with existing and planned measures, are accounted for in assessing 'residual' risk levels (refer to Glossary).

7.3.2 NUMBER ANALYSIS OF AVAILABILITY VERSUS APPLICATION OF PROTECTION MEASURES

Table 7.9: For the stated element at risk and area of bushfire prone vegetation, the summarised number of bushfire protection measures that can be applied (and their corresponding effectiveness rating), is compared to the number available.

EXPOSURE REDUCING PROTECTION MEASURES – SUMMARY NUMBERS						
Element at Risk	Buildings/Structures - NCC Classes 1-10					
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.					
The Protection Principle	Effectiveness Rating [1]	Numbers of Protection Measures				
		Total Available	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Separation from the Hazard	Very High	-	-	-	-	-
	High	-	-	-	-	-
	Effective	1	1	-	1	1
	Moderate	3	3	2	1	1
	Not Relevant	3	-	-	-	-
Shielding from the Hazard	Very High	-	-	-	-	-
	High	1	1	-	-	-
	Effective	-	-	-	-	-
	Moderate	1	1	-	-	1
	Not Relevant	3	-	-	-	-
Total Numbers	Very High	-	-	-	-	-
	High	1	1	-	-	-
	Effective	1	1	-	1	1
	Moderate	4	4	2	-	2
	Not Relevant	6	-	-	-	-
	Totals	12	6	2	1	3

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status: Refer to table footnotes on previous page.

7.3.3 ASSESSED IMPACT OF APPLIED PROTECTION MEASURES (EXPOSURE REDUCTION)

Table 7.10: For the stated element at risk, The potential impact of the applied protection measures in reducing exposure levels to the stated area of bushfire prone vegetation.

ASSESSED IMPACT OF APPLIED MEASURES (EXPOSURE REDUCTION)								
Element at Risk	Buildings/Structures - NCC Classes 1-10							
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.							
Exposure Reducing Protection Measures Applied to Assessment [1]	The Bushfire Hazard Threats [2]							
	Direct Attack Mechanisms				Indirect Attack Mechanisms			
	Embers	Radiant Heat	Flame	Surface Fire	Debris Accum.	Conseq. Fire	Fire Driven Wind	Tree Strike / Obstruct
Existing and Planned (applied to inherent risk)	Medium	Medium	Medium	Significant	Significant	Medium	Medium	Medium
	Medium				Medium			
Existing, Planned and Recommended (applied to residual risk)	Significant	Very Significant	Very Significant	Very Significant	Significant	Significant	Significant	Very Significant
	Very Significant				Significant			
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 4 for explanatory information.								

Assessment Comments: The comparison considers the BAL-29 APZ required for planning approval, against the recommended setbacks and additional measures. Objects should be positioned away from relevant assets to reduce the capacity for consequential fire spread.

7.3.4 ASSESSED EXPOSURE LEVELS

Assessed as a function of the capacity to apply sufficient exposure reducing protection measures, their individual effectiveness and their combined impact in reducing the exposure of the identified element at risk (Note: This assessment is independent of the threat level and vulnerability level assessments).

Table 7.11: For the stated element at risk, the assessed exposure level corresponding to the stated area of bushfire prone vegetation.

ASSESSED EXPOSURE LEVELS	
Element at Risk	Buildings/Structures - NCC Classes 1-10
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.
Exposure Reducing Protection Measures Applied to Assessment [1]	Relative Exposure Level [2]
Existing and Planned (applied to inherent risk)	Moderate
Existing, Planned and Recommended (applied to residual risk)	Low
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 2 for explanatory information.	

7.4 FIXED (HARD) INFRASTRUCTURE ASSETS

7.4.1 PROTECTION MEASURES AVAILABLE TO REDUCE EXPOSURE LEVELS AND THEIR APPLICATION STATUS

Table 7.12: All available protection measures to reduce exposure of the stated element at risk to bushfire hazard threats and their application to the subject development/use.

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
ELEMENT AT RISK: FIXED (HARD) INFRASTRUCTURE ASSETS						
PROTECTION PRINCIPLE – SEPARATION FROM ALL BUSHFIRE THREATS (SITING): To locate (site) the buildings and attached/adjacent structures at distances away from the direct and indirect attack mechanisms of bushfire (the hazard threats) to reduce their exposure. The required distances will be dependent on the relative threat levels and the degree of bushfire resilience that is or is planned to be incorporated into the exposed elements through design and construction.						
6.1	Asset Protection Zone (APZ): Ensure an APZ can be established surrounding the exposed element(s) to create the required separation distance from the bushfire hazard and its threats (the direct and relevant indirect attack mechanisms). This is to be an area containing minimal fire fuels and maintained in a low threat state. The *Explanatory Notes for Element 2 of the Bushfire Protection Criteria and Schedule 1: Standards for Asset Protection Zones* established in the Guidelines [22] provides the key requirements for establishing and maintaining an APZ. Additional requirements may exist within a relevant local governments firebreak notice, or the responsibilities established by an applicable Bushfire Management Plan (BMP). The required dimensions of the APZ will correspond to the maximum level of radiant heat the exposed element is to be exposed to – or a greater distance if it is stipulated by a different authority (e.g. firebreak notice or BMP). As a minimum avoid dimensions (separation distances) that correspond to BAL-FZ and BAL-40 ratings for any given site/vegetation combination of the relevant parameters. Note that this will also apply to BAL-29 separation distances if flame length modelling indicates potential contact due to specific site and effective slope configurations. The APZ should be contained solely within the boundaries of each lot, except in instances where the neighbouring lot(s) or adjacent public land will be managed in a low-fuel state on an ongoing basis, in perpetuity. *Note that the APZ does not provide separation from the consequential fire attack mechanism. Separation from consequential fire fuels requires additional assessment and management.*	Effective	Yes	No	Yes	Yes
Informative and/or Site Specific Comment/Assessment: The required separation distance is a function of the relevant levels of the bushfire threats (attack mechanisms) presented by the vegetation and the relevant vulnerabilities of the identified elements at risk (the BESS System and associated infrastructure).						

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
The relevant threats are the flame lengths and the potential for radiant heat transfer as determined from the design fire modelling for the vegetation types that have been identified. BESS technologies are continuing to develop and the critical heat flux thresholds of assets may vary slightly between engineering designs. The exterior and structural components of battery cabinets are non-combustible, generally being metal, fibrous cement, mineral wool etc. A battery cabinet is a sea container-sized with a series of battery racks installed. A single battery rack consists of battery cells (each cell connected into a module), and a control box with chiller. Power and computer cabling is associated within and between racks. These are the relevant components regarding potential for fire. • The individual batteries have been found to be highly resistant to conductive heat. Applied temperatures exceeding 400 degrees Celsius destroyed, but did not ignite, running battery cells. See *UL 9540A Test Method for Evaluating Thermal Runaway Fire Propagation in Cell Energy Storage Systems, Third Edition* (UL LLC; 8 July 2020). Other trigger/failure conditions must be met for battery cells to ignite (mechanical rupture, flame contact, product failure etc). • Control boxes are computers which will apply thermal throttling and thermal shutdown if internal temperatures exceed a determined threshold. Once a computer system is shut down in this scenario, the threshold is expected to be that of the cabling (below). • Associated cabling (both power transmission and computer). Common electrical cabling reaches its critical point at >12kWm2 (Kaczorek-Chrobak et al. 2007) [49]. Electrical cabling and components are expected to exceed this standard, being industrial and high capacity, however the 12kW threshold is adopted for the highest potential vulnerability. **Recommendation**: An APZ is to be established around electrical components and infrastructure. This APZ will ensure exposure to the bushfire hazard threat of radiant heat will be limited to a maximum radiant heat flux of 10 kW/m2 (calculated with an assumed flame temperature of 1090K) by providing the required separation distances from the bushfire hazard. The 10m portion of the APZ immediately around the assets must be entirely and permanently non-vegetated (sealed, compacted limestone, gravel, mineral earth etc).						
6.2	**Siting of Buildings/Structures - Wind**: Site the buildings/structures/infrastructure in locations that have lower wind exposure. Avoid the top and sides of ridges which are especially vulnerable to fire driven winds as well as topographically influenced winds. Winds can directly or indirectly (carrying materials/debris) cause damage to the external building envelope potentially allowing flame, radiant heat and ember entry.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: Not possible as the proposed facility is extensive and the topography is consistent (flat to very gentle slope).						
6.3	**Use of Non-Vegetated Areas and/or Public Open Space**: Reduce exposure by increasing separation from APZ landscaping vegetation and/or the bushfire hazard by incorporating these lowest threat areas adjacent to buildings/structures and/or adjacent to the bushfire hazard. These lowest threat components of the APZ include non-vegetated areas (e.g. footpaths, paved areas, roads, parking, drainage, swimming pools), formally managed areas of vegetation (public open space and other recreation areas) and services installed in a common section of non-vegetated land. These elements create robust and easier managed asset protection zones.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: There are no such areas existing or proposed.						

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
6.4	Landscaping - Tree Location: Use separation to minimise the potential for debris accumulation and tree strike damage to the building envelop potentially allowing flame, radiant heat and ember entry to internal spaces. • The buildings/structures are separated from trees (or trees from buildings) by a distance of at least 1.5 times the height of the tallest tree. • Trees that produce significant quantities of debris (fine fuels) during the bushfire season should be located a sufficient distance away from vulnerable exposed elements to ensure debris cannot drop and accumulate within at least 4m of buildings/structures or be likely to be relocated by wind to closer than 4m to buildings / structures. • If the minimum distances cannot be achieved with an existing tree either remove the tree or at least ensure tree branches are sufficiently separated from buildings and attached/adjacent structures (at a minimum to not overhang) to ensure branches cannot fall onto or be blown onto the buildings/structures.	Moderate	Yes	Yes	Yes	No
Informative and/or Site Specific Comment/Assessment: Trees are not proposed within the <10kW/m2 APZ.						
6.5	Separation from Stored Flammable Products - Gas in Cylinders: To reduce the potential for gas flaring or explosion (consequential fire), installation of LPG cylinders is to apply as a minimum, the principles and requirements established in AS 1596 and LP Gas cylinder safety in bushfire prone areas (Energy Safety – Govt. of WA). Otherwise, the required separation distance is 6m from any combustible materials. Heat from bushfire or consequential fire can be sufficient to cause cylinder pressure to reach critical levels and the pressure relief valve release large quantities of gas (flare). If the cylinder falls over the pressure relief valve may not function correctly, and the cylinder may rupture (explosion).	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: No gas storage will be on site.						
6.6	Separation from Stored Flammable Products – Fuels / Other Hazardous Materials: Establish sufficient separation distance between the consequential fire fuels and buildings/structures. The required separation distance will be dependent on the fuel and storage type.	Moderate	Yes	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The BESS units will be installed to manufacturers specification, including separation distances. Fuels and other hazardous material will not be stored on site.						
6.7	Separation from Stored and Constructed Combustible Items: These consequential fire fuels include: • Stored Combustible Items - Heavy Fuels e.g. building materials, packaging materials, rubbish bins etc:	Moderate	Yes	No	No	Yes

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
		Possible	Exists	Planned	Additionally Recommend
• Stored Combustible Items – Large Heavy Fuels e.g. vehicles, caravans and large quantities of dead vegetation materials stored as part of site use. • Constructed Combustible Items – Heavy Fuels e.g. landscaping structures including fences, screens, walls, plastic water tanks. • Constructed Combustible Items – Large Heavy Fuels e.g. adjacent buildings/structures including houses, sheds, garages, carports. (Note: If the adjacent structure is constructed to BAL-29 requirements or greater and can implement a significant number of additional bushfire protection measures associated with reducing exposure and vulnerability, these minimum separation distances could be reduced by 30%) [31]. *Apply the rule of thumb [13] "assume flames produced from a consequential fire source will be twice as high as the object itself … where the consequential fire source is a structure, then the maximum eave height is a reasonable measure of maximum height".* Apply the following separation distances from the subject building/structure as a multiple of the height of the consequential fire source and dependent on the construction standard applied to the building/structure [13 and 31]: • At least six times the height when the building/structure construction incorporates design and materials that is only intended to resist low levels of radiant heat up to 12.5 kW/m^2) and no flame contact; • Between 4 and 6 six times the height when the building/structure construction incorporates design and materials intended to resist radiant heat up to 29 kW/m^2 and no flame contact. • Between 2 and 4 times the height when the building/structure construction incorporates design and materials intended to resist up to 40kW/m^2 and potential flame contact. • Less than 2 times the height when the building/structure construction incorporates design and materials intended to resist extreme levels of radiant heat and flame contact. • Zero separation distance is required if the building/structure is separated by a non-combustible FRL 60/60/60 rated wall or the potential consequential fire source is fully enclosed by the building/structure.					
Informative and/or Site Specific Comment/Assessment: All non-structural combustible materials are to be removed within 10m of assets. This includes but is not limited to; waste, leaf litter, machinery, grasses, vehicles, fuel, furniture, and timber. When storage of flammable items or materials are stored on site temporarily (for maintenance etc), separation distances must be complied with. This requirement is to be included in the Site Operating Procedures document.					
PROTECTION PRINCIPLE – SHIELDING FROM ALL BUSHFIRE THREATS: To shield buildings and attached/adjacent structures (or other consequential fire fuels) from the direct bushfire attack mechanisms of flame, radiant heat, surface fire and surface migration of embers. To also reduce exposure to the indirect attack mechanism of debris accumulation against buildings/structures and other consequential fire fuels and wind attack.					

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
6.8	**Constructed Barrier – Shielding from Bushfire**: Walls, fences and/or landforms to shield the subject building/structure from direct and indirect bushfire attack mechanisms and reduce the potential impact of these threats to vulnerable exposed elements. Must be constructed using appropriate fire resistant / non-combustible construction materials (e.g. masonry, steel, earthworks). These are to withstand the impact of direct bushfire attack mechanisms for the required period of time. Apply the bushfire construction standards for external walls subject to the assessed level of radiant heat or flame contact to which the barrier will be exposed (or otherwise to BAL-FZ requirements). These are established by AS 3959:2018 [4] and/or the NASH Standard [33] and additionally informed by the research report 'Research and Investigation into the Performance of Residential Boundary Fencing Systems in Bushfires.' [29]	High	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: The measure is not cost-effective or necessary where greater separation distance can be achieved.						
6.9	**Constructed Barrier - Shielding from Consequential Fire**: Applicable to all consequential fire fuel sources. Install a non-combustible barrier (including complete enclosure when appropriate), of required robustness, that can perform the following as relevant: • Reduce the exposure of the subject building/structure to the threats of consequential fire; and/or • Reduce the exposure of the consequential fire fuels to the bushfire hazard.	Moderate	Yes	No	No	Yes
Informative and/or Site Specific Comment/Assessment: Ensure all subfloor spaces are sealed or enclosed with non-combustible solid material or ember screening mesh (corrosion-resistant steel, bronze, or aluminium with an aperture <2mm).						
6.10	**Natural Barrier - Landforms**: Use existing natural landforms to reduce buildings/structures exposure to radiant heat, and lower wind speeds (prevailing synoptic and/or fire driven).	Not Relevant	N/A	N/A	N/A	N/A
6.11	**Natural Barrier – Vegetation**: Use appropriate hedges and trees strategically to reduce (to varying extents) buildings/structures exposure to radiant heat, to filter/trap embers and firebrands, and to lower wind speeds (prevailing synoptic and/or fire driven).	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: Sufficiently low radiant heat flux can be achieved through separation distance.						
6.12	**Shield Non-Structural Essential Elements**: These are elements essential to the continued operation of the built asset which are potentially exposed to fire attack mechanisms of both bushfire and consequential fire. They include cabling and plumbing associated with power / data transmission and water / fuel transport. When the use of fire rated materials to the degree necessary is not possible or practical, the application of non-combustible shielding can be applied to reduce exposure to the threats. Shielding includes underground installation.	Moderate	Yes	No	Partly	Yes

EXPOSURE REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
		Possible	Exists	Planned	Additionally Recommend
Informative and/or Site Specific Comment/Assessment: Exposed electrical cabling to be shielded from radiant heat and consequential fire by burying underground or shielding with non-combustible material – common electrical cabling reaches its critical point at >10kWm2. *Exposed plumbing (poly pipe) is to be buried or shielded with non-combustible material – maximum exposure 120 degrees Celsius.*					

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status:

- Possible: Protection measures that can potentially be applied to the proposed development/use;
- Exists: Protection measures already implemented by existing components of the proposed development/use. These measures are accounted for in assessing 'inherent' risk levels (refer to Glossary);
- Planned: Protection measures that:
    - Are incorporated into the site plans;
    - Exist in an approved Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), alternative solutions and any additional recommended protection measures - for which a responsibility for their implementation has been created and approved; and/or
    - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), that can be met and for which a responsibility for their implementation can be created in the BMP.

  These planned measures are accounted for in assessing 'inherent' risk levels (refer to Glossary).
- Additionally Recommend: Protection measures that:
    - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and comprise alternative solutions and/or additional recommended protection measures (that can and should be implemented in the opinion of the bushfire consultant), and for which a responsibility for their implementation can be created in the BMP; and/or
    - Are developed in the process of producing this risk assessment and management report and for which a responsibility for their implementation can be created in the BMP.

  These additionally recommended measures, along with existing and planned measures, are accounted for in assessing 'residual' risk levels (refer to Glossary).

7.4.2 NUMBER ANALYSIS OF AVAILABILITY VERSUS APPLICATION OF PROTECTION MEASURES

Table 7.13: For the stated element at risk and area of bushfire prone vegetation, the summarised number of bushfire protection measures that can be applied (and their corresponding effectiveness rating), is compared to the number available.

EXPOSURE REDUCING PROTECTION MEASURES – SUMMARY NUMBERS						
Element at Risk	Fixed (hard) infrastructure assets					
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.					
The Protection Principle	Effectiveness Rating [1]	Numbers of Protection Measures				
		Total Available	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Separation from the Hazard	Very High	-	-	-	-	-
	High	-	-	-	-	-
	Effective	1	1	-	1	1
	Moderate	3	3	2	1	1
	Not Relevant	3	-	-	-	-
Shielding from the Hazard	Very High	-	-	-	-	-
	High	1	1	-	-	-
	Effective	-	-	-	-	-
	Moderate	2	2	-	1	2
	Not Relevant	2	-	-	-	-
Total Numbers	Very High	-	-	-	-	-
	High	1	1	-	-	-
	Effective	1	1	-	1	1
	Moderate	5	5	2	2	3
	Not Relevant	5	-	-	-	-
	Totals	12	7	2	3	4

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status: Refer to table footnotes on previous page.

7.4.3 ASSESSED IMPACT OF APPLIED PROTECTION MEASURES (EXPOSURE REDUCTION)

Table 7.14: For the stated element at risk, The potential impact of the applied protection measures in reducing exposure levels to the stated area of bushfire prone vegetation.

ASSESSED IMPACT OF APPLIED MEASURES (EXPOSURE REDUCTION)								
Element at Risk	Fixed (hard) infrastructure assets							
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.							
Exposure Reducing Protection Measures Applied to Assessment [1]	The Bushfire Hazard Threats [2]							
	Direct Attack Mechanisms				Indirect Attack Mechanisms			
	Embers	Radiant Heat	Flame	Surface Fire	Debris Accumulation	Consequential Fire	Fire Driven Wind	Tree Strike / Obstruction
Existing and Planned (applied to inherent risk)	Medium	Significant	Medium	Significant	Significant	Medium	Medium	Medium
	Medium				Medium			
Existing, Planned and Recommended (applied to residual risk)	Very Significant	Very Significant	Very Significant	Very Significant	Significant	Very Significant	Significant	Very Significant
	Very Significant				Significant			
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 4 for explanatory information.								

Assessment Comments: The BAL-29 APZ required for planning approval limits potential exposure to bushfire impacts. However, the assessed vulnerability of the Merredin BESS (Section 8.4) necessitates a greatly reduced exposure.

7.4.4 ASSESSED EXPOSURE LEVELS

Assessed as a function of the capacity to apply sufficient exposure reducing protection measures, their individual effectiveness and their combined impact in reducing the exposure of the identified element at risk (Note: This assessment is independent of the threat level and vulnerability level assessments).

Table 7.15: For the stated element at risk, the assessed exposure level corresponding to the stated area of bushfire prone vegetation.

ASSESSED EXPOSURE LEVELS	
Element at Risk	Fixed (hard) infrastructure assets
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.
Exposure Reducing Protection Measures Applied to Assessment [1]	Relative Exposure Level [2]
Existing and Planned (applied to inherent risk)	Moderate
Existing, Planned and Recommended (applied to residual risk)	Very Low
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 2 for explanatory information.	

Assessment Comments: The applied APZ and additional restrictions on combustible materials greatly reduces relative exposure.

8 VULNERABILITY LEVEL ASSESSMENT OF THE ELEMENTS AT RISK

SUMMARY OF THE QUALITATIVE ASSESSMENT PROCESS

1. Identify all protection measures (grouped by protection principle) that are available to reduce vulnerability levels and rate their effectiveness;
2. Produce a numerical summary of all potential vulnerability reducing protection measures that are available and determine their application status;
3. Assess the potential vulnerability reducing impact of the package of protection measures that is able to be applied. The effectiveness rating weights the potential impact of an individual measure; and
4. Derive the vulnerability level of the identified element at risk, to the threats presented by each identified area of bushfire prone vegetation (refer to Section 2.3.3 and Appendix 2 for additional risk assessment process information).

8.1 PERSONS ONSITE OR TEMPORARILY OFFSITE

8.1.1 PROTECTION MEASURES AVAILABLE TO REDUCE VULNERABILITY LEVELS AND THEIR APPLICATION STATUS

Table 8.1: All available protection measures to reduce exposure of the stated element at risk to bushfire hazard threats and their application to the subject development/use.

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
ELEMENT AT RISK: PERSONS LOCATED ONSITE AND TEMPORARILY OFFSITE						
PROTECTION PRINCIPLE – TRANSPORT AND MULTIPLE EVACUATION DESTINATIONS AND ROUTES AVAILABLE						
7.1	**Sufficient Evacuation Transport Available**: Ensure that all persons likely to be on site have access to transport. This can be through own vehicles, facility vehicles, a formal arrangement with an external provider or a combination of these.	Effective	Yes	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The location is relatively remote from settlements (no public transport). All visitors must necessarily have their own transport.						
7.2	**Multiple Safer Offsite Locations Available**: Increasing the route and destination options decreases vulnerability of persons as the exposed element. Multiple buildings/areas are accessible from the subject site as evacuation destinations. The offsite locations exist at a sufficient distance from the subject site ensuring that the destination and the subject site are very unlikely to be simultaneously impacted by a bushfire event. For the most robust scenario:	Very High	No	Yes	No	No

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
	• Multiple access/egress route are available to the safer locations from the subject site; • The entirety of at least two routes is unlikely to be simultaneously impacted by a bushfire event; and • The availability of water and amenities corresponding to person numbers increases the effectiveness of the measure.					
Informative and/or Site Specific Comment/Assessment: Two-way access/egress is available. The access/egress routes run through farm land and adjacent to the existing solar installation with Robartson Rd access/egress in a north direction towards the Great Eastern Highway and the town of Merredin, and south direction for approx. 750m before meeting the Bruce Rock – Merredin Rd in an east or west direction. *Safe (early) evacuation is the primary procedure for any occupants (staff) during bushfire emergencies.*						
PROTECTION PRINCIPLE – PROVISION OF BUSHFIRE EMERGENCY INFORMATION AND EDUCATION						
7.3	Bushfire Emergency Plan: Is produced and appropriately located within the site of the subject development/use. It is an operational document that details site specific preparation, response, recovery and review procedures. It is produced for use by the site owners, managers, operators and occupants (as relevant).	Effective	Yes	No	No	No
7.4	Bushfire Emergency Poster: A poster is prominently displayed, for the attention of all persons onsite. It presents the key emergency contacts, information sources and response procedures in the event of a bushfire event. It has increased value attached to its display when there are no bushfire emergency trained persons onsite or no persons that are familiar with the site and local area.	Moderate	Yes	No	No	No
7.5	Bushfire Protection Measures to be Implemented are Published in the Relevant Operational Documents: The relevant documents can include the Bushfire Management Plan (BMP), the Bushfire Emergency Plan (BEP), the Site Emergency Plan (as required to be developed by the operators of 'high risk' land uses), and any relevant documents associated with a projects design phase. The purpose of this measure is to ensure the application of relevant protection measures, that have been identified in this Bushfire Risk Assessment and Management Report, will be acted upon through responsibilities created by the operational documents.	Effective	Yes	No	No	Yes
Informative and/or Site Specific Comment/Assessment: The development is proposed to be unstaffed. Visitors will be inducted staff/contractors familiar with emergency procedures and preparation/display of separate bushfire emergency procedures is not necessary. Additionally, evacuation (in the direction away from the bushfire) is the only bushfire response procedure. *The site Emergency Management Plan (document title pending), is to include responses to bushfire emergencies. The immediately procedure is to evacuate in the appropriate direction away from the fire, and inform DFES Comcen of the status of the BESS facility.*						

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
7.6	Prominent Display of Information Stating Safe Early Evacuation is the Primary Procedure: For the subject development/use evacuation in the event of a bushfire within the locality has or is likely to be determined as the primary response procedure and that it must be conducted early. This option is available. The emphasis on early rather than a late evacuation is important. Analysis of past events identify that most people who die in bushfires are caught in the open, either in vehicles or on foot, because they have left their property too late. For evacuation to provide the safest response for occupants, it must be conducted early. Being on roads when a bushfire is close is a high risk action. Otherwise, sheltering-in-place is likely to provide greater protection to persons – particularly when a suitable onsite shelter place is identified.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: Occupants will be site staff only, who will be aware of the emergency response procedure.						
7.7	Egress Pathway Signage: Where pathways exist onsite for occupants to relocate to an identified safer onsite location, appropriate signage to guide unfamiliar persons can reduce their vulnerability.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: Staff will be familiar with the site. The safer onsite location is obvious.						
7.8	Trained Personnel Onsite: Operational persons (staff) are provided with bushfire emergency management training, aligned with the subject site's prepared Bushfire Emergency Plan (BEP). The intent also includes identifying the specific roles and persons to fill any required responsibilities that have determined through the BEP construction process.	Moderate	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: The development is proposed to be unstaffed.						
7.9	Build Community Resilience Through Education: When relevant to the type and scale of proposed development/use, the delivery of effective education programs can result in lowering the vulnerability of the community to a bushfire event, once the information has been acted upon and packages of protection measures put in place. Local government develops an ongoing program of innovative and leading edge community and landowner education that builds on the information presented within this Bushfire Risk Assessment and Management Report. Subsequent implementation of recommended/required protection measures can be encouraged through legislation, education, audits, enforcement and penalties as appropriate. Examples of such community education programs exist in various jurisdictions. The CSIRO (2020) Climate and Disaster Resilience Overview Report in 'Recommendation No. 5' [18] encourages collaboration with research agencies on the issue of building community resilience.	Not Relevant	N/A	N/A	N/A	N/A
7.10	**Encourage 'Property Bushfire Resilience Assessments'**: Local government to promote (and potentially incentivise) the conducting of these assessments and the implementation of any recommendations. These assessments address bushfire	Not Relevant	N/A	N/A	N/A	N/A

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
	hazard threat levels and the level of exposure and vulnerability of buildings and persons. It identifies appropriate protection measures to increase bushfire resilience.					
PROTECTION PRINCIPLE – A BUSHFIRE EMERGENCY FIREFIGHTING CAPABILITY EXISTS (RESPONSE)						
7.11	Personnel Onsite Can Manage Bushfire Emergency Procedures: Different categories of persons can perform this role in different scenarios, with potentially varying levels of expertise and effectiveness. These include: • Appropriately trained person(s) will be onsite at all times, or able to be onsite at short notice. They are trained in bushfire emergency procedures in general and have specific knowledge of site preparation, response and recovery procedures from the required Bushfire Emergency Plan), and the environment in which the development/use exists. This person(s) may have the official title of fire warden. • An untrained person familiar with the local area will be onsite at all times. They have knowledge and instruction gained from the required Bushfire Emergency Plan for the subject development/use and will ensure the preparation, response and recovery procedures established by the required Bushfire Emergency Plan are conducted appropriately and provide emergency event guidance to any other persons onsite.	Effective	Yes	No	No	Yes
Informative and/or Site Specific Comment/Assessment: The development is proposed to be unstaffed. It is recommended that the staff member managing emergency procedures has training in general bushfire emergency procedures, and has specific knowledge of the site procedures in response to bushfire. This staff member should be easily contactable.						
7.12	Personnel Onsite Can Operate Firefighting Equipment: Such person(s) is suitably capable of maintaining and operating any installed firefighting water supply and associated pumps, hoses/nozzles and sprinklers.	Moderate	Yes	No	Yes	No
Informative and/or Site Specific Comment/Assessment: Staff will receive basic instruction on operation of firefighting equipment and procedures for suppression or prevention of fire spread associated with BESS facilities.						
7.13	Locations of Vulnerable Persons are Registered: Relevant department of local government and their emergency services maintains a register of the location of land uses that are likely to result in a number of 'vulnerable' persons residing onsite, so that their needs can be addressed as a priority in a bushfire emergency. The subject development/use would exist on that register.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: No vulnerable persons will be onsite.						
7.14	External Emergency Services Available: An emergency service with a bushfire response capability is located within a realistic operational distance of the subject development/use. Bushfire services include volunteer bushfire brigades, volunteer fire and emergency services, DFES career fire and Rescue Service or Parks and Wildlife.	Effective	No	Yes	No	Yes

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
		Possible	Exists	Planned	Additionally Recommend
Even if an emergency service response capability exists, effectiveness will be limited by number of resources and their availability likelihood at the crucial time. *Bushfire Verification Method – Handbook s6.6 [14] states "During significant bushfires, there will be conflicting demands on fire brigade resources and reliance should not be placed on fire brigade intervention to protect a specific property.* *Prior to the 2009 Black Saturday fires, an early evacuation or stay and defend policy was in place and data from major fires indicated that the presence of occupants significantly increased the probability of house survival (refer Table 7.1). However, in response to the subsequent Royal Commission findings there is now a greater emphasis on early evacuation. Whilst this is expected to reduce fatalities by reducing the numbers of people at risk, a negative consequence will be an increase in property losses for buildings constructed to similar standards. It should therefore be assumed that there will be no fire brigade or occupant intervention with respect to protecting a specific property."*					
Informative and/or Site Specific Comment/Assessment: It is recommended that the Merredin Volunteer Fire and Rescue Service are to be invited to inspect and familiarise with the site. Provide information in site fire response procedures. This invitation may be annual or ad-hoc.					

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status:

- Possible: Protection measures that can potentially be applied to the proposed development/use;
- Exists: Protection measures already implemented by existing components of the proposed development/use. These measures are accounted for in assessing 'inherent' risk levels (refer to Glossary);
- Planned: Protection measures that:
  - Are incorporated into the site plans;
  - Exist in an approved Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), alternative solutions and any additional recommended protection measures - for which a responsibility for their implementation has been created and approved; and/or
  - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), that can be met and for which a responsibility for their implementation can be created in the BMP.

  These planned measures are accounted for in assessing 'inherent' risk levels (refer to Glossary).
- Additionally Recommend: Protection measures that:
  - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and comprise alternative solutions and/or additional recommended protection measures (that can and should be implemented in the opinion of the bushfire consultant), and for which a responsibility for their implementation can be created in the BMP; and/or

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
		Possible	Exists	Planned	Additionally Recommend
• Are developed in the process of producing this risk assessment and management report and for which a responsibility for their implementation can be created in the BMP. These additionally recommended measures, along with existing and planned measures, are accounted for in assessing 'residual' risk levels (refer to Glossary).					

8.1.2 NUMBER ANALYSIS OF AVAILABILITY VERSUS APPLICATION OF PROTECTION MEASURES

Table 8.2: For the stated element at risk and area of bushfire prone vegetation, the summarised number of bushfire protection measures that can be applied (and their corresponding effectiveness rating), is compared to the number available.

VULNERABILITY REDUCING PROTECTION MEASURES – SUMMARY NUMBERS						
Element at Risk	Persons located onsite and temporarily offsite					
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.					
The Protection Principle	Effectiveness Rating [1]	Numbers of Protection Measures				
		Total Available	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Transport and Multiple evacuation destinations and routes available	Very High	1	-	1	-	-
	High	-	-	-	-	-
	Effective	1	1	1	-	-
	Moderate	-	-	-	-	-
	Not Relevant	-	-	-	-	-
Provision of bushfire emergency information and education	Very High	-	-	-	-	-
	High	-	-	-	-	-
	Effective	2	2	-	-	1
	Moderate	2	2	-	-	-
	Not Relevant	4	-	-	-	-
A bushfire emergency firefighting capability exists (response)	Very High	-	-	-	-	-
	High	-	-	-	-	-
	Effective	2	1	1	-	2
	Moderate	1	1	-	1	-
	Not Relevant	1	-	-	-	-
Total Numbers	Very High	1	-	1	-	-
	High	-	-	-	-	-
	Effective	5	4	2	-	3
	Moderate	4	3	`	1	-
	Not Relevant	5	-	-	-	-
	Totals	14	7	3	1	3

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status: Refer to table footnotes on previous page.

8.1.3 ASSESSED IMPACT OF APPLIED PROTECTION MEASURES (VULNERABILITY REDUCTION)

Table 8.3: For the stated element at risk, The potential impact of the applied protection measures in reducing vulnerability levels to the stated area of bushfire prone vegetation.

ASSESSED IMPACT OF APPLIED MEASURES (VULNERABILITY REDUCTION)								
Element at Risk	Persons located onsite and temporarily offsite							
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.							
Vulnerability Reducing Protection Measures Applied to Assessment [1]	The Bushfire Hazard Threats [2]							
	Direct Attack Mechanisms				Indirect Attack Mechanisms			
	Embers	Radiant Heat	Flame	Surface Fire	Debris Accumulation	Consequential Fire	Fire Driven Wind	Tree Strike / Obstruction
Existing and Planned (applied to inherent risk)	N/A	Significant	Significant	N/A	Minimal	Significant	N/A	N/A
	Significant				Medium			
Existing, Planned and Recommended (applied to residual risk)	N/A	Significant	Significant	N/A	Significant	Very Significant	N/A	N/A
	Significant				Very Significant			
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 4 for explanatory information.								

Assessment Comments: Persons are not vulnerable to direct ember attack or surface fire impacts. Recommendations are for training and site responses.

8.1.4 ASSESSED VULNERABILITY LEVELS

Assessed as a function of the capacity to apply sufficient vulnerability reducing protection measures, their individual effectiveness and their combined impact in reducing the vulnerability of the identified element at risk (Note: This assessment is independent of the threat level and exposure level assessments).

Table 8.4: For the stated element at risk, the assessed exposure level corresponding to the stated area of bushfire prone vegetation.

ASSESSED VULNERABILITY LEVELS	
Element at Risk	Persons located onsite and temporarily offsite
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.
Vulnerability Reducing Protection Measures Applied to Assessment [1]	Relative Vulnerability Level [2]
Existing and Planned (applied to inherent risk)	Moderate
Existing, Planned and Recommended (applied to residual risk)	Low
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 2 for explanatory information.	

Assessment Comments: After training and response procedures are made available to staff/visitors and emergency services are familiar with the site, there is little more that can be done to improve vulnerability.

8.2 PERSONS ON ACCESS/EGRESS ROUTES (IN VEHICLES) OR PATHWAYS

8.2.1 PROTECTION MEASURES AVAILABLE TO REDUCE VULNERABILITY LEVELS AND THEIR APPLICATION STATUS

Table 8.5: All available protection measures to reduce exposure of the stated element at risk to bushfire hazard threats and their application to the subject development/use.

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
ELEMENT AT RISK:	PERSONS ON ACCESS/EGRESS ROUTES IN VEHICLES					
Access/Egress Route ID:	All bushfire prone vegetation within the broader locality (10km radius) including along access routes.					
PROTECTION PRINCIPLE – APPLY BEST (SAFER) ROAD DESIGN AND CONSTRUCTION (MATERIALS): The application of as many of the following protection measures as possible ensures a greater level of safety for users and lowers the associated risk when roads need to be used to evacuate to a safer offsite location in potentially high stress situations within a threatening environment. Safety for persons using the route is increased through reducing the likelihood of vehicle/terrain or vehicle/vehicle accidents and the ability to maintain travelling speed.						
8.1	Road Width: Ensure appropriate width roads are installed. Wider roads allow safer passing of the anticipated traffic that can be travelling in both directions (e.g. emergency services travelling towards the emergency event). The effectiveness of road width to reduce vulnerability is also a function of the required carriage capacity - which may be increased by the proposed development/use when it will increase traffic intensity. The incorporation of non-vegetated and trafficable road verges/shoulders and adjacent footpaths can also be considered to increase effective width for slower moving vehicles (providing additional separation from the hazard and passing opportunities).	High	No	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The measure is not under the control of the landowner/developer. The access/egress routes run through farm land and adjacent to the existing solar installation with Robartson Rd access/egress in a north direction towards the Great Eastern Highway and the town of Merredin, and south direction for approx. 750m before meeting the Bruce Rock – Merredin Rd in an east or west direction. Both roads are approx. 8-10m wide giving safe passage for evacuation and emergency responding vehicles.						
8.2	Road Gradient: Ensure appropriate road gradients are available. Lower gradients ensure traction and speed can be maintained and can also be associated with driver visibility. Appropriate gradients will depend on the constructed surface materials and the weights and tractive capability of expected vehicle types.	High	No	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The measure is not under the control of the landowner/developer. The local topography is gently undulating rather than rugged.						

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
8.3	Road Clearance: Ensure appropriate clearance can exist and is established. Sufficient horizontal and vertical clearances from obstructions ensure unhindered movement of all possible vehicle types;	High	No	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The measure is not under the control of the landowner/developer. The minimum horizontal clearance is the road width of 8m and generally 10m. Trees and powerlines do not overhang the road, so vertical clearance is unrestricted.						
8.4	Road Surface Materials: Ensure that roads are constructed of materials that will provide the necessary traction (also a function of gradient), can support the weight of all expected vehicle types and remain operational in all weather. The required supportive capacity also applies to associated structures such as bridges.	High	No	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The measure is not under the control of the landowner/developer. Robartson Rd and Bruce Rock -Merredin Rd are designed to carry heavy and industrial vehicles. There is no limitation for the residential vehicles (<2 ton) used by site staff.						
8.5	Driver Visibility and Road Ahead Signage: Ensure that road design provides high levels of visibility ahead (at least in the absence of smoke and embers) and informative signage indicating relevant 'up ahead' route information (includes information stating distance to turnaround area for narrow roads in more remote locations). Good visibility is associated with the avoidance 'blind' corners and crests to the greatest extent possible.	High	No	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The measure is not under the control of the landowner/developer. Robartson Rd and Bruce Rock- Merredin Rd have long straight sections (>1km) and gentle curves (<30 degrees).						
8.6	Road / Pathway Length: Shorter distances to safer locations reduce the length of time persons remain vulnerable to bushfire threats.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: The measure is not under the control of the landowner/developer. Robartson Rd and Bruce Rock- Merredin Rd are >10km to a safer offsite location (Merredin Townsite)or to a westerly direction through farmland. This is addressed in Section 7.2.1.						
8.7	Interconnected Roads: Ensuring that the design of the road network provides through roads and avoids dead-end roads, provides the choice of alternative routes for drivers to minimise close contact with a bushfire event. Otherwise vehicles and persons can be trapped.	High	No	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The measure is not under the control of the landowner/developer. Some minor side roads in the area are no through-roads. All major roads are through-roads.						
PROTECTION PRINCIPLE – EVACUEES SELF-SUFFICIENT (LOCAL AWARENESS AND TRANSPORT): The 'type' of persons that will be present on the site of the proposed development/use influences their degree of vulnerability to both bushfire threats and to risk associated with vehicular accidents in a stressful environment. Persons that have local knowledge, are self-supportive, have their own transport and are physically and mentally capable present the lowest degree of vulnerability for this factor.						

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
This contrasts with persons who meet the SPP 3.7 definition of 'vulnerable' where the most vulnerable are likely to be less effective at making the required decisions and carrying out the required actions in the timeframe required. They are likely to be dependent on others for both information and transport and will not have any local knowledge.						
8.8	**Self Sufficient Persons with Local Awareness**: These are the type of persons that will be present on the site of the proposed development/use.	Effective	Yes	Yes	No	No
8.9	**Persons Onsite Have Own Transport**: There is no need to have arrangements in place for external provision of evacuation vehicles.	Effective	Yes	Yes	No	No
Informative and/or Site Specific Comment/Assessment: Staff must necessarily have their own transport to access the site.						

[1] **Protection Measure Effectiveness Rating**: Refer to section 2.3.5 for explanation and defining.

[2] **Protection Measure Application Status**:

- **Possible**: Protection measures that can potentially be applied to the proposed development/use;
- **Exists**: Protection measures already implemented by existing components of the proposed development/use. These measures are accounted for in assessing 'inherent' risk levels (refer to Glossary);
- **Planned**: Protection measures that:
  - Are incorporated into the site plans;
  - Exist in an approved Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), alternative solutions and any additional recommended protection measures - for which a responsibility for their implementation has been created and approved; and/or
  - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), that can be met and for which a responsibility for their implementation can be created in the BMP.

  These planned measures are accounted for in assessing 'inherent' risk levels (refer to Glossary).
- **Additionally Recommend**: Protection measures that:
  - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and comprise alternative solutions and/or additional recommended protection measures (that can and should be implemented in the opinion of the bushfire consultant), and for which a responsibility for their implementation can be created in the BMP; and/or
  - Are developed in the process of producing this risk assessment and management report and for which a responsibility for their implementation can be created in the BMP.

  These additionally recommended measures, along with existing and planned measures, are accounted for in assessing 'residual' risk levels (refer to Glossary).

8.2.2 NUMBER ANALYSIS OF AVAILABILITY VERSUS APPLICATION OF PROTECTION MEASURES

Table 8.6: For the stated element at risk and area of bushfire prone vegetation, the summarised number of bushfire protection measures that can be applied (and their corresponding effectiveness rating), is compared to the number available.

VULNERABILITY REDUCING PROTECTION MEASURES – SUMMARY NUMBERS							
Element at Risk	Persons on access/egress routes in vehicles						
Access/Egress Route ID	All bushfire prone vegetation within the broader locality (10km radius) including along access routes.						
The Protection Principle	Effectiveness Rating [1]	Numbers of Protection Measures					
		Total Available	Application Status [2]				
			Possible	Exists	Planned	Additionally Recommend	
Road Design and Construction (Materials)	Very High	-	-	-	-	-	
	High	6	-	6	-	-	
	Effective	-	-	-	-	-	
	Moderate	-	-	-	-	-	
	Not Relevant	1	-	-	-	-	
Evacuees Self-Sufficient in Transport and Local Knowledge	Very High	-	-	-	-	-	
	High	-	-	-	-	-	
	Effective	2	2	2	-	-	
	Moderate	-	-	-	-	-	
	Not Relevant	-	-	-	-	-	
Total Numbers	Very High	-	-	-	-	-	
	High	6	-	6	-	-	
	Effective	2	2	2	-	-	
	Moderate	-	-	-	-	-	
	Not Relevant	1	-	-	-	-	
	Totals	9	2	8	-	-	

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status: Refer to table footnotes on previous page.

8.2.3 ASSESSED IMPACT OF APPLIED PROTECTION MEASURES (VULNERABILITY REDUCTION)

Table 8.7: For the stated element at risk, the assessed impact of the applied protection measures corresponding to the stated area of bushfire prone vegetation.

ASSESSED IMPACT OF APPLIED MEASURES (VULNERABILITY REDUCTION)								
Element at Risk	Persons on access/egress routes in vehicles							
Access/Egress Route ID	All bushfire prone vegetation within the broader locality (10km radius) including along access routes.							
Vulnerability Reducing Protection Measures Applied to Assessment [1]	The Bushfire Hazard Threats [2]							
	Direct Attack Mechanisms				Indirect Attack Mechanisms			
	Embers	Radiant Heat	Flame	Surface Fire	Debris Accumulation	Consequential Fire	Fire Driven Wind	Tree Strike / Obstruction
Existing and Planned (applied to inherent risk)	Minimal	Medium	Significant	Significant	N/A	N/A	Minimal	Significant
	Medium				Medium			

[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3

[2] Refer to Appendix 4 for explanatory information.

Assessment Comments: No recommendations are applicable. The inherent and residual risk are the same. The combination of suitable transportation, awareness, and quality of egress route(s) is weighed against the landscape-scale forests bounding the route and length of route to a low threat destination (>13km).

8.2.4 ASSESSED VULNERABILITY LEVELS

Assessed as a function of the capacity to apply sufficient vulnerability reducing protection measures, their individual effectiveness and their combined impact in reducing the vulnerability of the identified element at risk (Note: This assessment is independent of the threat level and exposure level assessments).

Table 8.8: For the stated element at risk, the assessed exposure level corresponding to the stated area of bushfire prone vegetation.

ASSESSED VULNERABILITY LEVELS		
Element at Risk	Persons on access/egress routes in vehicles	
Access/Egress Route ID	All bushfire prone vegetation within the broader locality (10km radius) including along access routes.	
Vulnerability Reducing Protection Measures Applied to Assessment [1]		Relative Vulnerability Level [2]
Existing and Planned (applied to inherent risk)		Moderate

[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3

[2] Refer to Appendix 2 for explanatory information.

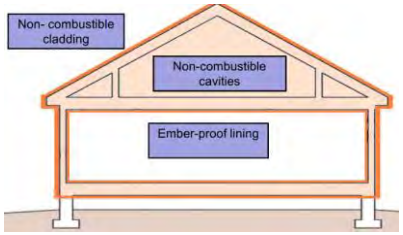
Assessment Comments: The vulnerability of persons on access routes is assessed as Moderate and cannot be practically improved.

8.3 BUILDINGS AND STRUCTURES NCC CLASSES 1-10

8.3.1 PROTECTION MEASURES AVAILABLE TO REDUCE VULNERABILITY LEVELS AND THEIR APPLICATION STATUS

Table 8.9: All available protection measures to reduce exposure of the stated element at risk to bushfire hazard threats and their application to the subject development/use.

	VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
ELEMENT AT RISK: BUILDINGS/STRUCTURES - NCC CLASSES 1-10						
PROTECTION PRINCIPLE – DESIGN AND CONSTRUCTION (MATERIALS): Increase bushfire resilience through the application of beneficial design and construction, including using non-combustible materials and minimising the use of vulnerable materials, to the greatest extent possible. Practicality and cost will be key considerations in determining the viability of applying protection measures in differing scenarios, but this should be determined with due consideration of threat levels and the importance of the elements at risk. The constructed systems should utilise the following properties to the greatest extent possible: reliability (which requires their durability over time, low maintenance and being unlikely to change over time), robustness (which limits damage spread from minor sources, continue to protect when thermally loaded and protects vulnerable elements), resilience (which enables their return to a functional state following an overload) and redundancy (which ensures the fate of the subject building/structure is not reliant on the effective performance of a single element). Refer to the glossary for additional explanation. The principle is also applicable to constructed consequential fire fuels.						
9.1	Construction to a Standard - AS 3959:2018 [4]: Apply the specified requirements to construction. These are intended to reduce the risk of building ignition from bushfire direct attack mechanisms. Note that the indirect attack mechanisms and the threats presented by consequential fire fuels are not specifically considered. *"The standard is primarily concerned with improving the ability of buildings … to better withstand attack from bushfire thus giving a measure of protection to the building occupants (until the fire front passes), as well as to the building itself".* The AS 3959 approach adopts a strategy that relies on the integrity of the building's exterior envelope (i.e., the cladding of roof/wall/eaves, floor supporting structures/flooring and all penetrations) to resist all bushfire exposure conditions and environmental actions thereby protecting all structural construction elements behind it, including allowable combustible materials. It provides protection by: • Using specified materials that provide ignition resistance (tolerance of radiant heat and flames). Higher BAL ratings impose increased construction requirements for these exterior envelope materials; • Specifying precise gap control (applicable to all bushfire attack levels) for the exterior envelope of the building to prevent ember entry); and • Attached and adjacent structures (within 6m) must also comply with the Standard.	High	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: Structures (storage sheds and switchrooms etc) do not have a general structure which can comply with AS 3959 or NASH.						

	VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
9.2	Construction to a Standard – NASH Standard [33]: Apply the specified requirements to construction. The Standard: *"Sets out acceptable construction requirements for residential and low-rise buildings in bushfire prone areas to reduce the risk of ignition from bushfire attack involving embers, radiant heat and direct flame impingement using non-combustible materials. Buildings constructed in accordance with this Standard are intended to provide a sheltering envelope during the passage of a bushfire flame front. They do not constitute 'last resort' private bushfire shelters as defined in the NCC. The Standard is based on achieving ignition resistance through non-combustible construction using conventional building materials and a level of redundancy to provide a high level of performance in extreme bushfire events and an increased probability that unattended buildings will survive such events."* Key attributes of the Standard include: • Materials used anywhere on the building envelope (see shaded part of diagram below), must be non-combustible except for a small amount allowed externally that includes flooring, window frames, doors and external decorative trim. The building envelope is comprised of a framed roof/ceiling system, an external wall system and a floor system;  • The same construction requirements apply for all BAL ratings up to BAL-40 (except for external doors and windows which apply AS 3959 requirements). An additional benefit of this is the built in resistance to the direct attack mechanisms of consequential fire when lower BAL ratings apply. • It does not rely on eliminating ember entry to the roof space, wall cavities and floor system as these are non-combustible construction. Embers only need to be kept from entering the internal living/operating spaces. • It is ember tolerant without unrealistic workmanship, supervision and maintenance requirements; • The combination of a non-combustible cladding and cavities is a robust solution that enables the building to be configured so that failure or damage to one element does not lead to the inevitable failure of the building or a breach of the habitable envelope; and • Attached and adjacent structures (within 6m) must also comply with the Standard.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: Structures (storage sheds and switchrooms etc) do not have a general structure which can comply with AS 3959 or NASH.						

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
9.3	**Construction Materials – External And Internal Cavity Building Elements**: Excluding internal living or operation spaces, to the degree necessary, utilise materials resistant to fire attack mechanisms of flame and radiant heat (preferably non-combustible) for all relevant building elements, including wall, roof, floor, supporting structures and framing systems.	Very High	Yes	Unknown	No	Yes
Informative and/or Site Specific Comment/Assessment: The construction of proposed structures is currently unknown. They will likely be primarily masonry, steel, aluminium and cement sheeting. It is recommended non-combustible elements are included where practical.						
9.4	**Construction Materials – Consequential Fire Fuels**: For constructed large consequential fire fuels, construct using non-combustible materials to the fullest extent possible. These include: • Surrounding landscaping items - fences/screens, retaining walls, gazebos, plastic water tanks etc; • Attached structures - decks, verandahs, stairs, carports, garages, pergolas, patios, etc; • Adjacent structures - houses, sheds, garages, carports, etc. Structure to structure fire is a common cause of overall building loss in post bushfire event assessments [9].	Very High	Yes	Yes	No	No
Informative and/or Site Specific Comment/Assessment: Adjoining heavy constructed fuels are not proposed as part of the relevant buildings.						
9.5	**Construction – Resistant To High Wind**: Apply construction measures to prevent the type of building damage from wind that will open or create gaps (from the wind itself or carried projectiles) and allow the entry of embers, radiant heat and flames. This type of damage is typically superficial damage. Building codes relating to wind (e.g., cyclones) do not necessarily address this superficial type of impact. Additional fixings for building envelope claddings and protection of the most vulnerable elements, such as glazing, from debris impact, are key considerations. Consider applying the principles of the NASH Standard [33] design solution to construction. "Potential wind effects directly associated with bushfire events have been considered in this Standard. Wind actions may affect houses subject to a bushfire attack in various ways including: • The intensity of flame front activity may produce locally high wind pressures on parts of the building; • In the post fire phase, some weakened components on the building envelope may be vulnerable to normal design pressures; and • Wind can drive embers into the building envelope." Most applicable when the physical requirements exist for the development of an extreme bushfire event within the surrounding broader landscape.	High	Yes	Unknown	No	No

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
9.6	**Construction – Gas Supply**: All gas cylinders are installed and maintained in accordance with AS 1596. This standard includes requirements for small portable cylinders and larger cylinders used for domestic house supply. These include: • Safety release valve shall be directed away from the building and persons access/egress routes; • Metal piping and fittings shall be used on all piping inside the building's cavities and enclosable occupied spaces and the high pressure side of any gas regulators; and • Tethers securing cylinders are to be non-combustible. The objective is to reduce the risk of local fire against a building and reduce the risk of death or injury, from gas flaring or explosion. The rationale is gas cylinders which have either flared or ruptured are commonly found in post bushfire surveys [9]. The heat from the bushfire or consequential local fire has been sufficient to cause their pressure to reach critical levels beyond which their pressure release valve releases large quantities of LP gas. If these gas cylinders fall over, this pressure release valve may no longer function correctly, meaning that the gas cylinder may continue to increase in pressure with continued heating until the cylinder ruptures. The resulting explosion includes a pressure wave and large ball of flame which can threaten nearby life and buildings.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: No gas storage will be on site.						
9.7	**Construction - Electricity Supply**: Cabling to be shielded (includes installing underground within subject property boundary) from applicable bushfire attack mechanisms. The objective is to assist with continuity of supply for essential site operations and/or electrically driven firefighting pumps. It also reduces the risk of electrocution to any persons onsite and reduces potentially additional sources of fire ignition. It is common in bushfires for power infrastructure to burn and collapse or be impacted by falling trees or branches while power lines are still live. Removing this risk may be appropriate for some sites.	Moderate	Yes	No	Partly	Yes
Informative and/or Site Specific Comment/Assessment: Exposed electrical cabling to be shielded from radiant heat and consequential fire by burying underground or shielding with non-combustible material – common electrical cabling reaches its critical point at >12kWm2. *Exposed plumbing (poly pipe) is to be buried or shielded with non-combustible material – maximum exposure 120 degrees Celsius.*						
9.8	**Minimise Debris and Ember Accumulation – Re-Entrant Detail**: Avoid or minimise the accumulation of unburnt debris and embers by avoiding re-entrant details and/or adopting aerodynamic forms that will self-shed windblown debris and embers. For example: • Simple building/structure footprints that avoid re-entrant corners in access ways, at wall/floor, wall/ground, roof/wall junctions and around doors, vents, windows; and • Simple roof layouts that avoid valleys and minimise the number of ridges that need protection details (e.g. skillion roofs).	High	Yes	Unknown	No	No

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
9.9	**Minimise Debris and Ember Accumulation – Trapping Surfaces**: Avoid or minimise the use of exposed combustible surfaces that can trap and accumulate embers. These can include: • Horizontal, or shallow angle surfaces e.g. exposed wall/roof framework, roofs, decking, verandahs, steps, windowsills; and • Vertical surfaces with rough textured cladding (e.g. sawn timber).	Moderate	Yes	Unknown	No	No
Informative and/or Site Specific Comment/Assessment: The design of Class 1-10 buildings is unknown at this stage, but are likely to be simple rectangular structures without complex features.						
9.10	**Minimise Debris and Ember Accumulation – Roof Plumbing**: All roof plumbing (gutters, valleys) is protected from the accumulation of debris and embers that can result in direct fire attack mechanisms immediately adjacent to any combustible elements within the roof cavity.	Moderate	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: There will be few to no trees within the APZ and leaf litter accumulation will be very slow.						
9.11	**Minimise Debris and Ember Accumulation – Construction Cavities**: Apply designs that lower the potential for accumulation of embers and debris within cavity spaces of buildings/structures. Examples include concrete floor slab on the ground and solid masonry walls.	Moderate	Yes	Unknown	No	Yes
Informative and/or Site Specific Comment/Assessment: Ensure all subfloor spaces are sealed or enclosed with non-combustible solid material or ember screening mesh (corrosion-resistant steel, bronze, or aluminium with an aperture <2mm).						
9.12	**Minimise Flame/Radiant Heat/Ember/Debris Entry - External Openings**: Limit potential sites for entry through the external envelope to internal spaces and combustible materials within (as consequential fire fuels).	High	Yes	No	Yes	No
9.13	**Screening and Sealing - Gaps and Penetrations**: Apply fire rated sealants and/or install metal screening (corrosion resistant steel, bronze, aluminium <2mm aperture). All external construction and penetration gaps with apertures greater than 2mm will allow ember entry (and potentially debris) to internal cavities and combustible materials within (as consequential fire fuels). This includes gaps in roofs, walls, doors, windows and their surrounding trims – including those associated with penetrations, vents, weepholes, poor workmanship and material deterioration and movement over time (maintenance). Internal fire is difficult to see and extinguish.	Moderate	Yes	No	Yes	Yes
Informative and/or Site Specific Comment/Assessment: All Class 1-10 buildings (including non-habitable structures) must have ember screening/sealants installed on any gaps and penetrations.						

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
9.14	Screening - External Doors and Windows: Metal screens (corrosion resistant steel, bronze, aluminium <2mm aperture) installed over non-openable and/or openable parts of windows and doors to prevent ember entry to internal spaces containing combustible materials (consequential fire fuels) and reduce radiant heat load on vulnerable surfaces.	Moderate	Yes	No	No	No
9.15	Shutters - External Doors and Windows: Fire rated shutters Installed to significantly increase bushfire resistance of the vulnerable building elements. Any requirement for onsite manual activation is a potential limitation to effectiveness.	Moderate	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: The measures are excessive for the radiant heat flux exposure of <10kW/m2.						
9.16	Landscaping Construction - Fences and Walls: Non-combustible materials are used for fences, walls (including retaining walls), screens, garden edging, play equipment and other built structures - as potential consequential fire fuels. Where relevant, the capacity to resist high winds, to minimise potential for impact damage to subject building/structure, should also be incorporated.	Moderate	Yes	No	No	Yes
Informative and/or Site Specific Comment/Assessment: Any security fences or other potential fuel loads should be constructed using non-combustible material.						
PROTECTION PRINCIPLE – FIREFIGHTING CAPABILITY: Provide sufficient, reliable and bushfire resilient water supply and delivery capability as is necessary for active and/or passive systems.						
9.17	Firefighting Water Supply: Have a dedicated static supply of firefighting water for the protection of buildings/structures before and after the passage of a bushfire front. Adequate water supply is critical for any firefighting operation, particularly where property protection is the intent. This is necessary when: • A water supply additional to a reticulated water supply is required to counter the loss of firefighting water as a protection measure, should the reticulated supply be interrupted; • It is the only source of firefighting water. All tanks shall be non-combustible. Aside from losing water, failure of combustible tank can provide an additional heat or load to a vulnerable building element. Metal piping and fittings shall be used for any above ground components. The limitation to the effectiveness of the measure is the requirement for persons to be present and have the minimum required operational knowledge and/or access to appropriate information.	Very High	Yes	No	Yes	Yes
9.18	Firefighting Equipment – Active Operation: In addition to a dedicated water supply, appropriate firefighting equipment is installed (pumps, hoses, sprinklers etc). These will be resilient to bushfire impact, to the extent necessary, through the application of appropriate equipment materials and protection (shielding or separation from the hazard). The limitation to the effectiveness of the measure is the requirement for persons to be present and have the minimum required operational knowledge and/or access to appropriate information.	Not Relevant	N/A	N/A	N/A	N/A

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Informative and/or Site Specific Comment/Assessment: Measure 11.18 discusses firefighting water supply to the site. The Merredin Battery facility will be supplied with a minimum 288kL firefighting water supply. This will provide an ample supply for any Class 1-10 buildings. *The design and bushfire protection measures assumes no active defence of the site. Attendance of emergency services or response by site staff would be additional to the protection measures applied.*						
9.19	Firefighting Equipment – Passive Operation: In addition to a dedicated water supply, appropriate water dispensing apparatus are installed (e.g. pumps, plumbing and sprinklers) that are automatically activated. These will be resilient to bushfire impact, to the extent necessary, through the application of appropriate equipment materials and protection (shielding or separation from the hazard).	Not Relevant	N/A	N/A	N/A	N/A
9.20	Firefighting Equipment – Maintain Operability: Where water pumps, shutters or other active/passive protection measures rely on the continued supply of electricity, establish barriers (shielding) or separation from potential damaging factors (e.g. falling trees/branches, fire, or other impact sources). For example, bury transmission systems to the greatest extent possible.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: Passive operations are not proposed for Class 1-10 buildings.						
9.21	Firebreaks – Primarily for Access: Installation and maintenance of firebreaks to remove vegetation, limit surface fire progression and facilitate firefighting access / backburning.	Moderate	Yes	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The site is currently compliant with the Shire of Merredin Firebreak Notice.						
PROTECTION PRINCIPLE – MANAGEMENT AND MAINTAINING EFFECTIVENESS OF APPLIED PROTECTION MEASURES: To ensure the retention of the level of bushfire resilience that has been established through the implementation of appropriate bushfire protection measures, formal and enforceable responsibilities are created.						
9.22	Formal Management/Maintenance Plan – Actions and Responsibilities: Through a bushfire management plan, site operations emergency plan, bushfire emergency plan, operational annual works plan and/or a 'firebreak' notice, a mechanism is put in place to ensure that: • The required management and maintenance of applied bushfire protection measures is conducted on a regular basis – with the interval dependent on the necessary frequency that will maintain full effectiveness; and • The relevant protection measures are known and understood; and • Responsibilities are created The different documents will be able to satisfactorily perform this function to differing extents.	Effective	Yes	No	No	Yes

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
		Possible	Exists	Planned	Additionally Recommend
Informative and/or Site Specific Comment/Assessment: The different documents will be able to satisfactorily perform this function to differing extents.					

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status:

- Possible: Protection measures that can potentially be applied to the proposed development/use;
- Exists: Protection measures already implemented by existing components of the proposed development/use. These measures are accounted for in assessing 'inherent' risk levels (refer to Glossary);
- Planned: Protection measures that:
    - Are incorporated into the site plans;
    - Exist in an approved Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), alternative solutions and any additional recommended protection measures - for which a responsibility for their implementation has been created and approved; and/or
    - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), that can be met and for which a responsibility for their implementation can be created in the BMP.

  These planned measures are accounted for in assessing 'inherent' risk levels (refer to Glossary).
- Additionally Recommend: Protection measures that:
    - Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and comprise alternative solutions and/or additional recommended protection measures (that can and should be implemented in the opinion of the bushfire consultant), and for which a responsibility for their implementation can be created in the BMP; and/or
    - Are developed in the process of producing this risk assessment and management report and for which a responsibility for their implementation can be created in the BMP.

  These additionally recommended measures, along with existing and planned measures, are accounted for in assessing 'residual' risk levels (refer to Glossary).

8.3.2 NUMBER ANALYSIS OF AVAILABILITY VERSUS APPLICATION OF PROTECTION MEASURES

Table 8.10: For the stated element at risk and area of bushfire prone vegetation, the summarised number of bushfire protection measures that can be applied (and their corresponding effectiveness rating), is compared to the number available.

VULNERABILITY REDUCING PROTECTION MEASURES – SUMMARY NUMBERS							
Element at Risk	Buildings/Structures - NCC Classes 1-10						
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.						
The Protection Principle	Effectiveness Rating [1]	Numbers of Protection Measures					
		Total Available	Application Status [2]				
			Possible	Exists	Planned	Additionally Recommend	
Design and Construction (Materials)	Very High	2	2	1	-	1	
	High	4	3	-	-	-	
	Effective	-	-	-	-	-	
	Moderate	8	8	-	1	4	
	Not Relevant	2	-	-	-	-	
Firefighting Capability	Very High	1	1	-	1	1	
	High	-	-	-	-	-	
	Effective	-	-	-	-	-	
	Moderate	1	1	1	-	-	
	Not Relevant	3	-	-	-	-	
Management and Maintaining Effectiveness of Applied Protection Measures	Very High	-	-	-	-	-	
	High	-	-	-	-	-	
	Effective	1	1	-	-	1	
	Moderate	-	-	-	-	-	
	Not Relevant	-	-	-	-	-	
Total Numbers	Very High	3	3	1	1	1	
	High	4	4	-	1	1	
	Effective	1	1	-	-	1	
	Moderate	9	9	1	1	4	
	Not Relevant	5	-	-	-	-	
	Totals	22	17	2	3	7	

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status: Refer to table footnotes on previous page.

8.3.3 ASSESSED IMPACT OF APPLIED PROTECTION MEASURES (VULNERABILITY REDUCTION)

Table 8.11: For the stated element at risk, The potential impact of the applied protection measures in reducing vulnerability levels to the stated area of bushfire prone vegetation.

ASSESSED IMPACT OF APPLIED MEASURES (VULNERABILITY REDUCTION)								
Element at Risk	Buildings/Structures - NCC Classes 1-10							
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.							
Vulnerability Reducing Protection Measures Applied to Assessment [1]	The Bushfire Hazard Threats [2]							
	Direct Attack Mechanisms				Indirect Attack Mechanisms			
	Embers	Radiant Heat	Flame	Surface Fire	Debris Accumulation	Consequential Fire	Fire Driven Wind	Tree Strike / Obstruction
Existing and Planned (applied to inherent risk)	Minimal	Significant	Significant	Medium	Significant	Medium	Medium	Medium
	Medium				Medium			
Existing, Planned and Recommended (applied to residual risk)	Very Significant	Significant	Significant	Very Significant	Very Significant	Significant	Significant	Medium
	Very Significant				Significant			
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 4 for explanatory information.								

Assessment Comments: The protection measures concentrate on reducing the vulnerability of building(s) to Ember Attack, including ember screening, construction materials, enclosing subfloor cavities, and preventing leaf litter/debris accumulation.

8.3.4 ASSESSED VULNERABILITY LEVELS

Assessed as a function of the capacity to apply sufficient vulnerability reducing protection measures, their individual effectiveness and their combined impact in reducing the vulnerability of the identified element at risk (Note: This assessment is independent of the threat level and exposure level assessments).

Table 8.12: For the stated element at risk, the assessed exposure level corresponding to the stated area of bushfire prone vegetation.

ASSESSED VULNERABILITY LEVELS	
Element at Risk	Buildings/Structures - NCC Classes 1-10
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.
Vulnerability Reducing Protection Measures Applied to Assessment [1]	Relative Vulnerability Level [2]
Existing and Planned (applied to inherent risk)	Moderate
Existing, Planned and Recommended (applied to residual risk)	Very Low
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 2 for explanatory information.	

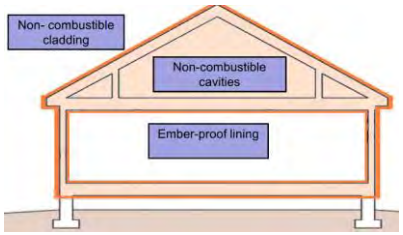
Assessment Comments: Class 1-10 buildings will be robust against bushfire impacts.

8.4 FIXED (HARD) INFRASTRUCTURE ASSETS

8.4.1 PROTECTION MEASURES AVAILABLE TO REDUCE VULNERABILITY LEVELS AND THEIR APPLICATION STATUS

Table 8.13: All available protection measures to reduce exposure of the stated element at risk to bushfire hazard threats and their application to the subject development/use.

	VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
ELEMENT AT RISK: FIXED (HARD) INFRASTRUCTURE ASSETS						
PROTECTION PRINCIPLE – DESIGN AND CONSTRUCTION (MATERIALS): Increase bushfire resilience through the application of beneficial design and construction, including using non-combustible materials and minimising the use of vulnerable materials, to the greatest extent possible. Practicality and cost will be key considerations in determining the viability of applying protection measures in differing scenarios, but this should be determined with due consideration of threat levels and the importance of the elements at risk. The constructed systems should utilise the following properties to the greatest extent possible: reliability (which requires their durability over time, low maintenance and being unlikely to change over time), robustness (which limits damage spread from minor sources, continue to protect when thermally loaded and protects vulnerable elements), resilience (which enables their return to a functional state following an overload) and redundancy (which ensures the fate of the subject building/structure is not reliant on the effective performance of a single element). Refer to the glossary for additional explanation. The principle is also applicable to constructed consequential fire fuels.						
11.1	Construction to a Standard - AS 3959:2018 [4]: Use the principles and requirements established in the Standard, for buildings in general, and apply to the infrastructure assets where they have merit. These are intended to reduce the risk of building ignition from bushfire direct attack mechanisms. Note that the indirect attack mechanisms and the threats presented by consequential fire fuels are not specifically considered. Key attributes of the Standard that may have relevance to other built assets include: • The AS 3959 strategy that relies on the integrity of the building's exterior envelope (i.e., the cladding of roof/wall/eaves, floor supporting structures/flooring and all penetrations) to resist all bushfire exposure conditions and environmental actions thereby protecting all structural construction elements behind it, including allowable combustible materials. • Using specified materials that provide ignition resistance (tolerance of radiant heat and flames). Higher BAL ratings impose increased construction requirements for these exterior envelope materials; • Specifying precise gap control (applicable to all bushfire attack levels) for the exterior envelope of the building to prevent ember entry); and • Attached and adjacent structures (within 6m) must also comply with the Standard.	Not Relevant	N/A	N/A	N/A	N/A
11.2	Construction to a Standard – NASH Standard [33]: Use the principles and requirements established in the Standard, for residential and low-rise buildings, and apply to the infrastructure assets where they have merit.	Not Relevant	N/A	N/A	N/A	N/A

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
	Key attributes of the Standard that may have relevance to other built assets include: • Materials used anywhere on the building envelope (see shaded part of diagram below), must be non-combustible (except for a small number of smaller building elements). The building envelope is comprised of a framed roof/ceiling system, an external wall system and a floor system;  • The same construction requirements apply for all BAL ratings up to BAL-40 (except for external doors and windows which apply AS 3959 requirements). An additional benefit of this is the built in resistance to the direct attack mechanisms of consequential fire when lower BAL ratings apply. • It does not rely on eliminating ember entry to the roof space, wall cavities and floor system as these are non-combustible construction. Embers only need to be kept from entering the internal living/operating spaces. • It is ember tolerant without unrealistic workmanship, supervision and maintenance requirements; • The combination of a non-combustible cladding and cavities is a robust solution that enables the building to be configured so that failure or damage to one element does not lead to the inevitable failure of the building or a breach of the habitable envelope; and • Attached and adjacent structures (within 6m) must also comply with the Standard.					
11.3	**Construction Materials – External and Internal Cavity Building Elements**: Excluding internal living or operation spaces, to the degree necessary, utilise materials resistant to fire attack mechanisms of flame and radiant heat (preferably non-combustible) for all relevant building elements, including wall, roof, floor, supporting structures and framing systems.	Not Relevant	N/A	N/A	N/A	N/A
11.4	**Construction Materials – Consequential Fire Fuels**: For constructed large consequential fire fuels, construct using non-combustible materials to the fullest extent possible. These can include attached structures, adjacent structures and surrounding landscaping items.	Very High	Yes	Partly	Partly	Yes
Informative and/or Site Specific Comment/Assessment: • Battery modules will be self-contained through highly insulated steel encasing used to encapsulate modules. • Cabinets and fencing will be non-combustible (metal or mineral).						

	VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
•	Installation of thermally insulated steel vents within the thermal roof protecting the units from flame impingements and hot gas intrusion.					
11.5	**Construction – Resistant To High Wind**: Apply construction measures to prevent the type of building damage from wind that will open or create gaps (from the wind itself or carried projectiles) and allow the entry of embers, radiant heat and flames. This type of damage is typically superficial damage. Building codes relating to wind (e.g., cyclones) do not necessarily address this superficial type of impact. Additional fixings for building envelope claddings and protection of the most vulnerable elements, such as glazing, from debris impact, are key considerations. Consider applying the principles of the NASH Standard [33] design solution to construction. "Potential wind effects directly associated with bushfire events have been considered in this Standard. Wind actions may affect buildings subject to a bushfire attack in various ways including: • The intensity of flame front activity may produce locally high wind pressures on parts of the building; • In the post fire phase, some weakened components on the building envelope may be vulnerable to normal design pressures; and • Wind can drive embers into the building envelope." Most applicable when the physical requirements exist for the development of an extreme bushfire event within the surrounding broader landscape.	High	Yes	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The BESS units and associated structures are fixed to the ground and have limited vulnerabilities.						
11.6	**Construction – Gas Supply**: All gas cylinders are installed and maintained in accordance with AS 1596 (for domestic house supply) as a guide. The requirement of the standard includes: • Safety release valve shall be directed away from the building and persons access/egress routes; • Metal piping and fittings shall be used on all piping inside the building's cavities and enclosable occupied spaces and the high pressure side of any gas regulators; and • Tethers securing cylinders are to be non-combustible. The objective is to reduce the risk of local fire against a building and reduce the risk of death or injury, from gas flaring or explosion. The rationale is gas cylinders which have either flared or ruptured are commonly found in post bushfire surveys [9]. The heat from the bushfire or consequential local fire has been sufficient to cause their pressure to reach critical levels beyond which their pressure release valve releases large quantities of LP gas. If these gas cylinders fall	Not Relevant	N/A	N/A	N/A	N/A

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
	over, this pressure release valve may no longer function correctly, meaning that the gas cylinder may continue to increase in pressure with continued heating until the cylinder ruptures. The resulting explosion includes a pressure wave and large ball of flame which can threaten nearby life and buildings.					
11.7	**Construction Materials – Non-Structural Essential Elements**: Utilise fire/radiant heat rated products (rated to the level determined as necessary), for the construction of non-structural elements that are essential to the continued operation of the built asset and are exposed to a bushfire hazard. These include cabling and plumbing associated with power / data transmission and water / fuel transport.	High	Yes	No	No	Yes
Informative and/or Site Specific Comment/Assessment: Use non-combustible or products with high heat ratings to assist with maintaining their operability. Recommend shielding - These include cabling and plumbing associated with power / data transmission.						
11.8	**Minimise Debris and Ember Accumulation – Re-Entrant Detail**: Avoid or minimise the accumulation of unburnt debris and embers by avoiding re-entrant details and/or adopting aerodynamic forms that will self-shed windblown debris and embers. For example: • Simple building/structure footprints that avoid re-entrant corners in access ways, at wall/floor, wall/ground, roof/wall junctions and around doors, vents, windows; and • Simple roof layouts that avoid valleys and minimise the number of ridges that need protection details (e.g. skillion roofs).	High	Yes	Yes	No	Yes
Informative and/or Site Specific Comment/Assessment: The structure design and construction allow for little debris accumulation. Where the electrical cabling contacts the ground or any arrangement of associated structures creates a 'pocket' for accumulation of debris, this should be rectified by design or filling with non-combustible material such as mineral earth. Consideration should be given to making the arrangement self-cleaning through wind action to the greatest extent possible. These measures will reduce accumulation and/or make the management (clearing) of accumulated debris easier. E.g. cable raking to be 100mm above ground.						
11.9	**Minimise Debris and Ember Accumulation – Trapping Surfaces**: Avoid or minimise the use of exposed combustible surfaces that can trap and accumulate embers. These can include: • Horizontal, or shallow angle surfaces e.g. exposed wall/roof framework, roofs, decking, verandahs, steps, windowsills; and • Vertical surfaces with rough textured cladding (e.g. sawn timber).	Not Relevant	N/A	N/A	N/A	N/A

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
11.10	**Minimise Debris and Ember Accumulation – Roof Plumbing**: All roof plumbing (gutters, valleys) is protected from the accumulation of debris and embers that can result in direct fire attack mechanisms immediately adjacent to any combustible elements within the roof cavity.	Not Relevant	N/A	N/A	N/A	N/A
11.11	**Minimise Debris and Ember Accumulation – Construction Cavities**: Apply designs that lower the potential for accumulation of embers and debris within cavity spaces of buildings/structures. Examples include concrete floor slab on the ground and solid masonry walls.	Not Relevant	N/A	N/A	N/A	N/A
Informative and/or Site Specific Comment/Assessment: The battery modules are contained within simple structures without the above components.						
11.12	**Minimise Flame/Radiant Heat/Ember/Debris Entry - External Openings**: Limit potential sites for entry to internal spaces through the external envelope and combustible materials within (as consequential fire fuels).	High	Yes	No	No	Yes
11.13	**Screening and Sealing - Gaps And Penetrations**: Apply fire rated sealants and/or install metal screening (corrosion resistant steel, bronze, aluminium <2mm aperture). All external construction and penetration gaps with apertures greater than 2mm will allow ember entry (and potentially debris) to internal cavities and combustible materials within (as consequential fire fuels). This includes gaps in roofs, walls, doors, windows and their surrounding trims – including those associated with penetrations, vents, weepholes, poor workmanship and material deterioration and movement over time (maintenance). Internal fire is difficult to see and extinguish.	Moderate	Yes	No	No	Yes
Informative and/or Site Specific Comment/Assessment: The manufacturer or appropriate engineers should be contacted to enquire if it is possible to apply ember screening to intake/exhaust vents and other paths of entry to the interior cavity or accessing any combustible elements of BESS cabinets. This ember screening would be applicable to the exterior of the battery cabinet, not internal components. The intention is to prevent both ember ingress and debris accumulation. Ember screening mesh is corrosion-resistant steel, bronze, or aluminium with an aperture <2mm.						
11.14	**Screening - External Doors and Windows**: Metal screens (corrosion resistant steel, bronze, aluminium <2mm aperture) installed over non-openable and/or openable parts of windows and doors to prevent ember entry to internal spaces containing combustible materials (consequential fire fuels) and reduce radiant heat load on vulnerable surfaces.	Moderate	Yes	No	No	No
11.15	**Shutters - External Doors and Windows**: Fire rated shutters Installed to significantly increase bushfire resistance of the vulnerable building elements. Any requirement for onsite manual activation is a potential limitation to effectiveness.	Moderate	Yes	No	No	No
Informative and/or Site Specific Comment/Assessment: Any doors/windows will not be open during a bushfire event.						

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
11.16	Landscaping Construction - Fences and Walls: Non-combustible materials are used for fences, walls (including retaining walls), screens and other built structures - as potential consequential fire fuels. Where relevant, the capacity to resist high winds, to minimise potential for impact damage to subject building/structure, should also be incorporated.	Moderate	Yes	No	Partly	Yes
Informative and/or Site Specific Comment/Assessment: Any security fences or other potential fuel loads should be constructed using non-combustible material.						
PROTECTION PRINCIPLE – FIREFIGHTING CAPABILITY: Provide sufficient, reliable and bushfire resilient water supply and delivery capability as is necessary for active and/or passive systems.						
11.17	Firefighting Water Supply: Have a dedicated static supply of firefighting water for the protection of buildings/structures before and after the passage of a bushfire front. Adequate water supply is critical for any firefighting operation, particularly where property protection is the intent. This is necessary when: • A water supply additional to a reticulated water supply is required to counter the loss of firefighting water as a protection measure, should the reticulated supply be interrupted; • It is the only source of firefighting water. All tanks shall be non-combustible. Aside from losing water, failure of combustible tank can provide an additional heat or load to a vulnerable building element. Metal piping and fittings shall be used for any above ground components. The limitation to the effectiveness of the measure is the requirement for persons to be present and have the minimum required operational knowledge and/or access to appropriate information.	Very High	Yes	No	Yes	Yes
11.18	Firefighting Equipment – Active Operation: In addition to a dedicated water supply, appropriate mobile firefighting appliances are available quickly and/or fixed firefighting equipment is installed (pumps, hoses, sprinklers etc). Where equipment is installed, this will be resilient to bushfire impact, to the extent necessary, through the application of appropriate equipment materials and protection (shielding or separation from the hazard). The limitation to the effectiveness of the measure is the requirement for persons to be present and have the minimum required operational knowledge and/or access to appropriate information.	Very High	Yes	No	No	Yes
Informative and/or Site Specific Comment/Assessment: Battery Energy Storage Systems do not have an applicable firefighting water supply under the state or national requirements. A nominal supply of 50,000L would meet the planning requirements for the proposal under SPP 3.7. The State of Victoria Country Fire Authority has produced an applicable document, which is being used as the source of the appropriate water supply for the Merredin Battery project. The Design Guidelines and Model Requirements – Renewable Energy Facilities (CFA March 2022) does not lay out these specifications in a single format and some criteria are applicable to the Victorian planning system. A summary of all applicable measures to align with the document are provided below.						

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Informative and/or Site Specific Comment/Assessment: The following requirements apply to the firefighting water supply. The specifications will be confirmed at the detailed design stage. Access Firefighting water access points (hydrants, hard suction, or drafting) must be clearly identifiable, visible from internal roads, and unobstructed. The water tank(s) must be located at the vehicle access point to the development (northern entry gate). An all-weather hardstand turnaround area meeting the requirements of the Guidelines for Planning in Bushfire Prone Areas v1.4 (Explanatory Note E3.3) must be provided within 4 metres of both the static water storage tank(s) and any independent hard suction points (hydrants). Site Operating Procedures must include that access routes must be unobstructed at all times. Siting The water tank(s) must be positioned >10m from BESS cabinets and associated infrastructure. The water tank(s) should apply a BAL-29 APZ at a minimum. It is possible to locate the tank within the 10kW/m2 APZ applied to BESS infrastructure such that additional vegetation clearing is not required. Construction The static firefighting water supply must be calculated per AS 2419. Based on the submitted layout the required supply will be 288,000L. This water supply is intended to address bushfire and non-bushfire emergencies. The static water storage tank(s) must be an above-ground water tank constructed of concrete or steel. An external water level indicator must be installed on static water storage tank(s) and be visible from internal roads and the adjoining turnaround area. Signage indicating 'FIRE WATER' and the tank capacity must be fixed to each tank. The hard-suction point must be protected from mechanical damage (eg. bollards) where vehicle contact is possible. Couplings at hard suction points are required to be 125mm Storz fittings (*Guidelines v1.4* s2.2.2.1). DFES Built Environment and the Merredin Volunteer Fire and Rescue Service should be contacted for input on appropriate couplings and adaptors.						
11.19	Fire Fighting Equipment – Passive Operation: In addition to a dedicated water supply, appropriate water dispensing apparatus are installed (e.g. pumps, plumbing and sprinklers) that are automatically activated. These will be resilient to bushfire impact, to the extent necessary, through the application of appropriate equipment materials and protection (shielding or separation from the hazard).	High	Yes	No	Yes	Yes
Informative and/or Site Specific Comment/Assessment: *The BESS units have active monitoring and electrical fault safety devices which ensure the units only remain operational within their intended operating environment, with an automated shut-down system.*						

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES		Effectiveness Rating [1]	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
It is recommended that automatic fire suppression systems are installed and maintained, as appropriate to the BESS details and recommended by the manufacturer. This measure is not applied to reduce the vulnerability or risk posed, as the methodology for this Risk Assessment assumes that fire occurs.						
11.20	Fire Fighting Equipment – Maintain Operability: Where water pumps, shutters or other active/passive protection measures rely on the continued supply of electricity, establish barriers (shielding) or separation from potential damaging factors (e.g. falling trees/branches, fire, or other impact sources). For example, bury transmission systems to the greatest extent possible.	Moderate	Yes	No	No	Yes
Informative and/or Site Specific Comment/Assessment: Operating and maintenance procedures are to be developed to ensure regular maintenance.						
11.21	Firebreaks – Primarily for Access: Installation and maintenance of firebreaks to remove vegetation, limit surface fire progression and facilitate firefighting access / backburning.	Moderate	Yes	Yes	No	No
Informative and/or Site Specific Comment/Assessment: The site is currently compliant with the Shire of Merredin Firebreak Notice.						
PROTECTION PRINCIPLE – MANAGEMENT AND MAINTAINING EFFECTIVENESS OF APPLIED PROTECTION MEASURES: To ensure the retention of the level of bushfire resilience that has been established through the implementation of appropriate bushfire protection measures, formal and enforceable responsibilities are created.						
11.22	Formal Management/Maintenance Plan – Actions and Responsibilities: Through a bushfire management plan, site operations emergency plan, bushfire emergency plan, operational annual works plan and/or a 'firebreak' notice, a mechanism is put in place to ensure that: • The required management and maintenance of applied bushfire protection measures is conducted on a regular basis – with the interval dependent on the necessary frequency that will maintain full effectiveness; and • The relevant protection measures are known and understood; and • Responsibilities are created The different documents will be able to satisfactorily perform this function to differing extents.	Effective	Yes	No	No	Yes
Informative and/or Site Specific Comment/Assessment: The different documents will be able to satisfactorily perform this function to differing extents.						

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status:

- Possible: Protection measures that can potentially be applied to the proposed development/use;
- Exists: Protection measures already implemented by existing components of the proposed development/use. These measures are accounted for in assessing 'inherent' risk levels (refer to Glossary);

VULNERABILITY REDUCING PROTECTION MEASURES – ALL AVAILABLE MEASURES	Effectiveness Rating [1]	Application Status [2]			
		Possible	Exists	Planned	Additionally Recommend

• **Planned**: Protection measures that:
  • Are incorporated into the site plans;
  • Exist in an approved Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), alternative solutions and any additional recommended protection measures - for which a responsibility for their implementation has been created and approved; and/or
  • Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and are comprised of the applicable acceptable solutions (established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), that can be met and for which a responsibility for their implementation can be created in the BMP.
These planned measures are accounted for in assessing 'inherent' risk levels (refer to Glossary).
• **Additionally Recommend**: Protection measures that:
  • Exist in a yet to be submitted Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and comprise alternative solutions and/or additional recommended protection measures (that can and should be implemented in the opinion of the bushfire consultant), and for which a responsibility for their implementation can be created in the BMP; and/or
  • Are developed in the process of producing this risk assessment and management report and for which a responsibility for their implementation can be created in the BMP.
These additionally recommended measures, along with existing and planned measures, are accounted for in assessing 'residual' risk levels (refer to Glossary).					

8.4.2 NUMBER ANALYSIS OF AVAILABILITY VERSUS APPLICATION OF PROTECTION MEASURES

Table 8.14: For the stated element at risk and area of bushfire prone vegetation, the summarised number of bushfire protection measures that can be applied (and their corresponding effectiveness rating), is compared to the number available.

VULNERABILITY REDUCING PROTECTION MEASURES – SUMMARY NUMBERS						
Element at Risk	Fixed (hard) infrastructure assets					
Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.					
The Protection Principle	Effectiveness Rating [1]	Numbers of Protection Measures				
		Total Available	Application Status [2]			
			Possible	Exists	Planned	Additionally Recommend
Design and Construction (Materials)	Very High	1	1	1	-	-
	High	4	4	2	-	3
	Effective	-	-	-	-	-
	Moderate	4	4	-	-	2
	Not Relevant	6	-	-	-	-
Firefighting Capability	Very High	2	2	-	1	2
	High	1	1	-	1	1
	Effective	-	-	-	-	-
	Moderate	2	2	1	-	1
	Not Relevant	1	-	-	-	-
Management and Maintaining Effectiveness of Applied Protection Measures	Very High	-	-	-	-	-
	High	-	-	-	-	-
	Effective	1	1	-	-	1
	Moderate	-	-	-	-	-
	Not Relevant	-	-	-	-	-
Total Numbers	Very High	3	3	1	1	2
	High	5	5	2	1	4
	Effective	1	1	-	-	1
	Moderate	6	6	1	-	3
	Not Relevant	7	-	-	-	-
	Totals	22	15	4	2	10

[1] Protection Measure Effectiveness Rating: Refer to section 2.3.5 for explanation and defining.

[2] Protection Measure Application Status: Refer to table footnotes on previous page.

8.4.3 ASSESSED IMPACT OF APPLIED PROTECTION MEASURES (VULNERABILITY REDUCTION)

Table 8.15: For the stated element at risk, The potential impact of the applied protection measures in reducing vulnerability levels to the stated area of bushfire prone vegetation.

<table>
<tr><th colspan="9">ASSESSED IMPACT OF APPLIED MEASURES (VULNERABILITY REDUCTION)</th></tr>
<tr><td>Element at Risk</td><td colspan="8">Fixed (hard) infrastructure assets</td></tr>
<tr><td>Vegetation Area / Location</td><td colspan="8">All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.</td></tr>
<tr><td rowspan="3">Vulnerability Reducing Protection Measures Applied to Assessment [1]</td><td colspan="8">The Bushfire Hazard Threats [2]</td></tr>
<tr><td colspan="4">Direct Attack Mechanisms</td><td colspan="4">Indirect Attack Mechanisms</td></tr>
<tr><td>Embers</td><td>Radiant Heat</td><td>Flame</td><td>Surface Fire</td><td>Debris Accumulation</td><td>Consequential Fire</td><td>Fire Driven Wind</td><td>Tree Strike / Obstruction</td></tr>
<tr><td rowspan="2">Existing and Planned (applied to inherent risk)</td><td>Medium</td><td>Medium</td><td>Medium</td><td>Medium</td><td>Medium</td><td>Medium</td><td>N/A</td><td>N/A</td></tr>
<tr><td colspan="4">Medium</td><td colspan="4">Medium</td></tr>
<tr><td rowspan="2">Existing, Planned and Recommended (applied to residual risk)</td><td>Very Significant</td><td>Very Significant</td><td>Significant</td><td>Significant</td><td>Significant</td><td>Significant</td><td>N/A</td><td>N/A</td></tr>
<tr><td colspan="4">Very Significant</td><td colspan="4">Significant</td></tr>
<tr><td colspan="9">[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3
[2] Refer to Appendix 4 for explanatory information.</td></tr>
</table>

Assessment Comments:

The most significant of the available vulnerability reducing protection measures are associated with:

- Ensuring that the design and construction of the BESS units and associated structures can limit locations for accumulation of debris and facilitates self-cleaning by the wind;
- Ensuring that the design and the materials used in the construction of any structures adjacent to the BESS units and associated infrastructure are non-combustible to the greatest extent possible, to remove the threat of consequential fire from this source; and
- Having firefighting resources available (reticulated supply, hydrant and tank) to extinguish consequential fires and cool battery cabinets.
- Having the BESS units fitted with active monitoring and electrical fault safety devices which ensure the units only remain operational within their intended operating environment, with an automated shut-down system.

The package of protection measures play a significant role in changing the vulnerability of the Merredin Battery infrastructure.

8.4.4 ASSESSED VULNERABILITY LEVELS

Assessed as a function of the capacity to apply sufficient vulnerability reducing protection measures, their individual effectiveness and their combined impact in reducing the vulnerability of the identified element at risk (Note: This assessment is independent of the threat level and exposure level assessments).

Table 8.16: For the stated element at risk, the assessed exposure level corresponding to the stated area of bushfire prone vegetation.

ASSESSED VULNERABILITY LEVELS	
Element at Risk	Fixed (hard) infrastructure assets

Vegetation Area / Location	All bushfire prone vegetation within the subject lots, and within 150m of the proposed development.
Vulnerability Reducing Protection Measures Applied to Assessment [1]	Relative Vulnerability Level [2]
Existing and Planned (applied to inherent risk)	Moderate
Existing, Planned and Recommended (applied to residual risk)	Low
[1] Corresponds to the stage of risk level being reported i.e. inherent or residual. Refer to Section 2.3.3 [2] Refer to Appendix 2 for explanatory information.	

Assessment Comments: The Merredin Battery as the element at risk is not vulnerable to the impacts of radiant heat and flame contact. The protection measures available to reduce the Merredin Battery vulnerability are robust and materially address the direct attack mechanisms of bushfire.
Consequently, for this scenario, considering the bushfire protection measures, the relative residual vulnerability level is Low.

APPENDIX 1: RATIONALE FOR THE SELECTION OF THE APPLIED RISK ASSESSMENT PROCESS

The following information regarding the selection and adaptation of the risk assessment process applied in this report is presented to help inform persons tasked with understanding this report.

KEY DRIVERS

Bushfire Prone Planning has considered the following key drivers in determining the most appropriate risk assessment process to apply:

1. The relevant hazard types.

   Bushfire hazards are a natural hazard rather than a human-induced hazard (refer to glossary and see limitations of ISO 31000 in the next section). Natural processes and phenomena present unique types of threats.

   Consequently, the assessment process needs to be able to specifically deal with the unique characteristics of bushfire hazards in a way that derives meaningful risk-based information that can be readily interpreted and applied.

   A logical framework is needed around which the development of bushfire protection measures (risk treatments) can be constructed, assessed and understood by those tasked with making decisions based on the provided information.

2. The relevant risks to be addressed.

   The specific risks are limited to the potential loss of life, injury, or destroyed or damaged assets that are associated with a bushfire hazard. These originate from the hazard's direct and indirect bushfire attack mechanisms and the response of persons and property to these threats.

3. The complexity and/or scale of proposed development/use.

   For different development/use proposals, there are significant differences in the types of information required for the hazard risk assessments and the derivation of operationally useful information that is to be applied to mitigating the associated risks.

   These differences include scale e.g. from development or activities on a single lot to development or activities within a region.

   Also, different uses may be able to tolerate different levels of risk. For example the Guidelines v1.4 cl 5.5.2 establish that "different tourism land uses … may require different levels of risk management".

   Consequently, the applied risk management process needs to be able to accommodate these differences and remain both logical, useable and efficient to compile. It needs to be capable of being relatively easy to scale up or down to provide a relevant and actionable report.

LIMITATIONS OF ISO 31000:2018 AND NERAG

The approach adopted by Bushfire Prone Planning (BPP) contrasts with the typical approach historically used in various Australian jurisdictions. This historical approach conducts the risk management process by applying the *National Emergency Risk Assessment Guidelines (AIDR 2020, NERAG)*.

However, the considered view of BPP is that the *NERAG* approach is unable to effectively provide (a) the required assessment methodology for assessing risk associated with a bushfire hazard or (b) evaluate the impact of specific bushfire protection measures - to the level of detail and relevance required for the planning of development and uses. That is, the key drivers determining the suitable methodology cannot be satisfied.

It is not practical to fully justify the above statement here, but the following is noted:

The determination of pre and post treatment risk levels is a key objective of NERAG. These are determined as the product of consequence and likelihood ratings. These ratings have the following inherent weaknesses in meeting the risk assessment requirements for a natural bushfire hazard:

1. Consequence ratings are derived from a set of established qualitative and quantitative criteria - which are very broad based and have less relevance at smaller scales of development/use. No direct link between the application of a risk treatment(s) and how they can justifiably be assessed as being able to alter a consequence level is established; and

2. Likelihood ratings of both the emergency event and the consequences are difficult to separate. They are derived from a set of established quantitative (probability) criteria. They also typically look backward and not forward and their determination is problematic with respect to sourcing relevant and sufficient data.

   Varying the levels of likelihood has limited applicability when the pragmatic requirement is to assume an emergency event will occur. The level of risk to which the at risk elements are exposed and vulnerable when a bushfire does occur, should have the most relevance to planning its location, design and construction, or allowing it.

   The determination of level of relevant risks by relying on the accuracy and relevance of the probability of the bushfire occurring should be given much less weighting. A more robust reduction in risk will result from being protected by something more physical/tangible than probability.

Also relevant is that the *NERAG* state they are "primarily focussed on assessing emergency risks" and that they are "structured to align broadly with relevant sections of *ISO 31000:2018 – Risk Management Guidelines*".

ISO 31000:2018 states that its intended use is "… to provide guidelines on managing risk faced by organisations".

The key point is that organisational risk is derived from a 'human-induced hazard' rather than a natural hazard (refer to the glossary). However, it is the bushfire natural hazard that is the source of risk being addressed by requirements established by SPP 3.7 and the associated Guidelines.

Consequently, it is BPP's considered opinion that applying *ISO 31000:2018* and *NERAG* (in its current form) to assessing risk associated with a bushfire hazard has significant application and relevance limitations.

THE APPLIED ADAPTED RISK ASSESSMENT APPROACH

In acknowledging the key drivers, and the limitations of the risk management process developed by ISO 31000 and adapted by NERAG, Bushfire Prone Planning has adapted the understanding of disaster risk that is used by the United Nations Office for Disaster Risk Reduction (UNDRR).

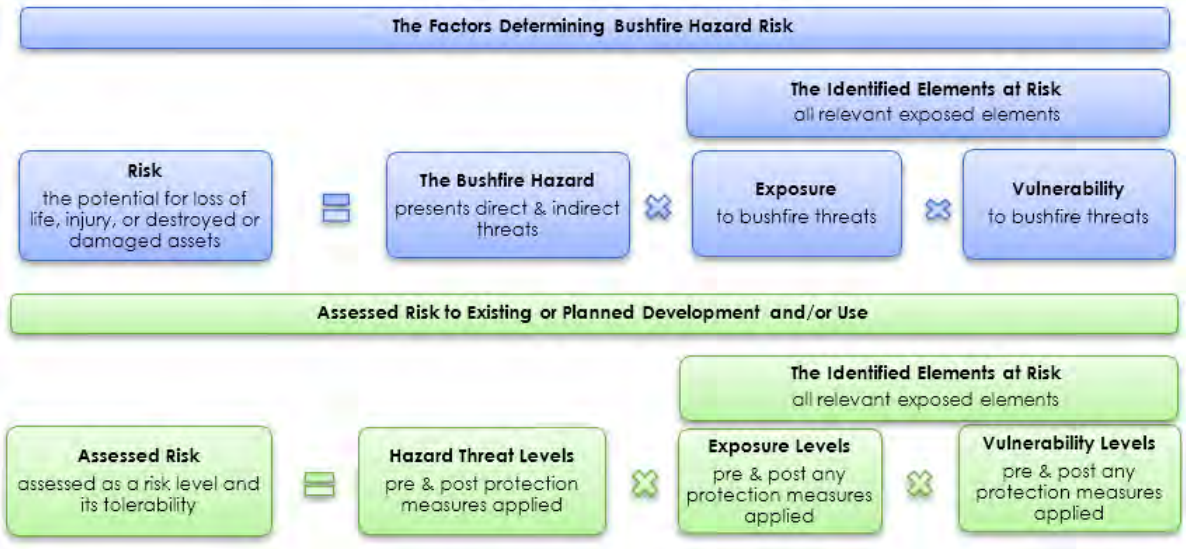
Although the UNDRR approach is designed to addresses disaster risk at large scale strategic levels, it can justifiably be applied to all scales of planning because it is focused on natural hazards and establishes a concept that can be readily adapted.

The risk assessment report that is developed applying this process presents relevant, logical, comprehensive and practical facts, to appropriately inform those persons tasked with either:

- Planning the siting, design, construction and management of development/use to ensure an appropriate level of bushfire resilience is achieved and limiting associated risks to tolerable levels; or
- With making pragmatic planning approval decisions.

The Figure below (copy of Figure 2.3) illustrates the framework of the adapted risk assessment process (refer to the glossary for terminology information and Appendix 2 provides greater detail of the risk analysis component of the assessment process).

THE FRAMEWORK OF BUSHFIRE PRONE PLANNING'S APPLIED RISK ASSESSMENT PROCESS



APPENDIX 2: RISK LEVEL ANALYSIS – ADDITIONAL EXPLANATION

INDICATIVE RISK LEVELS

Justification for reporting indicative risk levels is based on the following factors:

1. There is a finite 'universe' of bushfire protection measure principles that can be applied to reducing hazard threats and the exposure and vulnerability of at risk elements;
2. There will be a range of development/use specific protection measures associated with each protection measure principle. The number of available protection measures will vary dependent on the type and scale of development/use, but effectively there will also be a practical limit; and
3. Bushfire protection measures will vary in their standalone effectiveness at mitigating risk (refer to section 2.3.5);

Consequently, an indication of the level of risk – for a given development/use - can be gained by:

1. Assessing 'relative' threat levels.
2. Deriving 'relative' exposure and vulnerability levels by:
    a) Assessing how many protection measure principles and associated measures are applicable and can be applied;
    b) Assessing the relative effectiveness of each protection measure; and
    c) Comparing the numbers of applied protection measures with the number of possible measures in the protection measure 'universe'.
3. Making a qualitative assessment of the potential impact of the applied protection measures (including appropriate weighting given to their individual effectiveness) that can reduce the relative threat, exposure and vulnerability levels.
4. Derive the indicative risk level by applying the risk matrix shown as Table A2.1 and establish the tolerability of the risk by applying the risk tolerance scale of Table A3.2, Appendix 3.

Providing an indicative risk level establishes a qualitative understanding of the level of risk that potentially exists and is intended to inform and assist with making various planning decisions.

Deriving indicative risk levels is essentially a compilation and assessment of physical facts rather than determinations of what is to constitute different levels of threat, exposure and vulnerability and subsequently intolerable, tolerable and acceptable levels of risk for every development/use scenario.

An indicative risk level can be derived from an assessment of the site, the planned development/use and the knowledge and experience of the bushfire practitioner – such that an opinion can be provided regarding risk levels.

DETERMINED RISK LEVELS

Reporting determined risk levels will require reference information being available to the assessor so that 'determined' levels of threat, exposure and vulnerability can be established (this contrasts with the 'relative' levels required in deriving an indicative risk level).

The required reference information are the risk factor criteria, the risk level matrix and the risk tolerability scale.

Risk Factor Criteria

The required risk factor criteria will establish:

- What factors are to define the different 'determined' levels of hazard threats;
- What factors are to define the different 'determined' levels of exposure of elements at risk; and
- What factors are to define the different 'determined' levels of vulnerability of elements at risk.

Risk Level Matrix

The matrix will establish how the 'determined' levels of threat, exposure and vulnerability are to be applied in deriving the 'determined' risk level. Different sets of matrices to account for different development types, uses and scales will be required. The rationale for this statement includes:

- Different development types, uses and scales are potentially capable of tolerating different levels of risk and still be considered by the relevant authority (who are reflecting the understood society/community position), to remain acceptable;
- Recognition that different levels of risk can be tolerated by different development, use and scale is indicated in the Guidelines v1.4 where cl 5.5.2 establishes that "different tourism land uses … may require different levels of risk management"; and
- To account for the variation, one risk level matrix could establish a moderate determined risk level for a given development type/use/scale and combination of threat, exposure and vulnerability levels.

  For the same combination of threat, exposure and vulnerability levels but for a different development type/use/scale, a different risk level matrix could establish an extreme determined risk level; and

Risk Tolerance Scale

After the 'determined' risk level has been derived from the risk assessment process, a methodology is required to classify the risk level as either unacceptable, tolerable or acceptable. Currently Bushfire Prone Planning is applying the ALARP principle and associated risk tolerance scale (refer to Appendix 3).

The Current Limitations to Deriving a Determined Risk Level

The required reference information (i.e. the risk factor criteria, sets of risk matrices and the risk tolerance scale) is necessarily required to be provided by the relevant regulatory authorities /decision makers. The rationale for this statement is:

1. The information must reflect the expectations and understanding and accepting of risk as held by society and communities, and directed through its governing bodies;
2. The information must be standardised to the greatest extent possible so that it provides an acceptable and trusted basis on which the determined risk level can be derived and be relied upon in making decisions.
3. Properly establishing the reference information cannot be justifiably relegated to individual assessors with varied expertise, qualification and without any approved responsibility to provide such information. Their expertise might more appropriately be utilised in assisting the responsible authorities to establish the information.

Where the required reference information has not been established and provided by the responsible authorities, determined risk levels cannot be the final outcome when using this risk assessment process. Currently, this reference information does not exist.

HOW THE LIKELIHOOD OF A BUSHFIRE EVENT OCCURRING HAS BEEN DEALT WITH

The approach taken with the applied risk assessment process is to apply the pragmatic assumption that a bushfire will occur. It is assumed it can occur within any timeframe and could result in loss or life or injury, or unacceptable damage to property and or unacceptable disruption to services. This approach accepts that the requirements for fire of fuel, ignition source and oxygen will always exist. That is:

- The fire fuels being considered will always be there unless physically removed permanently;
- A potential ignition source will always exist through lightning and/or human activities; and
- The potential for adverse fire weather conditions to exist at some point within each year will always be present.

This contrasts with applying a quantitative approach based on the historical record of past bushfire event and determining the mathematical probability of a future event. This approach is problematic to achieving increased bushfire resilience at all stages of existing or proposed development/use for these reasons:

- Historical data may not be available or have enough data sets to be accurate. It cannot account for future changes in climate that may result in a different occurrence period. Consequently, further assumptions need to be made;
- Siting, design and construction of development to resist bushfire threats is much easier, more practical (and likely economical), to incorporate at initial planning stages rather than the retro-establishment of protection measures when circumstances change or tolerance of risk decreases;

- Time spent conducting historical research, performing statistical calculations and modifying risk levels, apart from being costly, is likely better spent assessing potential threat, exposure and vulnerability levels and developing appropriate protection measures; and
- The likelihood of occurrence cannot modify the levels of hazard threats, exposure or vulnerability. It can only be applied to reduce the overall risk level. That is, it would be applied as a modifying factor via the established risk level matrix and not the established risk factor criteria. The validity of incorporating such a factor may be indicated when, despite the existence of vegetation that can burn, there are other mitigating physical conditions that exist at the specific site that make the likelihood of ignition and severity of bushfire behaviour very low. How this is applied would need to be established by the authority establishing the relevant risk level matrix.

Table A2.1: Risk matrix for deriving indicative risk levels from the assessed relative levels of threat, exposure and vulnerability.

INDICATIVE RISK LEVEL MATRIX						
Relative Threat Level (a)	Relative Exposure Level (b)	Relative Vulnerability Level (c)				
		Very Low (1)	Low (2)	Moderate (3)	High (4)	Extreme (5)
Very Low (1)	Very Low (1)	VL1	VL2	VL3	L4	L5
	Low (2)	VL2	VL3	L4	L5	L6
	Moderate (3)	VL3	L4	L5	L6	M7
	High (4)	L4	L5	L6	M7	M8
	Extreme (5)	L5	L6	M7	M8	H9
Low (2)	Very Low (1)	VL2	VL3	L4	L5	6
	Low (2)	VL3	L4	L5	L6	M7
	Moderate (3)	L4	L5	L6	M7	M8
	High (4)	L5	L6	M7	M8	H9
	Extreme (5)	L6	M7	M8	H9	H10
Moderate (3)	Very Low (1)	VL3	L4	L5	L6	M7
	Low (2)	L4	L5	L6	M7	M8
	Moderate (3)	L5	L6	M7	M8	H9
	High (4)	L6	M7	M8	H9	H10
	Extreme (5)	M7	M8	H9	H10	H11
High (4)	Very Low (1)	L4	L5	L6	M7	M8
	Low (2)	L5	L6	M7	M8	H9
	Moderate (3)	L6	M7	M8	H9	H10
	High (4)	M7	M8	H9	H10	H11
	Extreme (5)	M8	H9	H10	H11	E12
Extreme (5)	Very Low (1)	L5	L6	M7	M8	H9
	Low (2)	L6	M7	8M	H9	H10
	Moderate (3)	M7	M8	H9	H10	H11
	High (4)	M8	H9	H10	H11	E12
	Extreme (5)	H9	H10	H11	E12	E13

Indicative risk level key: VL = very low, L = low, M = moderate, H = high, E = extreme.
The qualitative relative levels are assigned a numerical value.
The indicative risk value is calculated as = (a + b + c) – 2 and range from 1 (lowest) to 13 (greatest).
The indicative risk levels are derived from an assigned a numerical range: very low = 1-3, low = 4-6, moderate = 7-8, high = 9-11, extreme = 12-13.

APPENDIX 3: THE ALARP PRINCIPLE AND THE RISK TOLERANCE SCALE APPLIED

The following information is intended to provide an understanding of the ALARP principle and provide justification for its application in this risk assessment report.

THE ALARP PRINCIPLE

The As Low as Reasonably Practicable (ALARP) principle is based on the belief it is not possible to completely eliminate all risk involved, there will always be a certain level of risk remaining known as residual risk. The term is used to express the expected level of residual risk within a system, activity or, relevant to this document, within a proposed development/use, when good practice, judgement and duty of care are applied to decisions and operations.

The origins of the ALARP (As Low as Reasonably Practicable) principle are from United Kingdom case law and their regulatory framework. It is applied by their Health and Safety Executive (HSE) and is used by regulators and companies around the world as it provides a logical basis for managing risks – including its adaption for use in the following Australian guidelines:

- Australian Institute for Disaster Resilience, 2020; Land use Planning for Disaster Resilient Communities;
- WA Department of Mines, Industry Regulation and Safety, 2020; Petroleum safety and major hazard facility – guide. ALARP demonstration;
- NOPSEMA (Australia's offshore energy regulator), 2020; ALARP and risk assessment guidance notes;
- Department of Planning Lands and Heritage (DPLH), 2019; Coastal hazard risk management and adaptation planning guidelines;
- Planning Institute of Australia, 2015; National Land Use Planning Guidelines for Disaster Resilient Communities; and
- NERAG 2010, an earlier version of NERAG 2020, applied the ALARP Principle.

The ALARP principle has been defined by the United Kingdom Health and Safety Executive (HSE-UK, 2001) to depict the concept that efforts to reduce risk should be continued until the incremental cost in doing so is grossly disproportionate to the value of the incremental risk reduction achieved (see figure). Incremental cost is defined in terms of time, effort, finance or other expenditure of resources – including loss of natural resources. Usually, each incremental reduction in risk will require a greater expenditure of resources.

This concept is depicted in Figure A3.1 where the triangle represents the decreasing risk and the diminishing proportional benefit as risk is reduced. There are also three regions shown in the figure into which general levels of residual risk can fall. The residual risk should fall either in the broadly acceptable region, or near the bottom of the tolerable region. This approach allows higher levels of safety to be provided where it is feasible.

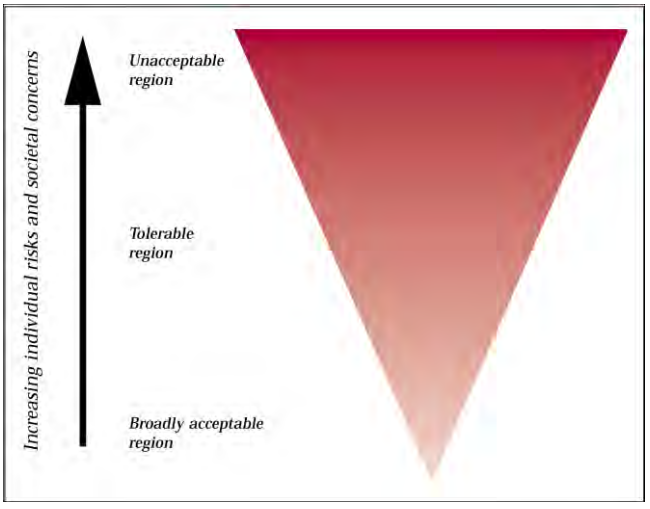


Figure A3.1: HSE framework for the tolerability of risk (source: HSE-UK, 2001)

Moving up the triangle from the region considered broadly acceptable, through a tolerable region (for which a greater range of risk can be considered), to an unacceptable region, represents increasing levels of 'risk' for a particular hazard or hazardous activity (determined through relevant risk analysis). Table A3.1 describes the risks that define each region.

Table A3.1: The risks associated with the risk tolerance regions (adapted from HSE-UK, 2001)

THE ALARP PRINCIPLE – DEFINING THE REGIONS OF RISK TOLERANCE	
Unacceptable Region	For practical purposes, a particular risk falling into this region is regarded as unacceptable whatever the level of benefits associated with the activity. Any activity, practice or use of land giving rise to risks falling in this region would, as a matter of principle, be not approved unless the activity or practice can be modified to reduce the degree of risk so that it falls in one of the regions below, or there are exceptional reasons for the activity, practice or use to be retained.
Tolerable Region	Risks in this region are typical of the risks from activities that people are prepared to tolerate in order to secure benefits, in the expectation that: • The nature and level of the risks are properly assessed, and the results used properly to determine control measures. The assessment of the risks needs to be based on the best available scientific evidence and, where evidence is lacking, on the best available scientific advice; • The residual risks are not unduly high and kept as low as reasonably practicable. This is the region to which the ALARP principle applies; and • The risks are periodically reviewed to ensure that they still meet the ALARP criteria, for example, by ascertaining whether further or new control measures need to be introduced to take into account changes over time, such as new knowledge about the risk or the availability of new techniques for reducing or eliminating risks. • In practice and where possible, the intent should be that residual risk continues to be driven down the tolerable range so that it falls either in the broadly acceptable region or is near the bottom of the tolerable region, in keeping with the duty to ensure health, safety and welfare so far as is reasonably practicable as per the ALARP principal.
Broadly Acceptable Region	Risks falling into this region are generally regarded as insignificant and adequately controlled. Regulators would not usually require further action to reduce risks unless reasonably practicable measures are available. The levels of risk characterising this region are comparable to those that people regard as insignificant or trivial in their daily lives. They are typical of the risk from activities that are inherently not very hazardous or from hazardous activities that can be, and are, readily controlled to produce very low risks.
Note: The risk tolerability framework is a conceptual model. The factors and processes that ultimately decide whether a risk is unacceptable, tolerable or broadly acceptable are dynamic in nature and are sometimes governed by the particular circumstances, time and environment in which the activity, practice or use occurs or is proposed. Standards change and public expectations vary between societies and change with time.	

RISK TOLERANCE SCALE

The application of a risk tolerance scale is necessary to:

1. Identify which exposed elements must be given priority for the development and application of bushfire protection measures; and

2. Where planning approval is being sought, identify if the determined residual risk levels can be considered as tolerable or acceptable and therefore capable of being approved for this factor, or not.

The risk tolerance scale to be applied within the risk assessment report, when the required risk factor criteria and risk level matrix are available, is established in Table A3.2.

Table A3.2: The applied risk tolerance scale

<table>
<tr><th colspan="4">APPLIED RISK TOLERANCE SCALE - INCORPORATING THE ALARP PRINCIPLE</th></tr>
<tr><th>Indicative / Determined Risk Level</th><th colspan="2">Tolerability Description and Action Required</th><th>Risk Tolerance Level[1]</th></tr>
<tr><td>Extreme</td><td colspan="2">The risks are unacceptable and require immediate implementation of risk management measures to eliminate or reduce risk to tolerable or acceptable levels.
Proposed development giving rise to risks in this region would not be approved unless there are exceptional reasons for the development to proceed.</td><td>Unacceptable</td></tr>
<tr><td rowspan="2">High</td><td rowspan="2">The risks are the most severe that can be tolerated but not unduly high. They require monitoring in the short term as risk management measures are likely to be needed in the short term given the intent should be to drive residual risk lower down the tolerable range where possible.</td><td rowspan="3">Tolerance Regions Subject to ALARP Principle</td><td>Intolerable
- if not ALARP-</td></tr>
<tr><td>Tolerable
- if ALARP -</td></tr>
<tr><td>Moderate</td><td>The risk is approaching an acceptable level. It can be tolerated and requires monitoring in the short to medium term. Need to consider potential changes over time in the risk and/or techniques for reducing/eliminating risk.
Risk management measures may be needed to reduce risk to more acceptable levels where possible – or accept the risk.</td><td>Tolerable
- if not ALARP -
Acceptable
- if ALARP -</td></tr>
<tr><td>Low</td><td colspan="2" rowspan="2"></td><td rowspan="2">Acceptable</td></tr>
<tr><td>Very Low</td></tr>
<tr><td colspan="4">[1] Refer to the glossary for definitions of the tolerance levels.</td></tr>
</table>

APPLICATION JUSTIFICATION

The following is taken from the 'National Land Use Planning Guidelines for Disaster Resilient Communities' (Planning Institute of Australia, 2015) and is also referred to in the document 'Land use Planning for Disaster Resilient Communities' (Australian Institute for Disaster Resilience, 2020).

> *Of relevance to planners in the NERAG is the ALARP principle and how it is used in evaluating risks. According to NERAG, the ALARP principle is applied to define boundaries between risks that are generally intolerable, tolerable or broadly acceptable. The ALARP principle will help to prioritise a risk hierarchy and determine which risks require action and which do not. Those that are broadly acceptable naturally require little, if any, action while risks that are at an intolerable level require attention to bring them to a tolerable level.*
>
> *According to NERAG, it is entirely appropriate and accepted practice that risks may be tolerated, provided that the risks are known and managed.*

The ALARP principle is particularly relevant to planners and other built environment professionals as it provides the means to categorise risks according to their severity, and to assign risk treatment options accordingly.

It is important to note that the effect each hazard has on a community and its settlement is different, and therefore land use planning and building responses may not always be appropriate to treat the risk borne by a particular hazard. Equally, the effectiveness or strength of response provided by land use planning or building may not be sufficient to fully address the risk.

In addition, it is likely that through a normal natural hazard management process a range of treatment measures will be proposed, tested and implemented to provide a comprehensive approach to risk treatment that may involve other measures working in concert with land use planning or building responses.

The manner in which land use planning and building responses are deployed to treat specific instances of natural hazard risk will vary depending on location, information availability, community views, broader development intent for the settlement under analysis and the effect of complementary risk treatment measures.

However, the ALARP principle provides a good reference for demonstrating the land use responses for the various ALARP risk categories. Generally speaking, in areas of intolerable risk the strongest land use planning and building responses should apply. Conversely, in areas of acceptable risk only minimal controls should apply, if at all.

The most complex risk category for which to prescribe treatment from a land use and building perspective is those areas of tolerable risk. Such risks in existing settlements may not be sufficiently concerning to warrant severe use restrictions or relocation, however they will need treatment over time to ensure the risk does not increase. Treatment options in this instance may include limiting vulnerable uses in this area, restricting significant intensification of development, and promoting resilient urban design. Such areas of tolerable risk are also best avoided from a greenfield perspective to limit increases in future risk and costs associated with infrastructure failure in these locations that could otherwise been avoided.

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APPENDIX 4: THE BUSHFIRE HAZARD – BEHAVIOUR AND ATTACK MECHANISMS

FACTORS INFLUENCING BUSHFIRE BEHAVIOUR

There are three primary factors that influence the intensity, speed and spread of a bushfire. Any increase in these behaviours will result in greater threat levels, to exposed elements, from the bushfire attack mechanisms.

1. VEGETATION AND OTHER FUELS: Key characteristics that will influence fire behaviour include:
    - Fuel size and shape – anything less than 6mm diameter/thickness is considered a fine fuel and will ignite and burn quickly. Larger/heavier fuels take longer to ignite but burn for longer, so the threat exists for longer;
    - Fuel load – the quantity of available fuel (t/ha) will influence the size of the fire. In particular it is the fine fuel load that determines the intensity of the bushfire and the flame sizes. Vegetation type and period over which it can accumulate will determine fuel loads;
    - Vegetation type – this influences the size, shape and quantity of available fuels. For bushfire purposes vegetation types include the classifications of forest, woodland, scrub, shrubland and grassland (with total fuel loads typically decreasing in that order);
    - Fuel arrangement – will influence two factors of fire behaviour (1) the speed and intensity of burning and (2) how much of the total fuels are likely to be involved in the fire simultaneously. The first factor is a function of how densely packed or aerated the fuels are with the more available arrangement burning with greater intensity. The second factor is a function of the availability of 'ladder' fuels (i.e. near surface, elevated and bark fuels) to carry fire up the vegetation profile, and the continuity of fuels to carry the fuel across the land; and
    - Fuel moisture content – drier fuels will ignite easily and burn quickly. The inherent moisture content of the vegetative fuels is a function of the vegetation type and arrangement and/or the positioning of the vegetation complex near readily available sources of moisture.

    Greater quantities of finer, dryer, aerated and connected fuels will result in more severe behaviours and elevated bushfire threat levels. Large extents of vegetation (broader landscape scale) can have additional implications for the development of extreme bushfire events and the consequent increase in bushfire threat levels (refer to Appendix 5 for additional information).

2. WEATHER: Adverse fire weather that results in more severe behaviours and elevated threat levels includes strong winds, high temperatures, low relative humidity and extended periods of these factors.

    Weather events at the broader landscape scale can have implications for the development of extreme bushfire events and consequent increase in bushfire threat levels (refer to Appendix 5 for additional information).

3. TOPOGRAPHY: The physical terrain can influence the severity of fire behaviour. At a local scale, it is the influence of ground slope on the rate a fire spreads, that is most relevant. Fire travels faster up slopes (rule of thumb is a doubling of speed for every 10 degrees increase in slope). Greater rates of spread increase fire intensity and the resultant threat levels.

    At the broader landscape scale, the impact of topography can be significant and includes establishing the potential for development of certain dynamic fire behaviours that can lead to extreme bushfire events and elevated threat levels (refer to Appendix 5 for additional information).

BUSHFIRE DIRECT ATTACK MECHANISMS

EMBER ATTACK: Ember attack is the most common way for structures to ignite in a bushfire. Scientific research indicates that at least 80% of building losses from past Australian bushfires can be attributed to ember/firebrand attack (mostly in isolation but also in combination with radiant heat), and the resultant consequential fires. (Leonard J.E. et.al; 2004 – Blanchi R. et.al. 2005 - Blanchi R. et.al. 2006).

Embers are the primary ignition source for consequential fire:

- They accumulate around and on vulnerable parts of structures (roofs, gutters, doors, windows, re-entrant corners)
- They enter gaps in structures envelopes to vulnerable internal cavities and spaces.
- They ignite surface materials such as walls and decks and any accumulated vegetative debris.

Embers can attack structures for a significant length of time before and after the passage of the fire front, as well as during. This potential length of exposure is an important factor in the consideration of the level of threat embers present.

An ember is a small particle of burning material that is transported in the winds that that accompany a bushfire (larger particles can exist as firebrands from certain vegetation types). Typically these consist of plant materials such as bark, leaves and twigs that exist as part of the standing vegetation or has collected or been placed on the ground.

Of the plant materials, bark is the predominant source of embers but built timber elements will also produce embers.

Bark is the primary source of embers and spotting in Australian eucalypt forests due to the key attributes of ease of ignition, extended burnout time and the favourable size to weight ratio and aerodynamic properties. Differences in these attributes strongly influence the spotting potential from different forest types – and therefore the potential hazard rating of the bark.

The type of tree bark will determine the size, shape and number of embers/firebrands which, along with the prevailing fire behaviour and weather conditions will dictate the spotting distances and density of ignitions.

Fine fibrous barks - including stringybarks (e.g. jarrah), have loosely attached fibrous flakes and can produce massive quantities of embers (prolific spotting) for shorter (up to 0.75 km) and medium distances (up to 5 km).

Short distance spotting (including ember showers) are generally the result of embers and firebrands blown directly ahead of the fire with little or no lofting. Density tends to decrease with distance from the fire front.

Medium distance spotting results from embers and firebrands that are lofted briefly in a convection column or blown from an elevated position (e.g., from tree tops on ridges). With sufficient density and coalescing spot fires, this can rapidly increase the size of a fire (deep flaming) leading to dynamic fire behaviours and extreme fire events.

Ribbon/candle type barks - have longer burnout time, extended flight paths and are more likely to be responsible for longer distance spotting > 5 km (with up to 30 km having been authenticated). This results from significant lofting of large firebrands (e.g. curled hollow tubes of bark that can burn for 40 minutes) in well-developed convection columns. These develop as separate, independent fires. Very long distance spotting requires Intense fire, maintenance of a strong convection column (to lift firebrands aloft) and strong winds aloft (to transport the firebrands).

Other bark types - that include coarsely fibrous (e.g. marri) / slab or smooth / platy and papery barks - produce lower quantities of embers and shorter distance spotting. Their highest bark hazard ratings that are lower than fine fibrous or ribbon barks.

(Sources: CSIRO Climate and Disaster Resilience Report 2020 and Overall Fuel Hazard Assessment Guide 4th edition July 2010, Victoria DSE and Cruz, MG (2021) The Vesta Mk 2 rate of fire spread model: a user's guide. CSIRO).

The importance of establishing protection measures to mitigate the potential impact of consequential fire ignited by the ember attack mechanism, cannot be overstated.

RADIANT HEAT ATTACK: This heat radiates in all directions from a bushfire and can potentially be felt hundreds of meters away. The amount of heat that a flame can transfer to other objects is influenced by the flame size and its temperature. These are a function of the characteristics of the fuels being burnt including fuel size, dryness, structure, arrangement and quantity. The bushfire is additionally influenced by the weather and topography factors that can intensify fire behaviour (described at end of this section).

Radiant heat:

- Can damage or destroy elements that are vulnerable to higher levels of heat;
- Can dry and heat vegetation and other fuels (combustible materials such as timber) to a temperature at which they ignite or are more easily ignited by existing flames or embers; and
- Is an extremely significant threat to people when they are not physically shielded. Protective clothing can provide only limited protection.

BUSHFIRE FLAME ATTACK: When flames make contact with structures they can flow over, under and around – impacting surfaces not directly facing the bushfire.

Flames will be longer when fine fuel loads are higher and will move faster up slopes and generally, slower down slopes.

Flame temperatures are highest in the lower parts of the flame and decrease towards the tip. The flame has two distinct regions - the lower solid body flame and the upper part that is a transitory flame (intermittently present). Both flame regions can damage structures.

Note: AS 3959:2018 *Construction of buildings in bushfire prone areas*, establishes both the construction requirements corresponding to each Bushfire Attack Level (BAL) and the methodology for determining a BAL. For a bushfire modelled using this methodology, the derived flame length only provides an estimate of the solid body flame length.

SURFACE FIRE ATTACK: These are low intensity fires (less than 0.5m high) burning along the ground consuming mostly intermittent fine fuels such as vegetation debris, litter, and mulches. They are typically patchy and erratic in their direction and short lived (<40 seconds) when burning in the absence of heavier fuels.

Typically these fires will be on the land immediately surrounding buildings and associated structures and other heavy fuels. Their importance as a threat is the bringing of direct flame contact, higher radiant heat and embers closer to these exposed elements.

BUSHFIRE INDIRECT ATTACK MECHANISMS

DEBRIS ACCUMULATION: The relevant debris are combustible fine fuels that can accumulate (by falling or being windblown) in close proximity to subject structures and their surrounding structures and other heavy fuels. This makes the burning of these structures/fuels much easier and more likely through the ignition of the accumulated debris by ember attack.

This debris can accumulate over long time periods (years) in locations such as:

- On horizontal or close to horizontal surfaces and rough timber surfaces;
- Within re-entrant corners and roof gutters/valleys;
- Against vertical surfaces; and
- Within internal spaces /cavities and under sub-floors when gaps are present.

The potential threat level will be determined by:

- The presence of vegetation types that produce quantities of debris with those that produce in the driest and hottest part of the year presenting a greater threat;
- The extent of this vegetation; and
- The proximity of this vegetation to the exposed and vulnerable structures.

CONSEQUENTIAL FIRE:

Consequential fire Is the burning of vulnerable (combustible/flammable) materials, items and structures that exist within the area surrounding the subject building or structure – the surrounding vulnerable elements.

The burning of these surrounding vulnerable elements can result in the subject building/ structure being exposed to the direct fire attack mechanisms (threats) of flame, radiant heat, embers and surface fire from a close distance.

These are threats that are separate from and additional to the threats generated by the bushfire front itself - which can be and often is, a considerable distance away.

The importance of establishing protection measures to mitigate the potential impact of consequential fire cannot be overstated.

Consequential fire fuels consist of both fine and heavy fuels.

Fine fuels:

- Dead plant material such as leaves grass, bark and twigs thinner than 6mm (or live material less than 3mm thick that can be consumed in a fire involving dead material); and
- Originate from the indirect bushfire attack mechanism of 'debris accumulation' and potentially from other areas of landscaped vegetation.

Heavy and Large Heavy Fuels:

- Stored combustible / flammable items:
    - Building materials, packaging materials, firewood, sporting/playground equipment, outdoor furniture, matting, rubbish bins etc;
    - Large quantities of dead vegetation materials stored as part of site use;

- Liquids and gases; and
- Vehicles, caravans and boats, etc.

- Constructed combustible items:
  - Surrounding landscaping items - fences/screens, retaining walls, gazebos, plastic water tanks etc;
  - Attached structures - decks, verandahs, stairs, carports, garages, pergolas, patios, etc;
  - Adjacent structures - houses, sheds, garages, carports, etc. Structure to structure fire is a common cause of overall building loss in post bushfire event assessments [9].

FIRE DRIVEN WIND: Severe bushfires are commonly accompanied by high winds due to the prevailing weather conditions. Localised high winds can be induced by the bushfire. When the required factors exist, the bushfire can couple with the atmosphere (pyro-convective) resulting in extreme bushfire events and gusty, severe windspeeds.

These winds can directly damage the external envelope of a building or structure by pressure (low and high) or the carriage of varying types of solid debris. This provides openings for other bushfire attack mechanisms to enter and ignite internal cavities.

TREE STRIKE/OBSTRUCTION: Branches or trees, subject to strong winds and/or tree burnout, can:

- Damage the envelope of a structure creating openings for direct attack mechanisms of bushfire (or consequential fire) to ignite internal cavities or living space:
- Fall and obstruct access to or egress from, a structure or site being impacted by bushfire.

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APPENDIX 5: THE BROADER LANDSCAPE AND EXTREME BUSHFIRE EVENTS

The content of this appendix is an overview of information that supports the assessment approach of section 5.4 of this report. It considers the risk implications arising from what is being learnt from the latest research work within the bushfire science of dynamic fire propagation and extreme fire development.

Any potential for extreme fire events to develop in the broader landscape surrounding the subject site, will result in increased in bushfire hazard threat levels to exposed elements and must be accounted for in the risk assessment.

The selected compilation of information is taken from various sources including peer reviewed research papers [references 1-3, 12, 15, 21, 27, 28, 41, 42].

RECENT BUSHFIRE RESEARCH

Traditionally, bushfire modelling conducted to determine rates of spread, intensity, flame lengths, radiant heat etc and provide measurements of threat levels, has been based on the quasi-steady fire state (i.e. a fire propagating under constant and uniform fuel, weather and topography – after it has finished its growth phase).

More recent research has provided important insights into the dynamic nature of fire spread in the landscape and identified local drivers of bushfire risk and highlighted the role of environmental factors that are significant for large and extreme fire development.

These environmental factors include aspects of the vertical structure of the atmosphere, meso-scale fire weather processes (e.g., sea breezes, cold fronts, squall lines, convective complexes), interactions between the fire and the atmosphere, and the modification of fire weather and fire behaviour due to the local topography.

From this work, a number of processes that can contribute significantly to the level of risk posed by a bushfire have been identified. These include:

- Extreme fire weather processes;
- Dynamic fire propagation; and
- Violent pyroconvection and pyrogenic winds.

Of particular relevance to this risk assessment are the topographic aspects of the broader landscape surrounding the subject site and the potential it might present for dynamic fire propagation, development of extreme fire events and therefore increased bushfire hazard threat levels and consequent risk.

DYNAMIC FIRE BEHAVIOURS

Dynamic fire behaviours (DFBs) result from interactions between the physical factors of fuel, terrain, fire weather conditions, atmosphere and different parts of the bushfire itself. They are physical phenomenon that involve rapid changes of fire behaviour and occur under specific conditions.

Certain DFBs occur at various scales and time frames (e.g. spotting), others only at large scales (e.g., conflagrations and pyroconvective events) and others at small scales and short time spans (e.g. junction fires, fire whirls). The following fire behaviours are considered DFBs:

Spotting

The production of embers/firebrands, carried by the wind/convective currents that ignite spot fires ahead of the bushfire front. Under extreme conditions, with the necessary fuels, mass spotting events can occur. Dependent on fuel types, winds and convective currents, embers can be consumed by the fire front itself or travel tens of kilometres. Spot fire occurrence can be so prevalent that spotting becomes the dominant propagation mechanism – with the fire spreading as a cascade of spot fires forming a 'pseudo' front.

Fire Whirl / Tornado

Various sized (<1m - >150m) spinning vortices of ascending hot air and gases that carry smoke, debris, and flame. The intensity of larger whirls compares to tornados. Can induce fire spread contrary to prevailing wind and ignite spot fires away from the fire front.

Junction Fire

Is associated with merging fire fronts that produces very high rates of spread and have the potential to generate fire whirls / tornadoes.

Crown Fire

Types of tree crown fires have been categorised according to their degree of dependence on the surface fire phase - passive, active, independent - with the last two being considered dynamic fire behaviour.

Active crown fire is "a fire in which a solid flame develops in the crowns of trees, but the surface and crown phases advance as a linked unit dependent on each other."

Independent crown fires "advance in the tree crowns alone, not requiring any energy from the surface fire to sustain combustion or movement."

For a crown fire to start, a surface fire of sufficient intensity is first necessary. The distance between the heat source at the ground surface and the canopy-fuel layer will determine how much of the surface fire's energy is dissipated before reaching the fuels at the base of the canopy. The higher the canopy base, the lower the chance of crowning.

The existence of trees themselves, separated from surface fuels, can offer a degree of protection by absorbing radiant heat, trapping embers and shielding from winds. Necessary considerations include:

- Eliminating understorey fuels;
- Species Issue: Understanding the extent to which the trees will contribute to fuels (leaves/bark/twigs etc) that accumulate on the ground and when moved (wind) become involved in consequential fire away from the tree during the fire season. This needs to be considered against the maintenance capability (regular removal of material) of the responsible entity; and
- Species / Positioning Issue: Requirements include not being highly flammable, no loose stringy bark, less able to trap embers, not being prone to branches breaking in high winds potentially causing structural damage to buildings (allowing ember entry) and keeping crowns separated as an additional measure of safety and allow wind to permeate rather than be totally blocked.

Eruptive Fire

Behaviour where the head fire accelerates rapidly on sufficiently steep terrain with sufficiently strong wind – as a result of fire plume attachment to the surface, bathing it in flames ahead of the front (pre-heating).

Fire Channelling / VLS (vorticity-driven lateral spread)

Behaviour where rapid lateral fire spread, in generated vortices, occurs across a sufficiently steep leeward slope in a direction approximately transverse to the prevailing winds. This results in the rapid increase in width of the fire front. VLS are highly effective at producing mass spotting events.

Conflagrations

These are large, intense, destructive fires. They have a moving front as distinguished from a fire storm (blow up / pyroconvective fire). With sufficient vegetation extent, fuel loads and the development of dynamic fire behaviours, the large amounts of heat and moisture released can cause its plume to rise into the atmosphere and develop large cumulus or cumulonimbus flammagenitus cloud (pyrocumulus or pyrocumulonimbus). Where the extent of vertical development is limited (e.g. a stable atmosphere, or insufficient flaming zone), the fire is likely to remain a surface based event.

Downbursts

These are strong wind downdrafts associated with convective columns of heated air (and associated cloud forms). The consequent falling columns of cooled air induce an outburst of strong winds on or near the ground that radially spread causing fire spread in directions contrary to the prevailing wind.

Pyroconvective Event

A pyro-convective event is an extreme manifestation of a conflagration that develops in an unstable atmosphere and can transition into a towering pyrocumulus or a pyrocumulonimbus (pyroCb's) that can extend to the upper troposphere or lower stratosphere. With the fire/atmosphere coupling, it has evolved beyond a purely surface based fire into dynamic fire propagation rather than quasi-steady propagation. In the violent pyroconvective system:

- As a fire's plume reaches higher into the atmosphere, larger scale mixing can cause drier and higher-momentum upper air to be transferred back to the surface, thereby further exacerbating the potential for more intense fire behaviour, including fire spread contrary to the prevailing wind direction;
- Pyrogenic winds can cause considerable damage to structures, directly or indirectly, increasing their vulnerability to bushfire attack mechanisms; and

- The pyroCb's carry dense ember loads, fire and other burning debris and generate lightning, all with very little rain or hail that would typically occur with an ordinary thunderstorm.

DRIVERS OF DEEP FLAMING

Deep flaming is the fire condition when the active flaming zone is unusually large and flame-front intensity is simultaneously great, resulting in large quasi-instantaneous energy release.

Deep flaming can be produced by numbers of mechanisms on varying terrain (flat, undulating of rugged) when a large enough area of sufficiently heavy fuels is present. These mechanisms include:

- Very strong winds – so the head fire advances more rapidly than the back of the flaming zone;
- Change in wind direction – so the long flank of a fire is transformed into a fast running head fire;
- Eruptive fire behaviour – where steep slopes can cause a fire to accelerate rapidly;
- Vorticity-driven lateral spread (wind channelling) – where strong winds and steep terrain interact to rapidly drive a fire laterally, accompanied by downwind mass spotting and consequent coalescing of spot fires forming large areas of flame (can include the DFB of 'junction fire').

Research has identified strong links between:

- Eruptive fire behaviour, VLS and the occurrence of deep flaming; and
- The development of deep flaming and extreme bushfire events.

EXTREME BUSHFIRE EVENTS

Extreme bushfire events create disproportionate risks to human and environmental. Their development is affected by dynamic feedback processes that result in unpredictable behaviour, and the worsening of rates of spread and intensities - even when environmental conditions are consistent.

The term 'extreme bushfire' is applied in the recent bushfire science literature in two ways:

1. Where it refers to large, intense bushfires in which one or more DFBs are simultaneously involved; and
2. Where it more specifically refers to a fire that exhibits deep or widespread flaming in an atmospheric environment conducive to the development of violent pyroconvection, often manifesting as towering pyrocumulus (pyroCu) or pyrocumulonimbus (pyroCb) storm(s) – also referred to as blow-up fire event(s).

   A distinguishing feature of these types of fires is that they involve a coupling of the fire with an unstable atmosphere to a much greater vertical extent, well above the mixed layer, which modifies or maintains the fire's propagation (e.g. through mass spotting, blustering winds and lightning);

Relevance to Risk Assessment: Given that this risk assessment is concerned with identifying the potential for the broader landscape surrounding the subject site to increase bushfire risk, the following common aspects of the two above descriptions are relevant:

- An extreme fire is a large intense fire, so it requires a sufficient area and sufficient fuels in which to develop; and
- An extreme fire of scale requires the formation of deep flaming to develop.

Consequently, the risk assessment is primarily focused on the extent and fuel types/loads of bushfire prone vegetation and the existence of terrain (topography) properties necessary for the relevant dynamic fire behaviours - rather than the potential for adverse fire weather / atmospheric conditions - whose likely occurrence can be assumed as possible.

Note also that the second description requires an unstable atmosphere - to enable deep/violent pyroconvection and subsequent significant cloud formation and latent heat release. This is not essential for the first. Consequently, this identifies a potential difference between the two defined extreme bushfire events to be considered when assessing risk:

- Large, intense bushfires can occur without deep convective column development. These fires remain as surface fires (essentially wind-driven fires), with a greater predictability of behaviour; and
- Large, intense bushfire that couple with an unstable atmosphere are no longer surface based. They are associated with a higher level of energy, chaos, and nonlinearity due to the enhanced (fire-induced)

interaction between the boundary layer and the free troposphere, which may introduce factors that act to maintain or enhance widespread flaming. The fire behaviour is much more unpredictable.

PHYSICAL REQUIREMENTS OF TERRAIN, FUEL LOAD (AND WINDSPEED) FOR DEEP FLAMING

The dynamic fire behaviours of eruptive fire and VLS and associated mass spotting, along with potential for topographically modified winds to develop, are strongly linked with the development of deep flaming, which is a prerequisite for extreme bushfire events.

There are certain environmental thresholds that are required to be met for these dynamic fire behaviours to occur. These are described below and form part of the assessment of the bushfire hazard in Section 5.5.

Eruptive Fire Behaviour

Eruptive fires are characterised by a rapid acceleration of the head fire rate of spread (exponential increases in rate of spread have been observed). It results in a rapid deepening of the flaming zone (larger area of active flame), from which heat is released into the atmosphere.

Eruptive fire results from the interaction between the slope of the terrain and the fire's plume. In the absence of wind, plume attachment can be expected on terrain that is inclined at roughly 24° or more and the effects of wind could cause plume attachment on slopes inclined at angles of 24° or lower. Consequently, the primary topographic requirement for eruptive fire is sufficiently steep terrain and sufficiently strong wind.

"This mode of fire propagation is completely contrary to that expected under the quasi- steady fire spread paradigm … eruptive fire behaviour poses a serious threat to the successful containment of a bushfire and provides a mechanism that can substantially elevate the risk posed by a bushfire in areas that are prone to its occurrence".

Rugged terrain (areas with local topographic relief >300m), is particularly prone to eruptive fire (and dynamic fire behaviours in general).

Fire Channelling (Vorticity-Driven Lateral Spread)

Fire channelling (VLS) exists when a fire exhibits rapid spread in a direction transverse to the synoptic winds as well as in the usual downwind direction. It is characterised by intense lateral and downwind spotting and production of extensive flaming zones.

VLS is highly effective at producing mass spotting events. A link between deep flaming events caused by VLS and the formation of pyroCb has been demonstrated. Under extreme conditions, spot fire occurrence can be so prevalent that spotting becomes the dominant propagation mechanism.

VLS can only be expected to occur on parts of the landscape, and under certain fire weather conditions. VLS occurrence depends critically on the following:

- Leeward slopes greater than 20-25° are required;
- Wind direction must be within 30-40° of the topographic aspect;
- Wind speed in excess of about 20 km h-1 are required;
- Generally VLS is only observed in heavy forest fuel types with load in excess of 15-20 t ha; and
- Fuel moisture content – dense spotting and downwind extension of the flaming zone are far more likely when fuel moisture contents are around 5% or less.

Topographically Modified Surface Winds - Downslope Winds

In WA the scarp winds are the well-known local occurrence of downslope winds. Similar meteorological phenomena (typically as foehn winds) occur in the lee of mountain ranges in many parts of the world, particularly on ranges with gentle windward and steep leeward slopes.

Scarp winds are nocturnal, strong and gusty winds that develop near the base of the scarp through summer months. The local mechanism is for a synoptic easterly flow, causing air to rise to the top of the scarp from further inland, at which point it is cooler and denser than the surrounding airmass. This produces an unstable situation and consequently the air flows down the scarp as a turbulent density current.

There are implications for enhanced fire activity for a fire located in a region of downslope winds, as they provide a clear mechanism for rapid, irregular direction of fire spread as well as turbulent transport of firebrands and plume development. If a 'hydraulic jump' is also present, the strong vertical motion in the jump region is a mechanism for lofting and dispersal of firebrands further ahead of the bushfire front.

The following information provides supporting guidance to the relevant bushfire protection measures that reduce bushfire hazard threat levels by reducing fuel levels.

1. SIGNIFICANT AREAS (LARGER) AREAS OF BUSHFIRE PRONE VEGETATION

Annually

Prior to the bushfire season ensure the following management of the identified areas of vegetation is conducted:

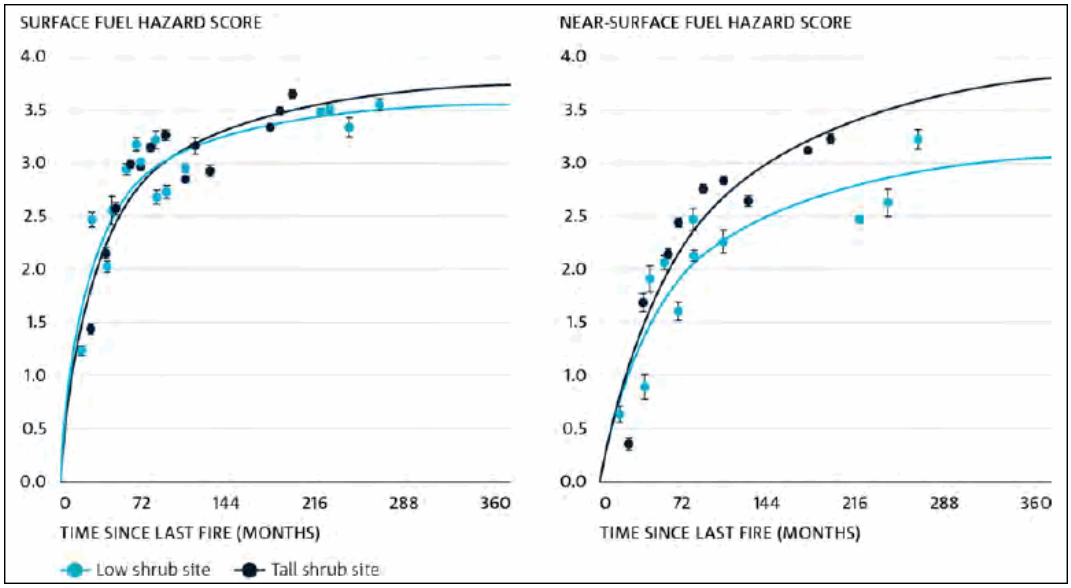
- Maintain the pruning of all trees and tall shrubs to a height of at least 2m from the ground and remove the material; and
- Remove any dead trees (that are not habitat trees), fallen branches and dead shrubs.

Burn Interval

Conduct hazard reduction burns at intervals that will ensure surface and near surface fuel loads (i.e. fine fuels – accumulated leaf litter, combustible plant materials and twigs up to 6mm diameter) remain less than 8 t/ha at all times.

It is likely the burning interval will need to be shorter than that which is typically currently conducted. The following statement and data from the Climate and Disaster Technical Report, CSIRO, 2020 [17] indicates the requirement for increased frequency of hazard reduction due to the rapid increase in surface and near surface fuel loads after hazard reduction burning.

"The only study published on the dynamics and structure of fine fuel in dry eucalypt forest following prescribed fire is that of Gould et al. (2011) utilising data to drive an exponential fuel accumulation relation for the key fuel attributes of surface fuel hazard and near-surface fuel hazard. In this study of time since fire in jarrah forest (Eucalyptus marginata), it was found that, over the 20-year period of the study (1979-1999) while surface fuel loads continued to increase indefinitely (up to and beyond 20 years), attributes such as percent cover and hazard score essentially plateaued after 6-9 years. Similarly, near-surface fuel loads were found to stop increasing significantly after 15-18 years whereas near-surface height and hazard score stopped increasing significantly after 9-12 years and 12-15 years, respectively (Figure 14). Bark hazard was found to be affected by hazard reduction burning for up to 12 years after hazard reduction burning"



"Figure 14 Recovery of surface (left) and near-surface fuel hazard (right) in Jarrah Forest following hazard reduction burning. Under these conditions these fuel attributes returned to equivalent long unburnt state after approximately 12-15 years but the response in the first few years following burning is extremely rapid, achieving 75% of fuel hazard within 4 years (surface) and 5-7 years (near-surface) depending on presence of shrub layer (Redrawn from Gould et al. 2011)"

2. THE BROADER LANDSCAPE

The following information has merit for consideration and is taken from the peer reviewed paper '*A framework for prioritising prescribed burning on public land in Western Australia'; Howard T. et al, DBCA and DFES; International Journal of Wildland Fire 2020, 29, 314-325.*

To develop and apply this protection measure it is likely interested entities, such as local government will need to engage and work with the relevant state government agency responsible for the identified areas of vegetation.

The collaboration will be necessary to establish the required indicators of acceptable risk - as they are determined through the application of the following published framework - and to establish a responsibility to conduct the ongoing management of these areas of vegetation to maintain compliance with the established indicators.

KEY RELEVANT POINTS FROM THE FRAMEWORK (QUOTED)

Introduction to the framework:

- *The framework provides principles and a rationale for programming fuel management with indicators to demonstrate that bushfire risk has been reduced to an acceptable level.*
- *Each bushfire risk management zone is divided into fire management areas, based on the management intent. These are areas where fuels will be managed primarily to minimise the likelihood of fire causing adverse impacts on human settlements or critical infrastructure, to reduce the risk of bushfire at the landscape scale or to achieve other land management outcomes. Indicators of acceptable bushfire risk are defined for each fire management area and are modified according to the distribution of assets and potential fire behaviour in the landscape.*
- *The framework establishes principles and a rationale for programming fuel management and, critically, provides indicators that demonstrate that bushfire risk has been reduced to an acceptable level. The acceptable level of bushfire risk is determined through a risk assessment and prioritisation process.*

Principles for managing bushfire risk applied in the framework:

- *Consistent with international standard: The regional risk framework commits to applying risk management in a manner that is consistent with AS ISO 31000: 2018 Risk management guidelines (Standards Australia 2018). This involves adherence to the principles of risk management, and applying the risk management process to the identification, assessment and treatment of risk.*
- *Fuels are managed to reduce the harm: Managing the fuel available to burn is critical to managing the threat posed by bushfire. The available fuel, and its structure, affect the speed and intensity of a bushfire, which, in turn, determine both its potential to cause damage and suppression difficulty. Done at appropriate temporal and spatial scales, managing the quantity, structure and distribution of fuel available has been demonstrated to be an effective and efficient way to reduce the severity and extent of damage by bushfires.*
- *Fuel management does not eliminate risk: Fuel management aims to reduce the negative consequences of bushfires rather than prevent their occurrence. Given the importance of fire to maintaining ecosystem health and resilience, it is neither desirable nor feasible to eliminate bushfire from natural landscapes and it is recognised that both planned and unplanned fire can have benefits. Fuel management aims to reduce risk to an acceptable level by greatly enhancing and supporting the effectiveness of other measures, including bushfire law, fire suppression, urban planning, building codes for fire-prone areas and community preparedness.*
- Fuel management is planned and integrated. Bushfire management puts people first, risk is managed at an appropriate scale and ecological requirements are considered when managing fuel.

Framework for managing bushfire risk by prescribed burning:

- The framework identifies bushfire risk management zones (BRMZ), recognises different fuel types (and associated fuel accumulation and fire behaviour models), classifies public lands within each zone into fire management areas (FMA) - with the Settlement-Hazard Separation classification being the relevant fire management area for the Mundaring town centre - and develops indicators of acceptable risk.
- *Bushfire Risk Management Zones: The framework identifies eight bushfire risk management zones (BRMZ) characterised by broad consistency of land use, asset distribution, fire environment (vegetation, fuels and climate) and fire management practices that combine to create a characteristic risk profile (Fig. 2). The Southwest zone includes the majority of the state's population, urban development and infrastructure.*
- *Fuel Types: The framework recognises 13 broad types across Western Australia. Fuel types are based primarily on structural attributes of the vegetation that influence fire behaviour. For each fuel type, best available information*

has been assembled regarding post-fire patterns of fuel accumulation, fire ecology, including the requirements of fire sensitive species and communities, harmful fire regimes and fire regimes compatible with ecosystem health. Where possible, the framework assigns each fuel type appropriate fuel accumulation and fire behaviour models and identifies the key weather attributes required to model fire behaviour. These models are used when setting indicators of acceptable bushfire risk, which are defined for different fuels according to the rates of fuel accumulation and the fire behaviour they may support.

- *Fire Management Areas: Public lands within each BRMZ are further classified into four fire management areas (FMAs) characterised as Settlement-Hazard Separation, Critical Infrastructure Buffer, Landscape Risk Reduction and Remote Area Management. These FMAs are defined by the primary intent of fuel management, which is a function of potential fire behaviour and the type and distribution of assets characteristic of the area. The framework recognises six classes of assets that may be affected by bushfire: settlements, dispersed populations, critical infrastructure, protected species and communities, economic assets and other assets (non-critical infrastructure, ecological, cultural).*
- *The Settlement-Hazard Separation FMA provides an area proximal to settlements where fuels are managed relatively intensively to minimise the likelihood of a bushfire being sustained, damaging properties or endangering people. Here, fuel management to protect settlements takes precedence over other land management objectives, though other land management outcomes can be pursued to the extent that they do not conflict with the primary management intent.*
- *The extent of the area described by each FMA varies according to the fuel type and the BRMZ in which it occurs … The breadth of the Settlement-Hazard Separation FMA is calculated to be sufficient to significantly reduce the likelihood of damage to assets from direct flame contact, radiant heat and ember attack and to provide adequate opportunity for fire suppression. This calculation is based on a combination of data derived from fire behaviour models and expert practitioner judgement. The Settlement-Hazard Separation FMAs are the largest in forest fuels that are prone to long-range spotting, severe ember storms and crown fire behaviour.*
- *Indicators of Acceptable Bushfire Risk: Are set for bushfire-prone fuel types in each FMA … Indicators are expressed in terms of the proportion of the landscape that is managed such that the treated fuels will not support a head fire of an intensity that precludes effective suppression action under weather conditions corresponding to the 95th percentile fire danger index … Weather conditions (air temperature, relative humidity, wind speed) corresponding to the 95th percentile FFDI are identified and used as inputs to fire behaviour models for calculating forward rate of spread and fire intensity (Table 1).*
- *The intent of fuel management is to reduce the quantity and alter the arrangement of fuels such that a bushfire is likely to spread more slowly, burn with lower intensity, be easier to suppress and cause less damage.*
- *The indicators of acceptable risk for the Settlement-Hazard Separation FMA for open eucalypt forest and tall/open eucalypt forest is a target of 60% of fuel less than threshold intensity for a distance of 5km surrounding settlements.*

As an open eucalypt forest example at the Perth rural urban interface, the fuel age and load to achieve threshold fire intensity under weather conditions representing 95th percentile values of the FFDI for the Bickley location are stated as 5 years and 8 t/ha.

APPENDIX 7: BUSHFIRE ATTACK LEVELS AND BAL CONTOUR MAPS EXPLAINED

Bushfire attack levels are determined using the methodology established by AS 3959:2018 Construction of buildings in bushfire prone areas. The Standard defines a bushfire attack level (BAL) as a "means of measuring the severity of a building's exposure to ember attack, radiant heat and direct flame contact, using increments of radiant heat expressed in kW/m^2."

Each BAL rating represents a set range of radiant heat flux (see table below). The amount of radiant heat and flame lengths generated by a bushfire is dependent on many factors that are modelled using the Standard's fire behaviour and flame length models. Key factors include vegetation type, terrain and a range of fire weather factors.

The variation that can exist in these factors results in different separation distances, away from bushfire prone vegetation, corresponding to a given BAL rating.

In assessing risk, knowing the separation distances away from each identified area of classified vegetation that correspond to a BAL rating, assists with evaluating threat levels from that bushfire hazard and the exposure levels of elements at risk.

Bushfire Attack Level	Explanation [Source AS3959:2018]
BAL – LOW	There is insufficient risk to warrant specific construction requirements but there is still some risk. *Important Note: For AS3959:2018 purposes, BAL-LOW will exist at 100m from classified vegetation (50m for Grassland).* *However, embers/firebrands from certain vegetation types can ignite spot fires ahead of the fire front for significant distances – short range spotting up to 740m, medium range spotting up to 5km and long range spotting has been authenticated up to 30km.*
BAL – 12.5	There is a risk of ember attack. Construction elements are expected to be exposed to heat flux not greater than 12.5 kW/m^2
BAL – 19	There is a risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to radiant heat. The construction elements are expected to be exposed to a heat flux not greater than 19 kW/m^2.
BAL – 29	There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level radiant heat. The construction elements are expected to be exposed to a heat flux not greater than 29 kW/m^2.
BAL – 40	There is a much increased risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front. The construction elements are expected to be exposed to a heat flux not greater than 40kW/m^2.
BAL – FZ (Flame Zone)	There is an extremely high risk of ember attack and burning debris ignited by windborne embers, and a likelihood of exposure to an extreme level of radiant heat and direct exposure to flames from the fire front. The construction elements are expected to be exposed to a heat flux greater than 40 kW/m^2.

THE BAL CONTOUR MAP - ILLUSTRATING THE CALCULATED SEPARATION DISTANCES CORRESPONDING TO BAL RATINGS

The BAL contour map illustrates different coloured contour intervals extending out from each different area of classified bushfire prone vegetation. The minimum and maximum distances of each contour, from each area of vegetation, is a diagrammatic representation of the calculated separation distances that correspond to each BAL rating. These take into account the specific site conditions.

Each coloured contour represents a different bushfire attack level and anything within that contour will be subject to that BAL rating and its corresponding level of radiant heat.

ADDENDUM 1

1. ADDENDUM SUB-HEADING

GLOSSARY

APPLIED TERMINOLOGY	
Consequence	The outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain. In the emergency risk management context, consequences are generally described as the effects on persons, society, the environment and the economy. *(Source: DPLH 2019)* An impact on the natural, economic, built or social environments as a result of the hazard. The consequences are influenced by the vulnerability of elements at risk, by the exposure of elements at risk to the hazard, and by the characteristics of the hazard. *(Source: PIA, 2015).* The outcome of an event that affects objectives. Can be a range of consequences; can be certain or uncertain; can have positive or negative effects; can be expressed qualitatively or quantitatively; can escalate through knock-on effects. *(Source: ISO Guide 73:2009)*
Controls	A measure that maintains and/or modifies risk. Controls include, but are not limited to, any process, policy, device, practice, or other conditions and/or actions which maintain and/or modify risk. *(Source: AIDR Knowledge Hub; Glossary)* A control is any measure or action that modifies or regulates risk. Controls include any policy, procedure, practice, process, technology, technique, method, or device that modifies or regulates risk. Risk treatments become controls, or modify existing controls, once they are implemented. *(Source: Praxiom)* *Note: 'Protection Measures' and 'Risk Treatments' will be alternative terms used in this risk assessment report.*
Decision Maker	The Minister for Planning, State Administrative Tribunal, Western Australian Planning Commission, Development Assessment Panel, any other State decision-making authorities, and/or the relevant local government and their delegates that make decisions regarding the application of this Policy. *(Source: SPP 3.7)* For proposed development or use that is not subject to planning approval, the relevant decision makers are those tasked with the development and management of a development or use. Typically this might be an existing development/use for which an improved bushfire performance is being sought.
Elements At Risk	The population, buildings and civil engineering works economic activities, public services and infrastructure, etc. exposed to hazards. (Australian Institute for Disaster Resilience, 2019)
Exposure	Refers to the people and things in the path of potential hazards. *(Source: AIDR* LUPDRC, *2020)* The elements within a given area that have been, or could be, subject to the impact of a particular hazard. Bushfire exposure can refer to property that may be endangered by a fire burning in another structure or by a bushfire. *(Source: AIDR Knowledge Hub; Glossary)* The situation of people, infrastructure, housing, production capacities and other tangible human assets located in hazard prone areas. Measures of exposure can include the number of people or types of assets in an area. These can be combined with the specific vulnerability and capacity of the exposed elements to any particular hazard to estimate the quantitative risks associated with that hazard in the area of interest. *(Source: UNDRR, 2017)*

Hazard	A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. Hazards may be natural, anthropogenic or socionatural in origin. • Natural hazards are predominantly associated with natural processes and phenomena (note: disasters often follow natural hazards, but there is no such thing a natural disaster); • Anthropogenic hazards are human-induced – being induced entirely or predominantly by human activities and choices; • Socionatural hazards are associated with a combination of natural and anthropogenic factors, including environmental degradation and climate change. Hazards may be single, sequential or combined in their origin and effects. Each hazard is characterized by its location, intensity or magnitude, frequency and probability. *(Source: UNDRR Terminology 2017)* A source of potential harm or a situation with a potential to cause loss. A potential or existing condition that may cause harm to people, or damage to property or the environment. A source of risk. *(Source: AIDR Knowledge Hub; Glossary)*
Hazardous Event	The manifestation of a hazard in a particular place during a particular period of time. [Severe hazardous events can lead to a disaster as a result of the combination of hazard occurrence and other risk factors.] (Source: *United Nations Office for Disaster Risk Reduction, 2017)*
Hazard Identification	The process of recognising that a hazard exists and defining its characteristics. *(Australian Institute for Disaster Resilience, 2019)*
Hazard - Bushfire	A fuel complex, defined by amount, type condition, arrangement, and location, that determines the degree of hazard. *(Source: AIDR Knowledge Hub; Glossary)* The term 'bushfire hazard' in this assessment report is intended to refer to both bushfire prone vegetation and the associated potential bushfire event itself. The term 'bushfire' is being applied as the common term for forest, scrub, shrub, and grass fire events.
Hazard - Urban Fire	1. Susceptibility of a material to burn. 2. The presence of combustible materials. 3. A process or activity posing a fire risk if not adequately controlled. *(Source: AIDR Knowledge Hub; Glossary)*
Hazardous Material	A substance or material which has been determined by an appropriate authority to be capable of posing an unreasonable risk to health, safety and property. *(Source: AIDR Knowledge Hub; Glossary)*
Impact	Describes as a quantitative or qualitative measure, the relative potential ability of a threat to adversely affect an exposed element or of a protection measure to reduce threat, exposure or vulnerability levels and consequently, risk levels.
Likelihood	Chance of something happening. The likelihood level reflects the probability of both the emergency event and the estimated consequences occurring as a result of the event. *(Source: AIDR NERAG, 2020)* In risk management terminology, the word 'likelihood' is used to refer to the chance of something happening, whether defined, measured or determined objectively or subjectively, qualitatively or quantitatively, and described using general terms or mathematically - such as a probability or a frequency over a given time period. *(Source: ISO Guide 73:2009)*

	The chance of an event occurring. Likelihood may be represented as a statistical probability (such as Annual Exceedance Probability), or where this is not possible, it can be represented qualitatively using such measures as 'likely', 'possible', and 'rare'. *(Source: PIA, 2015).*
Mitigation	The lessening or minimizing of the adverse impacts of a hazardous event. The adverse impacts of hazards, in particular natural hazards, often cannot be prevented fully, but their scale or severity can be substantially lessened by various strategies and actions. Mitigation measures include engineering techniques and hazard-resistant construction as well as improved environmental and social policies and public awareness. *(Source: UNDRR, 2017)*
Reliability	Refers to the expected reliability of a designed solution (protection measure). Over time it will be a function of: • Its Initial likely reliability; • Its durability which may or may not be a function of maintenance; • The level of maintenance required; • The likelihood of solution being modified over time; and • The influence of other adjoining/adjacent structures or stored materials that may be installed after the initial construction. (Adapted from Kelly M. et al; *Structural Design Options for Residential Buildings in Bushfire Areas*, Australasian Structural Engineering Conference November 2016)
Resilience	The ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management. (*United Nations Office for Disaster Risk Reduction, 2017)* Is that property of a building, system, or community that facilitates its return to a functional state following an overload. In the context of bushfire damage, resilience will be maximised when: • There is a high probability of an attacked building remaining fit for purpose; and • There is a low time and cost to make badly damaged buildings fit for purpose. (Adapted from Kelly M. et al; *Structural Design Options for Residential Buildings in Bushfire Areas*, Australasian Structural Engineering Conference November 2016)
Robustness	Refers to that property of structural systems that seeks to achieve proportionality of damage to the severity of an overloading event. It will be maximised when bushfire design solutions: • Have few 'weak links' that allow progressive spread of damage from minor sources; • Consist of materials and assemblies that retain physical properties when thermally loaded beyond their design capacity; and • Include protection of inherently vulnerable and brittle elements. Such as openings to internal parts of structures (including doors and windows) and essential services that maintain required functioning (e.g. cabling and plumbing). (Adapted from Kelly M. et al; *Structural Design Options for Residential Buildings in Bushfire Areas*, Australasian Structural Engineering Conference November 2016) As a design principle it means that the design and materials are not easily damaged or compromised, and do not require manual operation or intervention to work (Source: State Government of Queensland, CSIRO, 2020)

Redundancy	Refers to design that ensures the fate of the subject building/structure is not reliant on the effective performance of a single element. (State Government of Queensland, CSIRO, 2020) An example is a roof system that does not rely solely on the roof cladding to resist bushfire threats. It has additional layers of resistance including non-combustible roof/ceiling framing, insulation and ceiling lining, and the sealing/screening of gaps into internal operating spaces.
Risk	Disaster risk is the potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity. *(Source: UNDRR, 2017)* Disaster risk is a product of a hazard (a sudden event or shock), exposure (the people and things in the path of potential hazards), vulnerability (the potential for those people and things to be adversely impacted by a hazard) and the capacity (the ability for those people and assets and systems to survive and adapt). *(Source: AIDR LUPDRC, 2020)* Risk is the chance of something happening that will have an impact upon objectives. It is measured in terms of consequences and likelihood. In emergency management it is a concept used to describe the likelihood of harmful consequences arising from the interaction of hazards, communities and the environment. *(Source: PIA, 2015)*
Risk Management	Disaster risk management is the application of disaster risk reduction policies and strategies to prevent new disaster risk, reduce existing disaster risk and manage residual risk, contributing to the strengthening of resilience and reduction of disaster losses. *(Source: UNDRR, 2017)* Coordinated activities of an organisation or a government to direct and control risk. The risk management process includes the activities of: • Communication and consultation; • Establishing the context; • Risk Assessment (risk identification, risk analysis, risk evaluation); • Risk Treatment; and • Monitoring and Review. *(Source: AIDR NERAG, 2020)*
Risk Identification	Process of finding, recognising and describing sources of risks, their causes and their potential consequences. *(Source: ISO Guide 73:2009)* It is a process used to find, recognise, and describe the risks that could affect the achievement of objectives. *(Source: Praxiom)*
Risk Source	An element which, alone or in combination, has the intrinsic potential to give rise to risk. *(Source: ISO Guide 73:2009)*
Risk Assessment	Disaster risk assessment is a qualitative or quantitative approach to determine the nature and extent of disaster risk by analysing potential hazards and evaluating existing conditions of exposure and vulnerability that together could harm people property, services and livelihoods and the environment on which they depend. Assessments include the identification of hazards; a review of the technical characteristics of hazards such as their location, intensity, frequency, and probability; the analysis of exposure and vulnerability, including the physical, social, health, environmental and economic dimensions; and the evaluation of the effectiveness of prevailing and alternative coping capacities with respect to likely risk scenarios. *(Source: UNDRR, 2017)* The overall process of risk identification, risk analysis and risk evaluation. *(Source: ISO Guide 73:2009)*

Risk Analysis	The process to comprehend the nature of risk and determine the level of risk. Provides the basis for risk evaluation and decisions about risk treatment. *(Source: ISO Guide 73:2009)* Is a process that is used to understand the nature, sources, and causes of the risks that you have identified and to estimate the level of risk. It is also used to study impacts and consequences and to examine the controls that currently exist. How detailed your risk analysis ought to be will depend upon the risk, the purpose of the analysis, the information you have, and the resources available. *(Source: Praxiom)* In this risk assessment report, risk analysis is the part of the risk assessment process that assesses the hazard threat levels, identifies the protection measures (and their effectiveness) that can be applied and derives the levels of exposure and vulnerability of the identified elements at risk, based on the ability to apply protection measures. From this information indicative risk levels can be derived. Where relevant sets of risk factor criteria and a risk level matrix have been established by the relevant authorities, a determined risk level can be derived. The required risk level analysis can be conducted for either each exposed element separately and/or the proposed or existing development/use overall.
Risk Evaluation	The process used to determine risk management priorities by evaluating and comparing the level of risk against predetermined standards, target risk levels or other criteria. *(Source: PIA, 2015)* In this risk assessment report, it is the process of classifying the acceptability of the levels of risk, derived from the risk analysis, by reference to an established risk tolerance scale. The relevant tolerance scale will be that derived from the application of the 'as low as reasonably practicable' principle – 'ALARP' (refer to Appendix 3 for further information). This process can only be conducted when determined risk levels have been derived.
Risk Factor Criteria	In this risk assessment report, the risk factor criteria establish the parameters that will define the different hazard threat levels, the different levels of exposure of elements at risk and the different levels of vulnerability of elements at risk. Different sets of risk factor criteria can exist corresponding to different development types, uses and scale. They are applied as part of the risk analysis. These criteria are established by the relevant authorities as they must reflect societies preparedness to tolerate risk and be determined by those authorities exercising their responsibilities.
Risk Level Matrix	In this risk assessment report, the risk level matrix establishes how the assessed levels of hazard threats, exposure and vulnerability are to be analysed in deriving a determined risk level. It is applied as part of the risk analysis. The matrix is established by the relevant authorities as they must reflect societies preparedness to tolerate risk and be determined by those authorities exercising their responsibilities.
Risk Tolerance Scale	In this risk assessment report the applied risk tolerance scale defines the acceptability of determined risk levels based on the 'as low as reasonably practical' principle (ALARP). The risk tolerance scale can be applied within the risk assessment report when the required risk factor criteria and risk level matrix are available.
Risk - Inherent	In this risk assessment report, inherent risk is considered to be current risk after accounting for existing and any 'planned' protection measures (controls / risk treatments) but before the application of any additional protection measures that have been identified and recommended by the bushfire consultant – and which subsequently determines the residual risk (this approach is supported by the relevant information sourced from the two references below).

	'Planned' protection measures are those that are incorporated into the site development plans and those that exist in an approved Bushfire Management Plan (BMP) and/or Bushfire Emergency Plan (BEP) and for which a responsibility for their implementation has been created. If a BMP or BEP is yet to be developed or is being developed concurrently, the additional protection measures it contains (including any that are part of relevant 'acceptable solutions' established by the 'Guidelines for planning in bushfire prone areas', DPLH as amended), are considered to be additionally recommended protection measures. 1. *Source: www.fairinstitute.org* *"Confusion exists between Inherent Risk and Residual Risk … Here are the standard definitions of the two concepts:* • *Inherent risk represents the amount of risk that exists in the absence of controls.* • *Residual risk is the amount of risk that remains after controls are accounted for.* *Sounds straightforward. But these two terms seem to fall apart when put into practice. Applying the above definitions to the clients' scenario uncovered the fact that the 'inherent' risk being described was not a 'no controls' environment, but rather, one that only excluded some controls.* *The flaw with inherent risk is that in most cases, when used in practice, it does not explicitly consider which controls are being included or excluded. A truly inherent risk state, in our example, would assume no employee background checks or interviews are conducted and that no locks exist on any doors. This could lead to almost any risk scenario being evaluated as inherently high. Treating inherent risk therefore can be quite arbitrary. According to Jack Jones, author of Measuring and Managing Information Risk: A FAIR Approach and creator of the FAIR model, much more realistic and useful definitions would be:* • *Inherent risk is current risk level given the existing set of controls rather than the hypothetical notion of an absence of any controls; and* • *Residual risk would then be whatever risk level remain after additional controls are applied."* 2. *Source: Wikipedia:* *Inherent risk, in risk management is:* • *an assessed level of raw or untreated risk; that is, the natural level of risk inherent in a process or activity without doing anything to reduce the likelihood or mitigate the severity of a mishap, or the amount of risk before the application of the risk reduction effects of controls; or* • *Another definition is that inherent risk is the current risk level given the existing set of controls, which may be incomplete or less than ideal, rather than an absence of any controls.*
Risk - Residual	In this risk assessment report, residual risk is that which remains after the application of protection measures that are additional to those that already exist or are 'planned' and that establish the inherent risk (see Risk – Inherent in glossary) It is the disaster risk that remains in unmanaged form, even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained. The presence of residual risk implies a continuing need to develop and support effective capacities for emergency services, preparedness, response and recovery, together with socioeconomic policies such as safety nets and risk transfer mechanisms, as part of a holistic approach. *(Source: UNDRR, 2017)* It is the risk left over after you've implemented a risk treatment option. It's the risk remaining after you've reduced the risk, removed the source of the risk, modified the

	consequences, changed the probabilities, transferred the risk, or retained the risk. *(Source: Praxiom)* It is the risk remaining after any risk treatment has been applied to reduce its potential likelihood and/or its potential consequences. Residual risk can also be any risk that is chosen to be retained rather than treated *(Source: AIDR* LUPDRC, *2020)* Residual risk can contain unidentified risk. Residual risk can also be known as retained risk. *(Source: ISO Guide 73:2009)*
Risk Level - Determined	Magnitude of a risk or a combination of risks. In this risk assessment report, as an outcome of the risk analysis, a determined risk level is derived from: 1. The determination of threat, exposure and vulnerability levels by reference to an established set of risk factor criteria that corresponds to each risk level (for each factor); and 2. The determination of the risk level by reference to an established risk level matrix that incorporates threat, exposure and vulnerability levels.
Risk Level - Indicative	Magnitude of a risk or a combination of risks. In this risk assessment report, as an outcome of the risk analysis, an indicative risk level is derived from analysis of the number of bushfire protection measures able to be implemented compared to the number of measures available, and the relative effectiveness of each at reducing threat, exposure and/or vulnerability levels. Overall, more applicable and applied measures is better and the measures with a higher effectiveness rating have greater weighting in the analysis.
Risk - Acceptable	Risks that do not need further treatment. The expression acceptable level of risk refers to the level at which it is decided that further restricting or otherwise altering the activity is not worthwhile e.g. additional effort will not result in significant reductions in risk levels. *(Source: DPLH, 2019)* That level of risk that is sufficiently low that society is comfortable with it. Society does not generally consider expenditure in further reducing such risks justifiable. (Source: AIDR Knowledge Hub) Acceptable risk or tolerable risk is an important sub-term (of disaster risk). The extent to which a disaster risk is deemed acceptable or tolerable depends on existing social, economic, political, cultural, technical and environmental conditions. *(Source: UNDRR, 2017)* *Note: It is generally accepted that nothing can be absolutely free of risk, everything under some circumstance can cause harm. There are differing levels of risk and consequently levels of safety. In practice, attaining zero risk is not possible. Nevertheless, after risk avoidance, reduction/mitigation, transfer or acceptance - the residual risk may be determined as acceptable, as judged by the participants in an activity and decision makers (who apply societies expectations). For certain land uses, the residual risk may exist at higher levels but still be judged by to be acceptable (or tolerable) on this basis.*
Risk - Tolerable	The willingness to live with a risk to secure benefits and achieve objectives, on the understanding that it is being properly controlled. 'Tolerability' does not mean 'acceptability'. Tolerating a risk does not mean that it is regarded as negligible, or something we may ignore, but rather as something that needs to be kept under review and reduced further, if deemed necessary. *(Source: DPLH, 2019)* Certain levels of risk may be tolerated, provided that the risks are known and managed. *(Source: AIDR LUPDRC, 2020)*

	Risk tolerance is defined as the organisations or stakeholder's readiness to bear the risk, after risk treatment, in order to achieve its objectives. Risk tolerance can be influenced by legal or regulatory requirements. *(Source: ISO Guide 73:2009)* A level of risk that defines the ALARP region, as risks that should be driven to the broadly acceptable region. *(Source: PIA, 2015)*
Risk - Intolerable	A level of risk that is so high that require risk treatment measures whatever their cost, or the elimination of the risk. *(Source: PIA, 2015)* Risk that is unacceptable in any circumstances or at any level. *(Source: DPLH, 2019)*
Risk Treatment	Risk treatment options available as part of the risk management process are generally categorised as follows: • Risk Avoidance: Measures taken to avoid risks from natural hazards. Can include avoiding development in hazardous areas, relocating people or assets away from hazardous areas, or developing buffer zones to the hazard; • Risk reduction/mitigation: Measures undertaken to reduce the risks from natural hazards. Includes building control and development controls; • Risk Transfer: Measures taken to transfer the risk from natural hazards from one party to another; and • Risk Acceptance: The acceptance of risk from a natural hazard. Any realised losses will be borne by those parties exposed to the hazard. This is not specifically a treatment option as no action is taken, but it is an option for addressing risk. *(Source: AIDR LUPDRC, 2020)*
Retrofitting	Reinforcement or upgrading of existing structures to become more resistant and resilient to the damaging effects of hazards. Retrofitting requires consideration of the design and function of the structure, the stresses that the structure may be subject to from particular hazards or hazard scenarios and the practicality and costs of different retrofitting options. *(Source: UNDRR, 2017)*
Structural and Non-Structural Measures	Structural measures are any physical construction to reduce or avoid possible impacts of hazards, or the application of engineering techniques or technology to achieve hazard resistance and resilience in structures or systems. Non-structural measures are measures not involving physical construction which use knowledge, practice or agreement to reduce disaster risks and impacts, in particular through policies and laws, public awareness raising, training and education. Common non-structural measures include building codes, land-use planning laws and their enforcement, research and assessment, information resources and public awareness programmes. *(Source: UNDRR, 2017)*
Threats	The mechanisms by which hazards can impact exposed elements.
Vulnerability	The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards. (*United Nations Office for Disaster Risk Reduction, 2017)* The characteristic or property of a community, system or object that makes it susceptible to the damaging effects of a specific hazard. Can be defined according to the responses of people, houses and assets in mitigating the impacts of a hazard. Specifically, it refers to the extent to which a community, building, services or location is likely to be damaged or disrupted by the impacts of a hazard, such as a bushfire.

	Building vulnerability refers to weak points in a building caused by its design, construction, use of materials and management (including maintenance). These weak points are identified in the context that they are not able to withstand the level of hazard they are exposed to. Climate and weather may directly influence the buildings vulnerability through several processes including (i) moisture content of combustible elements around and within buildings (ii) gaps between materials that may shrink and expand due to changes in moisture content and temperature (iii) wind action causing damage or dislocation of elements. *(Source: State Government of Queensland, CSIRO, 2020; Bushfire Resilient Building Guidance for Queensland Homes)*

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SHIRE OF MERREDIN
INNOVATING THE WHEATBELT

Our Ref: A9722

27 March 2024

DAP Secretariat
Development Assessment Panels
Locked Bag 2506
PERTH WA 6000

Dear Sir/Madam

RE: SHIRE OF MERREDIN RESPONSIBLE AUTHORITY REPORT – DAP APPLICATION DAP/24/02631 – LOT 5 ROBARTSON ROAD MERREDIN

Thank you for your correspondence dated 15 January 2024, requesting the Shire of Merredin to provide the DAP Secretariat with the Responsible Authority Report with respect to DAP Application DAP/24/02631 – Lot 5 Robartson Road, Merredin.

In response I wish to advise you that the Shire of Merredin Council considered the matter at its ordinary meeting held on Tuesday 26 March 2024, where it resolved as follows;

That Council:

1. **ENDORSES the Shire of Merredin Responsible Authority Report forming part of Attachment 12.2B;**
2. **SUBMITS the endorsed Shire of Merredin Responsible Authority Report to the Development Assessment Panel Secretariat;**
3. **RECOMMENDS that the Regional Joint Development Assessment Panel resolves to:**
    a. **ACCEPT that the Development Assessment Panel Application reference DAP/24/02631 is appropriate for consideration as a "Use not listed" land use and compatible with the objectives of the zoning table in accordance with Clause 3.4.2 (b) of the Shire of Merredin Local Planning Scheme No. 6; and**
    b. **APPROVE Development Assessment Panel Application reference DAP/24/02631 and accompanying plans (Attachment 12.2A) in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the Planning and Development (Local Planning Schemes) Regulations 2015, and the provisions of Clause 3.4.2 (b) of the Shire of Merredin Local Planning Scheme No. 6, subject to the following conditions:**
        i. **The submission and approval of a dedicated Construction Management Plan, including a transport impact assessment, details showing the proposed interim and longer-term facilities including building/structure setbacks, carparking facility, landscaping/ screening etc, to the satisfaction of the local government;**
        ii. **The removal of all construction infrastructure once the facility has been completed to the satisfaction of the local government;**

iii. **The preparation and lodgement of a Drainage Management Plan to contain all drainage on site to the satisfaction of the local government;**

iv. **The design and location of on-site effluent systems, for the construction phase as well as the longer term, to be designed and located to the satisfaction of the local government;**

v. **Compliance with the Bushfire Management Plan dated 14 December 2023 recommendations (including the Bushfire Risk Assessment & Management Report); and**

vi. **Any new crossover to Robartson Road shall be located and constructed to the satisfaction of the local government.**

Advice Notes

1 **If the development, subject of this approval, is not substantially commenced within a period of 24 months from the date of the approval, the approval will lapse and be of no further effect. For the purposes of this condition, the term "substantially commenced" has the meaning given to it in the *Planning and Development (Local Planning Schemes) Regulations 2015* as amended from time to time.**

2 **If an applicant or owner is aggrieved by this determination, there is a right of review by the State Administrative Tribunal in accordance with the *Planning and Development Act 2005* Part 14. An application must be made within 28 days of the determination.**

3 **The applicant is advised that granting of development approval does not constitute a building permit and that an application for relevant building permits must be submitted to the Shire of Merredin and be approved before any work requiring a building permit can commence on site.**

I herewith attach the endorsed Shire of Merredin Responsible Authority Report for your information.

I hope that this now clarifies Councils position in relation to this matter. If you have any questions, please do not hesitate to contact me.

Yours sincerely

Peter Zenni
Executive Manager Development Services

12.2 Application for Development Approval – Lot 5 Robartson Rd, Merredin Proposed Battery Energy Storage System (BESS)

Development Services

Responsible Officer:	Peter Zenni, EMDS
Author:	Paul Bashall – Planwest (WA) Pty Ltd
Legislation:	*Planning and Development Act 2005* Shire of Merredin Local Planning Scheme No.6
File Reference:	A9722
Disclosure of Interest:	Nil
Attachments:	Attachment 12.2A - Development Application and Supporting Documentation. Attachment 12.2B - Responsible Authority Report (RAR). Attachment 12.2C – Submissions to Proposal.

Purpose of Report

■ Executive Decision ☐ Legislative Requirement

To recommend to Council that it advises Joint Development Assessment Panel (JDAP) of its support of the development application and of its recommendation to JDAP, that it approves the application for development approval (DA) for the proposed battery energy storage system (BESS) on a portion of Lot 5 Robartson Road, Merredin.

The vehicle to transmit the Council's recommendation is by the way of a Responsible Authority Report (RAR). A copy of this RAR is attached to this Item (Attachment 12.2B).

Background

An application has been received for development approval (DA) from Land Insights, Planning Consultants, on behalf of Nomad Energy for the proposed BESS.

Lot 5 Robartson Road is located approximately 7.5km south-west of the centre of Merredin and comprises a land area of approximately 61.51ha. Only a small portion (approximately 4ha) of this Lot, immediately adjacent to the Merredin Terminal sub-station, will be used for the development.

The subject site is an agricultural property, that does not contain any areas of remnant vegetation and is currently used for cropping and sheep grazing purposes.

Figure 1 provides a location plan of the site.

The proposed development is costed at $220m and consists of the battery energy storage system facility that is comprised of battery packs, inverters, transformers and control systems, and the associated high voltage substation and additional switch room(s)/control building(s),

laydown areas, staff car parking, firefighting equipment, internal roads and a perimeter fence. The Battery Energy Storage System Project will be connected to Western Power's transmission network at the adjacent Merredin Terminal.

FIGURE 1 – LOCATION PLAN



Source: Planwest, ESRI

The accompanying report states that the Shire of Merredin (the Shire) has become the renewable energy centre for the Wheatbelt and Western Australia. It pioneered wind turbines and solar farms, generating green energy to replace greenhouse gas emitting sources, and now the next iteration is in the storage and redistribution of this energy via battery energy storage systems.

Nomad Energy (the owner of the project) is an Australian company that has developed more than 500MW of renewable energy projects globally, including Western Australia's largest operational solar farm (Merredin Solar Farm).

Nomad Energy has partnered with Atmos Renewables on this project. Atmos Renewables are one of the top 5 largest owner/operators of utility-scale renewable energy facilities in Australia and currently holds generation assets with a gross capacity in excess of 1.7GW. A core feature of the Nomad – Atmos partnership is the intent to develop, build, own and operate the assets they develop. This strategy demonstrates their long-term approach to the assets, the local communities in which they are situated and to the electricity market this project will ultimately support.

The proximity to Western Power's Merredin Terminal substation was a key consideration when the site was selected and will result in relatively minor works being required to connect the proposed facility to the South West Interconnector System. The battery energy storage system facility will be accessed off Robartson Road and will be securely fenced.

The land is surrounded predominantly by other agricultural properties to the north and west, Western Power's Merredin Terminal to the south and Merredin Solar Farm to the east/ southeast. The subject site is in close proximity to other energy infrastructure assets, being the Merredin Energy dual-fuel peaking plant and Merredin Solar Farm (the largest operating solar farm in Western Australia).

Figure 2 shows the site plan with Bushfire Prone mapping data (DFES), a 150m assessment area and the battery development extent area.

FIGURE 2 – EXTRACT FROM DA SITE PLAN



Source: Land Insights, Bushfire Prone Planning, DFES, Planwest

The closest sensitive receptor is over 2km away from the site. To the south and west of the subject site sits the energy infrastructure assets mentioned previously, to the north east of the subject site at Lot 15490 is a lot reserved for parks and recreation under the Shire of Merredin Local Planning Scheme No.6, known as Merredin Nature Reserve. The applicant considers that, given the nature of the facility, it is unlikely that there will be any offsite impacts and the balance of the Lot will be retained for rural / agricultural purposes.

The DA is accompanied by a comprehensive Bushfire Management Plan (BMP) prepared by Bushfire Prone Planning. Although Lot 5 is affected by the Bushfire Prone mapping, the proposed development site is about 200m from the nearest mapped area (as per DFES data). Notwithstanding this distance, the BMP is deemed necessary as the proposed use class is considered a high-risk land use.

The BMP deals with risk issues that are better assessed by agencies specialising in these areas rather than from a planning perspective. During the advertising period, the DA will be forwarded to DFES, amongst others, for comment.

The BMP looks at:

- Assessment of potential bushfire impact;
- Environmental conservation;
- Assessment of the development's ability to acceptably mitigate bushfire risk through application of required and/or additional bushfire protection measures; and
- Creation of responsibilities to implement and maintain protection measures.

Council considered the application for development approval at the January Ordinary Council Meeting held 23 January 2024, where Council resolved the below (CMRef 83312);

That Council

1. *NOTES the receipt of the application for Development Approval for the proposed Battery Energy Storage System to be located on a portion of Lot 5 Robartson Road, Merredin;*
2. *ADVISES the Development Assessment Panel of the application for Development Approval by forwarding the lodged documentation;*
3. *ADVERTISES the application for Development Approval for a period of 21 days for public submissions, neighbours and agencies being advised of the advertising period. These agencies, amongst others, will include:*
    a. *Department of Fire and Emergency Services (DFES);*
    b. *Department of Water and Environmental Regulation (DWER);*
    c. *Environmental Protection Authority (EPA);*
    d. *Department of Biodiversity, Conservation and Attraction (DBCA);*
    e. *Western Power (WP);*
    f. *Civil Aviation Safety Authority (CASA); and*
4. *NOTES that all submissions received during the advertising period will be brought back to Council for its consideration prior to submitting its Responsible Authority Report to the Development Assessment Panel for its determination.*

Footnotes

1. *The applicant is advised that Council will consider all submissions received during the advertising period, however it is likely to require at least the following conditions;*
    - *The submission and approval of a dedicated Construction Management Plan, including a transport impact assessment, details showing the proposed interim and longer-term facilities including building/structure setbacks, carparking facility, landscaping/ screening etc;*
    - *The submission and approval of a dedicated Drainage Management Plan;*
    - *The design and location of on-site effluent systems for the construction phase, as well as the longer term;*
    - *The removal of all construction infrastructure once the facility has been completed to the satisfaction of the local government; and*
    - *The approval of any crossovers required by the development;*
2. *The applicant is advised that granting of development approval does not constitute a building permit and that an application for relevant building*

permits must be submitted to the local government and be approved before any work requiring a building permit can commence on site;

3. *The applicant is advised that effluent disposal facilities will require an application for the installation or construction of an apparatus for the treatment of sewage to be submitted to the local government, and be approved, before any work can commence on the installation of an onsite effluent disposal system; and*
4. *The applicant is advised of the need for compliance with the local government annual Firebreak Notice.*

Comment

The proposed development:

- Is consistent with the Council's ambition to be a centre for renewable energy systems;
- Is logically located close to the source of renewable power systems;
- Is located near an entry point to the national power grid;
- Is more than 200m from the nearest bushfire prone area;
- Will have no impact on remnant vegetation, flora or fauna; and
- Will cause minimal loss of agricultural land.

The other matters to be considered include:

- Disruption during construction;
- Public and aviation safety;
- Noise; and
- Visual impact.

Strategic Considerations

The existing Shire of Merredin Local Planning Strategy (the Strategy) does not provide many details outside the main townsite area of Merredin. The district map of the Strategy designates the subject land as 'General Agriculture Zone'. At the time of drafting the Strategy, renewables were not a significant land use that required consideration.

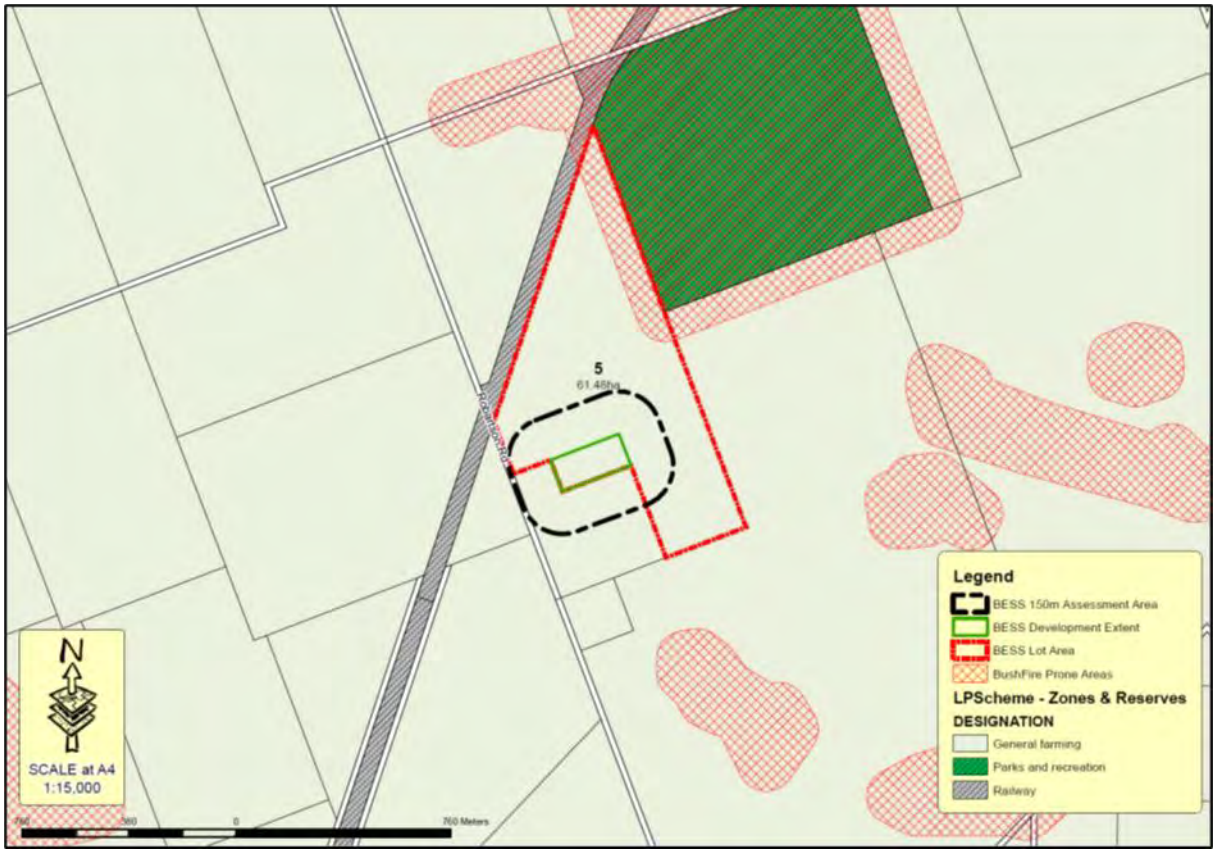
Storm Water Management

Storm water management will need to be addressed via a drainage strategy that is acceptable to the Shire's engineers. This will ensure that any drainage from the site will be managed on the site and will not impact any neighbouring properties or public infrastructure like roadways, road reserves and other reserves.

Statutory Considerations

Figure 3 provides an extract from the Local Planning Scheme No 6 (the Scheme) showing the subject land zoned 'General Farming'.

FIGURE 3 – SCHEME MAP EXTRACT (and BUSHFIRE PRONE MAPPING)



Source: Landgate, DPLH, Planwest

Table 1– Zoning Table in the Scheme does not specifically list a use class for battery storage, however there are two options of dealing with the proposal.

The first is to accept the use as falling within the use class of 'Service utility' which is defined as -

> *Service utility - means any work or undertaking constructed or maintained by a service authority or the local government as may be required to provide water, sewerage, electricity, gas, drainage, waste, communications or other similar services.*

A service utility is a 'D' use in a General Farming zone. A 'D use means that the use is not permitted unless the local government has exercised its discretion by granting development approval. It may be argued that the service utility proposed is not constructed by a service authority or a local government.

The second option is to treat the proposed use class as a use not listed. Clause 3.4.2 of the Scheme states that;

> *If a person proposes to carry out on land any use that is not specifically mentioned in the Zoning Table and cannot reasonably be determined as falling within the type, class or genus of activity of any other use category the local government may –*
>
> *a. determine that the use is consistent with the objectives of the particular zone and is therefore permitted;*
> *b. determine that the use may be consistent with the objectives of the particular zone and thereafter follow the advertising procedures of clause 64 of the deemed provisions in considering an application for development approval; or*

c. *determine that the use is not consistent with the objectives of the particular zone and is therefore not permitted.*

In either option the proposal will need to be advertised to invite submissions from service agencies and the public.

Environmental Impact

The proposal affects about 4 hectares of general farming land of the 61-hectare lot. The area not affected by the proposed development will continue to be used for rural and agricultural purposes.

The BMP provides an assessment of the bushfire risk and suggests certain measures that need to be adopted to minimise the potential bushfire risk.

The DA provides a visual assessment that concludes that the new infrastructure will not have a significant visual impact on the environment given its proximity to the existing power terminal. Prior to a determination of the DA there may need to be a requirement for landscaping where the Shire considers the views from public places that will be detrimentally impacted.

The DA discusses the preparation of a Construction Management Plan (CMP) that will coordinate phases of the development including, temporary accommodation, laydown areas, access for delivery of equipment and temporary ablutions and amenities.

The detail of the CMP will need to be prepared and implemented to the satisfaction of the local government to ensure all temporary works and structures are removed on completion of the construction.

The CMP will need to include a Transport Impact Assessment that is prepared and implemented to the satisfaction of the local government. This will ensure minimal damage to local road infrastructure, maintain safety while accessing the site and minimise any impact to local drainage systems.

Building Requirements

The Shire has previously sought and obtained clarification from the Building Commission that power storage containers (batteries) are not considered buildings (roofed structures), nor incidental structures (associated with a building) and as such do not require a building permit from the Shire prior to their erection on site. However, buildings that will house staff and are accessible by the public such as site offices etc, will still require building permits from the Shire.

Policy Implications

Nil

Statutory Implications

Consistent with Scheme No.6 requirements for advertising and Councils resolution, a notice was published in the West Australian newspaper on 3 February 2024 inviting submissions to the BESS proposal before 26 February 2024.

There were no submissions received other than those from the servicing agencies shown in Attachment 12.2C.

In addition to the public invitation, several agencies were specifically contacted regarding the proposed development. Four responses were received including, CASA (Civil Aviation Safety Authority), DPIRD (the Department of Primary Industries and Regional Development) and DBCA (Department of Biosecurity, Conservation and Attractions).

DFES (Department of Fire and Emergency Services) requested an extension to the submission period due to its extreme demand for emergency services during this period. The Shire granted this extension.

A subsequent email (dated 11 March 2024) from DFES indicates that it has not reviewed the BMP as it has not formally been referred to the Department. Referrals are only received by DFES where the development is affected by the Bushfire Prone mapping.

CASA and DBCA indicated that they had no issues with the proposed development, whilst DPIRD requested that a Drainage Management Plan be prepared for the site.

Schedules of these submission (and copies of the submissions) are shown in Attachment 12.2C.

Strategic Implications

Ø Strategic Community Plan

Theme:	4. Communication and Leadership
Service Area Objective:	4.2 Decision Making 4.2.3 The Council is well informed in their decision-making, supported by a skilled administration team who are committed to providing timely, strategic information and advice.
Priorities and Strategies for Change:	Nil

Ø Corporate Business Plan

Theme:	5. Places and Spaces.
Priorities:	Nil
Objectives	5.4 Town Planning & Building Control. 5.4.2 The Shire has a current local planning scheme and associated strategy which is flexible and able to suitably guide future residential and industrial growth.

Sustainability Implications

Ø Strategic Resource Plan

Nil

Risk Implications

Although the development site is about 200m from the nearest bushfire prone area (as per DFES data) the proposed use class is considered a high-risk land use. Compliance with the recommendations of the BMP is critical to minimising the fire risk on an on-going basis.

Financial Implications

The relevant development application fees have been paid.

	Voting Requirements

■ Simple Majority ☐ Absolute Majority

	Resolution

Moved: **Cr O'Neill** **Seconded:** **Cr Van Der Merwe**

That Council:

1. **ENDORSES the Shire of Merredin Responsible Authority Report forming part of Attachment 12.2B;**
2. **SUBMITS the endorsed Shire of Merredin Responsible Authority Report to the Development Assessment Panel Secretariat;**
3. **RECOMMENDS that the Regional Joint Development Assessment Panel resolves to:**
   a. **ACCEPT that the Development Assessment Panel Application reference DAP/24/02631 is appropriate for consideration as a "Use not listed" land use and compatible with the objectives of the zoning table in accordance with Clause 3.4.2 (b) of the Shire of Merredin Local Planning Scheme No. 6; and**
   b. **APPROVE Development Assessment Panel Application reference DAP/24/02631 and accompanying plans (Attachment 12.2A) in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the Planning and Development (Local Planning Schemes) Regulations 2015, and the provisions of Clause 3.4.2 (b) of the Shire of Merredin Local Planning Scheme No. 6, subject to the following conditions:**

83355

      i. **The submission and approval of a dedicated Construction Management Plan, including a transport impact assessment, details showing the proposed interim and longer-term facilities including building/structure setbacks, carparking facility, landscaping/ screening etc, to the satisfaction of the local government;**
      ii. **The removal of all construction infrastructure once the facility has been completed to the satisfaction of the local government;**
      iii. **The preparation and lodgement of a Drainage Management Plan to contain all drainage on site to the satisfaction of the local government;**
      iv. **The design and location of on-site effluent systems, for the construction phase as well as the longer term, to be designed and located to the satisfaction of the local government;**

v. **Compliance with the Bushfire Management Plan dated 14 December 2023 recommendations (including the Bushfire Risk Assessment & Management Report); and**

vi. **Any new crossover to Robartson Road shall be located and constructed to the satisfaction of the local government.**

Advice Notes

1 **If the development, subject of this approval, is not substantially commenced within a period of 24 months from the date of the approval, the approval will lapse and be of no further effect. For the purposes of this condition, the term "substantially commenced" has the meaning given to it in the *Planning and Development (Local Planning Schemes) Regulations 2015* as amended from time to time.**

2 **If an applicant or owner is aggrieved by this determination, there is a right of review by the State Administrative Tribunal in accordance with the *Planning and Development Act 2005* Part 14. An application must be made within 28 days of the determination.**

3 **The applicant is advised that granting of development approval does not constitute a building permit and that an application for relevant building permits must be submitted to the Shire of Merredin and be approved before any work requiring a building permit can commence on site.**

CARRIED 8/0

For: Cr McKenzie, Cr Manning, Cr Anderson, Cr Billing, Cr Crook, Cr O'Neill, Cr Simmonds, Cr Van Der Merwe
Against: Nil

PART C – CITY OF BUSSELTON

1. Declarations of Due Consideration

Any member who is not familiar with the substance of any report or other information provided for consideration at the DAP meeting must declare that fact before the meeting considers the matter.

2. Disclosure of Interests

Nil.

3. Form 1 DAP Applications

3.1 Lot 101 (1603) Wildwood Road, Yallingup – Rural Holiday Resort – DAP/23/02617

4. Form 2 DAP Applications

Nil.

5. Section 31 SAT Reconsiderations

Nil.

LOT 101 (1603) WILDWOOD ROAD, YALLINGUP– RURAL HOLIDAY RESORT

Form 1 – Responsible Authority Report
(Regulation 12)

DAP Name:	Regional DAP
Local Government Area:	City of Busselton
Applicant:	Halsall and Associates
Owner:	BLP1 Pty Ltd
Value of Development:	$17.5 million
Responsible Authority:	City of Busselton
Authorising Officer:	Joanna Wilson – Manager Planning and Development
LG Reference:	DA23/0816
DAP File No:	DAP/23/2617
Application Received Date:	20 December 2023
Report Due Date:	5 April 2024
Application Statutory Process Timeframe:	90 Days plus 23 day extension.
Attachment(s):	1. Location Plan & Site Aerial Development Plans, including; - Site plan; - Floor plans; - Elevations; and - External Colour Schedule - Portion of lot to be ceded 2. Applicant's Planning Report 3. Bushfire Management Plan 4. Environment Assessment Report 5. Site and Soil Evaluation 6. Visual Assessment Report 7. Traffic and Access Assessment 8. Schedule of Submissions 9. Bushfire Consultant Response to submissions. 10. Appendix to submission – N Smith & J White – Resident Assessment

Responsible Authority Recommendation

That the Regional DAP resolves to:

1. **Approve** DAP Application reference DAP/23/2617 and accompanying plans (A0.1 Rev 0, A0.2 Rev 1, A0.3 Rev 1, A0.4 Rev 0, A0.5 Rev 0, A0.6 Rev 0, A0.7 Rev 0, A0.8 Rev 0, A0.9 Rev 0, A0.10 Rev 0 and Figure 1) in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of the City of Busselton Local Planning Scheme No. 21, subject to the following conditions:

   General Conditions

1. This decision constitutes planning approval only and is valid for a period of four years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.

2. The development hereby approved shall be undertaken in accordance with the Approved Development Plans (enclosed), including any notes placed thereon in red, except as may be modified by the following conditions.

3. The main facilities building component of the Rural Holiday Resort, incorporating dining, bar and other related amenities is for use only by guests staying in the short stay accommodation.

Prior to Commencement of Any Works Conditions:

4. The development hereby approved, or any works required to implement the development, shall not commence until the following plans or details have been submitted to the City and have been approved in writing:

    4.1 Notification in the form of a section 70A notification, pursuant to the *Transfer of Land Act 1893* (as amended) is to be placed on the Certificates of Title of Lot advising that:

    > *This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner. The approval of the Rural Holiday Resort is conditional upon the details contained within the Bushfire Management Plan (BMP) prepared by Envision Bushfire Protection (Version V4) dated March 2024 (As Amended) and the accompanying Bushfire Emergency Evacuation Plan (BEEP).*
    >
    > *The Rural Holiday Resort hereby approved is to be made available for temporary accommodation purposes only. A single Chalet or suite shall not be occupied by any one person, family or group of persons (two persons or more) for a period exceeding 3 months (consecutively or intermittently) within any 12 month period.*

    A copy of the Certificate of Title with the section 70A notification registered against it, or Landgate lodgement receipt, is to be provided to the City.

    4.2 A Waste Management Plan.

    4.3 A Construction Management Plan.

    4.4 A schedule of the final materials, finishes and colours, which shall be generally consistent with the approved plans. The schedule shall include details of the type of materials proposed to be used, including their colour and texture.

4.5 A detailed plan which shows natural ground levels, finished ground levels and finished floor levels (in metres AHD)

4.6 The parking area(s) (minimum 68 car parking bays), primary driveway and point(s) of ingress and egress [including crossover(s) to Wildwood Road] shall be designed, constructed, sealed, drained and marked.

4.7 Details of the finished treatment of all hard surfaced areas to be used for the driveway and manoeuvring areas as shown on the Approved Development Plans

4.8 Details of stormwater and surface water drainage.

4.9 Details of the proposed vehicular access crossover and necessary road upgrades to Wildwood Road which shall be designed and constructed to the specifications and satisfaction of City of Busselton.

4.10 Details of the finished treatment of the Emergency Access Way, including upgrades to existing vehicular crossover to Wildwood Road and access leg to comply with bushfire requirements and which shall be designed and constructed to the specifications and satisfaction of City of Busselton.

4.11 Landscape Plan for the site and adjoining Wildwood Road road reserve. If the development is to be staged, the landscaping plan shall detail which portions of the landscaping is to be installed upon the completion of each stage. The Landscape plan shall address:

a) Screening between buildings on site;

b) Screening of headlight glare for adjacent properties; and

c) All planting and reticulation requirements on site.

4.12 Details of signage, including but not limited to the design, materials and levels of illumination (where applicable).

4.13 A suitably qualified Fauna Habitat expert shall:

a) Undertake a Fauna Habitat Survey to identify Black Cockatoo and Western Ringtail Possum habitat trees to be retained.

b) Provide a map and GPS co-ordinates of trees to be retained to the contractor to ensure no clearing is undertaken.

c) Trees identified for retention shall be clearly marked with flagging tape and numbered tags.

4.14 Lighting Management Plan consistent with the ‘dark sky principles’ and the requirements of *Australian Standard AS 4282—2023 Control of the obtrusive effects of outdoor lighting*, including no use of flood lights and not causing light emissions off site.

4.15 A Noise Management Plan detailing the control of all noise emanating from the property including (but not limited to) loading

docks, service bays, waste management/ bin areas, exhaust air outlets, air conditioning plants, business activities and amplified music.

4.16 A Tourism Facilities Management Plan detailing:
- 24 hour on-site management presence;
- Implementation of the approved Noise Management Plan;
- No Amplified music after 6pm;
- Advice for guests of agricultural implications;
- Operating hours of the Main Facilities Building from 7am to 10pm.
- Management of guests leaving the site;
- Complaints and conflict resolution process;

5 The development hereby approved, or any works required to implement the development, shall not commence until the following contributions have been paid to the City:

5.1 A contribution of $32,856.00 towards community facilities in the Rural Remainder precinct.

5.2 A contribution of 1% of the Estimated Cost of Development ('ECD') for the provision of public art in accordance with Local Planning Policy 4.4 Percent for Art.

Alternatively, the Applicant may make satisfactory arrangements with the City to provide public art works of the same value within the development site.

Prior to Occupation/Use of the Development Conditions:

6 The development hereby approved shall not be occupied, or used, until all plans, details or works required by Conditions 3 and 4 have been implemented; and the following conditions complied with**:**

6.1 Information has been provided to the City demonstrating that the "Prior to occupation of buildings" measures contained in Section 6 'Responsibilities for implementation and management of bushfire measures; Table 6: Responsibilities for implementation and management of the bushfire measures' of the approved *Bushfire Management Plan (BMP)* prepared by Envision Bushfire Protection (Version V4) dated March 2024 (as Amended) have been implemented.

6.2 Crossovers located and constructed to the City's specifications.

6.3 All vehicle parking, access ways, footpaths and external lighting shall be constructed to a minimum standard in accordance with the Australian Standard for Parking Facilities - Off-Street Car Parking (AS 2890.1) and shall be developed in the form and layout depicted on the approved plans to the satisfaction of the City.

6.4 Accessible car parking and access shall be provided and designed in accordance with the Australian Standard for Parking Facilities - Off-Street Car Parking for people with disabilities (AS 2890.6).

6.5 The portion of land (subject to survey) shown in the approved development plans 'Figure 1' shall be ceded as road reserve free of cost and without any payment of compensation to the Crown within 90 days of occupation of the development.

On-going Conditions:

7 The works undertaken to satisfy Conditions 3 and 5 shall be subsequently maintained for the life of the development and the following conditions shall be complied with:

7.1 The Rural Holiday Resort hereby approved is to be made available for temporary accommodation purposes only and shall not be occupied by any one person, family or group of persons (two persons or more) for a period exceeding 3 months (consecutively or intermittently) within any 12 month period.

7.2 The Bushfire Management Plan prepared by Envision Bushfire Protection (Version V4) dated March 2024 (as amended) shall be implemented and maintained in accordance with the approval details and any recommendations therein.

7.3 Landscaping and reticulation shall be maintained in accordance with the approved Landscaping Plan to the satisfaction of the City. Unless otherwise first agreed in writing, any trees or plants which, within a period of five years from first planting, are removed, die or, are assessed by the City as being seriously damaged, shall be replaced within the next available planting season with others of the same species, size and number as originally approved.

7.4 The lighting detailed within the Approved Lighting Management Plan shall be subsequently maintained for the life of the development.

7.5 A 24-hours on-site management presence shall be provided to service the Rural Holiday Resort.

Advice Notes

1. If the applicant and/or owner are aggrieved by this decision, there may also be a right of review under the provisions of Part 14 of the Planning *and Development Act 2005*. A review must be lodged with the State Administrative Tribunal, and must be lodged within 28 days of the decision being made.

2. This Decision Notice grants development approval to the development the subject of this application. It cannot be construed as granting development approval for any other structure shown on the Approved

Development Plans, which was not specifically included in this application.

3. For the purposes of this condition, the term "substantially commenced" has the meaning given to it in the *Planning and Development (Local Planning Schemes) Regulations 2015* as amended from time to time. Please note it is the responsibility of the applicant / owner to ensure that this development approval remains current and does not lapse.

4. In accordance with the provisions of the *Building Act 2011*, and *Building Regulations 2012*, an application for a building permit must be submitted to, and approval granted by the City, prior to the commencement of the development hereby permitted.

5. In accordance with the requirements of the *Local Government (Uniform Local Provisions) Regulations 1996*, you are hereby notified that any vehicle access from the land to a road or other public thoroughfare must be in accordance with the City's adopted *Crossover Policy and Vehicle Crossovers Technical Specification*.

6. In relation to the lodgement of a Section 70A, a notification can be pre-filled out via Landgate's website and needs to be submitted to the City for execution in its 'true form'- it must be an original copy with ink signatures, printed on double sides. You may either post the notification to the City or submit it in person. The Notification will be signed by the City's CEO and Mayor and have the Common Seal affixed. You will be notified once the document has been executed and may choose to come and collect or request it be posted. You must then lodge the document with Landgate (Perth office), and you will be given a receipt for the lodgement. A copy of the receipt provided by you to the City will clear your condition requiring a Section 70A notification.

7. You are advised that the 'external materials' shall comprise of 'prescribed materials' as identified by the City of Busselton *Local Planning Scheme No.*21 which are defined as follows –

> *"'external surfaces' means the external walls and cladding (if any), external doors, external door and window frames, columns, roofs, fences and any surface of a building or work visible from the exterior of a building or work; and*
>
> *'prescribed materials' means materials with dark tones or dark colouring and of low reflective quality or materials which are painted or similarly treated with dark toned or dark coloured paint or pigment of low reflective quality"*

8. The Construction Management Plan is required to address the following issues:

   a) public safety and amenity;

   b) site plan and security;

c) contact details of essential site personnel, construction period and operating hours;

d) community information, consultation and complaints management Plan;

e) noise, vibration, air and dust management;

f) dilapidation reports of nearby properties;

g) traffic, access and parking management;

h) waste management;

i) sanitary facilities;

j) earthworks, excavation, land retention/piling methods and associated matters;

k) stormwater and sediment control;

l) street tree management and protection; and

m) any other matter deemed relevant by the City.

9. The Landscape Plan should include:

a) the location and species of all trees to be removed and/or retained;

b) the location and type of screening to be provided to reduce headlight glare to neighbouring properties.

c) the location and type of fencing to be installed;

d) the location and type of reticulation to be installed;

e) the location and type of paving to be installed;

f) a plant schedule nominating species, planting distances, numbers, planting sizes, together with the anticipated height of each plant at maturity;

g) any adjoining road verges; and

h) If the development is to be completed within stages the landscaping plan shall detail which portions of the landscaping is to be installed upon the completion of each stage

10. The Waste Management Plan shall include specifications of the methods, facilities and management measures to be put in place for the storage, collection and disposal/collection of waste and rubbish generated by the development.

11. A clearing permit may be required from the Department of Water and Environment Regulation, unless the clearing is exempt in accordance with Schedule 6 of the *Environmental Protection Act 1986*. It is the applicant's responsibility to ensure that they have the necessary approvals in place before they commence development and penalties apply under the *Environmental Protection Act 1986* for clearing without a permit where an exemption does not apply. You will be required to contact the Department of Water and Environment Regulation on 9724

6109 and speak with the Native Clearing branch to confirm your obligations under this Act.

12. You are advised Agonis *flexuosa* (WA Peppermint Trees) provide key habitat for the endangered Western Ringtail Possum. The Western Ringtail Possum, and their habitat, are awarded protection under the *Biodiversity Conservation Act 2016* and you may face penalties for destroying their habitat and/or disturbing (including relocating or causing harm/death) a Western Ringtail Possum without the necessary approvals. A section 40 ministerial authorisation to take or disturb threatened fauna under the *Biodiversity Conservation Act 2016* is to be obtained prior to clearing occurring. A certified and / or registered fauna handler is required to be present during the removal of vegetation. The Handler is to provide a post clearing report to DBCA speciesandcommunities@dbca.wa.gov.au that includes the numbers of adult or juvenile western ringtail possums observed, taken or disturbed, any injuries or fatalities, and the location of the fauna after clearing has occurred.

13. You are advised that the lighting plan shall deal with sensible timed management of lighting and demonstrate adequate design and management so there will be no impact on the amenity of neighbouring properties and the area in general.

14. You are advised to have regard for the maximum light level permitted to be emitted into the relevant portion of the environment (including impact on surrounding properties (*Environmental Protection Act 1986*).

15. Please be advised that when forwarding payment for contributions and/or bonds to the City of Busselton, whether it be in person or through the mail, you will need to include a copy of this correspondence (decision on application for planning consent) for receipting purposes.

16. You are advised that the contribution fees are upgraded in line with the Consumer Price Index for Perth on 30 June each year. The fee applicable will be determined at the time of payment and may therefore vary from the quoted figure.

17. It is recommended that the owner / operator of the property undertakes suitable management practices to ensure impact or agricultural activities on the property do not negatively impact guests.

18. You are advised to ensure proposed infrastructure and site works do not create additional mosquito breeding habitat as follows:

    - Changes to topography resulting from earthworks (e.g., the installation of pipelines, footpaths, roads and the like) must prevent run-off from creating surface ponding as it may become mosquito breeding habitat.
    - Constructed water bodies (drainage infrastructure, infiltration basins and swales, settling ponds, wetlands, and the like) must be located, designed, and maintained so they do not create or

contribute to mosquito breeding.

- Constructed water bodies (drainage infrastructure, infiltration basins and swales, settling ponds, wetlands, etc) may require regular monitoring and application of herbicides and/or removal of invasive vegetation to prevent the harbourage of mosquito larvae.

19. The payment towards community facilities in the Rural Remainder precinct is required as a result of the City of Busselton Local Planning Scheme No. 21 Development Contribution Special Control Area provisions and is calculated on the basis of $1776.00 for every additional unit approved in Rural Remainder precinct (tourist accommodation units attract a 50% contribution rate). The contribution will be retained within a separate fund to be used solely for the upgrading, improving and provision of the City's community facilities consistent with a community facility plan for the precinct.

20. In relation to the provision of public art in accordance with Local Planning Policy 4.4 Percent for Art. The Estimated Cost of Development shall be to the satisfaction of the City and based on demonstrated contract values or estimates provided by a quantity surveyor, with such contract or estimates being no more than 3 months old at the time of calculation of the payment amount, and if such information is more than 3 months old, the Estimated Cost of Development shall be indexed to the general construction industry index for Western Australia.

21. It is advised that a Hotel-Restricted liquor license would be supported such that guests can be provided with mini-bar facilities within the rooms and chalets and as such this is part of the proposal. The City will not support service of alcohol in any form to persons not staying as guests in the Rural Holiday Resort.

22. Main Roads WA advise that the existing access / gates and crossovers to Caves Road has not been approved, should be removed and the road verge reinstated.

23. Department of Planning Lands and Heritage advises that the landowner should submit an application to purchase UCL PIN 534836 for subsequent conveyance and amalgamation into adjoining freehold Lot 101 on D84031 pursuant to section 87 of the *Land Administration Act 1997.*

Details: outline of development application

Region Scheme	N/A
Region Scheme - Zone/Reserve	N/A
Local Planning Scheme	City of Busselton Local Planning Scheme No. 21
Local Planning Scheme - Zone/Reserve	Viticulture and Tourism
Structure Plan/Precinct Plan	N/A
Structure Plan/Precinct Plan - Land Use Designation	N/A
Use Class and permissibility:	Rural Holiday Resort – Discretionary ("D")
Lot Size:	42.544 Ha
Existing Land Use:	Agriculture - Intensive
State Heritage Register	No
Local Heritage	☒ N/A ☐ Heritage List ☐ Heritage Area
Design Review	☒ N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	Yes
Swan River Trust Area	No

Proposal:

The proposed development is for a Rural Holiday Resort and will consist of 28 Hotel style suites, 4 chalets, a main facilities building, workers accommodation, and a new single house at Lot 101 (No. 1603) Wildwood Road, Yallingup (the 'Site').

The existing dwelling located in the central west is to be demolished and replaced with the main facilities building which will be the centre of a rural tourist resort and the single house replacement is proposed to the north. The main facilities building will provide dining, bar and other related amenities for guests only. To the south and north of this building are the hotel style suites (total of 28 rooms) with 20 of these rooms within blocks of four all connected by walkway directly across the contour to the main facilities building. Additionally to the south-east of the main facilities building are a further eight (8) hotel rooms that will be accessed via a driveway and parking network to be located behind the accommodation.

In addition to the above four (4) chalets are proposed, two (2) at the northern end of the development area and two (2) closer to the dam, providing an alternate experience for guests. Chalets designs are of a size that will accommodate families.

Background:

The applicant seeks approval for a Rural Holiday Resort which will be located in a portion of the site which was previously used for viticulture purposes but subsequently grape vines have been removed and the area is generally vacant.

The Site is zoned 'Viticulture and Tourism' and is within a 'Landscape Value' Special Control Area under the City's *Local Planning Scheme No. 21* ('Scheme'). The land uses 'Rural Holiday Resort' is a discretionary ("D") land use within the 'Viticulture and Tourism' zone under the Scheme. The Site is 'bushfire prone' as designated by an Order made by the Fire and Emergency Services Commissioner.

The site is principally used for viticultural purposes with vineyards occupying most of the site. It is located approximately 300m east of the junction of Wildwood Rd and Caves Rd in the locality of Yallingup in the western parts of the City of Busselton. The site is approximately 3.5km south from the township of Yallingup and 2.15km southeast from Smiths Beach tourist node.

The subject site is irregular in shape and technically made up of two parts with the bulk of the land within the southern part being 42.544ha and a small triangular portion in the far north being 4541m². These two parts are technically severed by as closed road reserve of approx. 2632m².

There is approx. 18ha of vineyard which is a significant vineyard in the context of the area and Margaret River Wine Region. The viticultural development on the land is supported by three dams which have been previously established along the creek line system (Gunyulgup Brook) which traverses the site from south to north through the central east.

Natural vegetation remains on the property particularly along the creek line system and a notable stand in the central south. There is vegetation on the land which appears to be planted, particularly a wind row near the existing main dwelling and plantation of what appears to be Tasmanian Blue Gum in the southwest. There are pockets of trees which have been planted including some of the vegetation around the larger dam. The notable area of native vegetation is in the central south which is situated immediately to the west of the existing small dwelling and south of the existing larger dwelling.

The characteristics of the land are such that a valley system dominates the central and eastern parts of the site with contours ranging from 35m in the far eastern part of the site up to a high point in the southwest of 55m AHD. There is a ridge immediately to the west of the existing main dwelling and a decrease in contour from this point north-westward to Caves Road. This drop in contour and ridge in the western parts provides that the central and eastern parts of the site are not visible from Caves Road.

Legislation and Policy:

<u>Legislation</u>

- *Planning and Development Act 2005*
- *Planning and Development (Local Planning Schemes) Regulations 2015* ('Regulations')
- City of Busselton *Local Planning Scheme No. 21* ('Scheme')
    - Clause 3.2 Zone Objectives – Viticulture and Tourism zone

- Clause 4.43 Development Along Main or Arterial Roads
- Clause 4.8 Height of Buildings
- Clause 5.4 Landscape Value Area
- Clause 5.12 Development Contribution Areas

State Government Policies

- *State Planning Policy 3.7 Planning in Bushfire Prone Areas* ('SPP3.7')
- *Guidelines for Planning in Bushfire Prone Areas* ('Guidelines')
- *State Planning Policy 6.1 Leeuwin Naturaliste Ridge* ('SPP6.1')

Local Policies

- *Local Planning Policy 2.1 Car Parking*
- *Local Planning Policy 2.4 Rural Tourist Accommodation*
- *Local Planning Policy 3.1 Reflective Building Materials*
- *Local Planning Policy 4.2 Bushfire*
- *Local Planning Policy 4.4 Percent for Art*
- *Local Planning Policy 4.6 Caves Road Visual Management*
- *Local Planning Policy 6.1 Stormwater Management*

Consultation:

Public Consultation

Consultation on the proposed development was undertaken in the following manner:

- letters sent directly to 40 surrounding landowner on 10 January 2024; and
- three signs erected on-site; and
- notification placed in the local paper on 10 January 2024; and
- development plans and information provided by the applicant were made available for public viewing on the City's website via 'Your Say'.

Consultation on the proposal concluded on 7 February 2024 with 57 public submissions received, 54 were opposed to the development and 3 were in favour of the proposal. The concerns raised in the submissions and the City's response are included in the table below.

Issue Raised	**Officer's comments**
Scale of development.	The application has been assessed against the Rural Tourism Local Planning Policy and the cumulative number of chalets and guest suites are consistent with the density standard within the Policy. 1 chalet per 3 hectare = 12 Ha 1 guest suite per hectare = 28 Ha.

	The proposal is in keeping with the objectives of the Viticulture and Tourism zone under the Scheme.
Visual impact on surrounding rural properties.	There is no requirement to maintain properties in a natural state. It is considered that there is adequate separation between the proposal and neighbouring properties. The proposal generally complies with requirements of all policies and has attempted to mitigate potential impacts of the development through landscaping, siting of development and colours and materials.
Noise impacts in regard to use of main facilities building.	There has been no indication in the proposal that main facilities building is to be utilised for any purpose other than guests of the resort. It is noted that a 'Reception Centre' is a separate use and not subject of this approval. In this regard conditions of approval have been included to address this.
Lighting Impacts	Any lighting impact will be addressed through the submission of a lighting plan to be submitted prior to construction and is included as a condition of approval.
Traffic and Access	Concern have been raised regarding increased traffic and access to the site. City officers have reviewed the submitted (Transport Impact Statement (TIS) and undertaken site visits and determined that the proposed location of the crossover is the optimal location along Wild Road for access to this site. However, trees along Wildwood Road will need to be removed to allow for improved site lines from the accessway. Concern surrounding vehicle headlights impacting a house in close proximity of this crossover will be required to be mitigated through design of driveway and landscaping. City Officers do not foresee any issue with proposed vehicle movement numbers related to the proposal.

Environmental Impact	The applicant has submitted an Environmental report and this has been reviewed by City Officers. Minimal removal of vegetation is required for the development to be undertaken. Any removal of vegetation will require a clearing permit from DWER to be undertaken. A fauna habitat survey and tree retention plan is condition and an advice note included to ensure fauna spotters are involved at the time of any clearing.
Health Impact from Winery operations	It is the owner's responsibility to ensure appropriate measures are undertaken to protect guests from any potential impacts from the active winery on site. Advice notes and Tourism facility management plan will address this.

Copies of all community submissions are provided in Attachment 8.

Referrals/consultation with Government/Service Agencies

In addition to the above mentioned community consultation, the application was referred to the following State Government agencies;

- Main Roads WA;
- Department of Health (DoH)
- Department of Planning Lands and Heritage (DPLH);
- Department of Fire and Emergency Services (DFES);
- Department of Water and Environment Regulations (DWER);
- Department of Biodiversity, Conservation and Attractions (DBCA); and

Main Roads WA, DFES, DoH expressed concerns regarding the proposed development in their responses. An outline of the concerns raised by these Agencies, as well as the City's response to these concerns, are provided below.

Copies of all Agency submissions are provided in the Schedule of submissions at Attachment 8.

Main Roads WA

The development initially proposed a secondary access, in the form of an Emergency Access Way ('EAW'), to Caves Road and primary and agricultural workers access from Wildwood Road, resulting in a total number of 3 access points to the site.

Mains Roads WA (MRWA) have advised that they are not willing to support any access to Caves Road from the Site, even if used only for emergency access purposes.

MRWA suggested that the two access points from Wildwood were sufficient and while the Caves Road crossover is existing it has never been approved by MRWA, should be closed off and the verge reinstated. MRWA cited that the access point is not considered to be safe and formalising the access may be detrimental due to close proximity of a neighbouring crossover and the Whittle Road intersection.

In response the applicant has amended the BMP to utilise the two accesses from Wildwood Road and advice note has been included regarding the removal of the crossover to Caves Road.

Department of Fire and Emergency Services (DFES)

The BMP and supporting documentation was referred to DFES. A response was received on 20 February 2024, identifying that the development design has not demonstrated compliance with the following elements of the *Guidelines for Planning in Bushfire Prone Areas*:

- Element 5: Vulnerable Tourism Land Uses.

DFES have advised that amendments were required in this regard. City Officers referred this to the applicant for review. Subsequently the applicant's Bushfire Consultant provided a response to the issues raised by DFES (Refer to Attachment 9). This is discussed in the 'Planning Assessment' below.

Department of Health (DoH)

DoH comments regarding the potential impacts and health risks arising from the encroachment of incompatible land uses and the Environmental Protection Authority guideline "Separation Distances between Industrial and Sensitive Land Uses" (2005) are noted, but the intent of policy is to ensure that agricultural practices and separation from sensitive land uses applies to uses on surrounding land not within the property itself.

There are a number of developments approved within the City where sensitive land uses are adjacent to agricultural practices on the property. The on-site agricultural management practices of the landowner will need to take into account the guests on site including when applying agricultural fertilisers etc. This is an on-site management matter and the responsibility of the owner.

Management of the site will be addressed in the Tourism Facilities Management Plan, included as a condition of approval along with an advice note in regard to this issue.

Planning Assessment:

The proposal has been assessed against all the relevant legislative requirements of the Scheme, State and Local Planning Policies outlined in the Legislation and Policy section of this report. The following matters have been identified as key considerations for the determination of this application:

- Bushfire;
- Visual Impact;
- Access; and
- Noise.

Bushfire

Due to the nature of the development, being for short stay accommodation, the proposal is considered to be a "Vulnerable" land use under SPP 3.7 and the Guidelines. The applicant has, therefore, submitted a Bushfire Management Plan, including a Bushfire Emergency Evacuation Plan, prepared by an accredited Level 3 Bushfire Planning Practitioner. The BMP has been referred to DFES for review in accordance with SPP 3.7.

The Site is accessible from Wildwood Road and in close proximity to access on Caves Road, which is a major road, providing access and egress from the site.

In their submission responses, DFES identified two key issues:

- Compliance of with Element 5 Vulnerable Tourism Land Uses - A5.7c & A5.8.1b of the Guidelines.

These two issues are discussed in detail below.

City officers are satisfied that the proposal meets the requirements of SPP3.7, the Position Statement and Guidelines as demonstrated within the BMP, subject to achieving the provision of a second creek crossing on the site and an emergency access point onto Caves Road.

Asset Protection Zone

DFES advised that the first concern was with proposed the APZ proposed did not meet the necessary requirements of the Guidelines. Of particular concern was that a 33m APZ should be provided for Rooms block 6 and the farm workers/staff accommodation in relation to Vegetation Plot 5 (downslope 5-10 degrees). DFES believed it was unclear if a 33m APZ is provided to all required areas of Chalet 3b, as a 21m APZ distance points towards an area of the 5-10 degree downslope 'Class A Forest'. DFES requested that the applicant provide further detail to justify their assessment.

The Bushfire consultant has provided a response and explanation (refer to attachment 9) with regard to the BPZ calculation outlining the process undertaken and justifying the calculation on conclusions. City Officers are satisfied with approach and concur with the Bushfire Consultant explanation and proposed APZs, as such no amendment is required.

Vehicular Access

DFES advised that conflicting statements are provided in the BMP, with figure Ex1 stating that vehicle access will comply with Table 6 column 4 requirements, however page 45 confirms that the gradients of the main access are not compliant (DFES notes a 14m drop over 100m to the north of the second dwelling house present on page 3 of the development plans). And goes on to say that the BMP has not clearly stated whether a Performance Principle Based Solution (PPBS) or other alternative approach is being applied to demonstrate compliance with the performance principle for vehicular access for other short-term accommodation or how the risk can be managed. DFES recommended that the BMP should be updated to clearly state non-compliance with the acceptable solutions and set out that a PPBS or an alternative approach is being provided.

DFES also noted that the BMP should be updated to ensure that all grades are provided in percentages (as provided in table 6) rather than degrees, to avoid any confusion, as mixing the use of degrees and percentages is misleading.

With regard to the change to the grades the Bushfire Consultant has made these amendments. However, with regard to the conflicting statements and PPBS Page 45 describes the predevelopment gradient and the existing agriculture access. The same section speaks of the proposed access alignment to achieve an average gradient across the access of 6 degrees. The Bushfire consultant stated that Figure EX1 is correct and reflect the alignment gradient determined by the fire engineer following specific route gradient survey. The BMP cover sheet, summary and compliance with the Bushfire Protection Criteria, in section 5 has demonstrated compliance at completion with the Acceptable solutions.

Upon review of the BMP and justification City Officers consider the BMP sufficient and complies with the requirements of the Guidelines, as such no amendment is required.

Visual Impact

State Planning Policy 6.1 Leeuwin-Naturaliste Ridge

Item	Requirement	Proposal	Compliance
Overall Objectives	To achieve the Vision, the Overall Objectives of the LNRSPP are to— • conserve and enhance the special benefits arising from landscape elements that form the fabric of the region; • respect and conserve its outstanding natural and cultural heritage and environmental values; • cater for population growth consistent with the objectives of the LNRSPP and provide a range of settlement options located to enhance the economic, social and environmental functions, while promoting quality and innovation in urban design and built form; • protect agricultural land for its economic,	Refer to planning assessment below	Complies.

	landscape, tourism and social values; • encourage a mix of compatible land uses while separating conflicting land uses; facilitate a robust, diverse and sustainable economy; and • foster a sense of community and creativity; for the benefit of all residents and visitors and for future generations.		
Landscape Classes Map classification	Travel Route Corridors within Rural Landscape Significance	Refer to planning assessment below.	Complies.
Relevant Policy Statements:	PS 3.3 Development will have due regard for the landscape integrity and value of Ridge backdrops when viewed from the coastline, bays or Travel Route Corridors.	Refer to planning assessment below.	Complies.

Local Planning Scheme

Item	**Requirement**	**Proposal**	**Compliance**
Clause 4.42 Development Along Main Or Arterial Roads	Development which is likely to contribute to ribbon development, the spread of town centres, or otherwise detrimentally impact the efficiency of or the rural and natural ambience of main or arterial roads will not be supported by the local government.	Refer to planning assessment below.	Complies.

The Site has frontage to Caves Road and there are a number of other developments along this section of the road that are visible from Caves Road. This proposal is not visible from Caves Road and while a number of submissions have been received regarding visual impacts, the policies in this regard are focussed on impact on the tourist routes, particularly Caves Road.

The applicant has minimised the visual impact of the development when viewed from neighbouring properties by positioning the development away from the top of the

ridgelines, proposing only single storey buildings and proposing colours and material that are sympathetic to the amenity of the surrounding area.

The visual impact of the proposal from Caves Road and Wildwood Road is minimal as the existing vegetation along Wildwood Road and the topography of the site provides significant screening of the development and the development will not be seen from Caves Road. It is considered that the development in its current form is consistent with the requirements of relevant policies in regard to visual impact and is recommended for support.

Access

Numerous submissions were received regarding the proposed primary access to Wildwood Road at the north of the site. The main concern raised was the impact of traffic and lights on the property opposite, as the dwelling onsite is in close proximity to the proposed crossover.

City Officers undertook a site visit to determine the viability of the access and potential impacts to the neighbouring property. Upon review of the proposed access and existing access (to remain as EAW), it was determined that the proposed location was in fact the best location to enter the site along Wildwood Road. While the TIS states that the location only meets minimum roads safety standards, it is the safest point along the road in respect to sight lines, particularly for the increased volume of traffic to be attracted to the site for the proposed use. It was noted that some trees may need to be removed to help ensure the best possible sight lines and road safety standards are provided, this was also raised in the TIS and City Officers concur with this finding.

With regards to impacts on the neighbouring property, City Officers considered this can be mitigated. The proposed location is not directly across from the dwelling and as such will not directly impact the dwelling. It is considered viable to have some screening inside the property through driveway design and landscaping to reduce impacts on the neighbouring property and this can be addressed through condition requirements of a landscaping plan.

City Officers also reviewed the existing access on Caves Road as this appeared to be a viable alternative to the Wildwood Road access. Officers discussed this matter with MRWA, however the access was not supported by MRWA due to safety concerns about sight lines, proximity to neighbouring crossovers and road intersection. Ultimately it was requested by MRWA that the crossover be closed and reinstated by the landowner.

In addition to the above City Officers also noted that the approximate area of private property indicated in the image below (Figure 1) extends over the constructed Wildwood Road and arrangement should be made to transfer the area of land to the Crown free of charge to incorporate it into the road reserve, so that there is a consistent minimum 6m wide verge along the Wildwood Road frontage.

The applicant has advised that they agree that the land should be ceded as this would help improve the safety for the access from Wildwood Road to the Rural Holiday Resort. It was requested that this be conditioned with a reasonable time frame to allow all works to be achieved in a timely matter and as such City Officers have recommended a timeframe for ceding to be undertaken within 90 days of the proposal operating.



Figure 1

Noise

Concerns arose from the public consultation process with regard to noise, particularly with regard to the main facilities building. The surrounding residents were concerned that the proposal was going to be utilised for public events such as weddings and live music events, and not limited for guests use only.

It should be noted that the uses in question with regard to the main facilities building would constitute a 'Reception Centre' use under the City of Busselton Local Planning Scheme No. 21. The application states that this is not the case and that this type of use does not form part of the application, this was rereinforced during discussions with the applicant. The main facilities building is for guest use only to provide a restaurant and bar facilities for the guest of the resort, no public access is proposed. The applicant report even states that this will not be a 'Reception Centre' and that it is for exclusive use of the resort guests.

Therefore a 'Reception Centre' does not form part of the application the use is not consideration of this application. However, while it is not to be used as a 'Reception Centre' there is still potential for noise impacts on neighbouring properties, as such the inclusion of conditions around Noise Management Plan and Tourism Facilities Management Plan have been included and are intended to include restrictions of amplified music and limited operation times for the main facilities building to reduce the impacts to the rural amenity.

Conclusion:

The proposed development is considered to meet the requirements of the Scheme and relevant planning policies, with the exception of those aspects outlined above.

The City is satisfied that the proposed 'Rural Holiday Resort' within the 'Viticulture and Tourism' zone is appropriate to support and it is therefore recommended that the application be approved, subject to conditions.

Alternatives

In accordance with clause 17(4) of the Regulations, the DAP may determine an application by either approving the application with or without conditions or refusing the application.

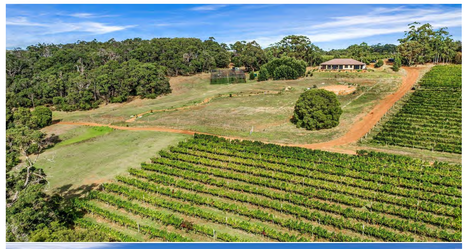
As a result, the DAP can amend or delete the conditions of approval recommended by the City and/or include additional conditions of approval should they be considered necessary to ensure the proposal complies with the relevant planning framework.

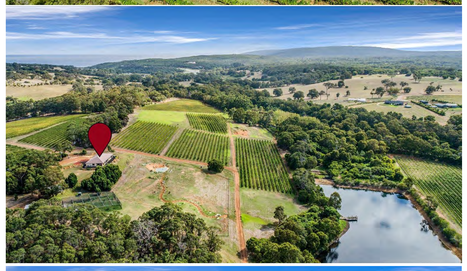
Should the DAP resolve to refuse the application, this determination needs to be made based on valid planning considerations as outlined under clause 67 of the Regulations and as set out in the *Development Assessment Panel Practice Notes: Making Good Planning Decisions.*

However, as outlined in the Planning Assessment and Officer Comments sections above, the City considers that the development meets the relevant provisions and/or objectives of the applicable planning framework and the application is therefore recommended for approval.

If the applicant is aggrieved by the decision or any aspect of the decision, the applicant has a right of review in accordance with the *State Administrative Tribunal Act 2004* and the Planning and Development Act 2005.

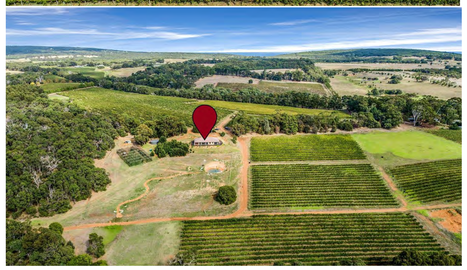


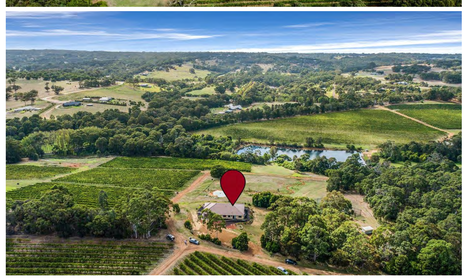






















Harley Dykstra
PLANNING & SURVEY SOLUTIONS

DISCLAIMER
This plan has been prepared for Boundary Lane Pty Ltd from a combination of field survey and existing records for the purpose of showing the physical features of the land to assist in designing future development. It should not be used for any other purpose.

The SDA boundaries shown hereon were not verified or marked at the time of survey but are derived from the SCDB (July 2021). They are estimated to be accurate only to +/- 0.3m. This plan should not be used for the setting out of boundary, or to prescribed set-backs, without further boundary survey.

AHD connection made to SSM BUSSELTON 47 by VRS GNSS observations.

Dwellings shown on plan have been surveyed by conventional methods. All other structures have been digitised from aerial photography (drone survey). All fence lines, alveyards and vegetated areas have been been digitised from aerial photography (drone survey).

Underground services shown on this drawing have been plotted from service authority records obtained from 'Before You Dig Australia' or a similar source. Unless indicated otherwise only surface features have been located by survey.

Before starting any demolition, excavation or construction on the site, the relevant person should make an independent and updated enquiry of 'Before You Dig Australia' and any relevant service providers to ascertain the existence of further services (if any) and the accurate location of those not surveyed at the time of preparing this plan (or data).

No responsibility can be accepted by Harley Dykstra for any damage caused to any underground service or any loss or injury so suffered if enquiries and verification have not been completed in accordance with this note.

Contractors to verify all survey control marks to be correct (by field checks) prior to utilisation for construction purposes.

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rev	details	approved	date
A	Original drawing	MS	29/07/22

survey	PH 11/07/22 MS 27/07/22
cad file	23336-01A.dgn
drawn	NP 27/07/22
checked	MS 29/07/22
horiz datum	MRC94
level datum	AHD
scale at A1	1 : 2000
all distances are in metres	0 10 20 30 40 50

plan type
FEATURE & CONTOUR SURVEY

client
Boundary Lane Pty Ltd

description
Lot 101 on Diagram 84031
1603 Wildwood Road
YALLINGUP

drawing no
23336-01A

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REV.	DATE	ITEM	BY
0	20/11/23	Issued for Development Application	VD

DEVELOPMENT APPLICATION

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architects board of WA registration > 2431 acn > 079 710 982

PROJECT
PROPOSED
TOURIST DEVELOPMENT
Lot 101 (No. 1603)
Wildwood Rd, Yallingup WA

DRAWING.
SITE SURVEY

STATUS / CHECKED.						DRAWN BY.	SCALE.
DA	T	CD	BP	FC		VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.1	0



1 PROPOSED SITE PLAN
A1 - 1:2000

NOTES.

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LEGEND

- NEW SEALED BITUMEN DRIVEWAY
- EXISTING AGRICULTURAL GRAVEL ACCESS DRIVEWAY
- NEW MANAGED LANDSCAPED AREA
- MODIFIED SOIL CUT/FILL
- STONE PITCH BANKING
- EXISTING VINEYARD
- EXISTING TREE LAND VEGETATION
- EXISTING WALKTRAILS
- EXISTING TREE LAND VEGETATION OUTLINE

REV.	DATE.	ITEM.	BY.
1	25/03/24	Driveway Code Revision	VD
0	20/11/23	Issued for Development Application	VD

DEVELOPMENT APPLICATION

BROOKING DESIGN ARCHITECTS

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PROJECT.

PROPOSED TOURIST DEVELOPMENT

Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING.

PROPOSED SITE PLAN

STATUS / CHECKED.					DRAWN BY.	SCALE.
DA	T	CD	BP	FC	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.2	1

Member Australian Institute of Architects | Design Institute of Australia



1 **PROPOSED GROUND FLOOR SITE PLAN**
A0 - 1:500

DEVELOPMENT DATA	QTY	GFA
GFA CALCULATION		
MAIN FACILITIES BUILDING	**1**	
INTERNAL AREAS		976.70 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PARTIAL OPEN SPACES WITHIN)		275.60 m²
EXTERNAL UNCOVERED AREAS		204.80m²
TOT. FACILITIES BUILDING GFA (INTERNAL + EXTERNAL COVERED AREAS)		**1252.30m²**

DEVELOPMENT DATA	QTY	GFA
GFA CALCULATION		
ROOMS TYPE A	**14**	
INTERNAL AREAS		2338.00 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PARTIAL OPEN SPACES WITHIN)		936.60 m²
TOT. ROOMS TYPE A GFA (INTERNAL + EXTERNAL COVERED AREAS)		**3274.60 m²**
ROOMS TYPE B	**14**	
INTERNAL AREAS		2179.80 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PARTIAL OPEN SPACES WITHIN)		889.00 m²
TOT. ROOMS TYPE B GFA (INTERNAL + EXTERNAL COVERED AREAS)		**3068.80 m²**
TOTAL ROOMS	**24**	
INTERNAL AREAS		4517.80 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PARTIAL OPEN SPACES WITHIN)		1825.60 m²
TOT. ROOMS GFA (INTERNAL + EXTERNAL COVERED AREAS)		**6343.40 m²**

DEVELOPMENT DATA	QTY	GFA
GFA CALCULATION		
CHALET TYPE A	**2**	
INTERNAL AREAS		569.60 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PARTIAL OPEN SPACES WITHIN)		314.00 m²
TOT. CHALET TYPE A GFA (INTERNAL + EXTERNAL COVERED AREAS)		**883.60m²**
UNCOVERED TERRACES		109.20m²
CHALET TYPE B	**2**	
INTERNAL AREAS		561.40 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PARTIAL OPEN SPACES WITHIN)		152.00 m²
TOT. CHALET TYPE B GFA (INTERNAL + EXTERNAL COVERED AREAS)		**713.40m²**
UNCOVERED TERRACES		105.00m²
TOTAL CHALETS	**4**	
INTERNAL AREAS		1131.00 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PARTIAL OPEN SPACES WITHIN)		466.00 m²
TOT. CHALET GFA (INTERNAL + EXTERNAL COVERED AREAS)		**1597.00m²**
UNCOVERED TERRACES		214.20m²

DEVELOPMENT DATA	QTY	GFA
GFA CALCULATION		
SECOND DWELLING HOUSE	**1**	
INTERNAL AREAS		419.80 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PARTIAL OPEN SPACES WITHIN)		197.20 m²
TOT. SECOND DWELLIG HOUSE GFA (INTERNAL + EXTERNAL COVERED AREAS)		**617.00m²**
UNCOVERED TERRACES		120.00m²
FARMWORKERS/STAFF ACCOMODATION	**1**	
INTERNAL AREAS		149.70 m²
EXTERNAL COVERED AREAS		188.60 m²
TOT. FARMWORKERS/STAFF ACCOMODATION GFA (INTERNAL + EXTERNAL COVERED AREAS)		**388.30m²**

DEVELOPMENT DATA		
PARKING	**PARKING**	**ACCESSIBLE PARKING**
MAIN FACILITIES BUILDING + ROOMS	38	8
CHALETS A	12	1
CHALETS B	8	1
SECOND DWELLING HOUSE	3	
FARMWORKERS/STAFF ACCOMODATION	6	1
	67	**11**
TOT. PARKING	**78**	

LEGEND

- NEW SEALED BITUMEN DRIVEWAY
- EXISTING AGRICULTURAL GRAVEL ACCESS DRIVEWAY
- NEW MANAGED LANDSCAPED AREA
- MODIFIED SOIL CUT/FILL
- STONE PITCH BANKING
- EXISTING VINEYARD
- EXISTING TREE LAND VEGETATION
- EXISTING WALKTRAILS
- EXISTING TREE LAND VEGETATION OUTLINE
- ASSET PROTECTION ZONE
- **RWT:** 170.000L RAINWATER TANKS 10M DIAMETER, 2.18M HIGH
- NEW EFFLUENT DISPOSAL DRIP IRRIGATION FIELD
- R — ROOM
- C — CHALET
- S — STAFF ACCOMODATION
- ENTRANCE

REV.	DATE	ITEM	BY
1	25/03/24	Driveway Code Revision	VD
0	20/11/23	Issued for Development Application	VD

DEVELOPMENT APPLICATION

BROOKING DESIGN ARCHITECTS PTY. LTD.
16 edward street cottesloe **wa 6011** western australia
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web > **www.brookingdesign.com** email > **tom@brookingdesign.com**
architects board of WA registration > **2431** acn > 079 710 982

PROJECT.
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING
PROPOSED GROUND FLOOR SITE PLAN

STATUS / CHECKED.					DRAWN BY:	SCALE:
DA	T	CD	BP	FC	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.3	1

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NOTE:
VINEYARD VEGETATION AND MANAGED LANDSCAPE NOT REPRESENTED IN 3D FOR CLARITY PURPOSE

NOTES.
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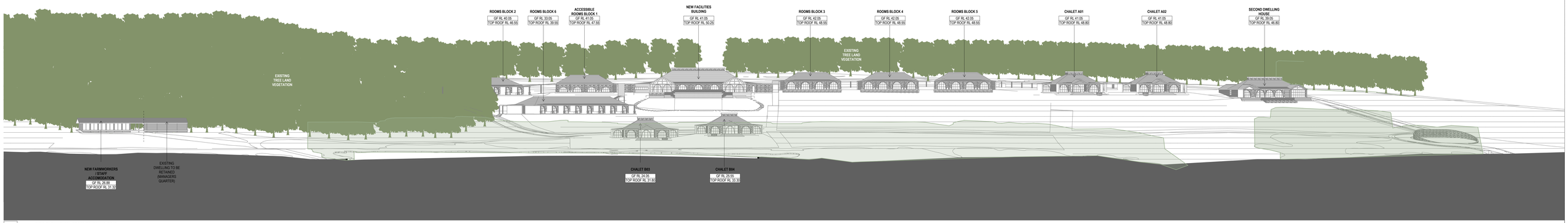
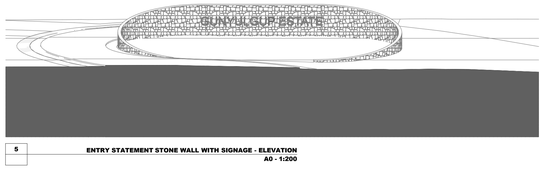


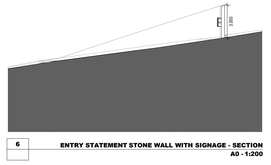
1 **SITE ELEVATION FROM EXISTING DAM**
A0 - 1:500



2 **SITE ELEVATION FROM WILDWOOD ROAD**
A0 - 1:500



5 **ENTRY STATEMENT STONE WALL WITH SIGNAGE - ELEVATION**
A0 - 1:200



6 **ENTRY STATEMENT STONE WALL WITH SIGNAGE - SECTION**
A0 - 1:200

REV.	DATE	ITEM	BY
0	20/11/23	Issued for Development Application	VD

DEVELOPMENT APPLICATION

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PROJECT
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING
PROPOSED SITE ELEVATIONS&SECTIONS

STATUS / CHECKED						DRAWN BY.	SCALE
DA	T	CD	BP	FC		VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.4	0

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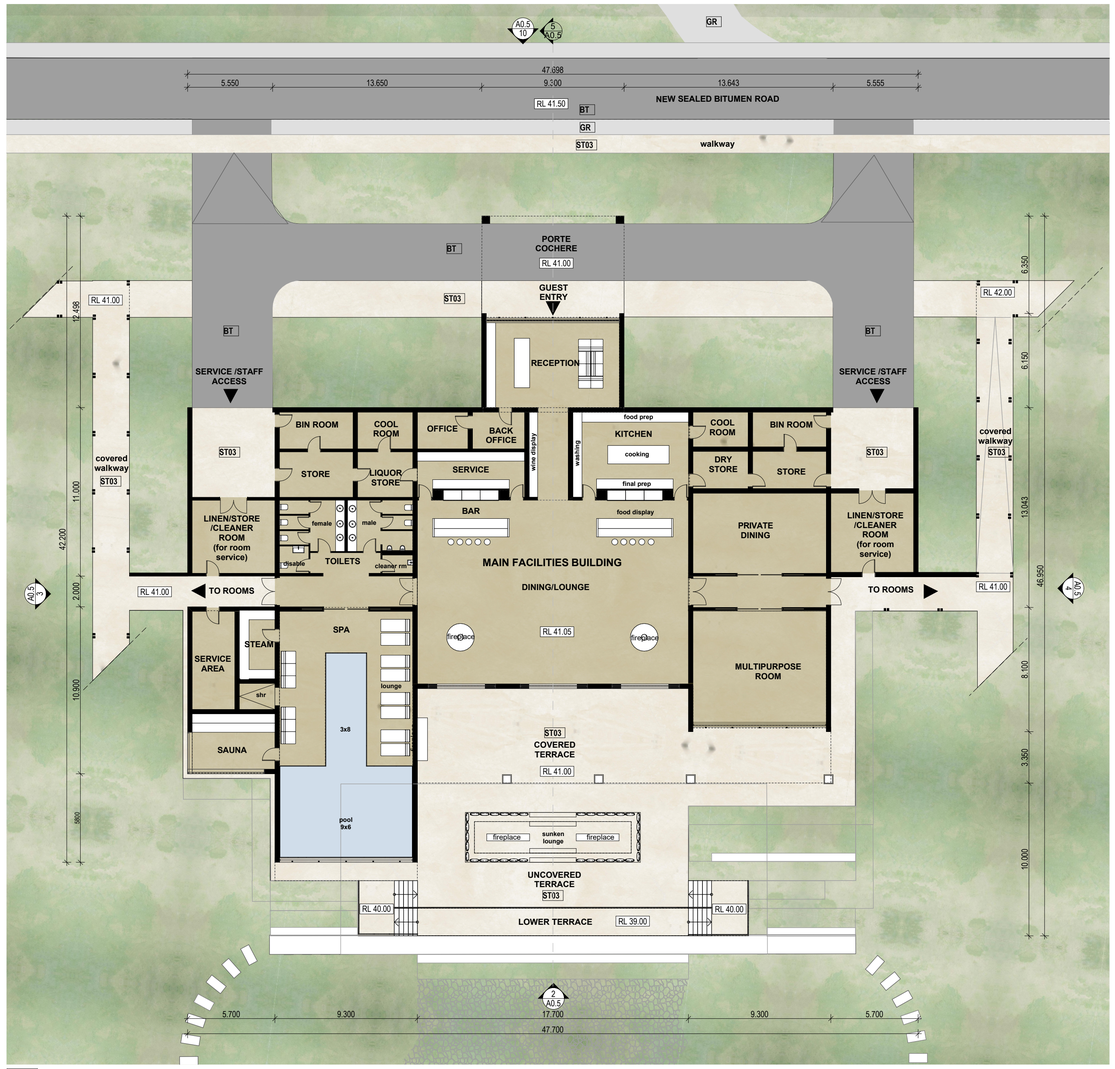
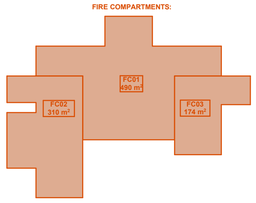


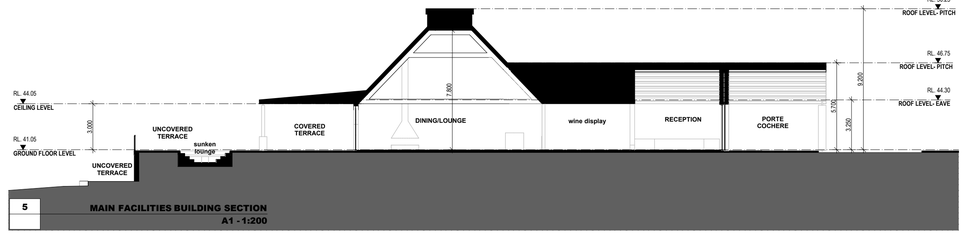
1 **MAIN FACILITIES BUILDING FLOOR PLAN**
A1 -1:200



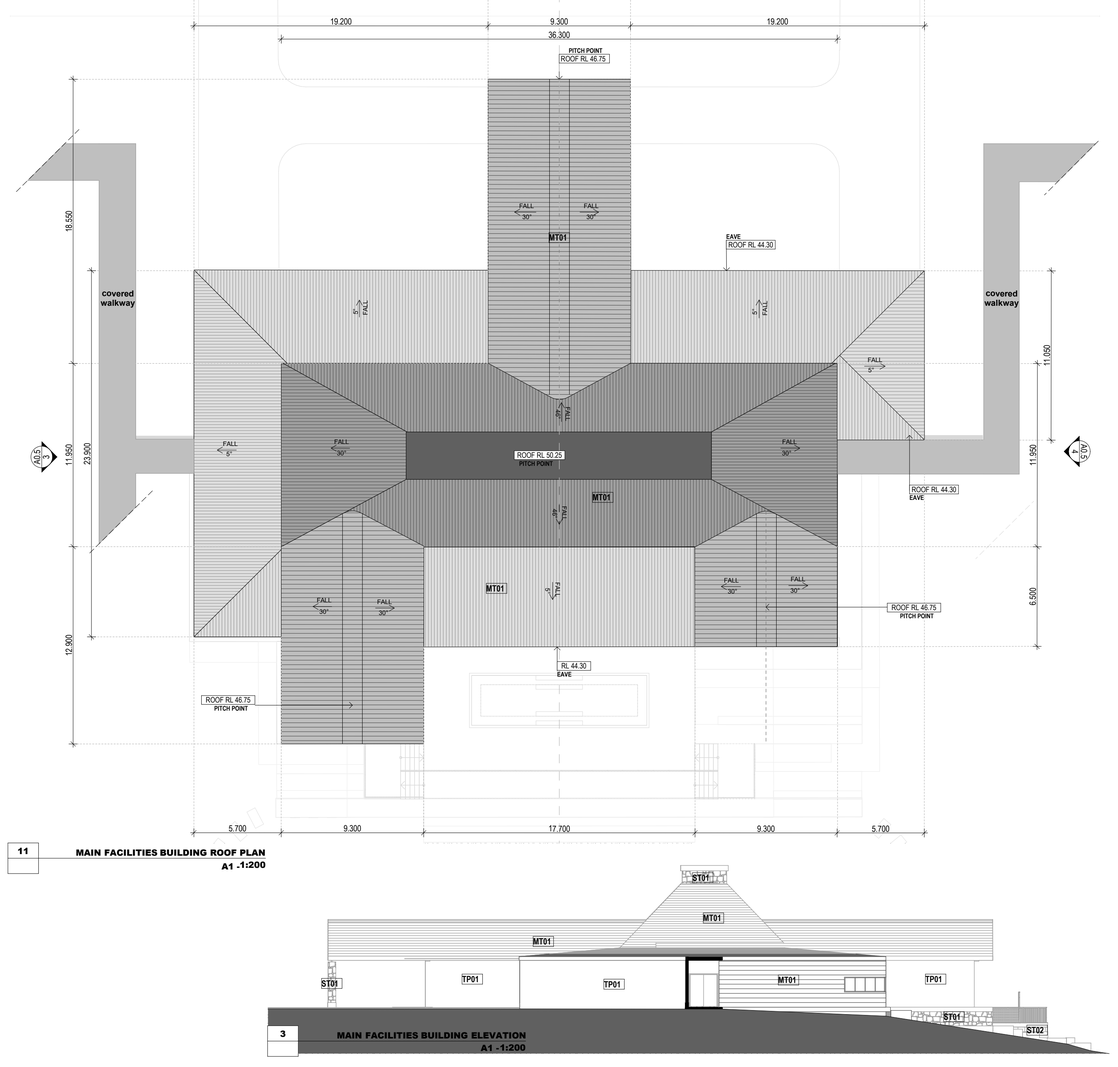
DEVELOPMENT DATA	
GFA CALCULATION	
MAIN FACILITIES BUILDING	
INTERNAL AREAS	976.70 m²
EXTERNAL COVERED AREAS (covered terrace, verandah, roof area, entrance porch)	275.60 m²
TOT. MAIN FACILITIES BUILDING GFA (INTERNAL + EXTERNAL COVERED AREAS)	**1252.30m²**
EXTERNAL UNCOVERED AREAS	204.80m²
	1457.10 m²

FIRE COMPARTMENTS:

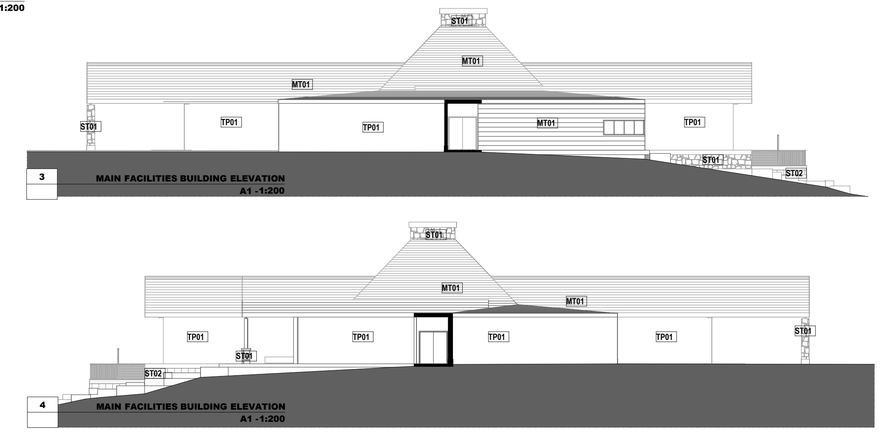




5 **MAIN FACILITIES BUILDING SECTION**
A1 -1:200



11 **MAIN FACILITIES BUILDING ROOF PLAN**
A1 .1:200



3 **MAIN FACILITIES BUILDING ELEVATION**
A1 -1:200

4 **MAIN FACILITIES BUILDING ELEVATION**
A1 -1:200

10 **MAIN FACILITIES BUILDING ELEVATION**
A1 - 1:200

2 **MAIN FACILITIES BUILDING ELEVATION**
A1 -1:200

NOTES.

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FINISHES SCHEDULE

RN01	CEMENT RENDER	
ST01	RANDOM PATTERN STONEWORK	
ST02	STONE- GABIAN WALL	
ST03	BLUESTONE EXTERNAL FLOORING	
MT01	STANDING SEAM COLORBOND ROOFING	
TP01	ROUGH SAWN TIMBER CLADDING	
TP02	TIMBER WEATHERBOARDS PAINT FINISH	

REV.	DATE.	ITEM.	BY.
0	20/11/23	Issued for Development Application	VD

DEVELOPMENT APPLICATION

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PROJECT.
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING.
PROPOSED MAIN FACILITIES BUILDING

STATUS / CHECKED.					DRAWN BY.	SCALE.
DA	T	CD	BP	FC	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.5	0

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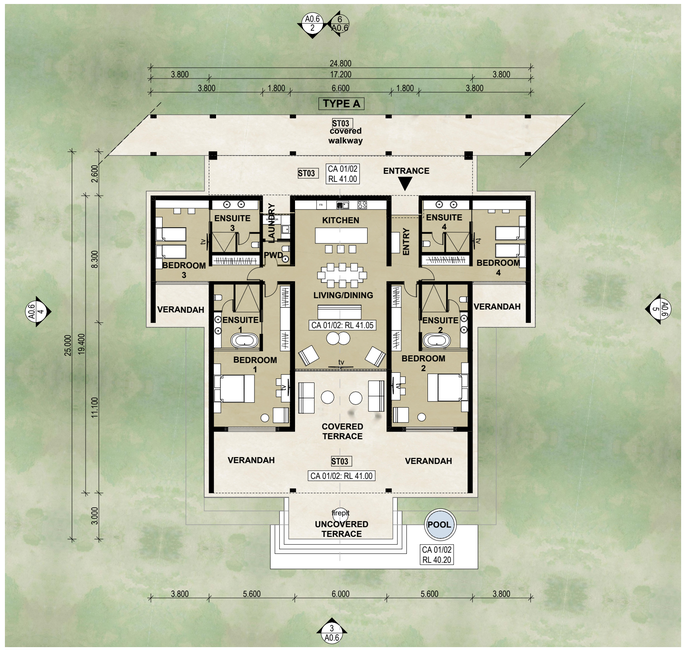
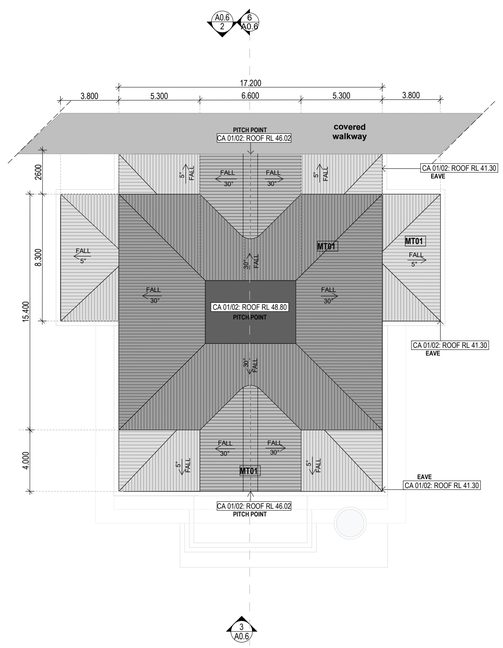


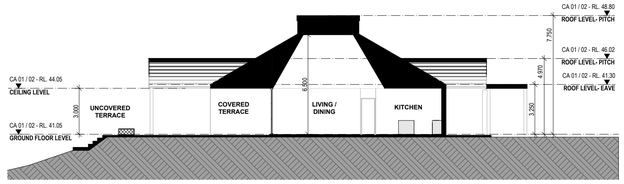
1 **CHALET TYPE A FLOOR PLAN**
A1 - 1:200



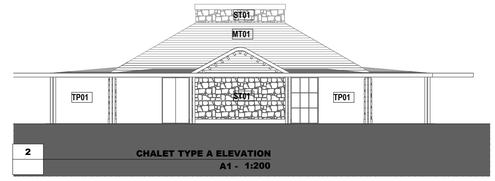


18 **CHLET TYPE A ROOF PLAN**
A1 - 1:200

DEVELOPMENT DATA	
GFA CALCULATION	
CHALET TYPE A	
INTERNAL AREAS	284.80 m²
EXTERNAL COVERED AREAS (covered terrace, verandah, entrance porch)	157.00 m²
TOT. CHALET TYPE A GFA (INTERNAL + EXTERNAL COVERED AREAS)	**441.80m²**
UNCOVERED TERRACES	54.60m²
	496.40 m²



6 **CHALET TYPE A SECTION**
A1 - 1:200



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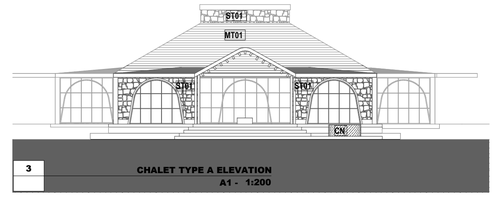

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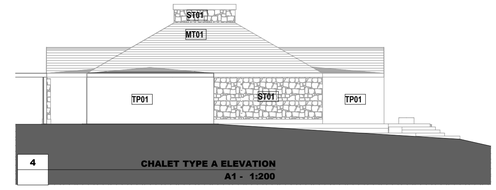

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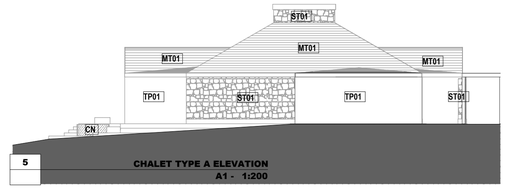

5

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FINISHES SCHEDULE

RN01	CEMENT RENDER	
ST01	RANDOM PATTERN STONEWORK	
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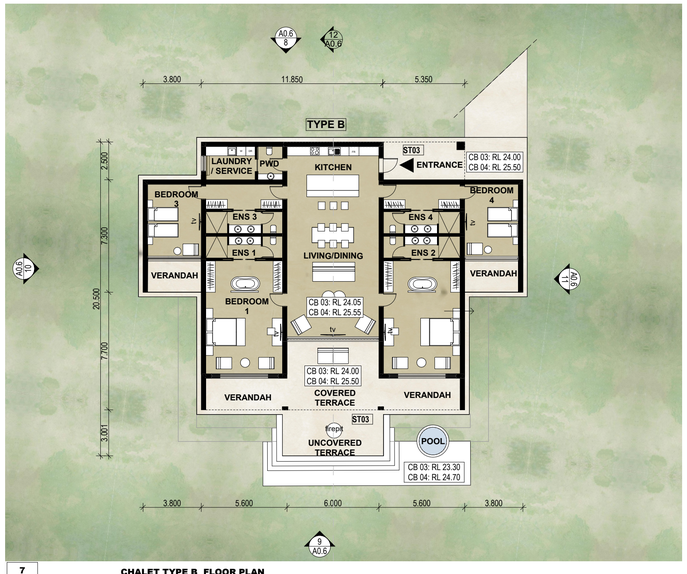
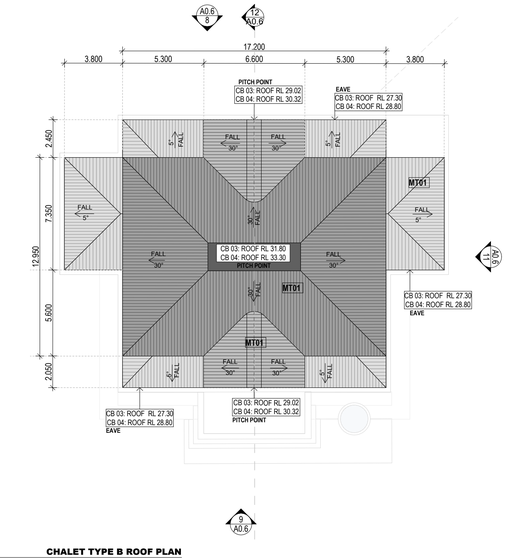
MT01	STANDING SEAM COLORBOND ROOFING	
TP01	ROUGH SAWN TIMBER CLADDING	
TP02	TIMBER WEATHERBOARDS PAINT FINISH	



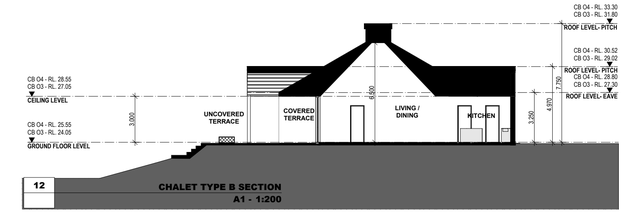
7 **CHALET TYPE B FLOOR PLAN**
A1 - 1:200



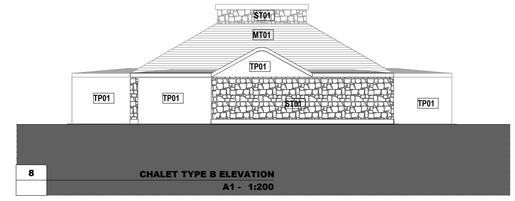


19 **CHALET TYPE B ROOF PLAN**
A1 - 1:200

DEVELOPMENT DATA	
GFA CALCULATION	
CHALET TYPE B	
INTERNAL AREAS	280.70 m²
EXTERNAL COVERED AREAS (covered terrace, verandah, entrance porch)	76.00 m²
TOT. CHALET TYPE B GFA (INTERNAL + EXTERNAL COVERED AREAS)	**356.70m²**
UNCOVERED TERRACES	52.50m²
	409.20 m²



12 **CHALET TYPE B SECTION**
A1 - 1:200



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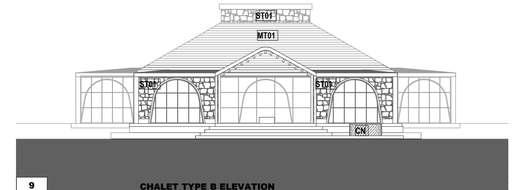

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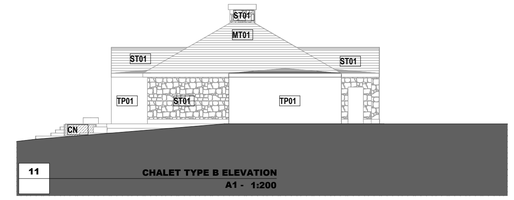

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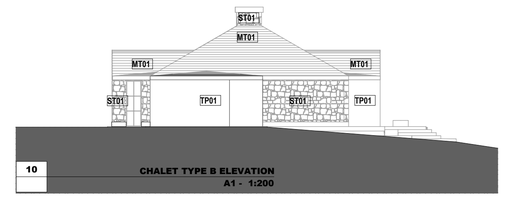

10

REV.	DATE.	ITEM.	BY.
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DEVELOPMENT APPLICATION

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PROJECT.
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING.
PROPOSED CHALETS

STATUS / CHECKED.						DRAWN BY.	SCALE.
DA	T	CD	BP	FC		VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.6	0

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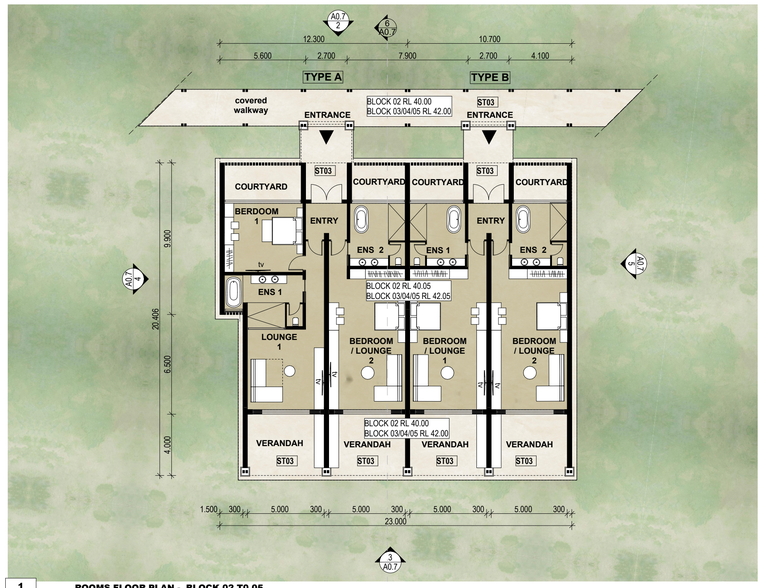
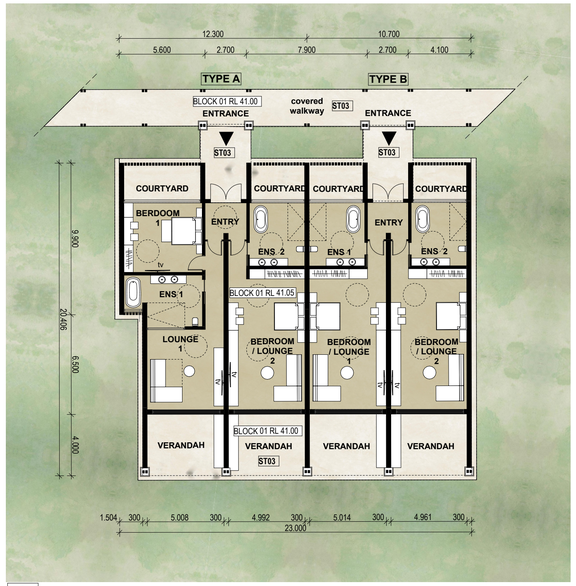
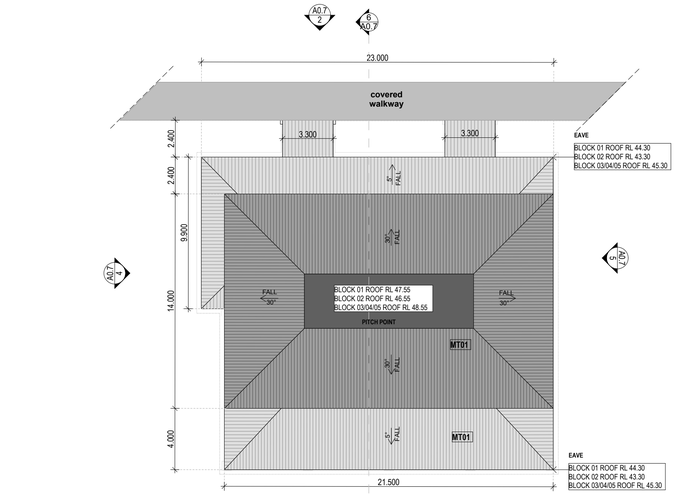


1 **ROOMS FLOOR PLAN - BLOCK 02 T0 05**
A1 - 1:200



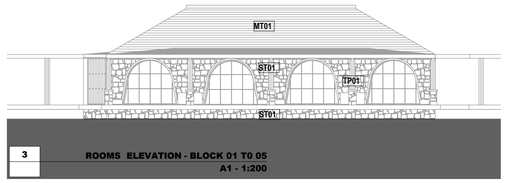
9 **ACCESSIBLE ROOMS FLOOR PLAN- BLOCK 1**
A1 - 1:200



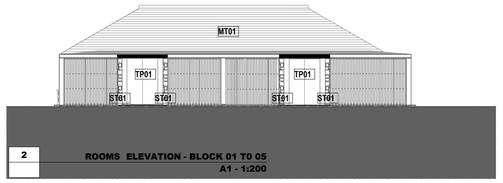
16 **ROOMS ROOF PLAN - BLOCK 01 TO 05**
A1 - 1:200

DEVELOPMENT DATA	
GFA CALCULATION	
ROOMS TYPE A	
INTERNAL AREAS	167.00 m²
EXTERNAL COVERED AREAS (verandah, courtyard, entrance porch)	66.90 m²
TOT. ROOMS TYPE A GFA (INTERNAL + EXTERNAL COVERED AREAS)	**233.90m²**

DEVELOPMENT DATA	
GFA CALCULATION	
ROOMS TYPE B	
INTERNAL AREAS	155.70 m²
EXTERNAL COVERED AREAS (verandah, courtyard, entrance porch)	63.50 m²
TOT. ROOMS TYPE B GFA (INTERNAL + EXTERNAL COVERED AREAS)	**219.20m²**

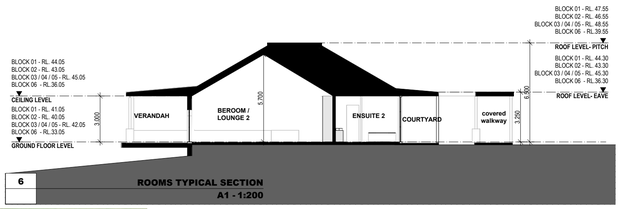


3 **ROOMS ELEVATION - BLOCK 01 T0 05**
A1 - 1:200

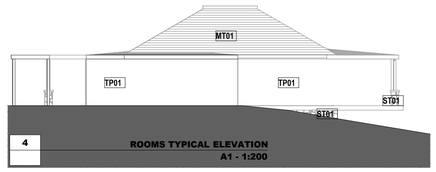


2 **ROOMS ELEVATION - BLOCK 01 T0 05**
A1 - 1:200

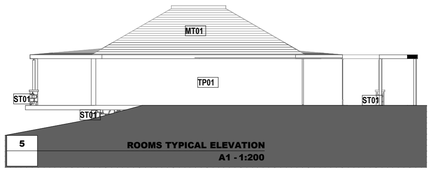




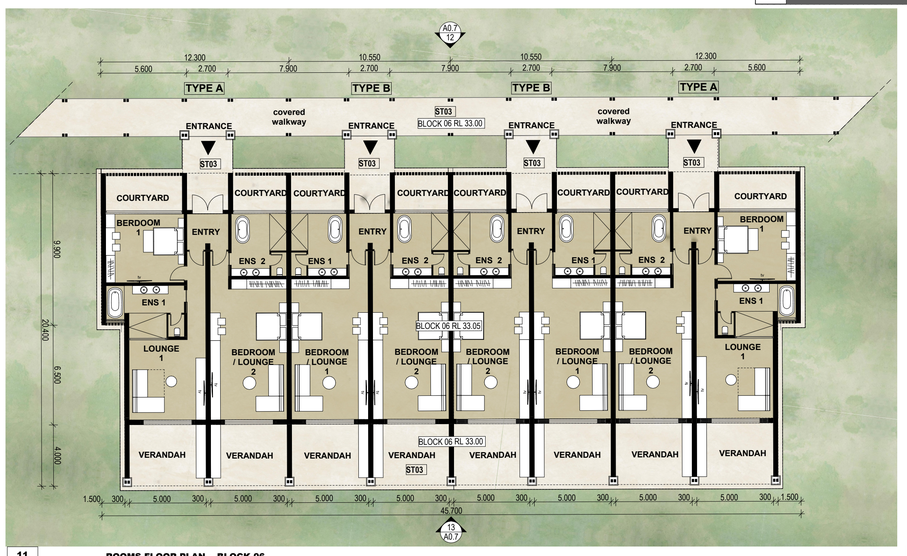
6 **ROOMS TYPICAL SECTION**
A1 - 1:200



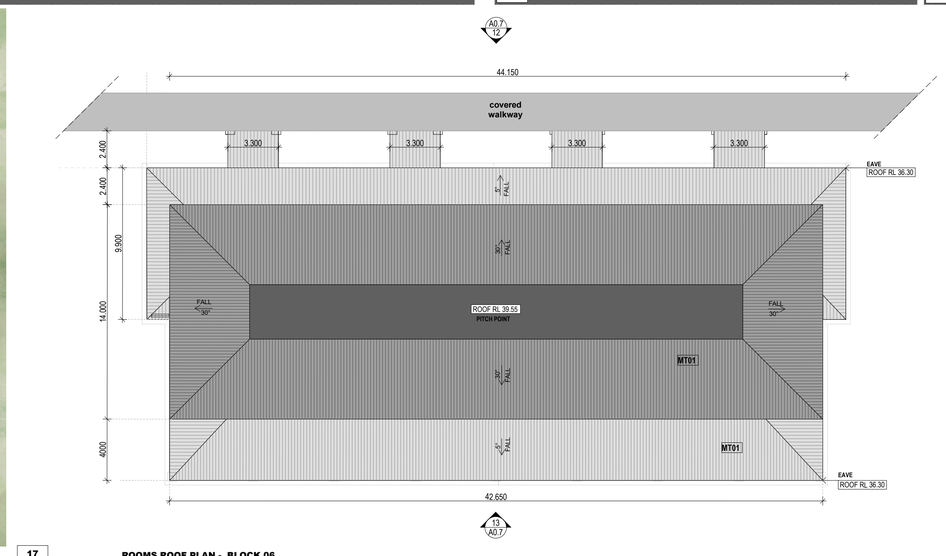
4 **ROOMS TYPICAL ELEVATION**
A1 - 1:200



5 **ROOMS TYPICAL ELEVATION**
A1 - 1:200



11 **ROOMS FLOOR PLAN - BLOCK 06**
A1 - 1:200

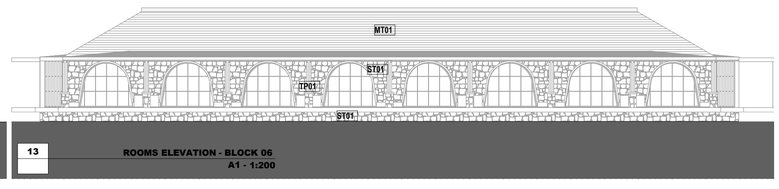


17 **ROOMS ROOF PLAN - BLOCK 06**
A1 - 1:200





12 **ROOMS ELEVATION - BLOCK 06**
A1 - 1:200



13 **ROOMS ELEVATION - BLOCK 06**
A1 - 1:200

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RN01	CEMENT RENDER	
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ST02	STONE- GABIAN WALL	
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MT01	STANDING SEAM COLORBOND ROOFING	
TP01	ROUGH SAWN TIMBER CLADDING	
TP02	TIMBER WEATHERBOARDS PAINT FINISH	

REV.	DATE.	ITEM.	BY.
0	20/11/23	Issued for Development Application	VD

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PROJECT.
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING.
PROPOSED ROOMS

STATUS / CHECKED.					DRAWN BY.	SCALE.
DA	T	CD	BP	FC	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.7	0

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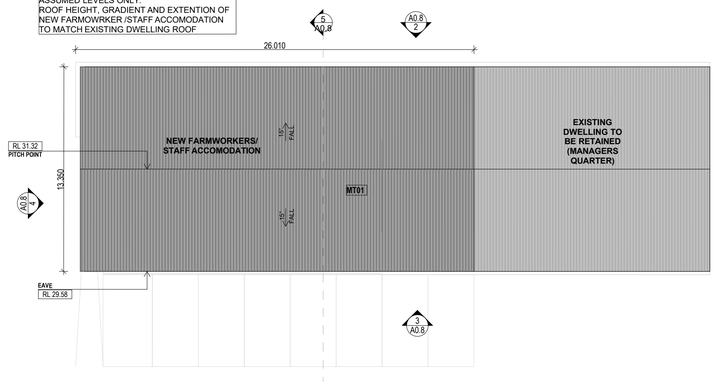
1 **FARMWORKERS / STAFF ACCOMODATION FLOOR PLAN**
A1 - 1:200

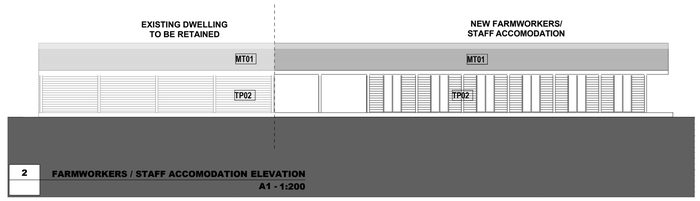
NOTE:
ASSUMED LEVELS ONLY.
ROOF HEIGHT, GRADIENT AND EXTENTION OF NEW FARMOWRKER /STAFF ACCOMODATION TO MATCH EXISTING DWELLING ROOF



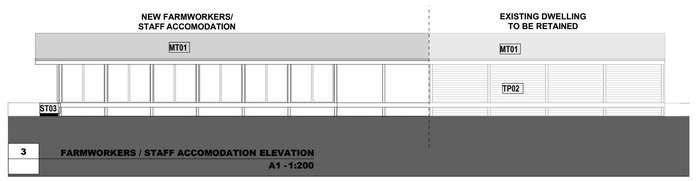
9 **FARMWORKERS / STAFF ACCOMODATION ROOF PLAN**
A1 - 1:200



DEVELOPMENT DATA	
GFA CALCULATION	
FARMWORKERS/STAFF ACCOMODATION	
INTERNAL AREAS	149.70 m²
EXTERNAL COVERED AREAS	188.60 m²
TOT. FARMWORKERS ACCOMODATION GFA (INTERNAL + EXTERNAL COVERED AREAS)	**388.30m²**



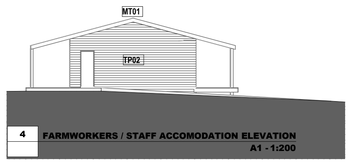
2 **FARMWORKERS / STAFF ACCOMODATION ELEVATION**
A1 - 1:200



3 **FARMWORKERS / STAFF ACCOMODATION ELEVATION**
A1 - 1:200



5 **FARMWORKERS / STAFF ACCOMODATION SECTION**
A1 - 1:200



4 **FARMWORKERS / STAFF ACCOMODATION ELEVATION**
A1 - 1:200

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FINISHES SCHEDULE

RN01	CEMENT RENDER	
ST01	RANDOM PATTERN STONEWORK	
ST02	STONE- GABIAN WALL	
ST03	BLUESTONE EXTERNAL FLOORING	
MT01	STANDING SEAM COLORBOND ROOFING	
TP01	ROUGH SAWN TIMBER CLADDING	
TP02	TIMBER WEATHERBOARDS PAINT FINISH	

REV.	DATE.	ITEM.	BY.
0	20/11/23	Issued for Development Application	VD

DEVELOPMENT APPLICATION

BROOKING DESIGN ARCHITECTS PTY. LTD.
14 edward street cottesloe wa 6011 western australia
po box > 1459 fremantle wa 6959 phone > +618 9336 3888
web > www.brookingdesign.com email > tom@brookingdesign.com
architects board of WA registration > 2431 acn > 079 710 982

PROJECT.
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING.
PROPOSED STAFF ACCOMODATIONS

STATUS / CHECKED.					DRAWN BY.	SCALE.
DA	T	CD	BP	FC	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
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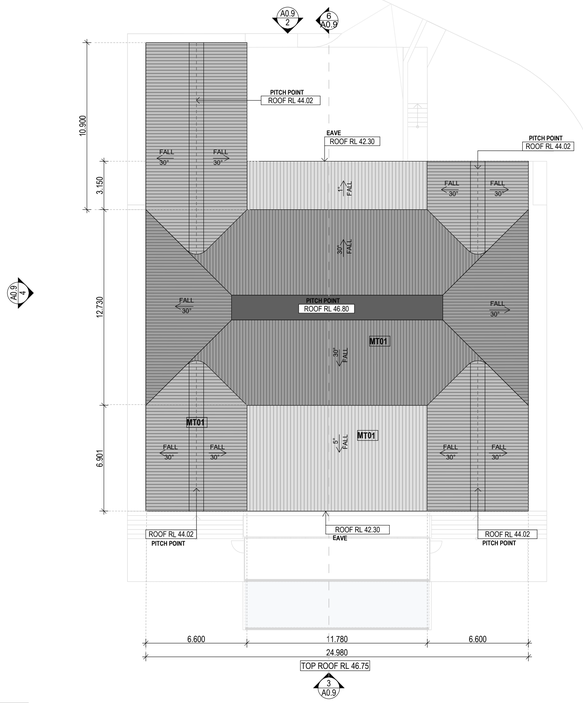
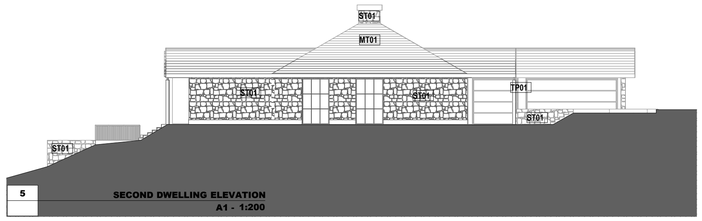
1 SECOND DWELLING FLOOR PLAN
A1 - 1:200



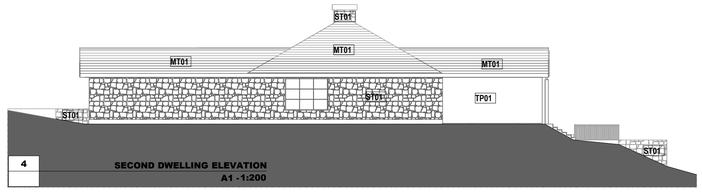
10 SECOND DWELLING ROOF PLAN
A1 - 1:200



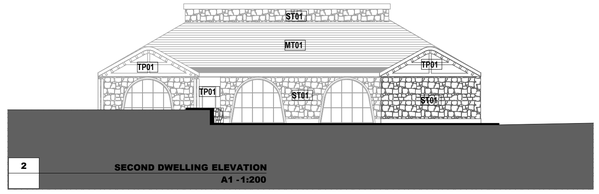
DEVELOPMENT DATA	
GFA CALCULATION	
SECOND DWELLING HOUSE	
INTERNAL AREAS	419.80 m²
EXTERNAL COVERED AREAS (covered terrace, alfresco, entrance porch)	197.20 m²
TOT. SECOND DWELLIG HOUSE GFA (INTERNAL + EXTERNAL COVERED AREAS)	**617.00m²**
UNCOVERED TERRACES	126.00m²
	743.00 m²



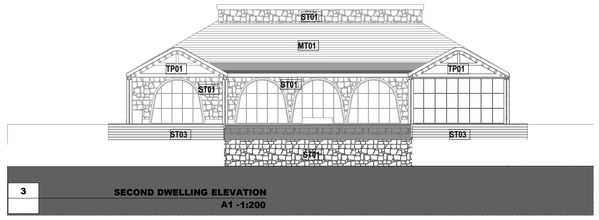
5 SECOND DWELLING ELEVATION
A1 - 1:200



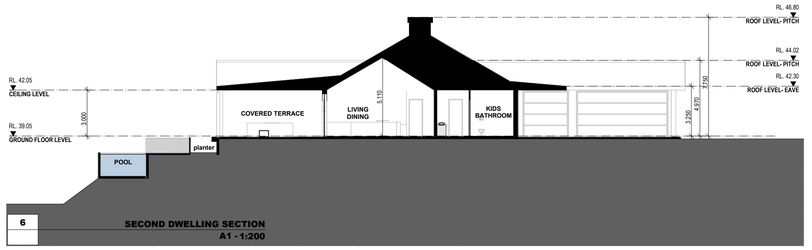
4 SECOND DWELLING ELEVATION
A1 - 1:200



2 SECOND DWELLING ELEVATION
A1 - 1:200



3 SECOND DWELLING ELEVATION
A1 - 1:200



6 SECOND DWELLING SECTION
A1 - 1:200

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PROJECT.
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING.
PROPOSED SECOND DWELLING HOUSE

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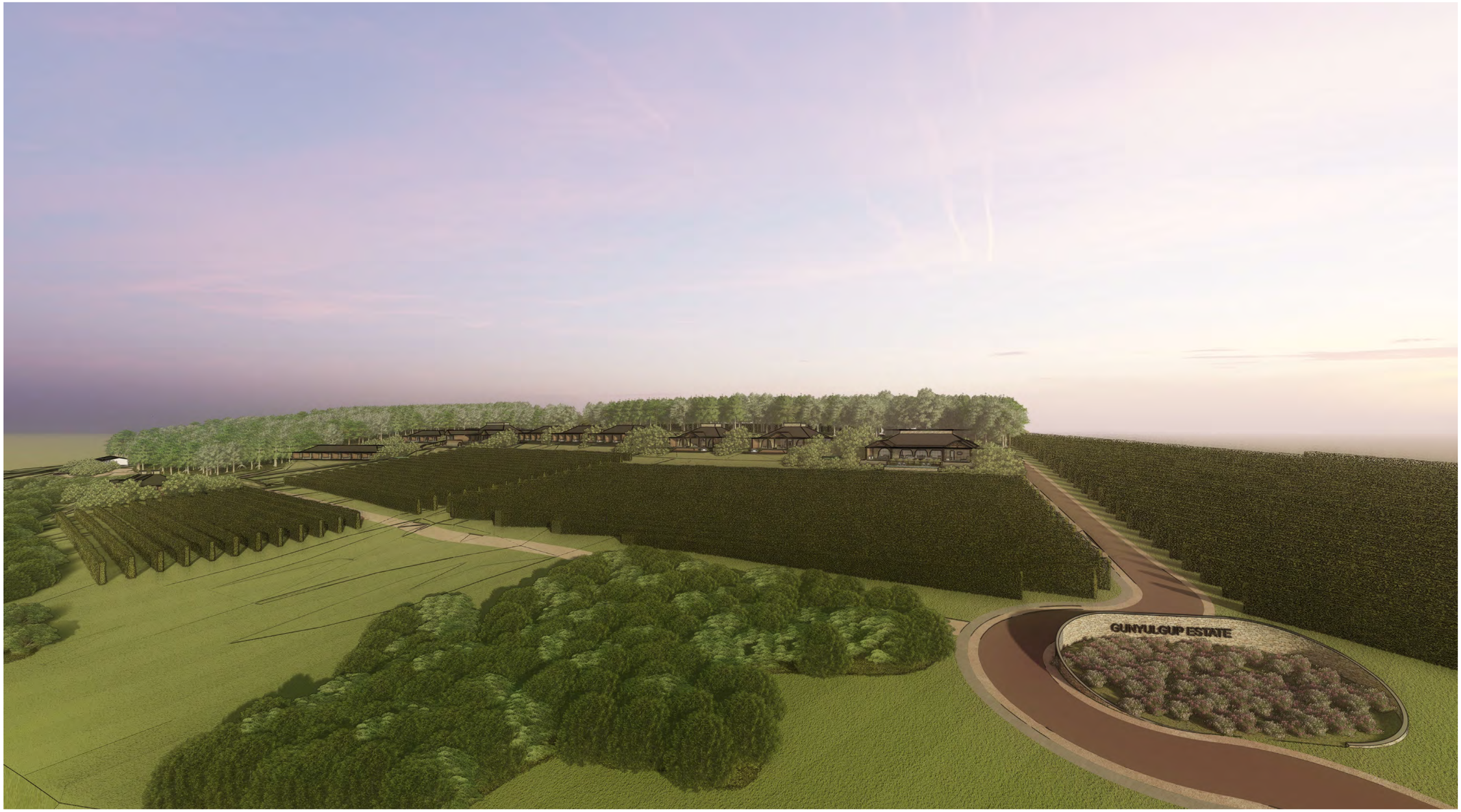

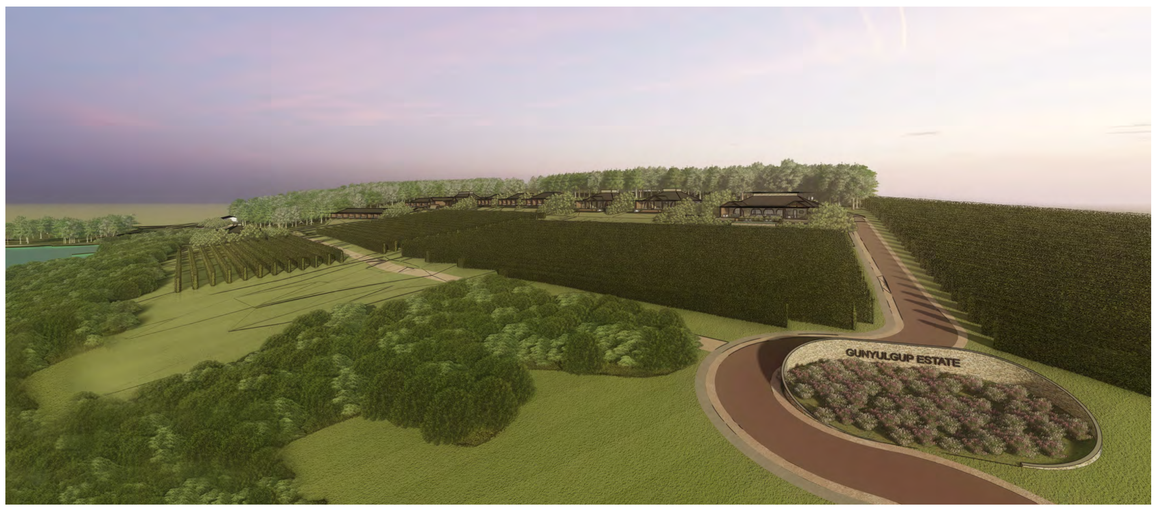

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PROJECT.
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING.
PROPOSED SITE 3D VEW

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City of Busselton
Geographe Bay

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Figure 1 - Approximate area of Lot 101 Wildwood Road to be ceded for inclusion in road reserve.

05/04/2024

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Halsall & Associates

Town Planning Consultants

CITY OF BUSSELTON LOCAL PLANNING SCHEME NO.21

Development Application
Rural Holiday Resort

Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

November 2023



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Version Control

Report version	Revision No.	Purpose	H&A Author	Review date by officer	Date
V1		Draft	MH	23/08/23	
V2		Draft	MH	22/09/23	
V3		Draft	MH	24/10/23	
V4		Final Draft	MH	8/11/23	
V5		Review	VC	10/11/23	
Final		Final	MH	23/11/23	

Approval for Issue

Name	Signature	Date
Marc Halsall		23/11/23

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Attachment 2 – Bushfire Management Plan
Attachment 3 – Visual Impact Assessment
Attachment 4 – Traffic Impact Assessment
Attachment 5 – Site and Soil Evaluation
Attachment 6 – Environmental Assessment

1.0 INTRODUCTION

Halsall and Associates Town Planning Consultants have been engaged by Peter Medich / BLP1 Pty Ltd to prepare this development application for a tourist development at Lot 101 Wildwood Rd, Yallingup.

The subject site is principally used for viticultural purposes with vineyards occupying most of the site and the proposal is to provide quality tourist accommodation in the areas generally not utilised for viticultural purposes with densities consistent with the relevant scheme and policy requirements of the City of Busselton.

Given the subject site is zoned "Viticulture and Tourism", the proposal is consistent with the objectives of the zone providing accommodation in addition to an existing viticulture enterprise.

Prior to preparation of the application detailed liaison occurred on two occasions with senior City planners with specific advice provided in relation to the concept, the density proposed, the location of development and the information that would be supplied with an application. A positive response was received on both occasions from City planners and as a result, this proposal has been prepared and lodged with confidence that the proposal will be well received, and the information supplied will be suitable.

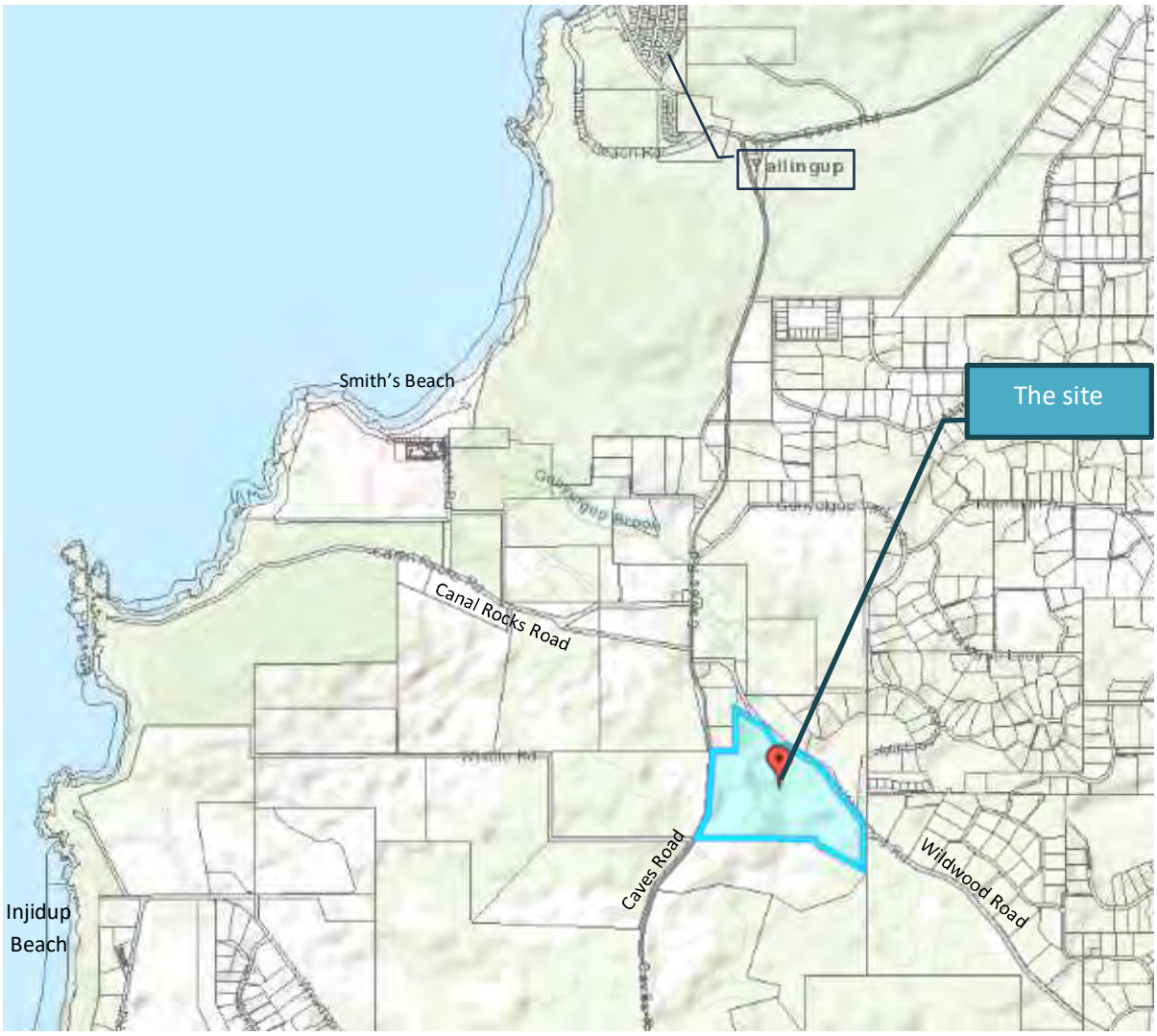
The proposal represents an important addition to the rural accommodation offering of the locality with a scenic vineyard and nature-based experience of quality. There are limited examples of such accommodation in the area. This type of rural accommodation is needed with most similar options being coastal/beach based.

The details of the site, the proposal, the planning framework and relevant issues that present as well as technical reports that have informed and justified the proposal and its design are explained and included within this report.

2.0 THE SITE

The site is Lot 101 Wildwood Rd, Yallingup situated within the City of Busselton. The location of the site be in the context of the broader area is included at **Figure 1** below.

Figure 1 – Location Plan **Source – Plan WA**



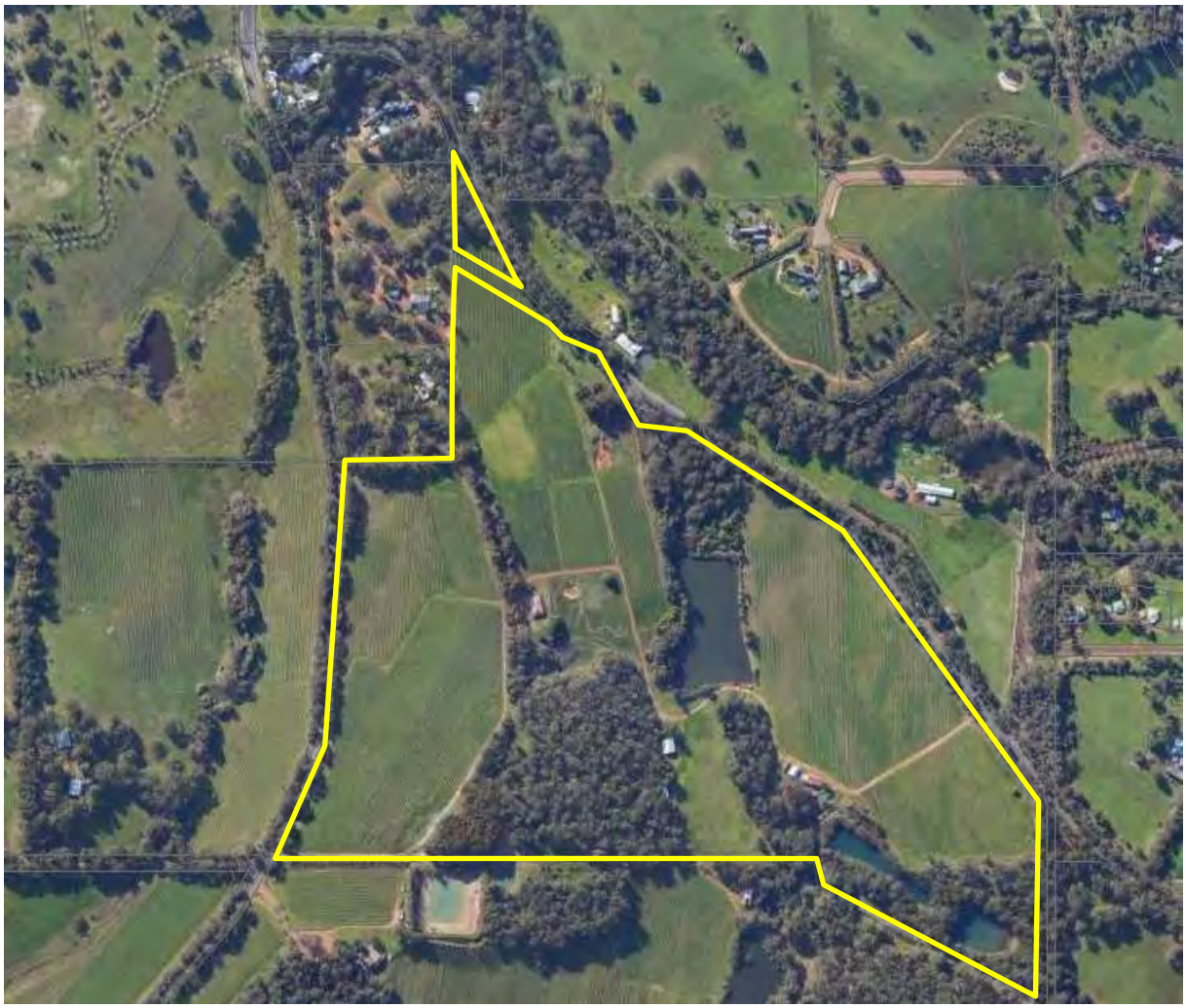
As evident above, the subject site is located almost at the junction of Wildwood Rd and Caves Rd in the locality of Yallingup in the western parts of the City of Busselton. The site is approximately 3.5km due south from the township of Yallingup and 2.15km due southeast from Smiths Beach tourist node. The site is also very close to other points of interest including Injidup Beach and numerous wineries and other tourism related activities along Caves Road and within the general area.

The subject site is irregular in shape and technically made up of two parts with the bulk of the land within the southern part being 42.0898h and a small triangular portion in the far north being 4541m². These two parts are technically severed by what is noted on the City of Busselton's mapping system as closed road reserve of approx. 2632m².

The subject site has approx. 495m of frontage to Caves Rd in the west and approximately 1006m of frontage to Wildwood Rd along the northeast boundary (excluding the closed road reserve section).

The specific characteristics of the land are evident at **Figure 2** below.

Figure 2 – Subject Site Characteristics **Source: Plan WA**



Evident on the detailed site plan are the characteristics of the land including extensive vineyards which occupy the majority of the cleared sections of the site. A measurement of areas of vineyard indicates

there is approx. 18ha of vineyard or approx. 45acres. This is quite a significant vineyard in the context of the area and Margaret River Wine Region.

The viticultural development on the land is supported by three dams which have been previously established along the creek line system (Gunyulgup Brook) which traverses the site from south to north through the central east. Whilst the depths of the dams are not known, the area of the three dams are approximately as follows:

Northern dam – 1.6ha

Central dam – 2880m² and;

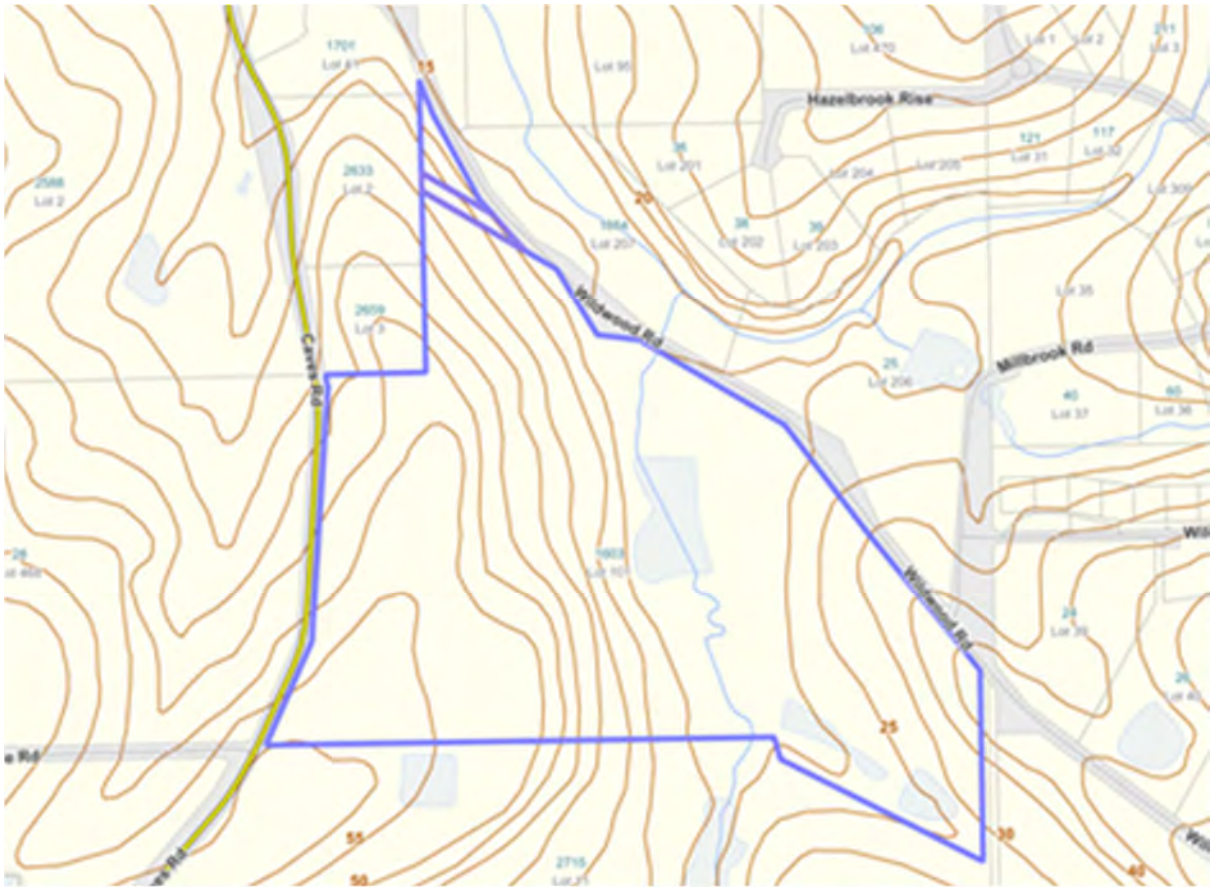
Southern dam – 2260m²

This provides that the water sources on the land are notable, and a water license has been issued for the site with capacity to support the viticultural operations.

Some natural vegetation remains on the property particularly along the creek line system and a notable stand in the central south. There are other stands of vegetation on the land which appear to be planted particularly a wind row near the existing main dwelling and plantation of what appears to be Tasmanian Blue Gum in the southwest. There are also other pockets of trees which have been planted including some of the vegetation around the larger dam. The notable area of native vegetation is in the central south which is situated immediately to the west of a second small dwelling and south of the larger and newer dwelling. The area of this vegetation appears to approximately 4ha and contains some existing walking trails.

The characteristics of the land are such that a valley system dominates the central and eastern parts of the site with contours ranging from 35m in the far eastern part of the site up to a high point in the southwest of 55m AHD. There is a ridge immediately to the west of the existing main dwelling and a decrease in contour from this point north-westward to Caves Rd. This drop in contour and ridge in the western parts provides that the central and eastern parts of the site are not visible from Caves Rd. The contours of the site are evident at Figure 3 below and this indicates the valley system associated with the Gunyulgup Brook and the hill in the western parts.

Figure 3 – Contours Source – City of Busselton Intramaps



Also evident at Figure 2 is the surrounding landscape which comprises large rural allotments to the south and west some containing vineyard, native bush and paddock areas, a number of smaller rural allotments along the northwest boundary (Lots 41, 2 & 3) and rural residential zoned lots to the north/northeast. The two main lots located immediately opposite the site to the northeast are 5.2 and 9 ha respectfully (relatively large rural residential lots) and each contains a dwelling situated on the south side of the creek line running through that area. Immediately to the north of those lots are a number of smaller rural residential lots approx. 1.5 to 2ha in area and further afield there are other lots zoned rural residential with other smaller rural residential lots to the east and northeast.

The subject site is therefore located almost at the junction of Wildwood Road and Caves Road at the northern extent of land that would be considered rural (zoned Viticulture and Tourism) and therefore opposite a rural residential area but also close to a focal point at the intersection of Wildwood Rd and Caves Rd where there are some smaller allotments and a small school (Steiner School). The site interfaces with larger rural residential lots to the north.

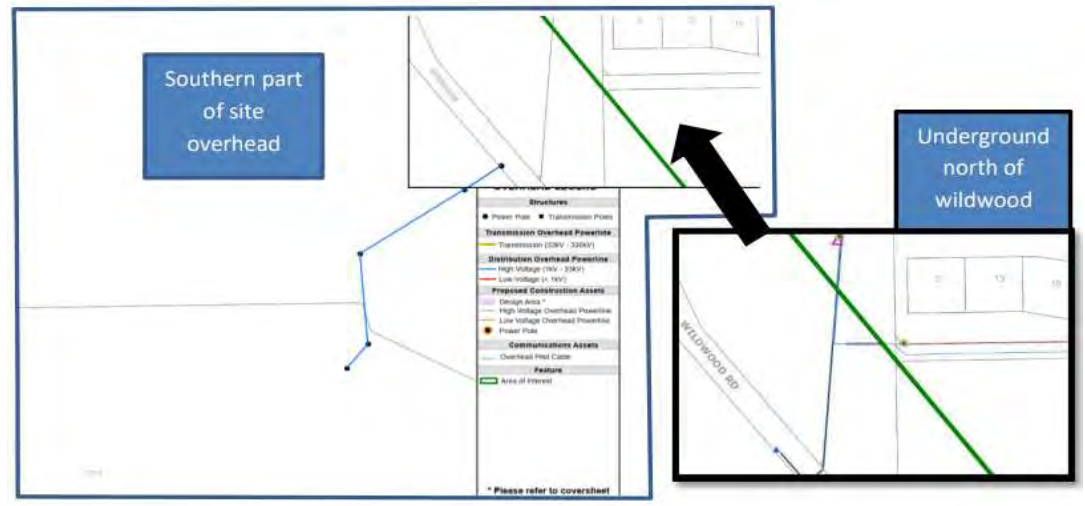
Given the subject site is located remote from townships, there is no reticulated water or sewerage available. This proposal therefore demonstrates through detailed advice the nature of the development and onsite effluent disposal systems that would be established and water supplies that would be principally roof catchment to tanks supplemented by onsite sources for non-potable / landscaping purposes.

Power services are available to the site and mapping indicates that services are available in the north, central east and southern parts. Services can therefore be extended to support tourist development in liaison with Western Power.

Mapping indicating the location of power services are provided at Figure 4 below.

Figure 4 – Western Power Services Location





Telstra services are also generally available in the area, and it is also noted that wireless telecommunications are achievable from certain locations on the property particularly where the tourist accommodation is proposed.

The subject site is described on the Certificate of Title Volume No. 1964 and Folio No. 994 currently held in the name of BLP 1 Pty Ltd. A copy of this title is included attached to this application and it is noted the title does not include any encumbrances. A review of the deposited plan for the land again indicates there are no easements.

A detailed aerial photograph of the site is included at **Figure 5** and this is provided to enable a closer inspection of other features of the site including buildings.

Figure 5 – Close up Aerial Photograph **Source: Plan WA**



As evident above, current access to the site is taken from Wildwood Rd in the southeast close to the Millbrook Road entry which is almost opposite to the east. This internal driveway runs through the centre of the site around the vineyard and over a bridge up to the main dwelling but also to the small dwelling. Close to the entry of the site are a number of outbuildings/sheds (used in association with

farming practices and there is also another open style shed to the south of the small dwelling. The location of the smaller and larger dwelling is indicated at Figure 5.

Immediately to the south of the main dwelling is an enclosed orchard area and associated water tanks. The owners have previously also established a water feature immediately to the east of the main dwelling with an artificial stream. In the north is a small gravel pit which has likely been utilised for provision of farm requirements on site.

There is a feature jetty established within the larger dam on the western foreshore.

A closer inspection of the boundaries of the site as they relate to Wildwood Rd indicate that one corner of the property extends close to the physical construction of Wildwood Rd in the northeast. This means that what may appear to be road verge or even perhaps a small section of bitumen may actually be within the property boundaries. There is a tree therefore that appears to be aside the road which is actually in the property and is therefore within the ownership of the landowner. The features of the site relevant to this are provided at Figure 6 below.

Figure 6 - Zoom Aerial North Part of Site



Detailed mapping of acid sulphate soil risk indicates that the site is in a moderate to low-risk area and such that this issue does not present as a notable constraint.

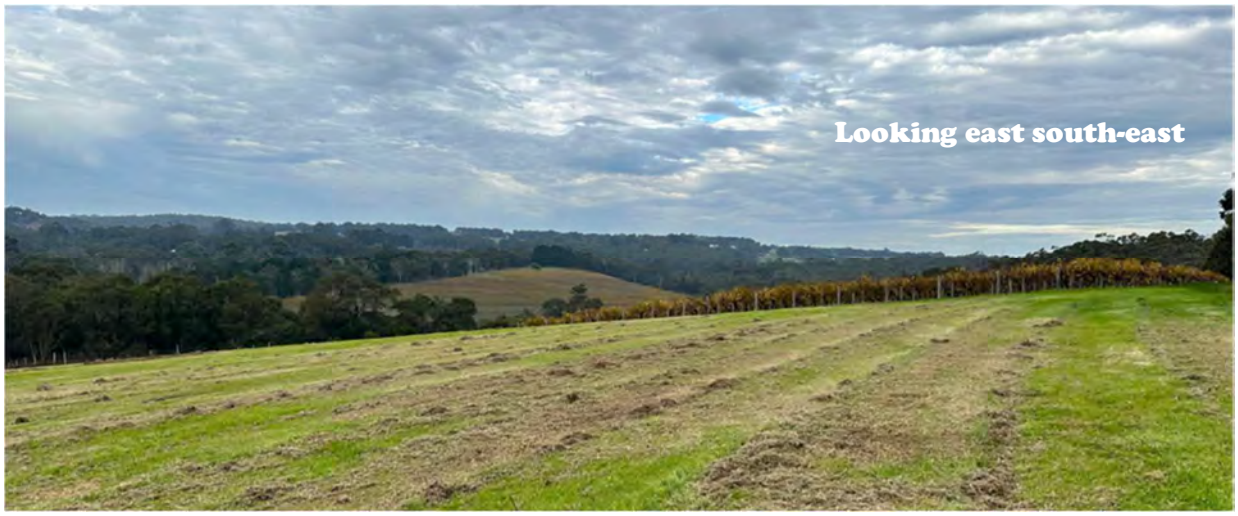
Mapping also indicates that the subject site is within a bushfire prone area which indicates that a planning assessment should include consideration of bushfire management and risk hence engagement of a level 3 fire consultant.

The subject site falls within a proclaimed ground water and surface water catchment area and this indicates that licensing is required. There are 3 licenses applicable to the land totalling 42,500kl, 46,000kl and 5000kl respectively. All licenses are valid until 2029 unless renewed.

The site is very scenic due to the undulations and from the location of the existing main dwelling and the central west and across the hillside to the north and east, outstanding rural views can be taken. This is illustrated below.

Photographs taken from just north of existing dwelling.




Looking east south-east

3.0 THE PROPOSAL

The proposal is to establish a high-quality tourist development (Rural Tourist Resort) providing accommodation and central amenities for guests to showcase the high scenic quality of the site as well as the viticultural enterprise activities. Detailed plans of the proposed development are included at Attachment 1 and the aspects of the development are described as follows.

The existing dwelling located in the central west is to be demolished and replaced with a notable centralised facilities building which would be the centre of a rural tourist resort. A new dwelling replacement is proposed to the north. The central building will provide dining, bar and other related amenities for guests only. To the south and north of this building are what are considered rooms or suites similar to a hotel (total twenty eight) with twenty of these rooms within blocks of four all connected by walkway directly across the contour to the main facilities building. In addition to the south-east of the main facilities building are an additional 8 hotel rooms that would be accessed via a driveway and parking network which will be located behind the accommodation.

In addition to the above there are four chalets proposed of notable size, two at the northern end of the development area and two closer to the dam providing an alternate experience for guests. Chalets are of a size that will accommodate families.

City planners agreed that a Hotel-Restricted liquor license would be supported such that guests can be provided with mini-bar facilities within the rooms and chalets and as such this is part of the proposal.

As stated previously, to the far north of the overall development concept is a proposed owners dwelling that will replace the existing dwelling that is currently occupying the area of the proposed main amenities building. City planners agreed that replacement of the dwelling would be supported on the basis that the site already has two dwelling entitlements. This provides a residential interface with the smaller rural allotments to the north west.

Access to the accommodation is principally to be provided from a new entry point from Wildwood Road which has been confirmed as suitable by a civil engineer (see later section) in the northern part of the site with access across the rear of the accommodation with bitumised standard and parking provided commensurate with City requirements. Screening of the driveway and accommodation arrangement to adjoining properties is provided as well as additional landscaping about the proposed development to assist in softening the presentation in the landscape but also to provide an attractive amenity. This will be subject of a later landscape plan requested to be conditional.

The existing second dwelling (cottage) in the central south of the site is to be the subject of expansion for workers accommodation such that this dwelling would be occupied by managers and workers employed with the viticultural and rural tourist resort activities.

To support the tourist accommodation, a series of water tanks are to be installed to capture water from rooves to principally support potable supplies.

An onsite effluent disposal system is proposed to be established in the form of an alternate treatment unit or secondary treatment system with disposal fields directed to appropriate locations away from watercourses and with suitable area. A Site and Soil evaluation has been conducted and justification for this system is provided and this will be outlined in a later section.

The internal driveway networks also ensure there is a connection to the two chalets affronting the dam. The internal driveway system is connected with loops so that there is good access particularly for bushfire but also for continued management of agricultural enterprises across the site.

The proposal also incorporates the provision of alcohol to guests within their room and therefore the application would be the subject of a hotel restricted license. This method was supported by the coordinator of planning services at the City as an appropriate licensing action.

Walk trails throughout the site including through the bush will be available to guests.

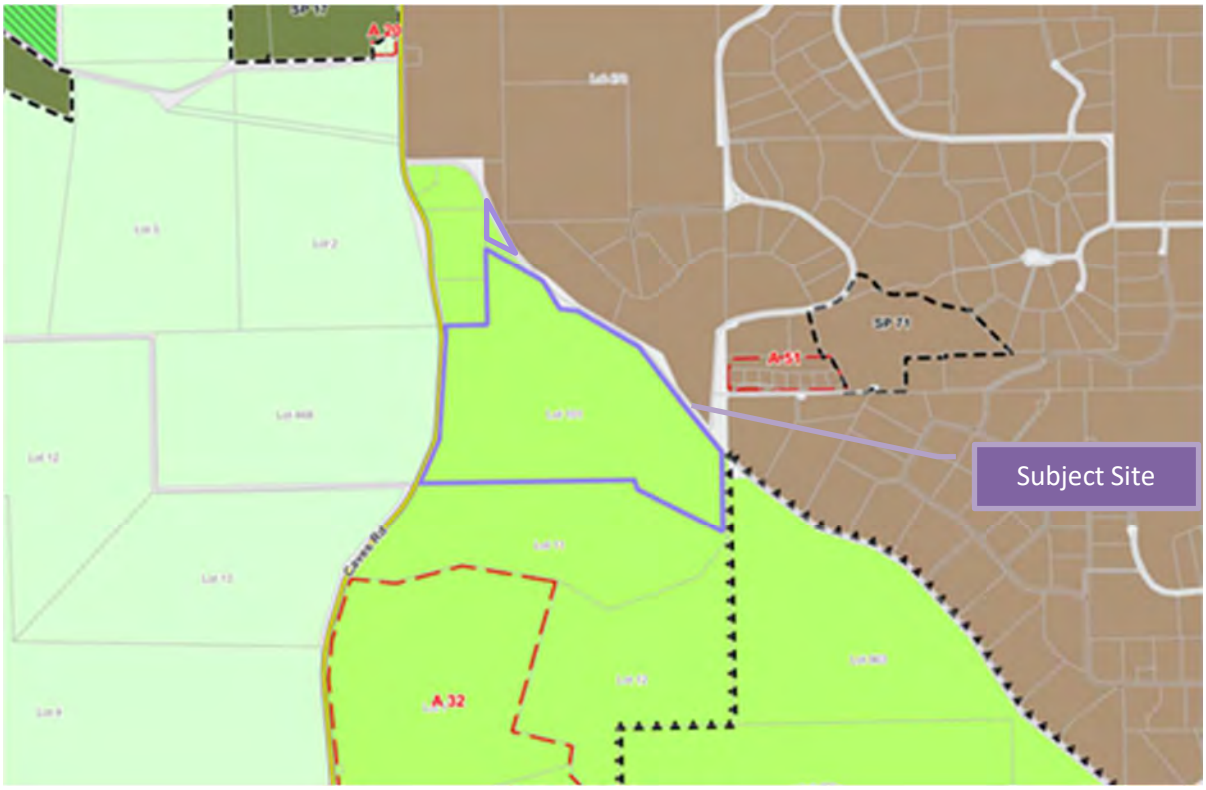
The result will be a self-contained tourist development providing for amenities onsite for guests including quality rooms and family accommodation in sizeable chalets. The development will provide, interpretation of a noteworthy scenic rural area, viticultural experience and recreation options within a landmark location in the renowned Willyabrup Wine Region. Such quality accommodation is needed in this locality and promoted by the applicable zoning. With the Busselton-Margaret River airport now offering services to Sydney and Melbourne such accommodation in the form of a boutique rural resort on a viticultural property would be what visitors would be looking anticipating. There is a lack of supply of rural viticultural tourism experiences with accommodation of such standard in the area.

4.0 LOCAL PLANNING FRAMEWORK

4.1 Local Planning Scheme No. 21 ('the scheme')

Under the City of Busselton's Local Planning Scheme No. 21, the subject site is zoned Viticulture and Tourism and is also situated within a special control area (Landscape Value). A copy of the scheme map as relevant to the subject site and surrounding area is included at Figure 7 below.

Figure 7 – Excerpt Local Planning Scheme No. 21 Scheme Map



As evident above, land immediately to the south and smaller allotments to the north are also zoned Viticulture and Tourism and likewise included within the special control area (Landscape Value). Land north of Wildwood Rd is zoned Rural Residential. Land immediately west of the site on the opposite side of Caves Rd is zoned Rural.

Clause 3.2 of the scheme outlines the zone objectives and those applicable to the Viticulture and Tourism zone are:

a) *To provide for the maintenance or enhancement of specific local rural character.*

b) *To provide for development and expansion of the viticultural, winemaking and associated industries, in addition to general rural pursuits, in a manner that does not cause adverse environmental impact.*

c) *To facilitate the development of tourist facilities of a scale and nature appropriate in rural settings without prejudice to the scenic quality of the land within this zone and without creating or increasing ribbon development on any road.*

d) *To provide for the operation and development of existing, future and potential rural land uses by limiting the introduction of sensitive land uses.*

e) *To provide for a range of non-rural land uses where they have demonstrated benefit and are compatible with surrounding rural uses.*

f) *To maintain and enhance the environmental qualities of the landscape, vegetation, soils and waterways."*

The scale and nature of development is further informed quite specifically by the Rural Tourist Accommodation Policy referenced in a later section.

Land uses that are permissible under this zone are outlined in the zoning table referenced at clause 3.3. It is noted that the use of Rural Holiday Resort is an 'A' use within the Viticulture and Tourism zone.

An A use means *"that the use is not permitted unless the local government has exercised its discretion by granting development approval after giving notice in accordance with clause 64 of the deemed provisions"*.

The definition of a Rural Holiday Resort means "*any form of rural tourist accommodation, except Caravan Parks and Camping grounds, comprising more than 10 accommodation units, whether they be rooms, suites or chalets".*

By reading of this definition in combination with the objectives for the land, it is determined that the proposed activity would be deemed a Rural Holiday Resort, and this was confirmed with the Coordinator of Planning at the City as the appropriate land use for the proposal. This means that the proposal can be considered following advertising.

The centralised dining and bar facilities for guests form as part of the Rural Holiday Resort in the typical fashion presented in a guest house or hotel format. The fact that these facilities are not open to the general public confirms that the central facilities are not a public restaurant or small bar use.

It is noted that there are two dwellings on the site and the fact that this is the case is remnant from a previous Local Planning Scheme. Typically, under the current scheme only one dwelling is permitted however, the City Planning Coordinator advised that in demolishing one of the dwellings, replacement with another under the same proposal would be supported on the basis that the proposal would be simply maintaining the status quo with respect of accommodation for permanent residents on site. Further, it is noted that workers accommodation has been supported by the City regularly of late given the issues of providing accommodation for workers in the rural context. The additions to the managers residence on site therefore for additional workers was also supported and suggested as an objective by the City Planning Coordinator. These uses are therefore modifications / rearrangement to existing residential land uses onsite.

Part 4 of scheme refers to general development requirements. Those applicable to the site and objectives are outlined as follows:

Clause 4.8 refers to height of buildings. Relevant to the site, is clause 4.8.1 which states *"a person must not erect any building that –*

a) *Contains more than 2 storeys or exceeds a height of 9m where land is within a 150m of the mean high water mark: or*
b) *Contains more than 3 storeys or exceeds a height of 12m where land is more than 150m from the mean high water mark, except where otherwise provided for in the scheme".*

The proposed development on the land complies with the maximum height of 12m also noting that less than 3 storeys are proposed. Other visual considerations are addressed in a later section.

Clause 4.8.2 of the scheme states "*notwithstanding 4.8.1, the local government may grant approval for the development of the building containing more than 2 or 3 storeys, as the case may be, provided that the additional storey or storeys are of a nature of a basement or a similar structure that they do not protrude more than 1m above finished ground level at the perimeter of the building".*

Clause 4.8.4 of the scheme makes reference to minor protrusions such as an aerial, chimney stack, ventilator etc are not included in the reference in consideration of height.

Clause 4.10 refers to provision of services this state that:

"*the local government shall not grant development approval for development of any land unless-*

a) *a water supply and facilities for removal of disposal of sewerage and drainage are available to that land, as deemed necessary by the local government: or*
b) *arrangements satisfactory to it have been made for the provision of that supply and those facilities."*

To demonstrate the suitability of the proposal with respect to water and sewerage facilities detailed consultant advice has been received and this has informed the proposal and the plan. This is documented in a later section.

Clause 4.11 refers to water supply and states "*each dwelling shall be provided with a supply of potable water from a reticulated system, an underground bore or rainwater storage system to the satisfaction of local government. Water tanks or other rainwater storage systems shall have a minimum capacity of 135,000lt and shall be directly connected to a suitable means of rainfall catchment having an area of not less than 150m². All water tanks shall be fitted with couplings to the specifications of Department of Fire and Emergency Services."*

A detailed assessment in relation to provision of water supply has been provided with this proposal inclusive of dwellings but also the accommodation again as outlined in a later section supported by technical report by experts in the field. The method of potable water provision is consistent with this clause of the Scheme.

Clause 4.12 of the scheme refers to effluent disposal and states:

"4.12.1 If no reticulated sewerage system is available, development approval shall not be granted for development in excess of a single house unless –

a) *adequate and appropriate provision can be made for the on-site disposal of effluent, having particular regard to the comments or requirements specified by the Department of Health; or*
b) *the development replaces an existing lawful development and redevelopment does not represent an increase of more than 10% over and above the density of the existing development*

4.12.2 If no reticulated sewerage system is available, liquid and/or solid wastes shall be disposed of on-site by means of an effluent disposal system approved by the local government. No house shall be occupied without the prior approval and installation of such a disposal system.

4.12.3 In the Rural Landscape zone effluent disposal areas shall be set back a minimum of 30 metres from any watercourse or dam or as otherwise approved by the local government.

4.12.4 In the Conservation and Bushland Protection zones effluent disposal areas shall be set back a minimum of 50 metres from any watercourse or dam or as otherwise approved by local government."

The above indicates that adequate information would need to be submitted to demonstrate capability for onsite effluent disposal and this will be determined by the Department of Health rather than the City of Busselton given the type of development proposed. Experts have been contracted to provide advice in this regard and this will be covered in a later section. Compliance with this clause is achieved.

Clause 4.30 refers to development of dams, and states "*any dam requiring development approval shall be constructed to maintain water flow so that the rights of downstream users are protected, and any spoil associated with the construction of a dam shall be removed or levelled and the site rehabilitated. In determining applications pursuant to this clause, the local government must consider any advice provided by the Department of Parks and Wildlife/Department of Water to whom any application may be referred*".

Appropriate licensing has been issued for the water supplies which support viticultural development as outlined previously.

Clause 4.36 refers to setbacks in the Rural and Viticulture and Tourism zones, the following clauses are applicable:

"4.36.1 A building in the Rural or Viticulture and Tourism zones must not be located closer than 30 metres or such other distance as may be specified in an adopted planning policy to any boundary.

4.36.2 In the Rural or Viticulture and Tourism zones, a building must not be constructed within 100 metres of Bussell Highway or Caves Road, or 60 metres of Vasse Highway without development approval, which must not be granted unless the local government is satisfied that the development is consistent with all relevant provisions of the Scheme. Where the local government receives such application, it shall forward the application to Main Roads Western Australia for comment and take such comments into consideration when determining the application.

4.36.3 In the Rural or Viticulture and Tourism zones, no person shall use or develop the land between the building setback line and the road alignment for any purpose other than a means of access, landscaping, dam construction (i.e. subject to development approval pursuant to clause 60 of the Deemed Provisions) or a rural activity permissible in the zone.

4.36.4 For the purposes of clause 4.36.3, the term 'landscaping' may include an entry statement provided that –

a) the development is not a structure of urban character;
b) only one entry statement may be developed per lot;
c) the entry statement is subsidiary to any natural vegetation that currently exists and/or proposed planting as part of a landscaping plan;
d) the entry statement is of a design and scale that minimises visual impact and is sympathetic with and submissive to the rural and natural scenic character;
e) the entry statement is constructed of materials, and coloured, to be compatible with the surrounding landscape; and
f) the entry statement does not exceed an average height of 1.2 metres and maximum height of 1.8 metres (from the natural ground level) and does not exceed a cumulative length of 9 metres."

The proposal plans comply with this clause with respect to development with setbacks in excess of 30m from boundaries and 100m from Caves Rd. Development within setback areas either already exists or comprises access and underground effluent disposal field and landscaping. This demonstrates that the proposal is consistent with clause 4.36. Policy compliance is outlined in a later section. There is only one entry statement internal to the entry part of the site.

Clause 4.42 of the scheme refers to development along main or arterial roads. Arterial roads are not defined under the policy however Caves Rd being managed by Main Roads WA would be considered an arterial road. The proposed development is not visible from Caves Rd and therefore would not be seen to be development visible or considered to be ribbon development along an arterial road. Wildwood Road is a distributor road however, development is not proposed adjacent to this and as explained in a later visual impact assessment section of this report, development is only fleetingly visible from Wildwood Road aided by distance from the road. The proposal therefore does not impact the natural ambiance of the public road network.

Part 5 of the scheme refers to special control areas, it is noted the subject site is located within a Landscape Value Area which is covered at section 5.4 of the scheme. The clauses relevant under this section are provided below:

"5.4.1 Development within the Landscape Value Area requires the prior development approval of the local government.

5.4.2 The local government shall not grant development approval for the clearing or development of any land identified within a Landscape Value area on the Scheme map, unless it has considered –

a) whether the development will be compatible with the maintenance and enhancement, as far as is practicable, of the existing rural and scenic character of the locality;
b) whether the development will materially affect any wildlife refuge, significant wetland, coastal environment, or any identified site containing Aboriginal archaeological relics; and
c) disturbance to the natural environment, including –
    i. visual effects of clearing for development;
    ii. maintenance of rural character; and
    iii. habitat disturbance.

5.4.3 The local government shall not grant development approval for the carrying out of development on land within the Landscape Value area or on land on or near any ridgelines where, in the opinion of the local government, that development is likely to substantially detract from the visual amenity of the area, having regard to, among other things, the cumulative visual effect of the development related to other development that may be anticipated in the locality and in the area generally.

5.4.4 Before granting development approval for the erection of a building on land within the Landscape Value area, the local government shall make an assessment as to whether it should impose conditions relating to –

a) the siting of the proposed building;
b) the use of prescribed materials on the external surfaces of the building; and
c) the number, type and location of existing trees and shrubs which are to be retained and the extent of landscaping to be carried out on the site.

5.4.5 In clause 5.4.4 -

"external surfaces" means the external walls and cladding (if any), external doors, external door and window frames, columns, roofs, fences and any surface of a building or work visible from the exterior of a building or work; and

"prescribed materials" means materials with dark tones or dark colouring and of low reflective quality or materials which are painted or similarly treated with dark toned or dark coloured paint or pigment of low reflective quality."

The above clause identifies the need that development approval is required, and consideration needs to be given to compatibility with the rural and scenic character, the natural environment, avoiding ridge lines and development that may substantially detract from the visual amenity. As such, development should be sensitively located, and materials should be utilised that are suitable in the locality.

To inform suitability of development including materials and colours, location, and sensitive use of landscaping a visual impact assessment expert was engaged. A later section of this report explains and demonstrates the suitability of a proposal from a visual perspective such that the proposal could be considered consistent with Section 5.4 of the scheme.

Clause 5.14 refers to designated bushfire prone areas. The subject site is within a designated bushfire prone area and as a result, dwelling construction is influenced under this clause. Notwithstanding this, the fact that the site is within a bushfire prone area affects consideration of the development generally and this is again dealt with in a later section.

Part 6 of the scheme refers to development of land. It is anticipated that all the development which is envisaged through the tourism proposal will not be exempt and require planning consideration through a development application.

The provisions of the scheme also call in the importance of relevant policy and following sections address policy applicable to the site and the objective of establishing tourist development.

4.2 Local Planning Strategy

The City of Busselton adopted a new Local Planning Strategy in 2019 and this provides broad guidance for future planning within the city. Importantly one of the themes within the strategy is to "*continue to support low-key, small-scale tourist accommodation in rural areas, but do not support:*

- *unrestricted length of stay component in rural areas or*
- *strata title subdivision of tourist accommodation"*

In the area of the subject site.

Unrestricted stay is essentially excluding long term occupation beyond a maximum of 3 months which is deemed to be short stay.

Another theme of the strategy includes protection and enhancement of habitat for native fauna, vegetation, waterways, and wetlands including support for the long-term survival of the Western Ringtail Possum.

Other objectives are to ensure that bushfire management risk is a central consideration in planning and development decisions reviewed at the same time as development of any landscape or vegetation management planning.

Protection of visual character is a key consideration particularly from key public vantage points including regional roads, travel route corridors including maintaining landscape visual character values and screening landscaped buffers where development is being undertaken in location visible from important sites, roads, and travel routes.

The subject site falls within a rural area as identified on the local planning strategy map. Rural areas are recognised under the strategy as those that contribute to provide agriculture and other associated uses including tourist development.

Importantly agriculture is seen to be primarily the activity to be conducted within rural areas however to support appropriate diversification of agriculture industry and land uses in rural areas including appropriate non-rural land uses that are incidental and/or complimentary to the agriculture use of the land.

The local planning strategy indicates that low key tourism can be considered, agricultural activity should be primary and alternate uses should be complimentary or incidental to agricultural production, visual impact is an important concern and bushfire matters should be considered.

The subject site is used extensively for intensive agricultural purposes and the proposed tourism use is primarily to utilise parts of the site that are not currently used for intensive agricultural and at a density consistent with policy. The accommodation therefore is complementary to the agricultural production onsite cognisant of bushfire concerns and visual impact considerations as demonstrated in later sections of this report.

4.3 Local Rural Planning Strategy 2006

The City of Busselton also adopted a Rural Planning Strategy in 2006 (Rural Strategy) and whilst in many respects this has been superseded by the broader Local Planning Strategy 2019, the Rural Strategy still has some relevance.

The strategy discusses the importance of agriculture and tourism as issues relevant to the City and avoiding land use conflict is considered important such that the use of tourism for example should not impact agriculture operations.

Again, landscape and character are recognised as well as bushfire management as a key issue.

The subject site falls within Precinct 4-Western Rural and major issues to be addressed include:

- *"land use competition and conflict between agricultural uses (particularly viticulture and extractive industry) and tourist based uses. Achieving a sustainable balance between the rural and tourist uses.*
- *Loss of environmental values due to clearing of remanent vegetation and impact of surface and ground water quality and availability.*
- *Long term sustainability expansion of the viticultural industry in view of limited water resources.*
- *Incremental impact of ongoing development on the character and landscape values of the area and particularly Caves Rd.*
- *Ability of road infrastructure to accommodate increase in traffic volumes and responsibility for infrastructure.*
- *Impact of larger scale tourist resort development and ongoing fragmentation of land on the long-term sustainability of expansion of the agriculture industry, particularly viticulture.*
- *Restriction of rural activities due to increased rural residential and tourist use.*
- *Management of nutrient export.*
- *Fire risk management"*

The above again reiterates the key issues that have been outlined in the scheme and local planning strategy.

The vision for the precinct is to "*support the ongoing primary agricultural land use and associated rural based tourist development in a manner that's sustains the high agriculture potential, existing natural environment, landscape values and rural character of the area."*

The proposal has been tailored to meet these objectives such that it would be well received under the planning framework. This includes:

- Protection of the environment, water resources and therefore proposing development in cleared areas with adequate setbacks from water resources.
- Does not locate development adjacent to boundaries where there are intensive agricultural practices occurring.
- Maintaining existing intensive agricultural practices whilst establishing tourist development that will not impact or compete with the viable agricultural use and will not adversely affect landscape environmental or other values and the character of the area and;
- Protects rural and natural landscapes particularly the character of Caves Road with due attention to fire management and provision of adequate infrastructure. Whilst is would have been attractive to site development adjacent to Caves Road and take advantage of this as a key tourist route, there has been a specific objective to locate development away from Caves Road such that it is not visible and protect the amenity of Caves Road. The development could have been oriented to Caves Road including with access but this has been deliberately avoided to give due attention to visual aspects of relevant Scheme and Policy provisions.

Tourist accommodation and chalet development consistent with the Rural Tourist Accommodation Policy is considered to be a land use that may be conditionally supported. Importantly, larger scale tourist proposals such as holiday resorts (inclusive of this proposal) should be located within the Viticulture and Tourism zone and be in accordance with the rural tourism policy. The proposed development has been specifically tailored to be consistent with the rural tourist accommodation policy and is within the viticulture and tourism zone which is appropriate.

4.4 City of Busselton Local Planning Policy 2.4 – Rural Tourist Accommodation

The Rural Tourist Accommodation Policy has been endorsed under the local planning scheme and the intent is to ensure commercial tourist development occurs generally in urban areas and that opportunities for small scale and low impact tourist accommodation and related activities can occur in rural areas.

Aims and objectives include:

a) *"Provide for tourist accommodation in the rural areas of the City in a manner that does not conflict with existing or potential agricultural, horticultural or viticultural pursuits.*

b) *Provide a balance between agriculture/viticulture/horticulture and tourism such that tourism does not dominate, and does not detrimentally impact, the sustainable use or availability of prime agricultural land.*

c) *Acknowledge tourism as an appropriate source of employment and income to the benefit and prosperity of the community of Busselton City.*

d) *Optimise both the agricultural and tourism potential of rural areas of the City without detrimental impact on the inherent natural beauty and value of those areas, having regard to the above".*

It is noted that the assessment and community consultation procedure section of the policy indicates that proposals for tourist accommodation will be advertised for public comment for a period of 21 days.

The policy states that Rural Holiday Resorts outside the Viticulture and Tourism zone will be subject to a rezoning via scheme amendment. This therefore recognises that Rural Holiday Resorts are considered suitable within the Viticulture and Tourism zone subject to meeting other policy requirements. The general location requirements of the policy reiterates that Rural Holiday Resorts are not permitted outside the Viticulture and Tourism Zone.

With this in mind, the proposal is therefore well located within the appropriate zone dedicated for development of the Rural Holiday Resort type. Prior to lodgement of the application, it was confirmed with City planners that the land use applicable to the proposal was Rural Holiday Resort and that this was certainly a reasonable proposal within the context of the zone and Rural Tourism Policy. City Planners also confirmed the format of development proposed was in compliance with density requirements in the Policy and as such would be supported.

Section 4.3 of the policy refers to minimum site area requirements and it is noted that Rural Holiday Resorts should not be permitted on allotments comprising less than 30 hectares. Given the subject site is excess of 42 hectares it clearly meets the requirements to accommodate a Rural Holiday Resort.

Objectives of the minimum site area requirements include recognising the rural ambiance of the area, ensuring buildings are in sympathy with landscape features and distant from neighbouring properties and important roads and to avoid clutter over development and the appearance of a commercial development such to achieve a high level of rural amenity. It is therefore clear that density of development if consistent with requirements could therefore be considered sympathetic to the

landscape. The design of the development is as evident on the plans with rural style architecture and colours and materials suited to the landscape.

Section 4 refers to density and relevant standards include guesthouses should not comprise more than 1 suite per hectare of site area and chalets no more than 1 chalet per 3 hectares of site area. Rural Holiday Resorts which are (as stated previously) tourist developments comprising more than 10 accommodation units whether these be rooms or chalets will be assessed based on a cumulative basis. As such, the proposed development comprises a development of 28 rooms (independently accessible) and 4 chalets. The nature/format of the development was confirmed with City planners, and it was agreed that the 28 rooms would therefore be considered on the basis of 1 suite/rooms per hectare and the chalets on the basis of 1 chalet per 3 hectares. Given the site is 42 hectares in area, the 28 rooms and 4 chalets are appropriate as this would require a site of 40 hectares in area which is achieved.

It is also noted that accommodation units shall not be located closer than 30m to each other unless landform and intervening vegetation provides adequate screening and/or cluster style development is necessary or appropriate in special circumstances of the particular site. This aspect was discussed with senior officers of the planning department at the City and was not seen to be a significant policy requirement. Given the subject is occupied by extensive areas of intensive agriculture and the area where development is proposed is therefore seeking to utilise areas principally not used for viticulture, there is an intention to cluster development but provide separation between sections with landscaping between. Existing and proposed landscaping will also serve to back drop the development so as to break up the built form and provide an appropriate development within the landscape. The visual attributes of the development have been critiqued by Ecoscape (experts in visual impact assessment) and confirmed that the format of development is appropriate within the context of the site having regard for visual policy. This is explained in further detail in a later section.

The objectives for density are to maintain rural amenity in terms of visual and human impacts, reduce potential risks of over exploitation of water supplies, and encourage development of a scale and density no greater than a lower density rural residential development and to specify a minimum scale of development. The proposal meets the requirements of the policy and is therefore compliant with the intended rural amenity, human impacts and scale of development anticipated on such land. Water supplies are principally to be provided via water tanks which will therefore minimise exploitation of water supplies on the site beyond current viticultural practices. Onsite water supplies will be used for landscape supply which would provide surety for landscaping elements of the proposal.

Section 4.5 of the policy refers to setbacks and standards as relevant for a holiday resort include:

- 100m from any highway, important regional road or nominated tourist road,
- 50m from any other property boundary except if that other property contains prime agricultural land,
- 100m from any other property boundary if that other property contains prime agricultural land.

Reductions to those setbacks specified above to a minimum of 30m may be considered in certain circumstances where densely vegetated or reduced to 50m where viticulture exists again where such a vegetated buffer exists.

As evident on the application plans, the development achieves a 100m setback from Wildwood Rd, 50m setback from other boundaries and 100m from viticulture to the south of the site. It should be noted that there are two smaller allotments immediately to the north-west of the site which are primarily vegetated and utilised for other purposes (typically not agriculture). One of the lots is just over 2 hectares in area and the other is 3.6 hectares which are akin to rural residential retreats and therefore larger setbacks from what may be considered prime agricultural land is not applicable. The area between the development and the nearest site to the north-west is proposed to be screened and landscaped and the most proximate part of the development to this lot is a residential dwelling.

The setback areas are to contain sufficient vegetation to screen and/or provide filtered views only of new developments. The City typically require implementation of landscape measures towards achievement of screening prior to the issue of a building licence. Screening by use of indigenous species is preferred.

The proposal intends to establish vegetation within setback areas where necessary and the visual assessment report appended to this application indicates that there is good quality screening already in place between Wildwood Rd and the development including along the road and within the property itself. Areas about the proposed development are earmarked as managed landscape areas on the detailed site plan. A condition requiring a landscape plan would be an appropriate recommendation.

Further objectives of this section of the policy include maintaining scenic quality and tourism appeal of local road systems including Wildwood Road. Landscaping and screening of development from neighbouring properties and roads is promoted and again this is addressed through the landscape assessment provided with the application. It is not recommended that further landscaping along Wildwood Rd is necessary.

Section 4.6 of the policy refers to the relationship of development to prime agricultural land and existing agricultural activities. It is stated that Rural Holiday Resorts should not be permitted within 100m of existing viticultural plantations or wineries on adjoining land. This is achieved given that the nearest agricultural practices to the site of this type are essentially to the south and it is only workers accommodation that is located approximately 100m from this boundary and the Rural Holiday Resort is effectively central to the property and only located within 100m of properties not used for intensive agricultural practices.

It is noted that the policy requires proponents to display material to guests within the reception of the development to advise the property is within an agricultural area and that agricultural activities may create nuisance or inconvenience from time to time but are essential to the maintenance of the prosperity and character of the area. Noting this, the development is situated such that it is oriented away from any significant agricultural activities other than that occurring on the property. Internal property management will be respectful to guest activity.

Objectives of the policy also include acknowledging agricultural land as a resource, protecting agricultural enterprises, to minimise land use conflicts and to provide sufficient separation distances between agricultural and tourism uses to minimise risks to health, nuisance, or conflict between land uses. This is all achieved with the location of development.

The policy refers to management and that all rural tourist accommodation must include 24hr onsite management. The proposal therefore incorporates managers quarters and rural workers accommodation on site and an owner's residence to be effectively a replacement of the existing dwelling. This will provide that there is a high standard of management on the premises including from the main building.

Section 4.8 of the policy refers to services and rural holiday resort developments must be accessed from bitumen sealed roads. This requirement is met via Wildwood Road.

It should also be demonstrated that efficient long term effluent disposal can be achieved without potential impact on public health, water supplies, neighbouring properties, or the environment. To this end, effluent disposal areas must not be located within 30m of any creek, river, dam, or spring. An expert consulting firm has been engaged to consider the effluent that would be generated by the proposed development, identify a suitable type of treatment system (in this case secondary treatment system) and disposal field options that are more than 100m from any creek or dam. This is illustrated

on the application plans and a full site and soil evaluation report is appended to this application to demonstrate capability and suitability of onsite effluent disposal. This is addressed in a later section.

The policy requires a potable water supply of a minimum of 80,000lt per chalet or 30,000lt per suite. Potable water should also comply with the relevant drinking water guidelines and acceptable means includes collection of roof water into holding tanks. The water / effluent disposal experts have also been engaged to provide advice on water supply requirements which have been determined based on occupancy and the format of development. This is included in a later section however the water tanks provided on the application plans have been designed so as to adequately support the use of the development with provision of potable water in the form of rainwater tanks.

Dam water on the site is generally not to be used for potable water supply unless demonstrated as suitable. The intention of the proposal is to only utilise dam water for irrigation purposes and rely on rainwater as the principal potable supply.

The policy requires provision of all services at no cost to the City and contributions to local bushfire fighting facilities and community facilities may be required.

Section 4.9 of the policy refers to subdivision which is therefore not relevant to the proposal.

Finally, section 4.10 refers to preferred development and this section states the following:

Council prefers development that:

a) *"Is a conjunctive use of land currently utilised for a viable agricultural / viticultural / horticultural enterprise.*
b) *Provides some on-site activity or feature of interest to tourists.*
c) *Is low profile, both physically and in setting, and is designed in harmony with existing buildings and character, being especially Bed and Breakfast Establishments and Guesthouse developments.*
d) *Provides a wilderness or other eco-tourism experience.*
e) *Is associated with an existing tourism operation such as a wildlife park, art gallery, restaurant, wineries, and the like, or is on land close to those facilities.*
f) *If a Caravan Park and Camping Ground, is situated within walking distance of beaches and tourism nodes.*

g) *If situated in an area of high agricultural activity, is a development that has utilised noise reduction techniques, filter systems and similar methods of construction to mitigate the*

The City will actively discourage development that:

a) *Is situated in visually significant locations, such as on ridges or along unscreened sections of regional or tourist roads.*
b) *Involves major disturbance of remnant bushland or natural areas.*
c) *Is not in reasonable proximity (i.e., 5kms) of a township, major tourist node, beaches, or other recognised areas of tourist activity. Caravan Park and Camping Grounds should be within 3km of an urban area on the coast.*
d) *Is located on land of no particular topographical or landscape interest or value.*
e) *Is of a development form that resembles urban based tourism such as motels, resorts, and the like.*
f) *Is identified as an "Undesirable Use" by the Busselton Local Rural Planning Strategy within the locality in which it is proposed.*
g) *Is a Caravan Park and Camping Ground situated east of Caves Road or on any allotment having frontage to Caves Road south of Dunsborough.*

The proposal addresses the preferred development matters in the fact that it provides onsite activity with recreation options, walk trails through bushland but also a very scenic outlook through a panoramic valley incorporating viticultural vista and natural amenity outlook and a central facility building with dining and bar facilities.

The development is low profile with buildings generally single storey and set into the landscape below the ridge line and back drops with vegetation and suitable setbacks from boundaries. Materials are typically stone and wood and therefore reflective of the local environment.

The site is also located within 5km of Yallingup and Smiths Beach as well as Injidup Bay / Spa which are key tourist points of interest. The site has topographical and landscape interest and value and is designed and feature colours and materials that resemble rural buildings rather than urban buildings.

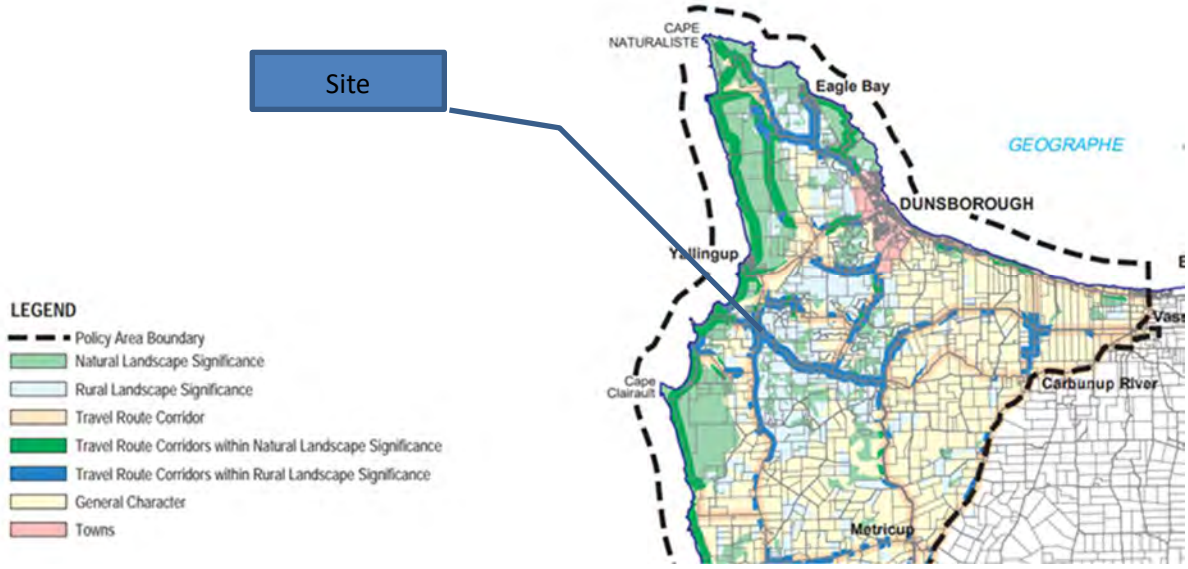
It is demonstrated that the location of development is not visually significant (refer to attached expert report) and involves very minimal disturbance of essentially peripheral degraded vegetation and enhancement with additional vegetation planting. Environmentally there will be a net benefit.

The proposal addresses visual elements, considers interrelationship with neighbours, complies with setbacks, utilises landscaping and protects agricultural within the site and interrelates with adjoining agricultural properties appropriately. The proposal represents an opportunity to provide guests with an appropriately scaled accommodation experience in a very scenic location without impacting on other agricultural practices or neighbours with appropriate separation. The ability to encourage guests to experience both natural and viticultural landscapes is a key objective of the proposal.

4.5 SPP 6.1 Leeuwin Naturaliste Ridge Policy

The Leeuwin Naturaliste Ridge Policy (SPP6.1) was endorsed by the West Australian Planning Commission in 1998 and this guides the development of policies and schemes within the City of Busselton. It also does provide some guidance for development within the area. Worthy of mention is the fact that the policy particularly deals with landscape matters, and it is noted that the subject site falls primarily within an area noted as "*Travel Route Corridors with Rural Landscape Significance*" the southern central part of the site is identified as "*Rural Landscape Significance".* This is illustrated at Figure 8 below.

Figure 8 – Excerpt SPP 6.1 Landscape Classes Map Source: WAPC



Landscape character was a key assessment of the SPP and rural landscape significance was described as areas that include all the natural and cultural characteristics which contribute to significant rural landscapes. Travel route corridors were determined as corridors (300m either side) along a primary

transport network which may or may not include area where rural or natural significance have been identified.

Policies include development being responsive to local values and compatible with natural characteristics, having regard for landscaping integrity and the value of ridge backdrops including relevantly along travel route corridors, ensuring adequate development setbacks along travel route corridors and it is important to provide screening. Development or change of use in rural landscape significance areas should protect rural character of the land.

The proposal responds to the policies of the SPP in respect to visual character which is demonstrated in the visual assessment report appended to this application. Comment in relation to this however includes the fact that the development is designed of an architectural type that is rural in nature inclusive of colours and materials, development is provided with a backdrop of the ridge and associated vegetation (enhanced with landscaping) and therefore is set on a hillside with appropriate development setbacks along the travel route corridor and appropriate screening is put in place. The development is situated sensitively within the rural landscape to protect the rural character.

Another feature of SPP 6.1 is the Land Use Strategy Plan which identifies the site as Principal Agriculture (Viticulture and Grazing). Policies relevant to this include the predominant use of land should be agriculture and other uses should be interspersed on land with lesser agriculture potential and be compatible and not jeopardise agricultural use of adjoining prime agriculture land. This is achieved as explained previously.

Viticulture is to remain the predominant land use within the constraints of protecting remnant vegetation and landscape values. Again, this is achieved with maintenance or large areas of viticulture onsite.

The information within the LNRSPP serves to reiterate the importance of primacy of agricultural land, landscape values and bushfire planning along with protection of native vegetation. The proposal responds appropriately to the LNRSPP because development is situated away from other important agricultural practices and utilises land principally not used for agriculture on the land. Further, it is sensitively located with adequate setbacks, backdrop landscaping and contours taking into account bushfire management and the location of native vegetation. The colours, materials, format of development and rural architectural style is suited to the rural landscape.

5.0 PLANNING ISSUES

5.1 BUSHFIRE – PLANNING FOR BUSHFIRE STATE PLANNING POLICY 3.7

Also as identified in a number of the relevant planning documents explored above, SPP 3.7 expressly requires detailed assessment of bushfire risk with respect to any proposal for development within a bushfire prone area. The subject site is located within a bushfire prone area and as such requires assessment under the relevant policy. A map indicating the subject site falling within a bushfire prone area is provided below.

Figure 9 - Map of Bushfire Prone Area Source: SLIP



Typical issues that need to be addressed under relevant bushfire policy as a result include but are not limited to:

- Ensuring the subject development is located in a situation where multiple entries/exits are available, and an extreme situation does not present.
- Access is available including two way passing, turn around for fire vehicles, access to water supplies and good locations for access to public road networks.
- Adequate asset protection zones which are zones where assets are protected with low fuel areas and therefore separated from bushfire risks such as native vegetation. Policy promotes achieving a bushfire attack level rating of BAL-29 particularly for tourist development.
- Access to water supplies and bushfire consultants in consultation with government generally advise on supplies that should be made available for fire fighters onsite with accessible couplings for connections etc.

Tourist development is generally noted as being a vulnerable land use and therefore requires greater attention and it is for this reason the City of Busselton also recommend 24hr onsite management.

The policy requires preparation of a Bushfire Management Plan and Evacuation Plan including assessment of the above factors and other relevant issues.

To inform the proposal and the layout of development, Envision Bushfire Consultants (Anthony Rowe) was engaged to provide advice. Anthony Rowe is a level 3 fire consultant which is the highest level available in Western Australia and policy recommends utilising level 3 fire consultants for tourist development proposals.

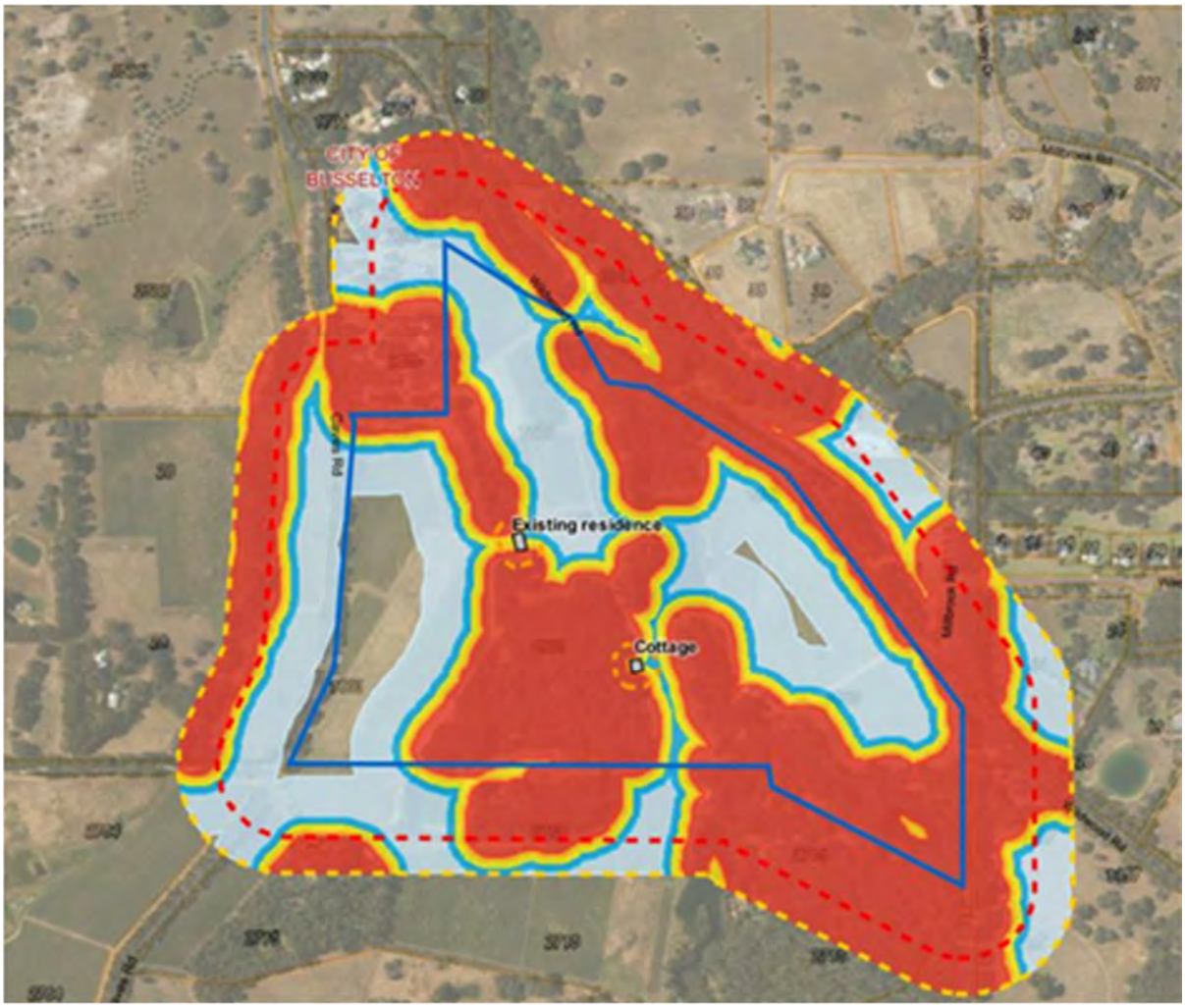
The Bushfire Management Plan prepared by Anthony Rowe to support the proposal is included at Attachment 2. The report recognises the appropriate location of development, access to it, bushfire attack level ratings (29 or better) access to water supplies, suitable turning and passing for vehicles and particularly recognises existing entry and exit opportunities as well as the proposed new entry.

During the preparation of the proposal very detailed consideration was given to accessibility, appropriate contours and manoeuvrability within the site. The driveway network essentially surrounds the development, provides a good level of accessibility and separation to development from areas of risk. The access arrangement also provides connections to other internal driveways including the second (agricultural) entry to Wildwood Rd to the east. Further, it is noted (whilst not relied upon) that there is another driveway connection to Caves Rd to the west which is convenient.

The bushfire attack level ratings have informed asset protection zones, and such zones are generally incorporated within existing open areas. Where asset protection zones penetrate into fringing vegetation areas, these have been assessed in great detail to confirm there is nothing of significance in these areas. Given the vegetated areas near proposed development is on the periphery of asset protection zones the modification to vegetation will be limited to understorey and likely retention of most if not all larger trees. A detailed report by Accendo environmental consultants along with a suitably qualified botanist has confirmed the suitability of fire management regimes to ensure the minimum rating of BAL 29 is achieved without impacting flora/fauna values.

The BAL contour map incorporated within the Bushfire Management Plan is included at Figure 10 below.

Figure 10 – BAL Contour Map Source: Envision



The Bushfire Management Plan adequately addresses the bushfire policy framework and has been instrumental in informing the proposal and the appropriateness of the location of development and access particularly. The proposal is therefore presented with appropriate attention to the issue of bushfire and particularly SPP 3.7 and the associated guidelines.

5.2 VISUAL IMPACT ASSESSMENT

Ecoscape (experts in visual impact assessment) were engaged to assist in providing advice with respect to visual aspects of the proposal given policy documents draw attention on ensuring development has due regard for visual amenity of the area particularly Caves Rd but also to a lesser extent Wildwood Road and also given the site falls within a special control area (Landscape Value Area). A copy of the advisory report with respect to visual impact assessment is included at Attachment 3.

The advice of such consultants served to inform the design of the proposal. The analysis prepared by Ecoscape considers the location of development and view sheds from relevant locations. The review considers the policy and scheme framework and recognises that setbacks are adequate and makes comment that buildings are not visually significant and are screened from tourist roads. Planting of additional vegetation to support the proposal is also recognised.

With respect to architectural design and materials of proposed buildings, this is generally single storey with stone, wood, colorbond and architectural style typical of rural buildings incorporated. This all serves to support the visual elements of the proposal.

Ecoscape have provided a sound assessment of the proposal against all of the relevant visual impact assessment matters and policies and indicate that the proposal is suitable within its context having regard for the relevant issues and documents that are applicable. Ensuring that the development is appropriately sited and designed with additional landscaping and retention of native vegetation has been a key aspiration of the proposal.

5.3 TRAFFIC IMPACT ASSESSMENT

A local experienced civil engineering firm Ascent Engineering was employed to provide detailed advice on traffic impact including access to the site and within as well as parking and other civil engineering related matters and this has involved detailed consideration of the existing road network and consultation with both the City and Main Roads WA. A comprehensive report supporting the proposal is included at Attachment 4. The report considers the existing site access and land use and the proposed development taking into account estimated traffic movements as a result of the maximum occupancy of the site which is estimated at 93.

Two crossover points to Wildwood Rd are noted including the proposed new crossover to service the development and the existing crossover (noted as A and B). It is noted that crossover B will be maintained as the agricultural practices entry/exit but can serve as an alternative in the event of an emergency to the primary crossover for tourists and firefighters.

The intersection sight distances are assessed, and this takes into account traffic counters that were placed on Wildwood Rd in August 2023 specifically to assess the speed and nature of traffic. Operating speeds were generally 80km/hr approaching the proposed new crossover.

Adequate sight distances were assessed, and it was noted that 1 tree (located within the property) limits current sight distances but with removal of this tree the sight distances will range between 120m and 178m therefore satisfying the absolute minimum property access stopping distances of 110m westbound and 114m eastbound. This assessment demonstrates the suitability of the proposed new entry point for the development. The environmental consultants have assessed the particular tree which is offending the sight distances and confirm this is not warranting of retention and therefore not of significance. This is addressed in the report by Accendo. Removal of this tree is therefore part of the proposal and indicated on the application plans.

The crossover utilised for agricultural practices is also assessed but it is recognised that this is an existing crossover and will not be utilised for an increase in traffic.

Section 5.3 of the report refers to traffic volumes and turn lane requirements. Existing traffic on Wildwood Rd is analysed and it is noted that this is generally between 48 and 63 vehicle movements per hour. The report outlines traffic to be generated by the proposed development would be a maximum of 111 vehicles movements per day via crossover A with anticipated reduction of 9 vehicle movements per day at the existing agricultural crossover. It is assumed that peak AM and PM volumes are modelled at 10 and 11 % respectively of daily volumes, 50% of all trips will be inbound to the site and 50% will be outbound with peak AM being between 11am and 12 noon and PM between 2pm and 3pm. 50% of all traffic generated by the site will travel to and from the west along Wildwood Rd particularly to points of interest and 50% east to access other tourism attractions at the townsites of Carbunup River, Vasse, Busselton and Margaret River.

Based on the assumptions projected peak hour turning movements are noted within the report. The peak number of vehicles moving in and out of proposed main crossover of the site both at AM and PM is estimated at only 6.

Consideration of widening and turning lanes is given and the very limited traffic at the existing agricultural crossover does not warrant further consideration. Given the movement of vehicles existing on Wildwood Rd and the 3 vehicles per hour expected to turn left into the new crossover warrants the most basic turn left treatment (BAL) based on Main Roads WA standards. Likewise, given the traffic existing on Wildwood Rd and the 3 vehicle movements turning right into the new crossover also warrants the most basic right turn treatment (BAR) to Main Roads standards.

A Main Roads guideline drawing 200413-0193 is recommended for the geometry for the new crossover at the main entry (location A). Further advice from the City of Busselton supports this view of driveway entry design which is reflected in the report.

Section 5.5 of the report documents considerations with respect to possible amendment to Wildwood Road posted speed limits. The report documents detailed consideration and liaison with the City and Main Roads engineers. Given traffic counters indicated that speeds were less than 80km per hour at location A (new crossover), a reduction in speed limit was not considered necessary to the proposal however, it was noted that agencies were considering a reduction to the posted limit in the area which would actually improve the situation.

With respect to vehicle access and parking an analysis of the parking requirements was undertaken and this has informed the number of parking spaces proposed to support the development. In summary, the minimum parking spaces required to support the development is 50 and at least 68 are provided which is therefore adequate.

With respect to parking for the disabled it is also noted that two disabled access spaces will be required, and adequate bays are incorporated within the proposal at accommodation and central facility locations.

Internal driveway geometry was assessed, and this also includes consideration of gradients and suitability for access for bushfire. Detailed analysis occurred in respect of gradients, and this ultimately informed the exact location of internal driveways so that accessibility within the site taking into account various standards and particularly, bushfire policy was given. Also, an important design element near the entry to the development was also proposed to address gradient in the form of a chicane which will also serve as a traffic calming arrangement. Provision for turnaround within the development and a loop road arrangement was also provided for improved accessibility and particularly again to address bushfire requirements.

The report prepared by Accent Engineering and the input during the design of the development certainly confirms that the access into and out of the site is appropriate taking into account the existing traffic on Wildwood Road and sight distances that are available and also informs that internal driveway networks are suitable for purpose and parking is provided at the appropriate rate. The detailed investigation by Accent Engineering serves to demonstrate the proposal is suitable with respect to traffic impact assessment and parking and also to confirm bushfire access requirements.

5.4 WATER SUPPLY AND EFFLUENT DISPOSAL

Environmental and Landscape Management in association with Ross Mars (Water Installations Pty Ltd) were employed to provide advice including a Site and Soil evaluation and information on water requirements to support the proposal. A report documenting this information is included at **Attachment 5.**

The report documents the characteristics of the site recognising there is a tributary of the Gunyulgup Brook traversing the site from south to north.

A Site and Soil evaluation was conducted in accordance with the Government Sewerage Policy September 2019, and this includes considering:

- Depth to highest groundwater from ground level.
- Depth to bedrock or impervious clay.
- Depth of free draining soil.
- Setback from water bodies.
- Soil structure and profile to a depth of 2m or more.
- Phosphorus retention in depth to 1m.
- Infiltration rate of the soil (litres per m^2 per day).

The physical environment was assessed with various references to other sources to inform consideration of the proposed development and its needs with respect to water supply and effluent disposal. Various test pits were dug on the site and soils analysed as well as site conditions. Test pits were dug during winter to assess conditions at the wettest time of the year. Soil permeameter tests were undertaken and soils were sent to laboratories for testing such matters as Ph nutrient content, electrical conductivity, phosphorus retention index and aggregate class or similar dispersion test.

Detailed consideration was given to climatic factors, and it was noted that the 2 wettest months of the year are June and July in the area as represented by figures recorded at Cape Naturaliste.

It was noted that the subject site was not located within a sewerage sensitive area nor a public drinking water source area. Further, no groundwater was observed in any of the pits at around 2m in depth.

Permeability tests were undertaken, and soils were described as sandy loam/loam. At the soil category from permeability readings is therefore classified as 2. It was noted that permeability was generally

high, and flatbed drains, and conventional leach drains are possible depending on local siting of the system and there is enough clear area for a drip line system.

The land application area calculations following on from consideration of the government sewerage policy and hydraulic loading rates indicated that with approximately 90 customers and 3 staff 9300lt per day would be expected at full occupancy. Both primary treatment and secondary treatment options were considered with a disposal field of 2475m² identified for a secondary treatment system which can easily be accommodated within the site as indicated on the application plans with options available. This amounts to approximately 0.25 hectares within a site of approximately 42.5 hectares and adequate separation from waterways can be achieved. A site for disposal at high contour and distance from watercourses has been suggested reflected on the application plans. The disposal field area is a planted belt of non-native vegetation.

With respect to water supply an appraisal report was prepared by Dr Ross Mars in July 2022. This has been further considered within the report at Attachment 5 to this application and an estimated consumption of 240,000lt per group of hotel rooms or chalet and based on existing roof area there is capacity to collect 324,000lt of water for each chalet or group of rooms and on this basis a 170,000kl tank will fill twice allowing for water use throughout the months of high rainfall. It is on this basis that water tanks are designed throughout the site to support potable water requirements.

The detailed assessment of effluent disposal capability and water supply requirements supports the application and the design included in the application plans.

5.5 ENVIRONMENTAL ASSESSMENT

The proposal aims to establish development essentially in existing cleared areas and therefore have very limited impact on the environmental attributes of the site. Notwithstanding this, given the slope of the land some of the asset protection zone areas about development extend into the periphery of some existing vegetation and there is also 1 tree which is inhibiting sight distances at the proposed entry point.

To confirm whether there were any environmental constraints in this regard, locally based consultants Accendo Australia (environmental consultants), and Plant Ecology Consulting (Botanist) were engaged to provide advice guidance to refine the proposal and assess and report on the environmental characteristics of the land and the suitability of the proposal. This included a spring survey.

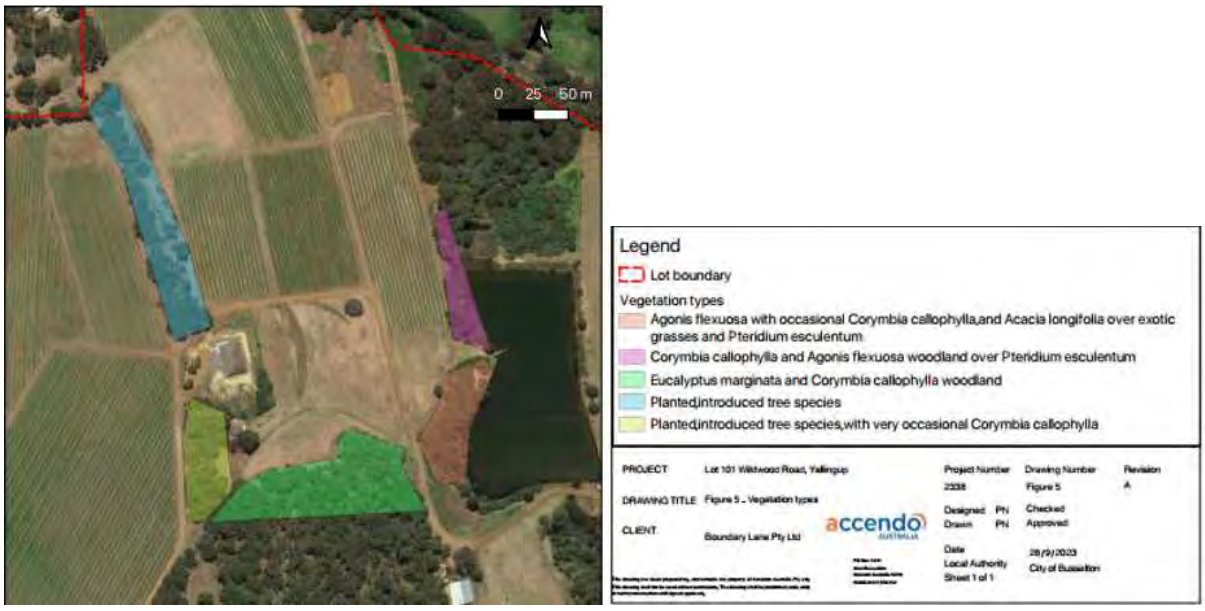
The environmental assessment report is provided at Attachment 6.

In summary, recommendations were to locate development such that the asset protection zone areas affected only the periphery of existing vegetation and predominantly where edge effects already existed, and some exotic species had been planted. The vegetation along the edges are noted as degraded.

The report outlines an assessment of the relevant legislation that is applicable and recognises the existing environment noting the previous land use of clearing for grazing and then viticulture enterprise, topography of the site, the land forms and soils, the moderate to low risk for acid sulphate, the fact that there is no known site contamination, consideration of water and groundwater matters and the fact that the site is not within a sewerage sensitive area.

In more detail the flora and vegetation characteristics of the site were analysed following site inspection, and it was noted that introduced species was a feature on the site although there are stands of native vegetation as evident in the aerial photograph contained within the report. See figure 11 below.

Figure 11 - Nature of Vegetation About the Development Area (Source: Accendo)



With respect to threatened and priority ecological communities, none were considered present within the site. Further, no environmentally sensitive areas were identified within the site.

A search for known rare or priority flora occurred to determine flora of conservation significance and a targeted flora survey was conducted in September 2023 (peak flowering season) by Plant Ecology Consulting and this did not identify any species of conservation significance within the proposed disturbance footprint.

With respect to fauna again databases for target species were assessed and specific reference was made to Western Ring-Tailed possum, Black Cockatoo, Dunsborough Borrowing Crayfish, Quenda and Phascogales.

The report recognises that there are no aboriginal heritage sites listed within the database on the subject site and where development is proposed to occur (already cleared areas with no notable features) the report concludes the proposal will not result on any direct impact to any registered sites.

The assessment indicates that acid sulphate soils risk is moderate to low, there are no anticipated direct impacts on wetlands of conservation significance or groundwater, wastewater management is appropriate, confirmation that the proposal will have minimal impact on native vegetation and recognises that given the additional planting that is proposed to occur on site as a result of the proposal the net result will be an improvement to the environmental attributes of the site. Again, whilst areas of the subject site may provide suitable habitat for significant fauna species, due to the completely degraded and degraded nature of vegetation, no significant impacts to fauna of conservation significance are anticipated.

The conclusion of the investigation includes the following:

"The proposed development recognises the importance of the key environmental and landscape attributes of the subject site. Consequently, at this stage, the identified key environmental features are unlikely to present as being constraint to the proposed development. This has been achieved with the avoidance and management measures summarised in Table I in the executive summary.

Overall, the known environmental attributes and values of the site can be accommodated through the development plan design or can be managed appropriately through future development phases in line with the relevant state and local government legislation, policies and guidelines and best management practices."

In relation to the targeted spring flora survey by the relevant botanist, as reported in the environmental assessment report, it was noted that the areas of interest do not contain any significant flora and that the vegetation condition is rated as completely degraded. The Botanist states the current habitat conditions would be unsuitable for most native annual and or herbaceous taxa and although some native shrubs and trees are present, none are of conservation significance.

The botanist concluded by stating:

"No conservation significant flora were recorded during the survey. Most of the conservation significant flora with potential to occur within the site are perennial taxa and would be observable if present. Although individual orchids may not flower every year and rainfall in the preceding 3 months for the Margaret River area was below average, the completely degraded condition of the vegetation indicates that it is highly unlikely that any threatened or priority flora occur within the site."

The environmental assessment does not identify any concerns with respect to the proposal and this is reflected in the fact that the development is located in cleared areas where asset protection zones only fringe into existing vegetation where edge effects and completely degraded status already exist. There is also a net environmental benefit as a result of the proposal with additional landscaping with appropriate species to be the subject of a landscape plan to be provided at development stage.

6.0 PREVIOUS MEETINGS WITH CITY PLANNERS AND HEALTH OFFICER

As required for DAP applications, prior to preparation of the proposal, two meetings were held with City planners and this was including a clear indication of what was proposed in this application. At one meeting the City Health officer was also present. Positive feedback was generally received to the proposal and officers were comfortable with the scale of development recognising the existing substantial viticultural operation and the fact that principally areas not utilised for agriculture are to be utilised.

Officers indicated the importance of bushfire consultants and effluent disposal capability assessments as well as the need for onsite management. Officers also indicated the importance of ensuring development was not visible from Caves Rd and that Wildwood Rd was of less concern.

Setbacks were encouraged to be complied with and it was noted that relocating the driveway entry should avoid impact on vegetation.

The nature of the buildings was noted as suitable for consideration as a Rural Holiday Resort with a mixture of rooms and chalets as depicted on the plans.

It was also pointed out that due regard should be had for the Leeuwin Naturaliste Ridge Policy, visual requirements, provisions of the scheme and the Rural Tourism Policy. All such matters have been considered and the feedback received during the initial consultation meetings with City officers was generally positive to the proposal and this provided confidence to continue to refine the proposal with expert input and lodge the proposal.

Officers of the City also recommended that if alcohol was to be served to guests that a hotel-restricted licence would be supported and should be applied for, and this should be incorporated within the proposal which is the intention of this application.

Officers of the City also indicated in their opinion there was no need to follow the design panel review process for the application in a rural setting such as this.

All of the advice received from City officers has been followed and therefore due attention to City requirements has been a feature of the proposal.

7.0 CONCLUSION

The subject sited is zoned Viticulture and Tourism under the City of Busselton's Local Planning Scheme and this clearly indicates that key objectives are to provide for development and expansion of viticultural enterprise and development of tourist facilities of a scale and nature appropriate to the rural setting. The City have developed a Rural Tourism Policy which provides very firm guidance on density of development relative to the size of the lot. This indicates density that would be appropriate and this is adhered with. There are also many other guidelines incorporated within the scheme and policy which provide guidance to proposals within this part of the City. The proposal is consistent with such requirements.

It is well recognised that the Willyabrup and Yallingup area is an important tourism area being proximate to points of interest and accessible from key roads such as Wildwood Road, Caves Road, and others in the locality. The proposal is suitably located to showcase the attributes of the area.

Viticulture and tourism are key drivers for the economy of the City of Busselton and the adjoining Shire of Augusta-Margaret River and tourism experiences, and accommodation of quality need to be provided. This is particularly bolstered by the fact that Busselton has now established a domestic airport providing easy access from interstate including Melbourne and Sydney.

There have been limited key examples of provision of quality accommodation in a viticultural setting within the Cape-to-Cape region and the proposal represents an excellent opportunity to provide such accommodation for all types of guests including families in a very scenic location without impact on the area. The proposal incorporates accommodation of architectural style, colours and materials and design that is suited to the rural locality. The setting within a vineyard is perfect for visitors to the Margaret River Wine Region and pathways through the pockets of bushland provide an environmental experience.

Quality accommodation in the region has been focussed on the coastline taking advantage of beach environments and there are limited examples of accommodation in scenic rural and viticultural settings which are not only needed but are highly desirable given viticulture is an important part of what visitors come to experience. The proposed boutique resort accommodation with amenities for guests in this context and location will be of benefit to the area generally, other value adding enterprises and tourist operators and will an excellent addition to the tourist offering in the area.

Prior to preparation and lodgement of this application, key meetings were held with senior planning officers at the City of Busselton to confirm the appropriateness of the proposal, the key information to be submitted, the density of development, the fact that a hotel restricted license would be supported, and general support was received subject to provision of information as documented in this application.

Detailed assessments have occurred including traffic assessment, bushfire assessment, environmental review including spring survey by an experienced botanist, effluent disposal considerations and design as well as visual impact assessment noting that development would not be evident from Caves Road which is a key matter. Further consideration has been given and due regard to all relevant planning scheme provisions and policy requirements and the proposal therefore represents a sound and reasonable proposal consistent with the planning framework.

The proposal will utilise areas of the site that are not generally developed for viticultural purposes, will provide an excellent quality tourism experience, and will serve to further bolster the Yallingup and Wilyabrup area as a key tourism destination of the City of Busselton but also Western Australia. The accommodation will be a rarely seen needed investment in tourism.

Approval of the application is respectfully requested.

Bushfire Management Plan

GUNYULGUP Wildwood Resort

1603 (Lot 101) Wildwood Road Yallingup

MARCH 2024

envision
bushfire protection

LIMITATIONS STATEMENT

This Bushfire Management Plan ('BMP') in support of a tourist accommodation facility at Lot 101 Wildwood Road Yallingup. The site is located within the City of Busselton (decision maker).

Envision Bushfire Protection

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Version Control

Lot 101 Wildwood Road Yallingup.			
Version	**Date**	**Author**	
V1	21 August 2023	Anthony Rowe	Draft
V2	17 November 2023	Anthony Rowe	Revised site plan
V3	19 March 2024	Anthony Rowe	Removal of access to Caves Road and slope percentages added
V4	22 March 2024	Anthony Rowe	Correction – removal of reference to Caves Road emergency access

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Disclaimer

In undertaking this work, the authors have made every effort to accurately apply the available information at the time of writing following the instructions of the regulatory authorities and applying best practice as described by the Fire Protection Association Australia. Any conclusions drawn or recommendations made in the report are made in good faith, and the consultants take no responsibility for how this information and the report are subsequently used.

Envision Bushfire Protection accepts no liability for a third party's use of, or reliance upon, this specific report.

Envision Bushfire Protection accepts no liability for the inaction of the owner to provide or maintain the bushfire protection measures identified in this report. Vegetation is dynamic, building materials may distort, and the accumulation and the location of flammable materials near the building may affect the potential for damage or loss of a building to occur.

Failure to maintain the property and/or building to these standards may compromise an insurance policy if currently covering any of your assets or those of any third party that may be consequentially affected due such failure. If not insured, and if you are seeking insurance, this report may not influence the decision of any insurer not to offer cover.

Importantly the measures contained in this report cannot guarantee human safety or an absence of harm or that the building will not be damaged or would survive a bushfire event on every occasion. This is due to the unpredictable nature of fire behaviour (knowledge in this field continues to develop) and the unpredictable nature of extreme weather conditions.

It follows the requirements listed in the Guidelines and the templates providing investigation guidance prepared by the Department of Planning Lands and Heritage. It is applicable to the authorisation required under the Planning and Development Act 2005. It does not obviate the need to gain authorisations under other legislation, or establish priority over other legislation such as, but not limited to, the State Environment Protections Act 1986, the aboriginal cultural Heritage Act 2021 and the Federal Environment Protection and Biodiversity conservation Act 1999.

The scope of the advice has been to assess the proposal for compliance with the policy measures described in State Planning Policy 3.7.

Client relationship

I was engaged to provide expert bushfire safety and planning advice. My relationship with the client is a standard commercial contract, and no private, personal, or other matter has influenced the content of the BMP or my findings.

STATEMENT OF CONFORMITY – PLANNING AND DEVELOPMENT ACT 2005



Anthony Rowe Level 3 - BPAD36690

Principal Bushfire Consultant I Town Planner

BPAD Accredited Practioner Level 3

PIA Registered Practicing Planner

The signatory declares that this Bushfire Management Plan meets the requirements of State Planning Policy 3.7 and the Guidelines for Planning in Bushfire Prone Areas V1.4.

SUMMARY

Preface

The applicant is proposing a tourist accommodation facility (Resort) at Lot 101 Wildwood Road Yallingup.

The site is within a declared bushfire prone area. Accordingly, the proposal is development that is required to be assessed for its compliance with State Planning Policy 3.7 *Planning in Bushfire Prone Areas* ('**SPP 3.7**') and the bushfire protection criteria described in the Guidelines v1.4.

The intent of the policy is: "***to preserve life and reduce the impact of bushfire on property and infrastructure"***.

The proposed development is a hotel comprising 28 rooms and 4 individual chalet units providing short term tourist accommodation. It is classed as a 'vulnerable' land use because guests at the accommodation may be unfamiliar with the locality. The development also includes a facilities building, associated with the tourist accommodation, and a new residence to be located at the northern extent of the buildings.

The BMP has been prepared together with a Bushfire Emergency Evacuation Plan.

This assessment (BMP) has followed the Department of Planning Lands and Heritage (DPLH) *BMP Template for a complex development application.* The headings below follow the investigations required by DPLH template and the findings.

1. **Proposal details (addressed in Section 1)**

The site is approximately 42 ha and zoned 'Rural' in the City of Busselton Local Planning Scheme No.21 ('the Scheme')

The site is triangular and located near the apex of Caves Road and Wildwood Road; a ridge/hilltop runs centrally from the apex of Caves Road and Wildwood Road.

The western hill side facing Caves Road (back of site) slopes from the ridge downward to Caves Road and will be retained as vineyards.

The eastern face (toward Wildwood Road) has a down slope of 5-10 degrees to a water way located along the eastern side of the site (flowing south to north). The waterway flows through a large centrally located lake.

The site is presently used for agricultural production (vineyard) and contains two habitable buildings and farm buildings.

The proposed buildings are mostly arranged in a line north south, following but below the ridgeline and on the northern face of the hill side. Two accommodation chalets are to be located near the south bank of the lake and at the toe of the hillside.

A facilities building is located centrally within the proposed buildings. One of the existing dwellings is to be displaced by the facilities building and that dwelling will be replaced with a new residence at the northern extent of the development. An existing dwelling south of the tourist accommodation will be repurposed for staff accommodation.

A new primary access (gateway) to the proposed development will be created at the northern extent; entering and exiting from Wildwood Road and connecting to a loop around the resort development. The access is aligned to not exceed an average gradient of 1:10 (10%); a chicane at

the entry has been provided as a control for descending vehicles approaching the junction with Wildwood Road.

The existing access at the southern extent will be retained for separating the agricultural production at the site from the guests and staff at the resort. All access ways are connected and provide multiple options to enter and leave the site in an emergency

The site does not have access to a reticulated water supply. Roof top capture is proposed for domestic purposes. The option to use treated water from the site may be pursued at a later time

2. **Environmental considerations (addressed in Section 2)**

The site contains isolated remnant vegetation, primarily along the waterway and in a triangle along the ridge line with a broader area at the southern end. Both the east and west face of the ridge are vineyards and will be retained as vineyards.

The proposed buildings will mostly occupy cleared land (displacing vineyards) and will mostly avoid the need for modification to forest vegetation on site.

The exception is at the southern extent which will require modification to facilitate a 21 m Asset Protection Zone (APZ).

The two chalets immediate to the lake, will require modification of the vegetation that was established around the lake at its making. This will be affected by the northern extent of the APZ (affecting 10 m) for each chalet.

All accessways have been incorporated into the APZ 's and otherwise across grassland to minimise impact on the forested areas of the site.

There is no requirement to modify vegetation outside of the site.

Future landscaping is proposed for beautification immediate to the buildings, carparking areas and driveways.

3. **Bushfire assessment results (addressed in Section 3)**

A Bushfire Attack Level assessment following Method 1 AS 3959:2018, and the DPLH *Visual guide for bushfire risk assessment in Western Australia*, and using an FFDI of 80, has been undertaken.

The proposed buildings will be separated from forest, with an APZ, adjusted for slope, achieving BAL 29. *(Shelter onsite is not proposed as a primary risk treatment in a bushfire event; nominal values AS 3959:2018 are appropriate).*

4. **Identification of bushfire hazard issues (addressed in Section 4)**

The history of bushfires in the location indicates there is no record of an uncontrolled fire, but due to the presence of bushfire fuels nearby, the risk is considered likely, and it warrants that risk treatments be applied. These treatments can be addressed by the Bushfire Protection Criteria.

Evacuation from the site can be provided to multiple destinations along Wildwood Road to either Caves Road (west of site) or Commonage Road (east of site). Both routes pass sporadic pockets of forest through open pasture landscapes.

The site is not connected to a reticulated water supply. The domestic supply is to be provided by roof top collection. Water for structural fire at the site and for bushfire will be required initially through water tanks.

The preparation of the Bushfire Emergency Evacuation Plan is a risk treatment provided for the safety of guests. It provides for seasonal preparation to minimise the impact of a bushfire at the resort, and importantly through receiving alerts (mobile phone) and actively monitoring daily conditions, maximising the time for (early) evacuation, when it is safe to do so.

5. Assessment against the bushfire protection criteria (addressed in Section 5)

The proposal was compared with the four Bushfire Protection Criteria for Element 5 - *Other short-term accommodation – including motel, serviced apartments, tourist development (includes cabins and chalets), holiday accommodation and caravan park (which incorporates camping grounds,* and the requirement for *Day uses (with no overnight accommodation) – including art gallery, brewery, exhibition centre, hotel, reception centre, restaurant/cafe, small bar, tavern, winery*

Acceptable Solution

Other short-term accommodation

Element A5.7 Siting and Design requires that a planning application should demonstrate the habitable buildings will not be exposed to a BAL greater than BAL 29.

All habitable buildings can achieve an APZ equivalent to BAL 29 within the site.

The APZ for the habitable buildings due to the site slope downwards to the east (5-10 degrees), will require an APZ of 33 m to the east. Presently this land is utilised as vineyards, The two chalets adjacent the lake will also require an APZ of 33 m to the east, accounting for the slope to the lake. The APZ will affect the first 10 m of trees that adjoin the lake. Modification will be required to comply with the APZ standard.

In other directions from the building the site is either level or has an upslope; the APZ required is 21 m.

An APZ will be required to be established extending 21 m into the forest vegetation at the southernmost buildings. A separate flora study has been undertaken and a Landscape Management Plan, will be prepared that is consistent with achieving the APZ standard (Element 2 Schedule 1) whilst retaining the highest ranked environmental assets.

Element A5.8 Vehicle Access requires the site has access to a through road to provide alternate routes of escape (to a suitable destination) and access for fire fighters.

The primary entry for guests is from a new access created on to Wildwood Road, which is an east west through road (A5.11a).

An internal loop road (private driveway) is proposed around the resort buildings and provides a continuous access and egress on to Wildwood Road.

The existing driveway onto Wildwood Road will be retained for the agricultural production at the site.

All access routes are connected to provide multiple options to enter and exit the site (A5.11e).

The private driveway (internal vehicular access longer than 70 m) is required to comply with the technical requirement (Table 6 column 4) (A5.11f).

The technical requirements described in (Table 6 column 4) require a horizontal width of 6 m and a minimum trafficable surface of 4 m.

It also requires a maximum average grade of 1:10 (10%), and the roads to be sealed where the grade exceeds 1:7 (14.3%).

Note: the City has a separate Planning requirement that internal roads serving a tourist facility are to be sealed, the private driveway/internal road serving the accommodation will be sealed, in accordance with the City requirements.

The north face of the hillside has a slope east ranging between 5-10 degrees. The primary access has been carefully aligned to achieve a gradient, and inner radius requirement, with an average slope not exceeding 1:10 (10%).

A primary concern for vehicles on slopes, at or exceeding 1:10 (10%), is the control of the vehicles on descent. The chicane at the north entry onto Wildwood Road (inner radius compliant) addresses both the gradient transition from the site onto Wildwood Road, as well as restricting the potential for an uncontrolled runaway of a vehicle into Wildwood Road.

Directional signage will be provided along the private driveway to provide clarity on the location of site exits in an emergency (A5.11g).

Element A5.15 Water requires the availability of water for firefighting purposes.

The site does not have a reticulated water supply.

Water to be reserved for emergency services will be provided in accordance with the ratio provided in Schedule 2 Element 4. A minimum 140 000 L is required to be provided, and sited opposite to the facilities building.

Additional Bushfire Management Strategies (addressed in section 5.2)

Additional Bushfire Management Strategies (risk treatments in addition to those addressed in Element5) includes the Bushfire Emergency Evacuation Plan (Attached at Attachment 1). The Bushfire Emergency Evacuation Plan has been prepared in compliance with 5.5.2 in the Guidelines v1.4.

Spatial representation of the bushfire management strategies (Figure EX 1)

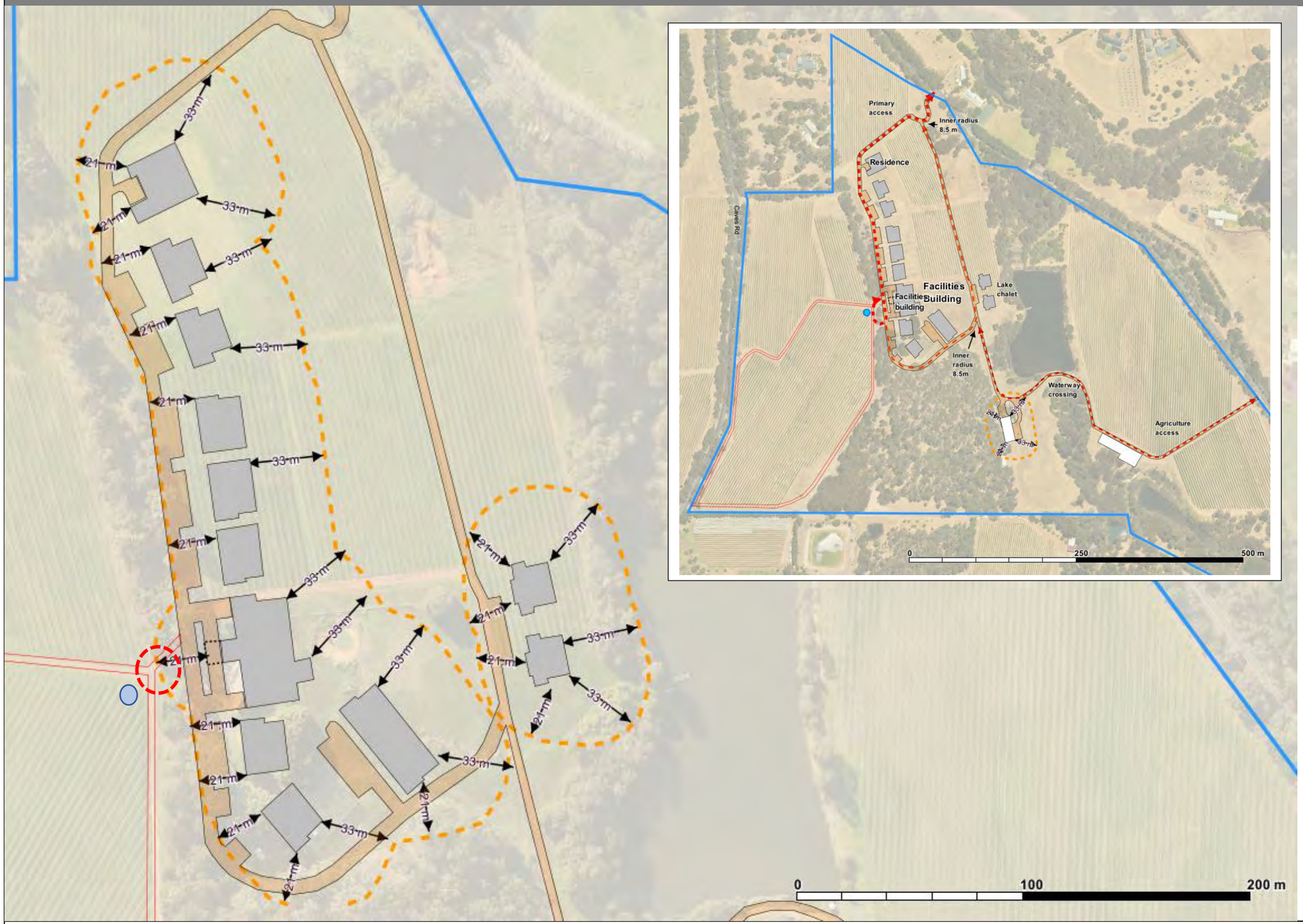
The key features demonstrating compliance with the bushfire protection measures are identified on the *Spatial representation of the bushfire management strategies*.

These actions are reflected in the following *Responsibilities for implementation and management of the bushfire measures.*

6. Responsibilities for implementation and management of the bushfire measures

The Owner responsibilities (Guidelines 4.6.3) identify the bushfire management measures necessary to achieve compliance with the bushfire protection criteria are provided at **section 6** in this BMP and summarised in Figure Ex1.

Figure Ex 1 - Spatial representation of the proposed risk management strategies - Lot 131 Wildwood Road Yallingup.



Responsibilities for implementation and management of the bushfire measures

1. The adoption of the Bushfire Emergency Evacuation Plan (provided in Attachment 1).
2. An Asset Protection Zone is to be maintained compliant with the Standards for Asset Protection Zones Schedule 1, Element 3 Guidelines v1.4.
3. The Asset Protection Zone is to be established only after the City approval of the Landscape Management Plan - affecting the existing vegetation within the extent of the Asset Protection Zone.
4. All Class 1 (residence) and Class 3 buildings (tourist accommodation) are to be constructed compliant with section 3 and 7 AS3959:2018 (BAL 29).
5. The facilities building is to be constructed compatible with section 3 and 7 AS3959:2018 (BAL 29). *Where the National Construction Code requires a high level of fire protection described in AS3959:2018 the higher standard is to apply.*
6. The Primary Access is to be constructed and maintained compliant with the technical specifications in Table 6 column 4, Guidelines v1.4 including a maximum average grade of 1:10 (10%) and with a 4 m wide sealed trafficable surface within a 6 m wide trafficable surface and at all junctions, and corners, an inner radius of 8.5 m.
7. The Agricultural Access, as a secondary access is to be constructed and maintained compliant with the technical specifications in Table 6 column 4, Guidelines v1.4 excepting the water way crossing having a 4m wide trafficable surface.
8. Directional signage is to be provided along the driveways at 50 m intervals, at driveway junctions and at the exits onto Wildwood Road.
9. Directional signage is to be provided to the (Bushfire) water tanks and the facilities building
10. A turn around area is provided west of the facilities building (compliant with Figure 28 Guidelines v1.4)
11. A dedicated (bushfire) water supply, minimum 140 000 L tankage is to be provide in compliance with Element 4 Schedule 2 (Guidelines v1.4). The tank/s are to be located within 30 m west of the Facilities building adjacent the vehicle turnaround area.

LEGEND

- Site Boundary
- Asset Protection Zone
- Primary Access
- Secondary Access
- Emergency Services Water Tank min 140 000 L
- Turn around area (Figure 28 Guidelines V1.4)

EMERGENCY EVACUATION DIAGRAM

BUSHFIRE EVACUATION PROCEDURES

If you hear the **Alarm – 3 sounds of a horn, repeated;**

or

If you a requested by a staff member

1. Collect your essential items
    - mobile phone
    - finance(money/cards)
2. Dress in, or take with you:
    - long sleeve shirts and pants and closed shoes
    - a bath towel, one for each guest
3. Move to the Facilities Building
4. Register your arrival with the supervising staff member.

At the Facilities building you will receive advice on

- whether to evacuate the resort to a safe destination: or
- shelter is to be taken at the Facilities building.

Do not leave the resort unless you have been advised it is safe to do so.



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ATTACHMENT 3 – Firebreak Notice
ATTACHMENT 4 – Access
ATTACHMENT 5 – References

1. PROPOSAL DETAILS

1.1 Introduction

The proposal is for a tourist accommodation facility at Lot 101 Wildwood Road Yallingup.

The site is within the administrative area of the City of Busselton (Plate 1) and is within a declared bushfire prone area (Plate 2). Accordingly, the proposal (short stay accommodation) is development that is required to be assessed for its compliance with State Planning Policy 3.7 *Planning in Bushfire Prone Areas* ('**SPP 3.7**') and the bushfire protection criteria described in the Guidelines v1.4.

The intent of the policy is: "***to preserve life and reduce the impact of bushfire on property and infrastructure"***.

The proposed development is classed as a 'vulnerable' land use because guests may be unfamiliar with the locality. The BMP has therefore been prepared in conjunction with a Bushfire Emergency Evacuation Plan.

This BMP has been prepared in accordance with SPP 3.7 and Appendix Five in the Guidelines v1.4 and the Department of Planning Lands and Heritage (DPLH) *BMP Template for a complex development application;* the following has been prepared to comply with the DPLH template.

Purpose of this Plan

The prevailing policy intent applied by SPP 3.7 is ***to preserve life and reduce the impact of bushfire on property and infrastructure.*** SPP 3.7 in achieving its intent, is a risk-based framework that utilises AS 3959:2018 to determine the bushfire risk and the bushfire protection criteria (Element 5) is the corresponding risk treatments. Compliance with each of the relevant Element may be by Acceptable Solutions, or through performance principle. Demonstrating compliance with the relevant provision of each Element, represent an acceptable risk.

> "SPP 3.7 does not require that there be no increase at all in the threat of bushfire to people property or infrastructure. Rather, as is seen in cl 2 of SPP 3.7, the intention of the policy is to 'implement effective, risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure". (Harmanis Holdings No. 2 Pty Ltd and Western Australian Planning Commission [2019] WASAT 43

The purpose of this BMP is to assess the suitability of the proposal and its location for the intended use and identify the measures to avoid an increase in the threat of bushfire and reduce the vulnerability of people and property (to the degree necessary) from a 'significant adverse bushfire impact'.

Site and Proposal Description (Table 1)

The proposed development is short term accommodation and will comprise:

- Hotel (28 rooms in 6 blocks);
- 4 Chalets;
- Facilities building (central)

The development will be accompanied by vehicle accessways and landscaping

The elevations for each building are provided in Plate 3.

Site and Proposal Description (Table 1)

Address	**Lot 101 Wildwood Road Yallingup**
Local Government Area	City of Busselton
Local Planning Scheme Zone	Rural
Bushfire Season	1 December – 12 May (precise dates may vary annually)
Lot size	42 ha
Land description site	The site is a low hill (summit 54 m Ahd valley floor 14 m Ahd) The site is mostly cleared and used for viticulture. Isolated forest is located at the crest of the hill and along the valley floor. The forest is contiguous with a narrow band of forest extending 1.2 km south from the site.
Road Access	The site is accessed from Wildwood Road. Wildwood Road is a sealed and line marked regional road that runs between Caves Road (west of site) to the townships of Margaret River (south) and Dunsborough (north). Commonage Road east of the site provides access to the township of Busselton and an alternate route to Dunsborough
Water supply	The site is not connected to a reticulated water supply. The site has a large open water supply (dam) that is located on the valley floor between the proposed buildings and Wildwood Road but is not proposed as a water supply for the resort. The proposed development will provide potable standard water (volume) from rooftop collections. No strategic water tanks or hydrants are located within 2 km of the site. Additional water tanks will be required for structural fire and also for bushfire.
Tele communications	The site is within the Telstra 4G network.
Emergency services	The nearest fire brigade is: Yallingup Rural Volunteer Bushfire Brigade, 2928 Caves Rd, Yallingup (4 km)
Minor Development	N/A
Unavoidable development	N/A
Vulnerable Development	Yes
High risk land use	N/A



Plate 1:Site in Locality (grey box)

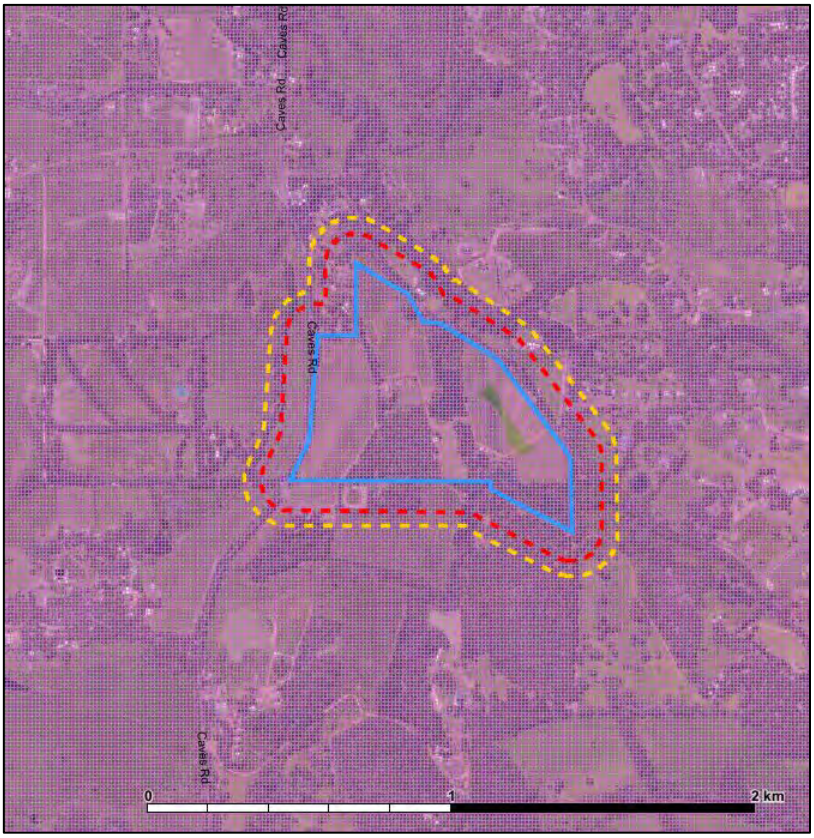

Plate 2: OBRM Bushfire Prone Area (pink area)



Plate 3a Development Proposal site

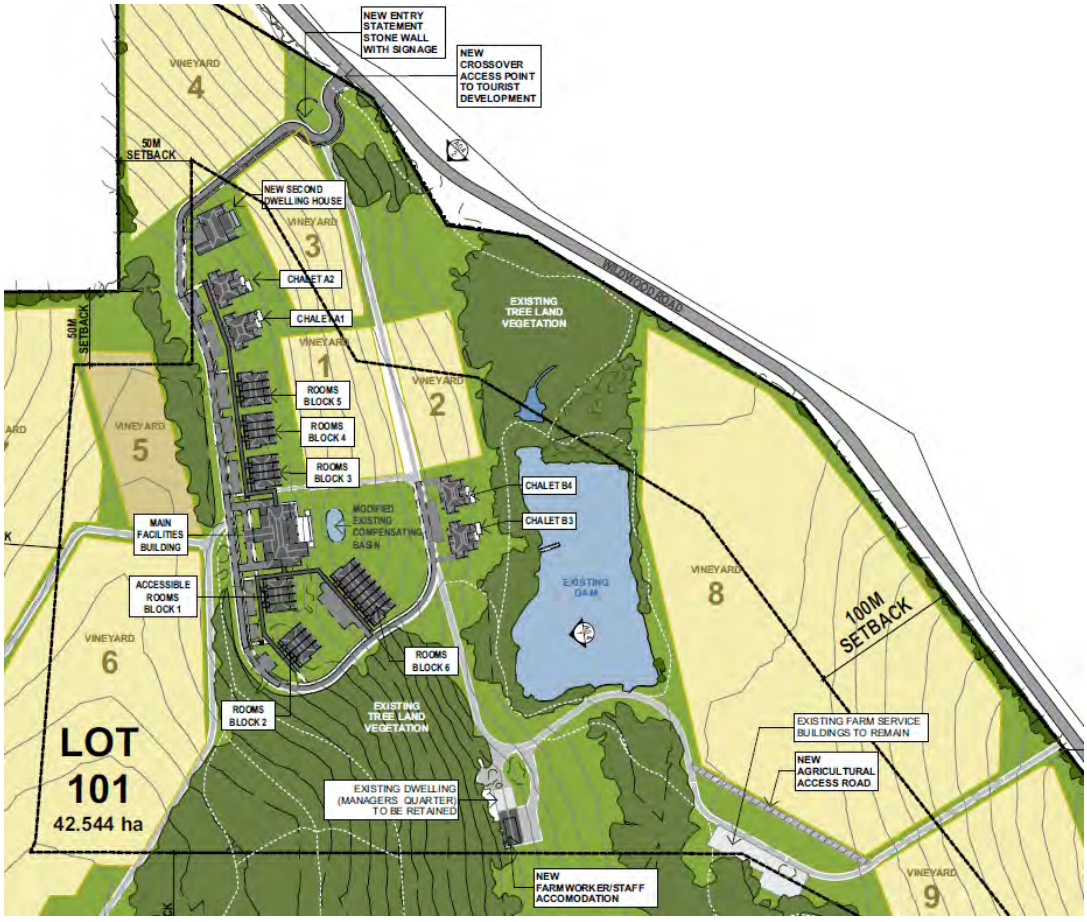

Plate 3b Development site

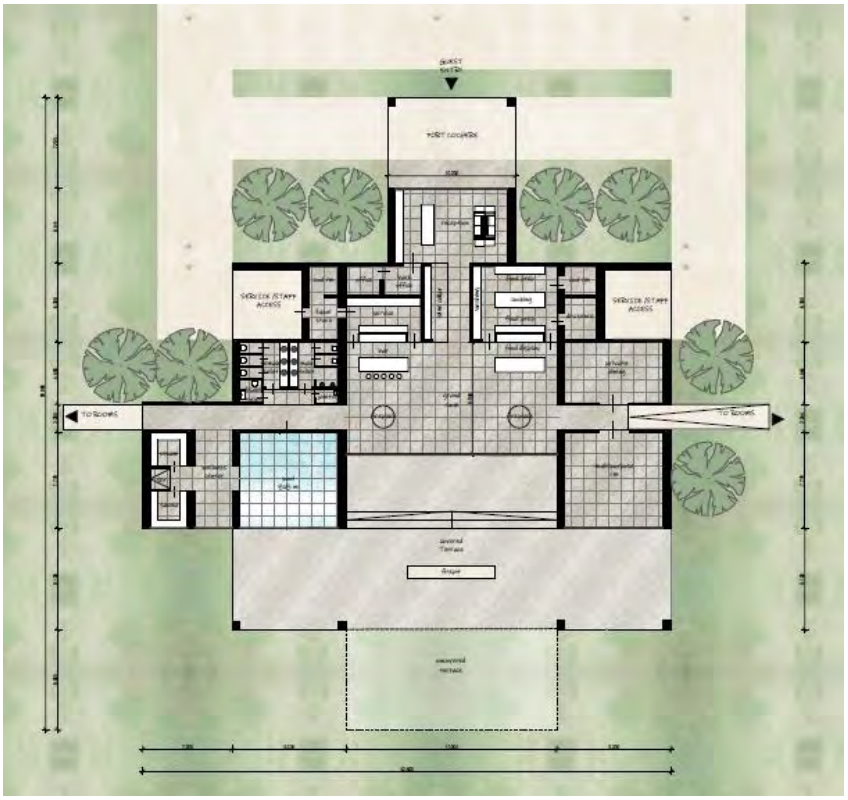

Plate3c: facilities building

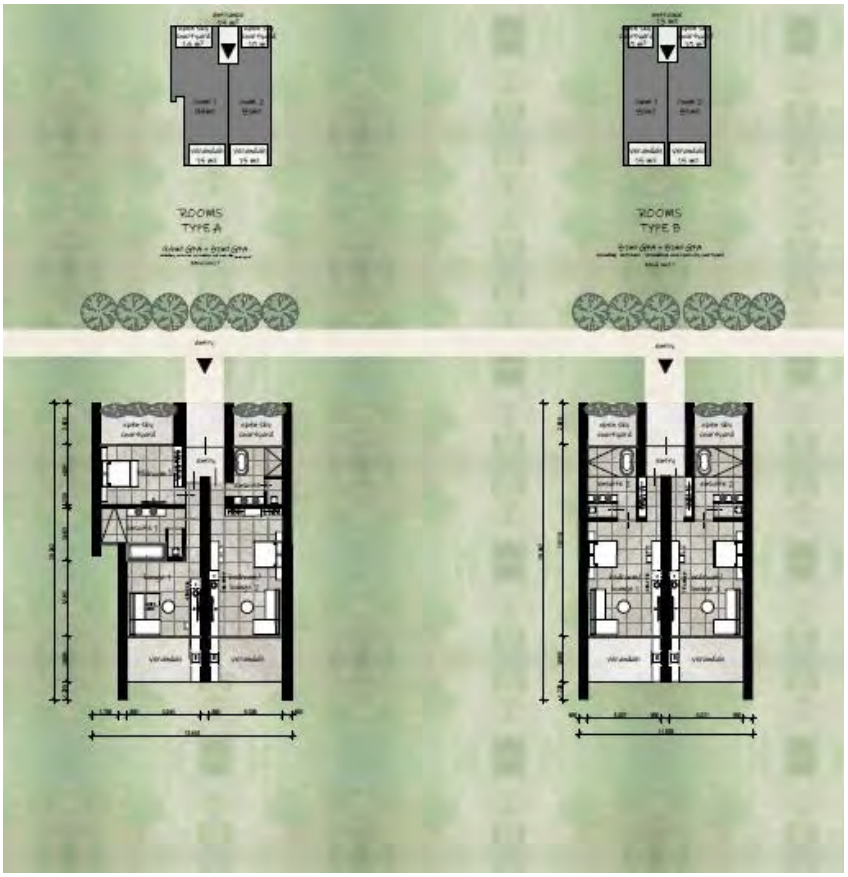

Plate 3d: hotel units

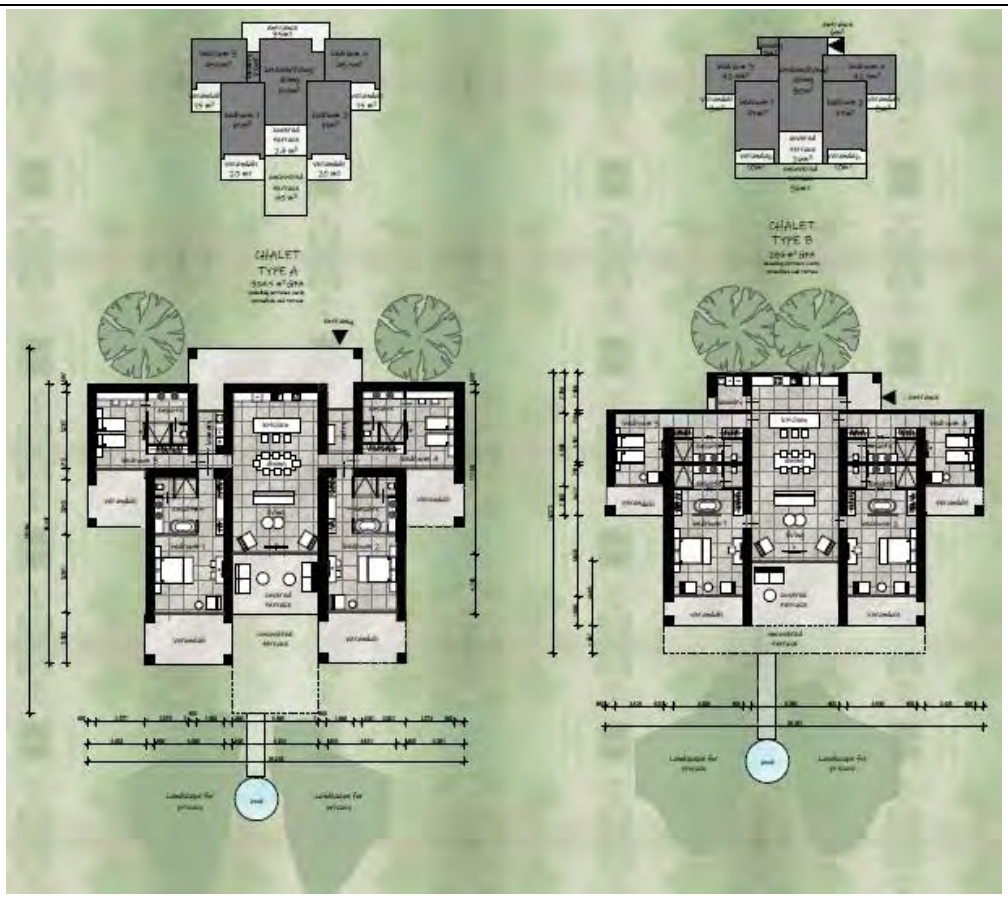

Plate 3e: Chalets

1.2 Regulatory Compliance Requirements

Planning and Development Act 2005 - SPP 3.7

On 7 December 2015, the State Government introduced by Gazette, a state map of Bushfire Prone Areas by order under the *Fire and Emergency Services Act 1998* and introduced development controls in Bushfire Prone Areas through the *Planning and Development Act 2005*. These controls were authorised by State Planning Policy 3.7 (Planning in Bushfire Prone Areas) regulations introduced under Part 10A Schedule 2 of the *Planning and Development (Local Planning Scheme) Regulations 2015* and guided by the *Guidelines for Planning in Bushfire Prone Areas*.

The State Planning Policy, Regulations, and Guidelines now form the foundation for fire risk management planning in WA at a community and land development level. The Policy Intent of SPP 3.7 is ***to preserve life and reduce the impact of bushfire on property and infrastructure***.

Applicable clause from SPP 3.7, include:

SPP 6.2: A development application within a bushfire prone area has or will, on completion, have a moderate BHL and/or where BAL-12.5 to BAL-29 applies, may be considered for approval. *In this instance the habitable buildings will not exceed BAL 29 at completion.*

SPP 6.5: A development application in a bushfire prone area is to be accompanied by an assessment against the bushfire protection criteria contained within the Guidelines, demonstrating compliance within the boundary of the development. *The proposed development requires no imposition beyond the site.*

SPP 6.7: A development that will result in the introduction or intensification of development or land use in an area that has or will, on completion, have an extreme BHL and/or BAL-40 or BAL-FZ will not be supported*. The habitable buildings will not exceed BAL 29 at completion.*

SPP 6.10: The decision-maker may impose a 'notice on title' advising that the site is located in a bushfire prone area and is subject to a Bushfire Management Plan. *Routinely imposed as a condition of planning approval.*

SPP 6.11: Precautionary Principle if a landowner/proponent cannot satisfy the performance principles of the relevant policy measures (intent) through either the acceptable solutions outlined in the Guidelines, or through the alternative solutions (Performance Principle) the application may not be approved. *The proposal achieves compliance by the acceptable solutions.*

Building Act 2011

The *Building Act 2011* applies the National Construction Code 2019[1] and the construction standards described in AS 3959:2018, only to the construction of class 1, 2, 3, and 10a, buildings. The proposed accommodation units are a Class 3 building, and the Residence is a Class 1 building. The facilities building is a Class 5. Whilst the Building Act describes construction standards only for some building classes, AS 3959:2018 is used to determine the siting considerations for all habitable buildings, including the facilities building. Also, whilst the *Building Act 2011* prevails where there is conflict with the Planning and Development Act 2005, it is at the owner's discretion, and it is encouraged, that all buildings offer a commensurate BAL resistance to their determined BAL level.

Bush Fires Act 1954

Section 33 of the *Bush Fires Act 1954* recognises the responsibility of all landowners to prevent the spread of bushfire. The City of Busselton issues a Firebreak Notice annually. The City can issue a notice upon the landowner to act as and when specified in the notice with respect to anything which

[1] NCC 2022 will become operational in 2024 (WA) and will also include specific bushfire building requirements for Class 9 buildings

is upon the land, and which in the opinion of the local government or its duly authorised officer, is or is likely to be, conducive to the outbreak of a bushfire or the spread or extension of a bushfire.

An owner who fails to comply with a notice is guilty of an offence (Penalty: $5,000). The local government may in addition carry out the required works of the notice and recover the costs incurred by application to a Court.

2. ENVIRONMENTAL CONSIDERATIONS

2.1 Native Vegetation – Modification and Clearing

A fundamental consideration in the assessment of development under SPP 3.7 is to avoid instances where bushfire risk management measures would conflict with or be limited by other biodiversity management measures.

Conservation class legislation

The ability to implement bushfire risk management measures may be affected by a number of conservation class vegetations: described below.

Environment Protection Act 1986 and Environmental Protection (clearing native vegetation) Regulation 2004

It is an offense to clear native vegetation without the authority of a permit or an exemption. The act of clearing native vegetation, requires a permit from either the Department of Water and Environmental Regulation (DWER) or the Department of Mines, Industry Regulation and Safety (DMIRS), unless an exemption applies.

Exemptions include:

Environment Protection Act 1986

- Clearing required by local government Section 33 *Bushfire Act 1954.*
- **Clearing in accordance with the terms of a subdivision approval.**
- Clearing in accordance with a permit under the *Bush Fires Act 1954* (prescribed burning) and clearing by a bushfire control officer.

Environmental Protection (clearing native vegetation) Regulation 2004 (exemptions do not apply in Environmentally Sensitive Areas, and clearing > than 5 ha)

https://www.der.wa.gov.au/your-environment/environmentally-sensitive-areas

- Clearing to the extent necessary to construct an approved building.
- Clearing that is for fire hazard reduction burning.
- Clearing to maintain an area cleared in the last ten years.

(WA) Biodiversity Conservation Act 2016 and Bio-diversity Conservation Regulations 2018

The *Biodiversity Conservation Act, 2016*, replaces the *Wildlife Conservation Act, 1950*, and the *Sandalwood Act, 1929*, it became operational with the *Bio-diversity Conservation Regulations 2018*, on 1 January 2019.

The Act provides for listing species, threatened ecological communities (TECs), key threatening processes, and critical habitats. It introduces criteria for listing species 'endangered', 'critically endangered' or 'vulnerable,' to align with the Environment Conservation and Biodiversity Conservation Act 1999 (Cth).

The *Biodiversity Conservation Act 2016* recognises that activities approved under the *Environment Protection Act 1986* do not require further approval include clearing of native vegetation that is either exempt or done under the authority of a clearing permit or done

in accordance with an implementation decision under Part IV of the *Environment Protection Act 1986*.

Commonwealth Environment Protection Biodiversity Conservation Act 1999

The Commonwealth Environment Protection Biodiversity Conservation Act 1999 provides for the protection of matters of national environmental significance. National environment law does not generally regulate fire prevention measures taken by state and territory governments, but no specific exemptions are provided.

In accordance with the Department of Planning Lands and Heritage template (BMP Complex) a review of the listed databases has been undertaken as part of this assessment. The purpose is to identify whether restrictions or other specific considerations may apply that would affect the possible implementation of any bushfire protection initiatives/risk treatments.

This however is not a comprehensive assessment. Not all ecological details are publicly available and many of the items are not described at a site-specific level, that would enable specific items to be identified on the site.

This BMP therefore does not preclude the requirement or influence the considerations required to be separately taken, in gaining the required authorisations under the conservation class legislation identified above.

Table 2: Ecological database assessment.

Is the land affected by:	**Yes/No/NA**	**If yes - describe**
Conservation Wetland or buffer (DBCA-019 DBCA-017)	No	
RAMSAR Wetland (DBCA-010)	No	
Threatened and Priority Flora (DBCA-036)	No	
Threatened and Priority Fauna (DBCA-037)	Yes	Western Ringtail Habitat suitability Carnaby's Cockatoo Areas requiring investigation as feeding habitat in the Jarrah Forest IBRA Region (DBCA-056)
Threatened Ecological Communities (DBCA-038)	No	
Bush Forever (COP-071)	No	
Environmentally Sensitive Area (DWER-046)	No	
Regionally Significant Natural Areas (DWER-070)	No	
Conservation Covenant (DPIRD-023)	N/A	
Does the proposal require the removal of restricted vegetation?	**Yes**	~~**No**~~

There is no requirement to modify vegetation outside of the site.

The proposed Asset Protection Zones set to forest and accounting for slope will affect trees located east of the chalets, nearest the lake, and to the south of buildings at the southern extent of the development.

2.2 Re-vegetation/Landscape Plans

The Asset Protection Zones will be established in accordance with Schedule 1 Asset Protection Zone Standard in Element 2 *Guidelines for planning in Bushfire Prone Areas* v1.4.

A separate detailed landscape management plan, following the Asset Protection Zone standard will be prepared by the proponent following the flora study. This will identify and rank the highest ecological assets as a basis for determining the pattern of modification require to achieve compliance with the Asset Protection Zone standard.

It is recommended that this be acknowledged as a condition of approval by the decision maker to be provided to it and approved by it prior to the undertaking of any works at the site.

3. BUSHFIRE ASSESSMENT

3.1 Bushfire Attack Level Assessment (Inputs)

The following assessment has applied the methodologies described in AS 3959-2018, the Guidelines, and has used the Fire Protection Association Australia accredited practitioner methodology for the preparation of Bushfire Attack Level (BAL) assessments.

All vegetation within 150 m (context) of the subject building has been classified following Clause 2.2.3 (AS 3959:2018) to determine the predominant vegetation affecting the behaviour at the locality. The Bushfire Attack Level is determined by the **predominant** vegetation within 100 m of the site boundary (for subdivision), or around the development site (building envelope) or the external face from a habitable building.

The classifications of vegetation used in AS 3959:2018 are based on foliage cover, measured as a percentage of a hectare and by the fuel (vegetation) height.

> ***Foliage cover**: The portion of the ground that would be shaded by foliage when the sun is shining directly overhead, expressed as a percentage for each stratum or identifiable layer of vegetation*
>
> AS 3959:2018

Table 3: Bushfire fuel descriptions

Layer/ Stratum	Description	Hazard
Bark	Tight/fine – course/ribbon	Spotting and ember attack potential associated with forest
Canopy	Trees taller than 6 m (forest)	Influences the flame height
Elevated fuel	Trees and Shrubs up to 6 m	Influences the flame height
Near surface	Grasses and shrubs taller than 100 mm and up to 2 m	Influences the rate of spread and canopy ignition
Surface	On ground material, leaves, twigs, bark	Influences the rate of spread

From CFA (Vic) Overall fuel assessment guide 2010

AS 3959:2018 prescribes six categories of Bushfire Attack Level (BAL): BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40, and BAL-FZ. In addition, BAL-FZ describes only performance solutions where the separation from classified vegetation (on completion) is less than 10 m. The BAL level is used for determining the siting of development (to be less than BAL-40) and in turn the construction standard that is equivalent to the BAL at the proposed building location.

This assessment has followed the guidance of AS 3959:2018. This includes:

- A recognition of excluded vegetation types described at cl.2.2.3.2 (e) and (f), but the underlying vegetation should still be classed e.g. an orchard may be excluded but not the grassland within it.
- A separate plot is applied if there is a variation in the slope greater than 5.0^0
- For various vegetation classes a representation that is less than 10%, does not constitute the predominant class. Foliage cover referred to in AS 3959:2018 for various classes is based on the foliage cover for that class as a percentage of a ha. (shadow cast is not representative of foliage cover).
- The measurement point and the most influential vegetation class (presenting the highest BAL at the building) is used for the determination of the BAL at the building (Figure 2.2 AS 3959:2018).

- Consideration of the predominant vegetation is to consider the likelihood of regeneration.
- Orchards, and single tree rows (planted in a row less than 10 m wide) is determined by underlying the near surface fuel.

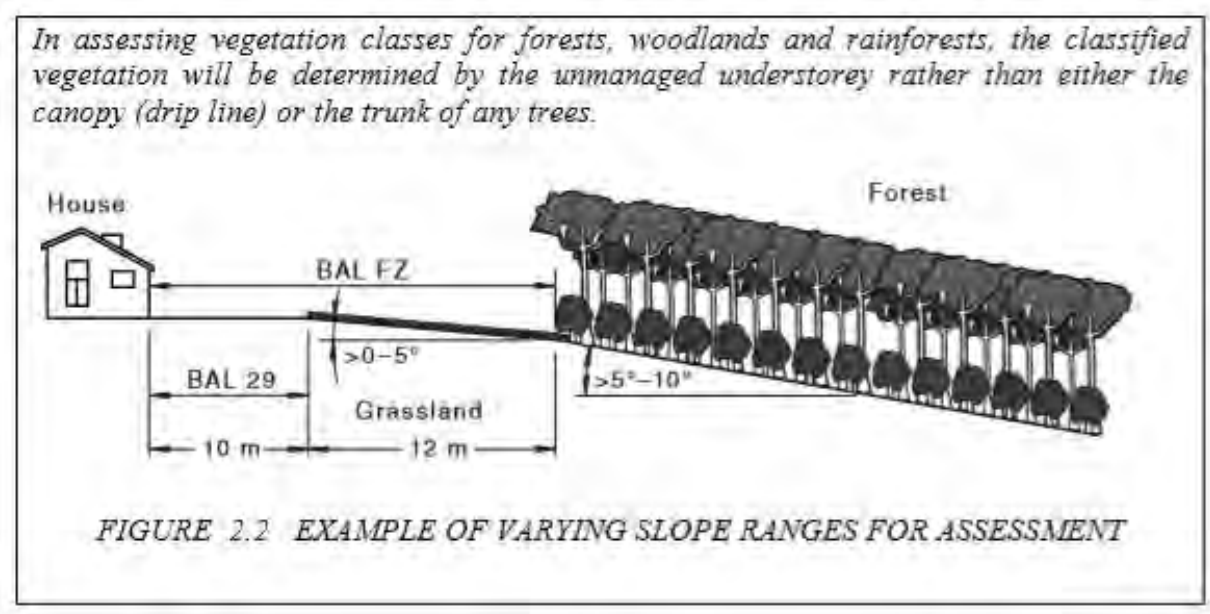

Plate 4**:** Effective Slope and measurement taken from AS 3959:2018

Effective slope under each vegetation plot was assessed in accordance with the methodology detailed in AS 3959:2018 Construction of buildings in bushfire prone areas (AS 3959) (Standards Australia, 2018 Bushfire Fuels). Slope data was measured on site and cross referenced with Landgate elevation data.



Figure 1: Location

N

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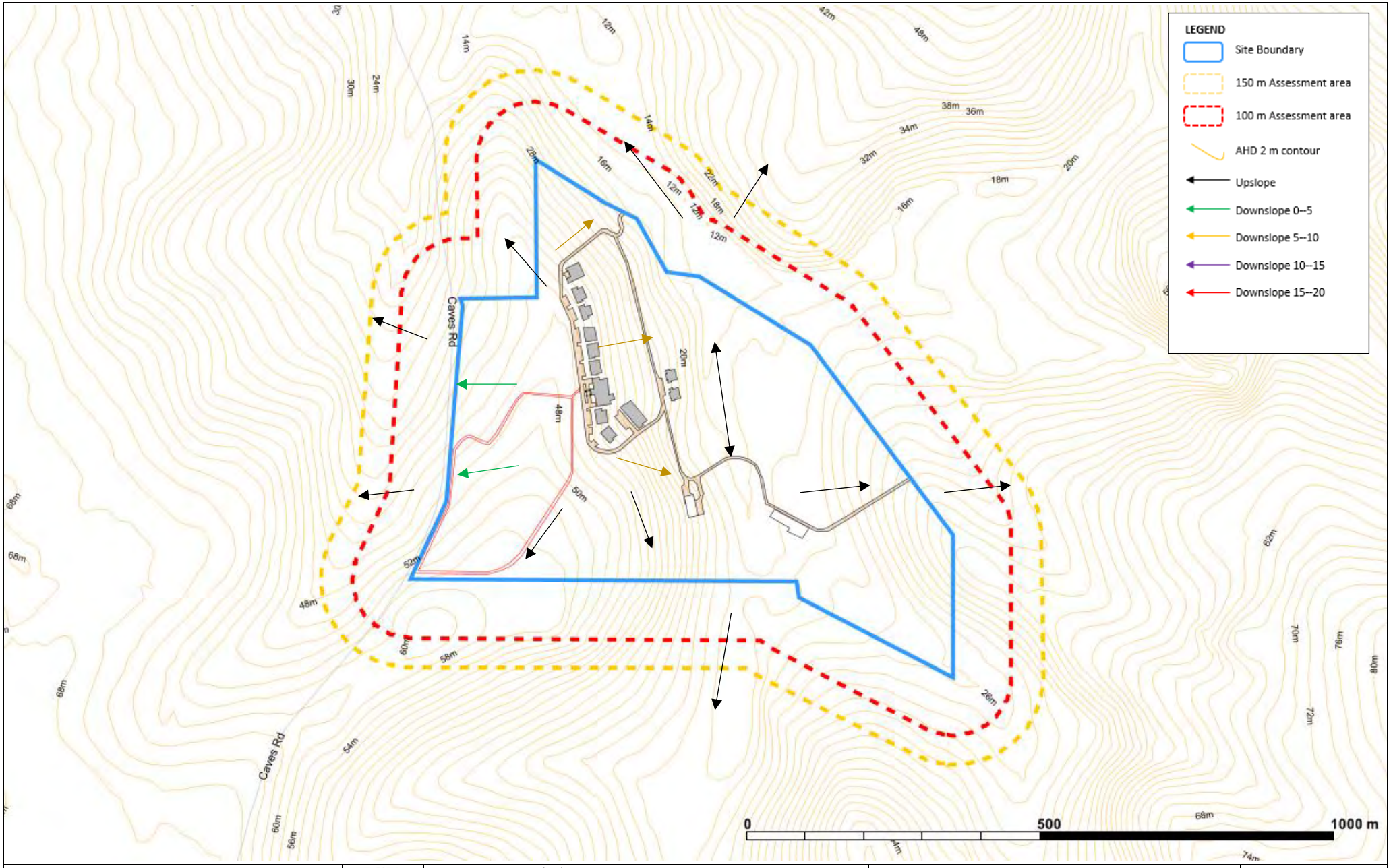

Figure 2: Topography

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Figure 3a: Vegetation Classification

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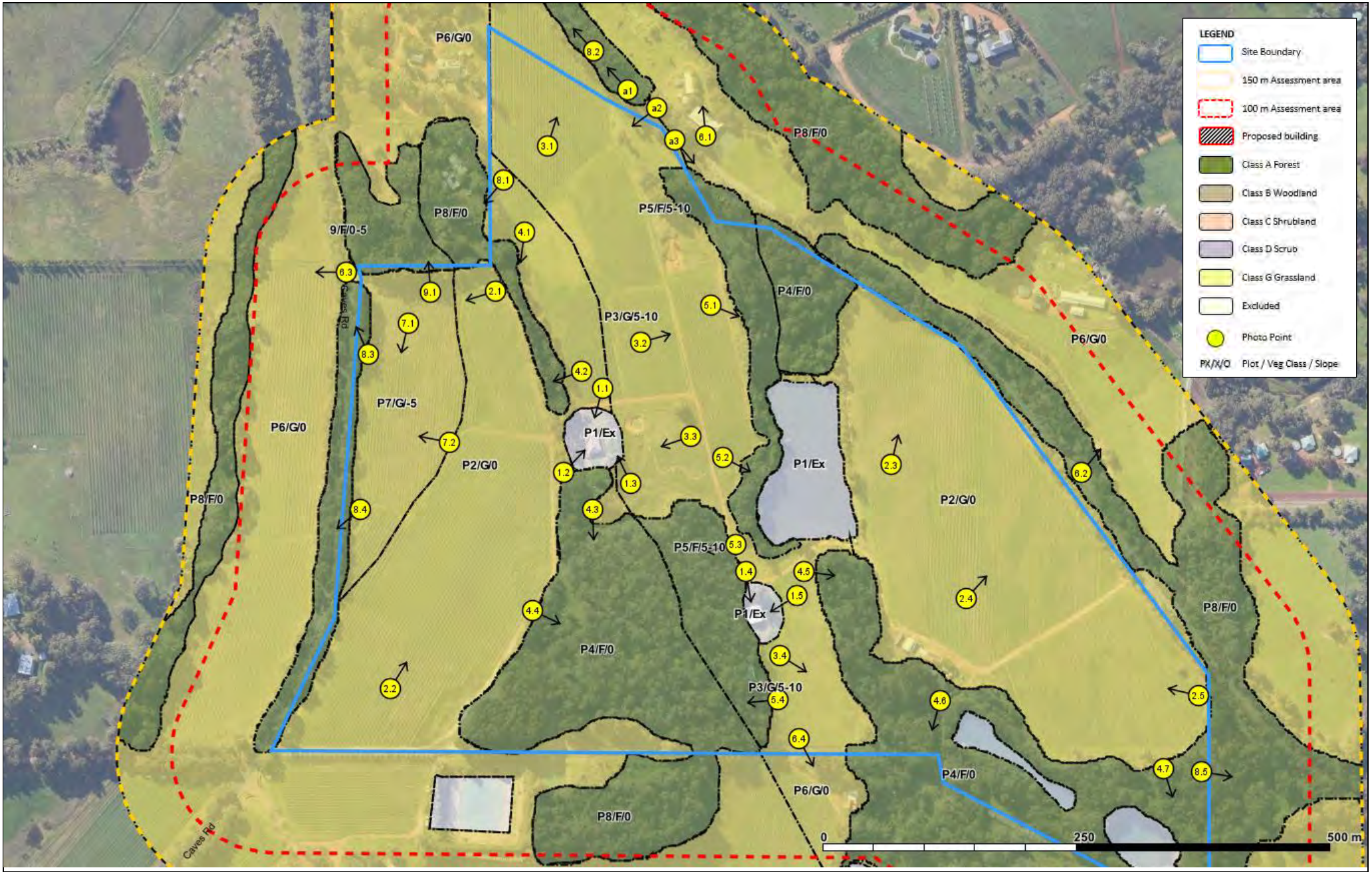

Figure 3b: Vegetation Classification and photo locations

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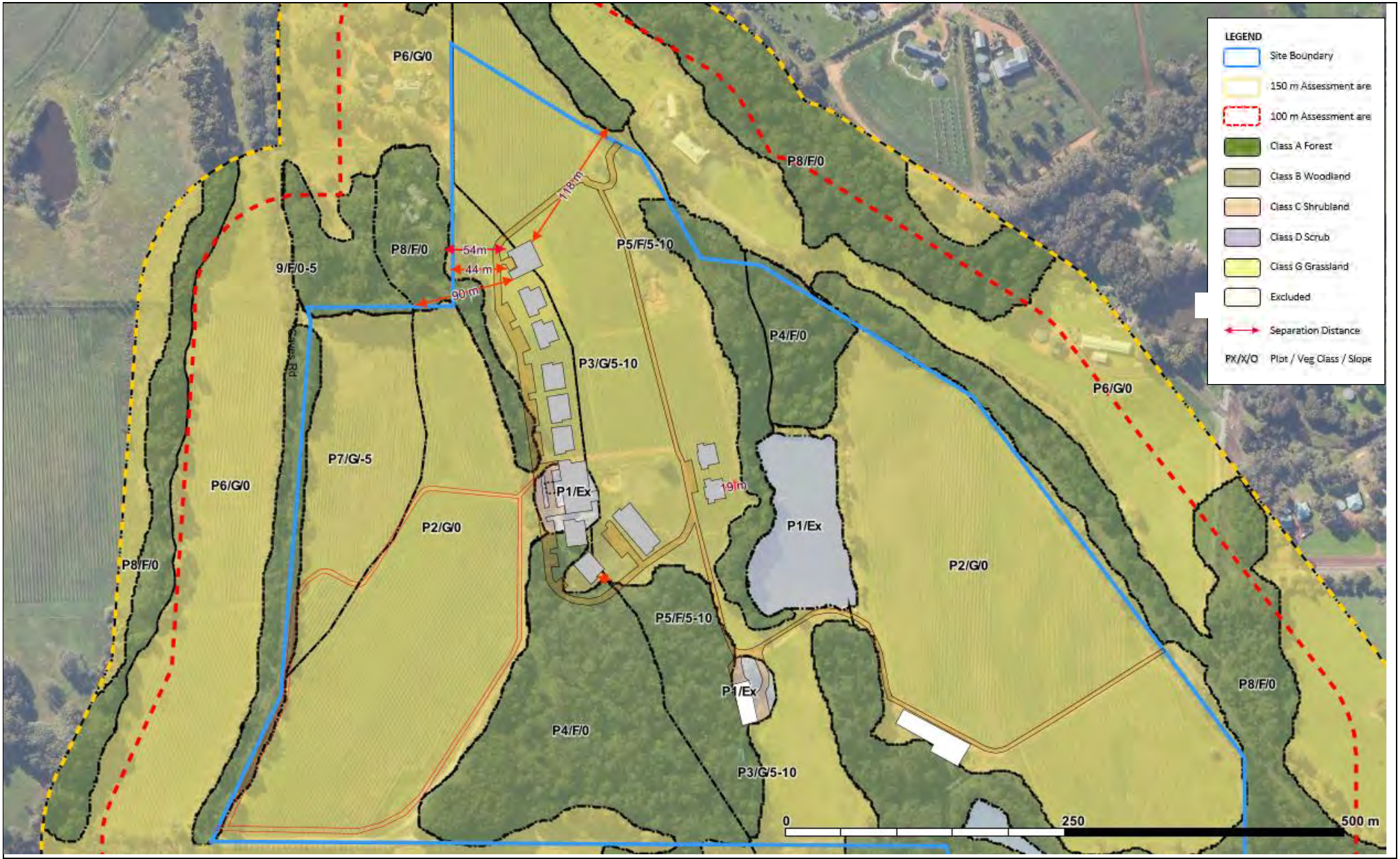

Figure 3c: Concept (nearest elevation >m to Vegetation Classification)

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PLOT: 1				
Vegetation Classification		**Slope**		
Excludable - 2.2.3.2(e) Non Vegetated Areas		Flat		
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low	✓	✓	✓	✓
Moderate				
High				
Very High				
Extreme				
Vegetation Description (AS 3959)				
Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, maintained lawns,….cultivated gardens, vineyards, nature strips and windbreaks.				
Post development				
Excluded - Existing dwelling/residence to be displaced and relocated north.				



Photo 1.1 Residence to be replaced (north east elevation)



Photo 1.2 Residence to be replaced (west elevation)



Photo 1.3 Residence to be replaced (south elevation)



Photo 1.4 Ancillary dwelling retained (east elevation)

PLOT: 1				
Vegetation Classification			**Slope**	
Excludable - 2.2.3.2(e) Non Vegetated Areas			Flat	
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low	✓	✓	✓	✓
Moderate				
High				
Very High				
Extreme				
Vegetation Description (AS 3959)				
Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, maintained lawns,….cultivated gardens, vineyards, nature strips and windbreaks.				
Post development				
Excluded				



Photo 1.5 Ancillary dwelling retained (east elevation)

PLOT: 2				
Vegetation Classification		**Slope**		
Class G Grassland – Spare open tussock G-24		Flat		
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low		✓	✓	✓
Moderate	✓			
High				
Very High				
Extreme				
Vegetation Description (AS 3959)				
All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.				
Post development				
Unchanged				



Photo 2.1 Production vineyards (west) view west



Photo 2.2 Production vineyards (west) view north



Photo 2.3 Production vineyards (north) view east



Photo 2.4 Production vineyards (central) view east

PLOT: 2				
Vegetation Classification			**Slope**	
Class G Grassland – Spare open tussock G-24			Flat	
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low		✓	✓	✓
Moderate	✓			
High				
Very High				
Extreme				
Vegetation Description (AS 3959)				
All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.				
Post development				
Unchanged.				



Photo 2.5 Production vineyards (south) view west from Wildwood Road

PLOT: 3				
Vegetation Classification		**Slope**		
Class G Grassland – Spare open tussock G-24		Downslope 5-10		
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low		✓	✓	✓
Moderate	✓			
High				
Very High				
Extreme				
Vegetation Description (AS 3959)				
All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.				
Post development				
To be retained as grassland, as foreground to the proposed buildings				



Photo 3.1: View east (north) Vines over grass



Photo 3.2: View east (central)



Photo 3.3: View west (central) Vines over grass



Photo 3.4: View south (central)

PLOT: 4				
Vegetation Classification		**Slope**		
Class A Forest - Open forest A-03		Flat		
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low		✓	✓	✓
Moderate	✓			
High				
Very High				
Extreme				
Vegetation Description (AS 3959)				
Trees up to 30 m high; 30%-70% foliage cover (may include understorey of sclerophyllous low trees or shrubs). Typically dominated by eucalypts, melaleuca or callistemon (may include riverine and wetland environments) and callitris. Includes eucalypt plantations.				
Post development				
Retained: but edge modification (south) require to accommodate buildings and Asset Protect Zone and modification (central) for access and parking.				



Photo 4.1 View south (north) ridge tree follows access



Photo 4.2 view west (central) modification for access and carpark



Photo 4.3 View south (south) forest, modification for building placement



Photo 4.4 View north (south) into forest

PLOT: 4				
Vegetation Classification		**Slope**		
Class A Forest - Open forest A-03		Flat		
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low		✓	✓	✓
Moderate	✓			
High				
Very High				
Extreme				
Vegetation Description (AS 3959)				
Trees up to 30 m high; 30%-70% foliage cover (may include understorey of sclerophyllous low trees or shrubs). Typically dominated by eucalypts, melaleuca or callistemon (may include riverine and wetland environments) and callitris. Includes eucalypt plantations.				
Post development				
Unchanged – Forest along waterway				



Photo 4.5 Forest on waterway plain (south) view to east



Photo 4.6 Forest on waterway plain (south) view to west



Photo 4.7 Forest on waterway plain (south) view south

PLOT: 5				
Vegetation Classification		**Slope**		
Class A Forest - Open forest A-03		Downslope 5-10		
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low				
Moderate	✓			
High		✓		✓
Very High			✓	
Extreme				
Vegetation Description (AS 3959)				
Trees up to 30 m high; 30%-70% foliage cover (may include understorey of sclerophyllous low trees or shrubs). Typically dominated by eucalypts, melaleuca or callistemon (may include riverine and wetland environments) and callitris. Includes eucalypt plantations.				
Post development				
Retained: but edge modification Photo 5.2 to accommodate chalet buildings and Asset Protect Zone				



Photo 5.1 View east (north) towards waterway



Photo 5.2 View east (central) towards waterway, displacement by chalets



Photo 5.3 view west (central) upslope behind Ancillary dwelling



Photo 5.4 view west (south) upslope

PLOT: 6				
Vegetation Classification		**Slope**		
Class G Grassland – Spare open tussock G-24		Flat		
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low		✓	✓	✓
Moderate	✓			
High				
Very High				
Extreme				
Vegetation Description (AS 3959)				
All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.				
Post development				
Unchanged – external to the site.				



Photo 6.1 Adjoining grassland east (north)



Photo 6.2 Adjoining grassland east (central)



Photo 6.3 Grassland west of Caves Road



Photo 6.4 Vines over grass view south (south).

PLOT: 7				
Vegetation Classification			**Slope**	
Class G Grassland – Spare open tussock G-24			Downslope 0-5	
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low		✓	✓	✓
Moderate	✓			
High				
Very High				
Extreme				
Vegetation Description (AS 3959)				
All forms (except tussock moorlands) including situations with shrubs and trees if the overstorey foliage cover is less than 10%. Includes pasture and cropland.				
Post development				
To be retained (within site)				



Photo 7.1 Production vineyard (west face) view south



Photo 7.2 Production vineyard (west face) view west

PLOT: 8				
Vegetation Classification		**Slope**		
Class A Forest - Open forest A-03		Flat		
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low				
Moderate	✓			
High		✓		✓
Very High			✓	
Extreme				
Vegetation Description (AS 3959)				
Trees up to 30 m high; 30%-70% foliage cover (may include understorey of sclerophyllous low trees or shrubs). Typically dominated by eucalypts, melaleuca or callistemon (may include riverine and wetland environments) and callitris. Includes eucalypt plantations.				
Post development				
Unchanged – external to the site.				



Photo 8.1 View west (north west)



Photo 8.2 (north of site)



Photo 8.3 Caves Road boundary (west - central)



Photo 8.4 Caves Road boundary (west - south)

PLOT: 8				
Vegetation Classification			**Slope**	
Class A Forest - Open forest A-03			Flat	
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low				
Moderate	✓			
High		✓		✓
Very High			✓	
Extreme				
Vegetation Description (AS 3959)				
Trees up to 30 m high; 30%-70% foliage cover (may include understorey of sclerophyllous low trees or shrubs). Typically dominated by eucalypts, melaleuca or callistemon (may include riverine and wetland environments) and callitris. Includes eucalypt plantations.				
Post development				
Unchanged – external to the site.				



Photo 8.5 Wildwood Road, view east (south)

PLOT: 9				
Vegetation Classification			**Slope**	
Class A Forest - Low open forest A-04			Downslope 0-5	
Observation/Justification for classification				
Fuel Hazard	Surface	Near surface	Elevated	Bark
Low				
Moderate	✓			
High		✓		✓
Very High			✓	
Extreme				
Vegetation Description (AS 3959)				
Trees up to 30 m high; 30%-70% foliage cover (may include understorey of sclerophyllous low trees or shrubs). Typically dominated by eucalypts, melaleuca or callistemon (may include riverine and wetland environments) and callitris. Includes eucalypt plantations.				
Post development				
Unchanged – external to the site.				



Photo 9.1 View North (North west) cross slope to Caves Road west face.

POTENTIAL BUSHFIRE IMPACT - Outputs

Determined Bushfire Attack Level

The determined BAL is the present BAL level at the position of the proposed development without bushfire protection measures. The assessment has identified the nearest building element to each plot (Figure 3c) as a basis for identifying the extent of the strategies to make the proposal compliant with the SPP 3.7 Policy Intent.

Table: 2 – Recorded distances for the nearest building elevation to a plot class > 0 m

Plot no.	Vegetation Classification	Effective slope	Separation m	BAL	Distance (m) for BAL 29
1	Excluded	N/A	0	BAL - Low	0
2	Grassland	Flat/Upslope	0	BAL - FZ	8
3	Grassland	Downslope 5-10	0	BAL - FZ	10
4	Forest	Flat/Upslope	0	BAL - FZ	21
5	Forest	Downslope 5-10	8 m	BAL - FZ	33
6	Grassland	Flat/Upslope	44 m	BAL - Low	8
7	Grassland	Downslope 0-5	90 m	BAL – Low	9
8	Forest	Flat/Upslope	54 m	BAL – 12.5	21
9	Forest	Downslope 0-5	90 m	BAL - 12.5	27

Where the BAL to a building exceeds BAL 29, then the vegetation is to be modified to achieve a siting that does not exceed BAL 29. BAL 29 is the calculated flame length. BAL 29 and lower levels are outside of the direct flame length from a fire but may be exposed to secondary fires from the ignition of materials adjacent a building. Having established a building outside of flame length, strategies turn to ensuring secondary fires can be avoided through ongoing management.

Bushfire Construction Standards apply to accommodation buildings exposed to a bushfire attack level of BAL 12.5 and higher.

Indicative Bushfire Attack Level

The Indicative Bushfire Attack level is the expected BAL at buildings upon completion, after the bushfire management strategies have been implemented.

The BAL contour map Figure 4 illustrates the spatial position of the proposed buildings with required Asset Protection Zones established to achieve BAL 29 at the face of the building. It shows the extent of the area around each building that is required to be modified.

The Asset Protection Zone illustrated **is set to dimensions to account for forest** on the corresponding slope from an outward direction from the building. The forest class is chosen because, as the highest value, it makes allowance for revegetation outside of the Asset Protection Zone, whilst still retaining the building outside of flame length.

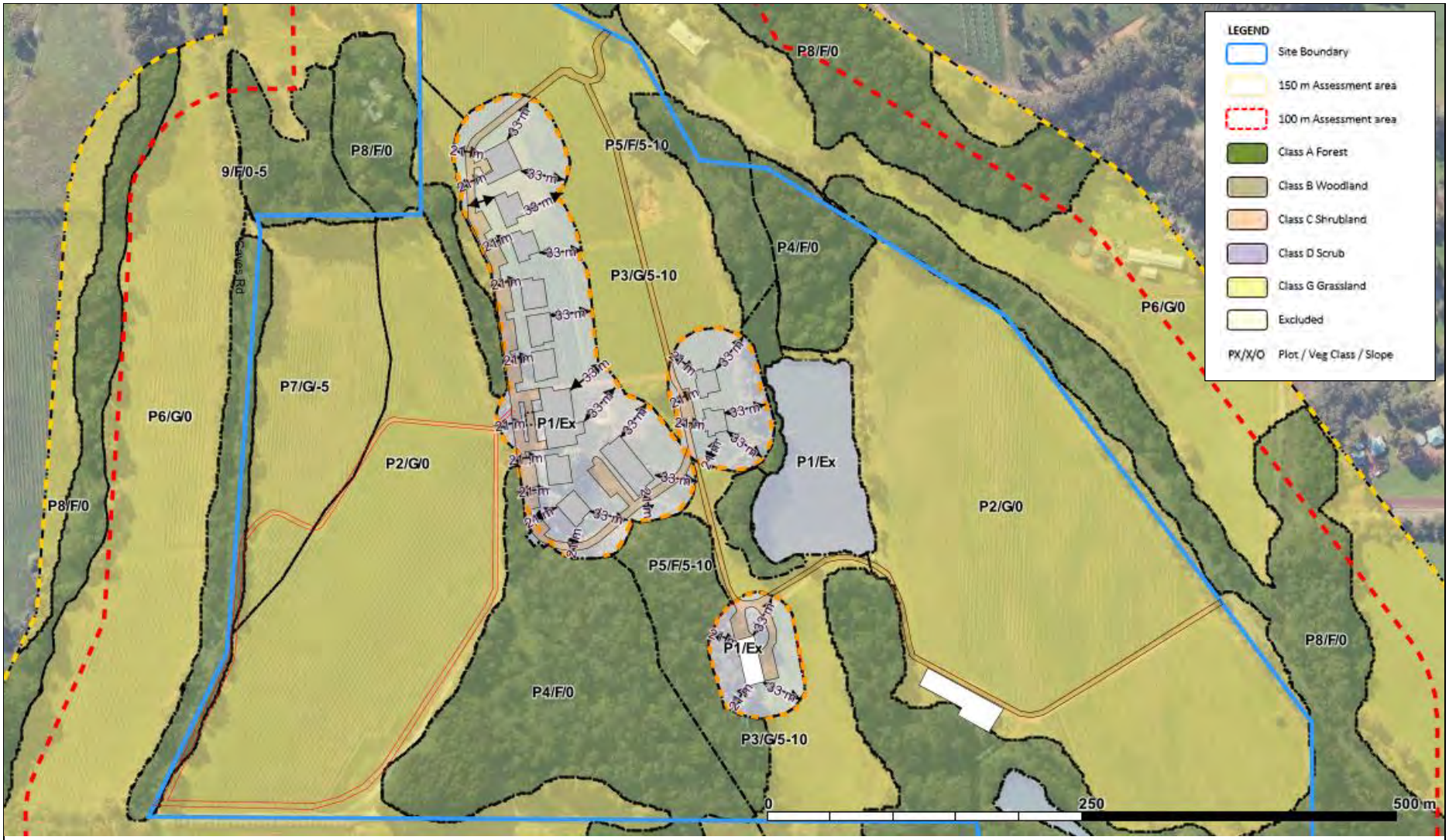

Figure 4 Vegetation for APZ	N	Assessment Date: 12/07/2023 Prepared: Anthony Rowe I Accreditation Level: BPAD L3 Accreditation Number: 36690 Accreditation I Expiry: Dec 2023 FPAA FIRE MAP 2023 I GDA 1994 MGA Zone 50	© 2023 Any conclusions drawn, or recommendations made in this report are made in good faith. No responsibility is taken for how this information and the report are used subsequently by others.	envision bushfire protection

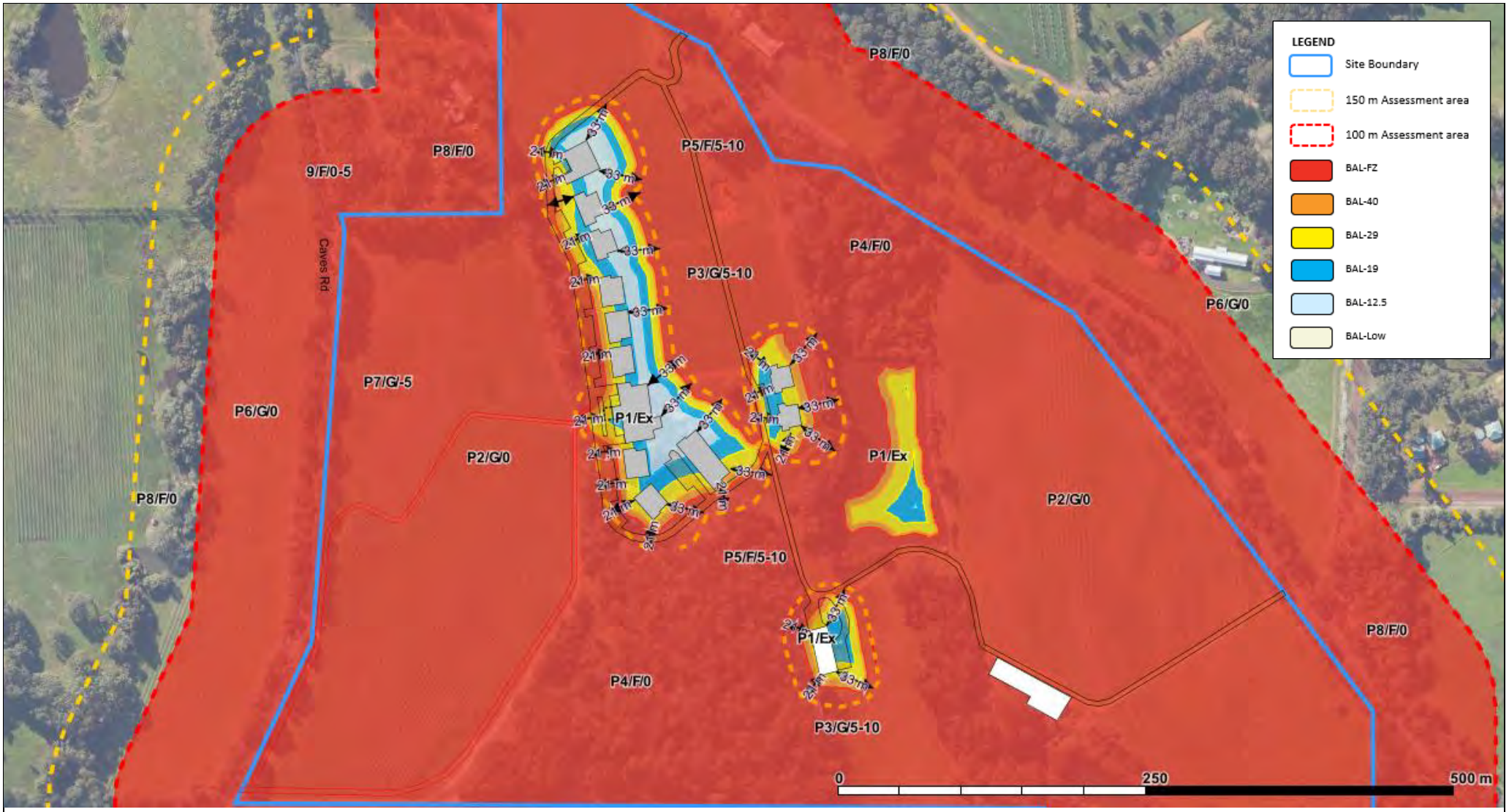

Figure 5: BAL Contour with APZ establish Post Development Scenario

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4. IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

Bushfire Behaviour

Sustainable fire combustion depends upon the availability of fuel, oxygen, and heat. Removal of any one of the three aspects will extinguish or not sustain a fire. Fuel management, the management of vegetation, is the most practical means of control.

Bushfire behaviour, as it increases in intensity and speed of travel, can exceed human control measures and when this occurs the risk increases to humans and property. Bushfire behaviour is a result of climate, topography, and the availability of bushfire fuel (vegetation).

- Climate (drought and season) & weather (temperature, humidity, wind, atmospheric instability).

  Wind

  Bushfires are influenced by the wind direction and the speed. The wind direction generally determines the direction of the fire and wind speed, along with ground slope, generally determines the speed a fire will travel over ground. As wind strength increases it increases the availability of oxygen allowing the fire intensity to increase.

  Atmospheric instability

  Atmospheric conditions determine the potential for the uplift of embers and particles that can be distributed by the prevailing wind direction well ahead of the fire, up to 9 km, to create spot fires that can advance the location of the fire front. In extreme events they can also result in extreme strength wind from down drafts when the accumulated particles cool and become too heavy to support and the plume collapses, evidenced in the Waroona 2016 fires.

  Fire Danger Index FDI

  FDI is an indicator of potential fire intensity and behaviour based upon weather conditions; temperature, humidity, and wind speed, together with climate measures, drought factor representing the dryness of the ground fuels.

  The FDI is an indicator of the potential for house loss and fatalities.

  The FDI is used as a basis for determining the required design performance of a building.

- Topography (slope of the ground, aspect) – fire travels faster uphill, and in some conditions may determine the direction of the fire. The landform can also channel and increase the windspeed at a locality and create turbulence. It is measured as 0.0^0 or in downslope increments of 5.0^0.

- Vegetation (horizontal and vertical structure, flammability, mass, and availability). Measured as a vegetation classification, or an exclusion, in AS3959:2018 (Method 1). The arrangement of fuel has a greater effect upon the intensity of a fire than just its mass; its exposure to oxygen is referred to as its availability in a bushfire.

It is assumed that a bushfire will achieve a steady-state and be fully developed to maximum intensity over a 100 m (minimum) fire run. Grass fires travel faster (GFDI) than a forest canopy fire, but a forest canopy fire can eject a higher level of embers and also eject them over a greater distance, up to 5 km.

Crown fires occur when the ground fire is intense, and conversely, when ground fuels are managed, the resultant fire intensity may not be sufficient to involve the crown or sustain a fire.

Fuel reduction initiatives such as slashing and controlled burns are intended to reduce the fuel availability to a level where the intensity of the fire remains controllable.

Climate

The nearest weather station to the site is at Cape Naturaliste (12 km south-east of the site). The site is within an area described as having a Mediterranean climate of dry summers and mild, wet winters. The majority of rainfall is between May and September. The prohibited burning period is from mid-December to mid-March.

The Bushfire Danger Season has traditionally been between November and April each year, but recent climatic conditions have caused fire danger conditions to be present either side of this period.

Severe bushfire conditions FDI 50+, occur mostly between January and March. Extreme and Catastrophic conditions occur mostly in the afternoon and typically with south-south easterly winds (BoM Naturaliste). A bushfire can however come from any direction.

Bushfires generally travel in the direction of the prevailing wind with the fire intensity also affected by the slope and fuel. The direction of the prevailing wind conditions can affect the options for evacuation.

The wind roses below (Plates 5 and 6) for February (averaged) recorded at 9 am and 3 pm, illustrate the winds are strongest and most frequent from the east and south-east in the morning. Afternoon winds are generally stronger and of higher frequency from the southwest.

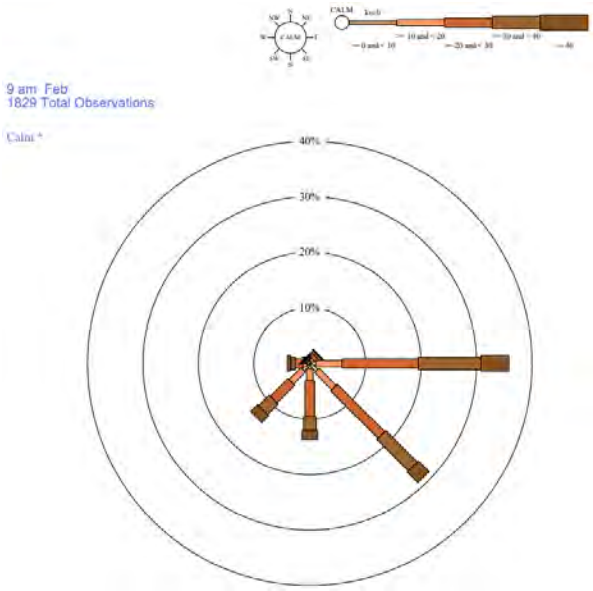


Plate 5: BoM weather data, prevailing wind directions as at 9 am

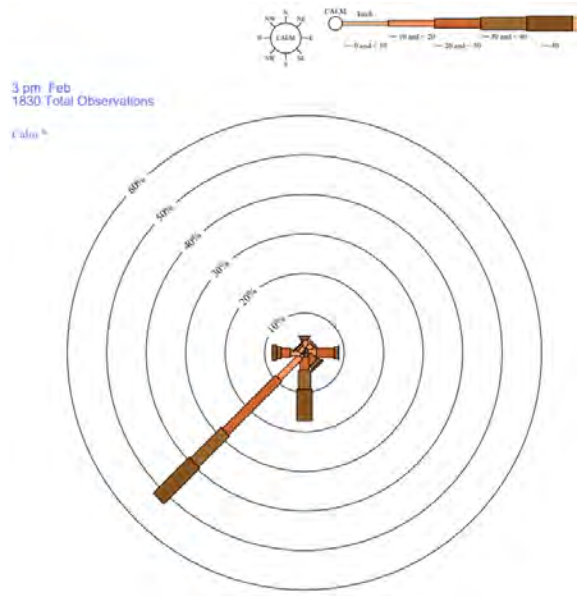


Plate 6: BoM weather data, prevailing wind directions as at 3 pm

4.1 Site Context

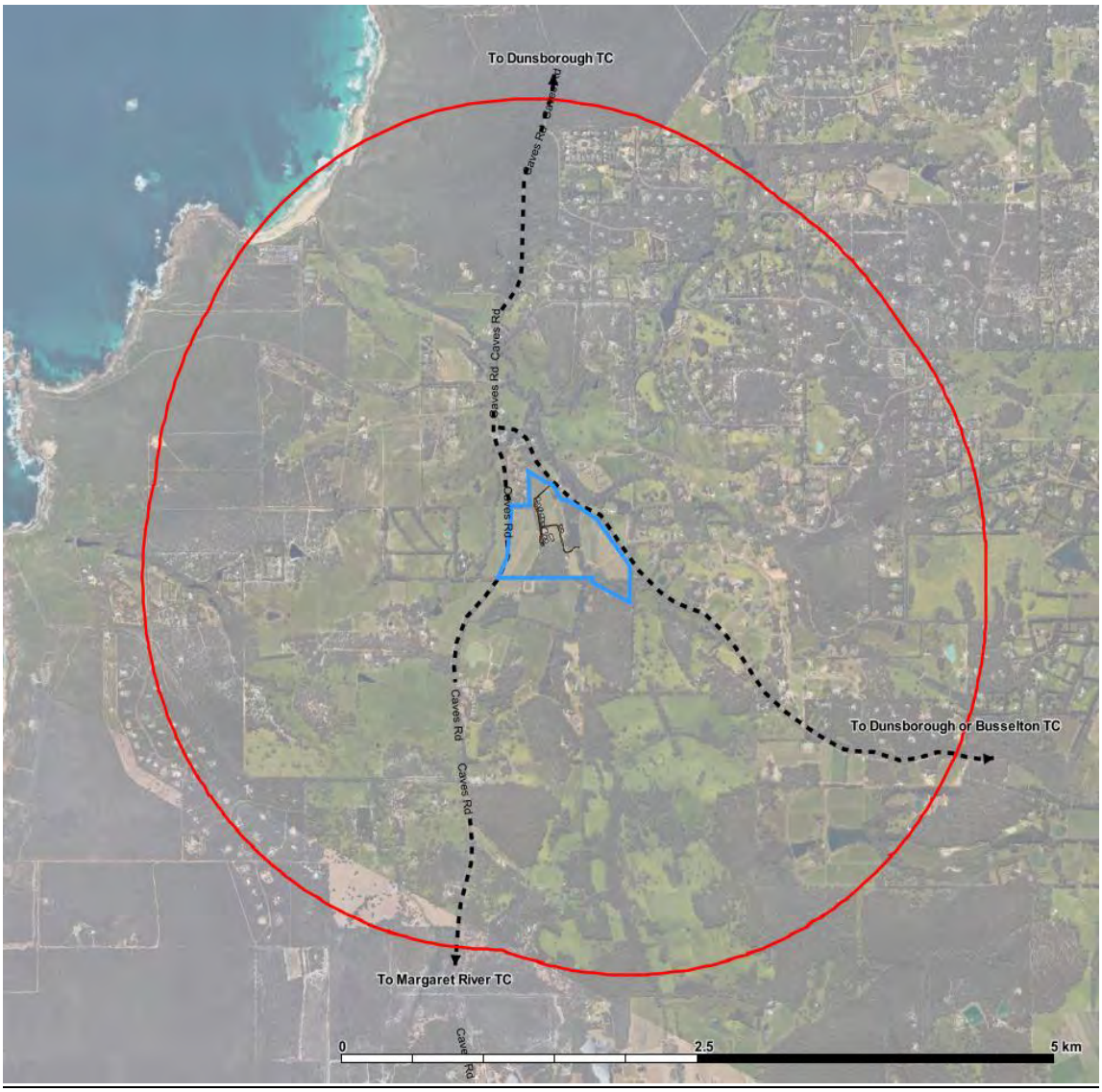


Plate7: Illustrates the surrounding area within 2.5 km is predominantly pasture with pocket of forest

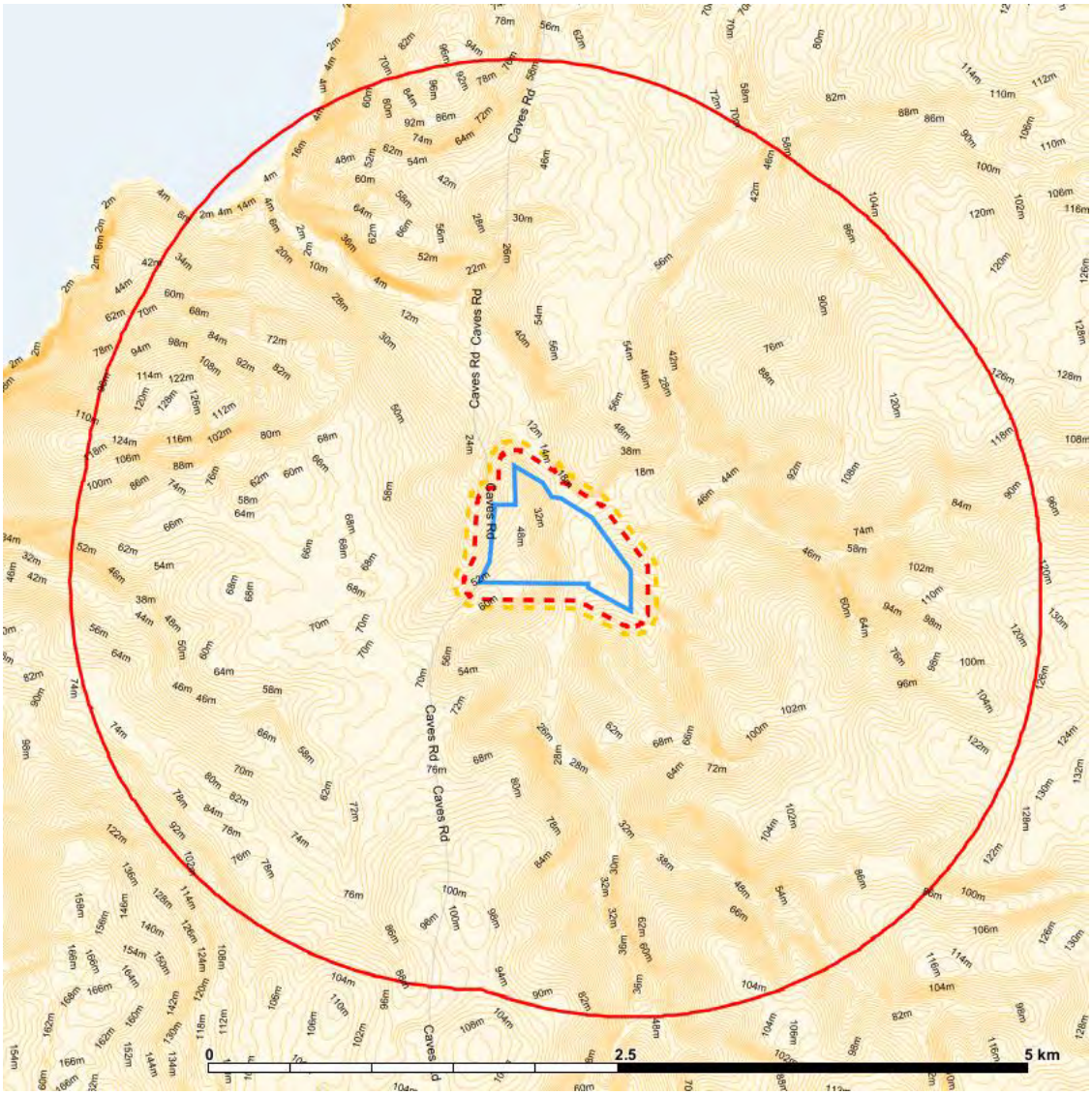


Plate 8: *Illustrates the topography 2m Ahd in the surrounding 2.5 km area. The site development site is on the east face of a gully that runs from the south to the north*

The site is within an area that is predominantly grassland, with isolated areas of retained native vegetation (forest).

The site is within a gently undulating low hills area, with gully slopes up to 15.0^0 that run to the coast in a southeast to northwest direction. These are features in the topography that can give rise to channelling stronger winds within gully's where it follows the prevailing winds may narrow the firefront and increase its speed or result in sporadic fire behaviour with a broader distribution of embers from the fire front where winds are cross slope creating eddy's in the airflow.

DBCA Fire History

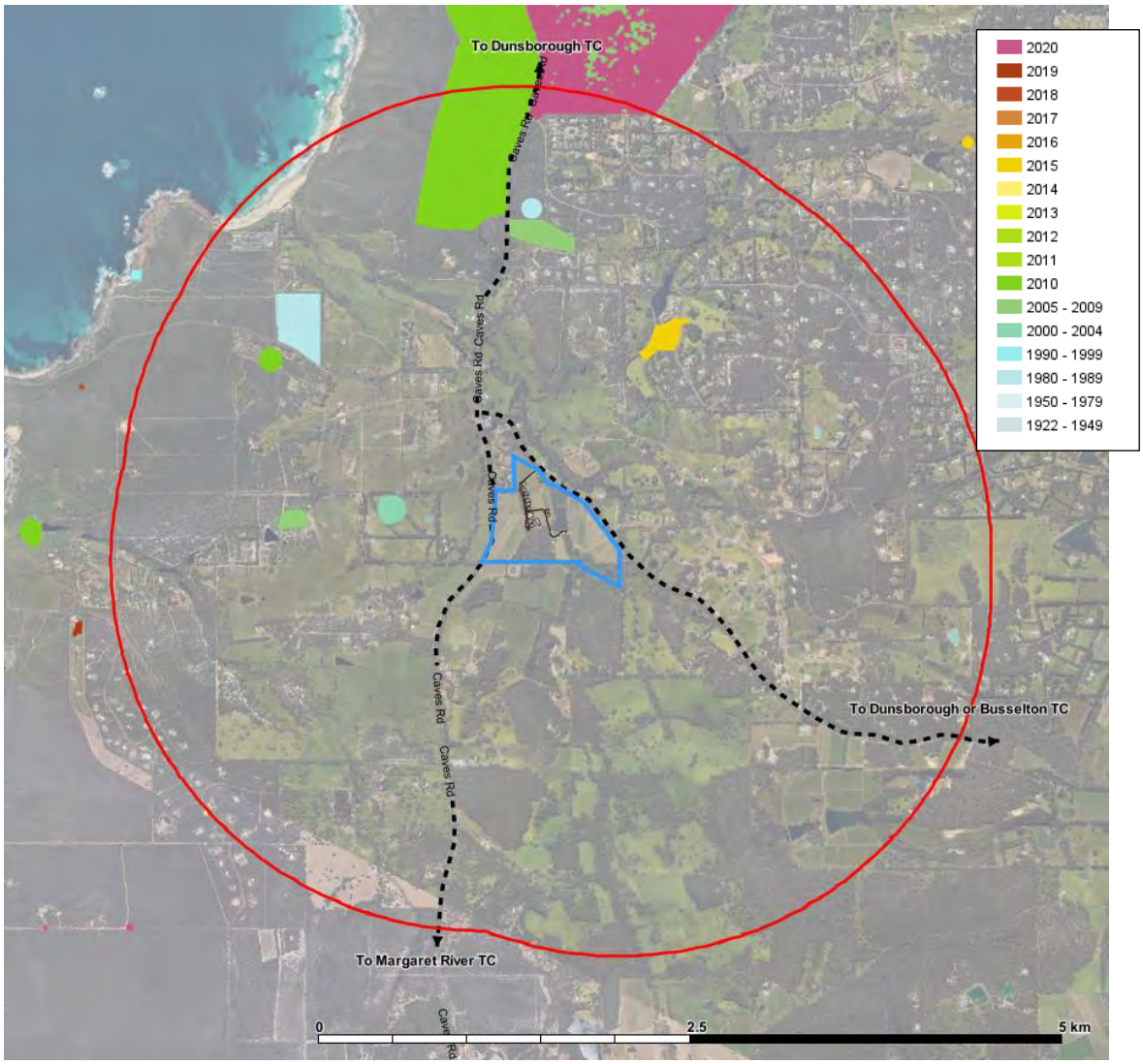


Plate 9: Illustrates the recorded fire history. It is indicative only due to the unreliability of previous recording.

The fire history indicates the site has no record of being affected by an uncontrolled fire.

Plate 7; when combined with Plates 5 and 6, suggests a fire that is most likely to affect the site from the east, through grasses, or through fragmented forest from the south. A dispersed ember attack is also possible from forest located within 5 km of the site, it may contribute to spotting and ignition of nearby flammable vegetation, but the distance dispersal is would only ignite highly flammable objects.

The site is characterised as a low hill that has retained endemic vegetation along its ridge and along the valley floor. The slopes of the hill are mostly cleared and grassland (under vines). The resort at its position in the site may be affected by forest adjoining south, and northwest of the development or otherwise by a grassland fire.

Access from the site is (restricted) to Wildwood Road, due to Main Roads policy. Wildwood Road is a through road to the north/east of the site. It is separated from the buildings by the waterway and narrow forest vegetation at it central and southern area.

Wildwood Road provides a through road to Caves Road, west of the site, and then onto either the Margaret River Township (south) or the Dunsborough Township (north). Caves Road passes through

mixed landscapes (along the route to the townships) ranging from adjoining forest, an extreme bushfire hazard level to pasture, a moderate bushfire hazard level. Wildwood Road runs east within a predominantly pasture landscape classed as a Moderate bushfire hazard level. It provides access to either the Dunsborough township or Busselton township and on to the City of Perth.

The primary access to Wildwood Road (northern area) is adjoined by grassland vineyards on a modest slope from the buildings to Wildwood Road. A secondary access is available from the site at the southern area and passes the onsite forest vegetation, it is primarily intended to service the agriculture production activity on the site. Given the condition adjoining the primary access, the need to use the secondary access in a bushfire event or after a bushfire event is unlikely.

The site does not have access to a reticulated water supply. The proposal will provide domestic potable water from roof surfaces and utilise water from the waterway for irrigation purposes.

Emergency services is restricted from taking water from domestic tankage/supply and water quality standards (DFES Guidelines) apply for the taking of water from alternative water sources. If an alternative water source is proposed for firefighting it is to be regularly monitored and its quality (safety) assured by the owner.

Risk

Exposure to extreme heat from a bushfire can be fatal, smoke and particle injuries (eyes) can be harmful.

Exposure may occur:

- Outside of buildings on site
- Within a failed building
- Within a trapped vehicle

Risk identification

The buildings may be affected by a fire front from forest at the north and south, and grassland moving upslope from the east and west. The site may be affected by a dispersed ember attack from a distant forest fire.

The proposed development without risk treatments would be subject to direct flame contact and the exposure of occupants. Ameliorating risk treatments are required.

The access from the site may be affected by bushfire.

Fire suppression resources at the site are finite.

Existing controls

Functions that presently reduce the risk of bushfire and promote safety are listed as follows, the proposal does not affect any change to the effectiveness level of any of the items listed.

The residual risk is the remaining risk following the application of existing risk controls, that the site is a beneficiary, to the inherent risk of a bushfire affecting the site.

<u>Offsite</u>

- Administration of the *Bush Fires Act 1954*, fuel reduction private land management
- Community participation on total fire ban days
- Public lands management (DBCA)
- Emergency service coordination.
- Local fire brigade and landscape fire suppression administration and resources.

- Telecommunications.
- Emergency warnings.
- Maintenance of public roads and traffic management.

Likelihood

The likelihood of a bushfire affecting the site is considered 'likely'. Nearby fuel reduction initiatives will reduce the intensity of a bushfire, increasing the opportunity for control, but it does not eliminate the possibility of a fire affecting the site.

Consequence

The option to minimise exposure to harm from bushfire is either to evacuate or provide safe shelter.

The site offers options to evacuate in the opposite direction to an approaching fire.

Evacuation should be taken as long as there is sufficient time (Available Safe Evacuation Time) to reach a suitable destination, major town (town of Margaret River or Dunsborough) or destination outside the fireground (the Required Safe Evacuation Time).

The establishment of separation areas within the site commensurate to the resistance level of the buildings can be undertaken. Subject to ongoing management, this can reduce the potential for damage to a minor consequence (no extended disruption of operation). Historically an occupant survives if a building survives[2]. Whilst in this instance evacuation is preferred, shelter as a last resort is assisted by a building survival.

Risk treatments

The risk treatments are addressed in the response to the bushfire protection criteria.

The establishment of an Asset Protection Zone can avoid direct flame contact upon a building and reduce the radiant heat level to within the tolerance of the building construction.

Habitable buildings providing accommodation are required to be sited and constructed in accordance with Australian Standard AS3959:2018 (a tolerant building construction).

Note: Whilst AS3959 is not a guarantee of building survival it is updated regularly to minimise building loss. Factors that affect the resistance of a building to bushfire risk is the initial design, assembly compliant with the design and the ongoing maintenance of the building and any underlying assumptions (including the APZ) compliant with the design.

The Bushfire Emergency Evacuation Plan is a complementary risk treatment that describes the seasonal preparations, the methods for daily vigilance of a threat, and clear roles and responsibilities that maximise an early and effective response to a bushfire event, maximising the time to evacuate guests to a safe destination.

[2] Blanchi R, Leonard J, Haynes K, Opie K, James M, Kilinc M, Dimer de Oliveira F, Van den Hornet R (2012). *Life and house loss database description and analysis*. CSIRO, Bushfire CRC report to the Attorney-General's Department

5. BUSHFIRE PROTECTION MEASURES

5.1 Guidelines for Planning in Bushfire Prone Areas Version 1.4 (the Guidelines)

The Bushfire Protection Criteria in the Guidelines v1.4 is divided into five elements – location, siting and design, vehicular access, water and tourism land uses; Element 5 is a standalone set of Bushfire Protection Criteria.

The Intent for Element 5 is:

To provide bushfire protection for tourism land uses relevant to the characteristics of the occupants and/or the location, to preserve life and reduce the impact of bushfire on property and infrastructure.

Element 5 provides a range of subclassifications. The applicable subclassifications are:

Other short-term accommodation – including motel, serviced apartments, tourist development (includes cabins and chalets), holiday accommodation and caravan park (which incorporates camping grounds) within ELEMENT 5: Vulnerable Tourism Land Uses.

Table 6: Bushfire Protection Criteria assessment Element 5 v1.4

✓	Acceptable solution provided	C	An Acceptable Solution to be conditioned
N/A	Not Applicable	P	Performance Principle solution see 5.2

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
P5vii Habitable buildings are sited and designed to: – minimise clearing of existing vegetation; and – provide hazard separation between classified vegetation and a development site, that is managed in perpetuity, to protect life, prevent the spread of, and manage the impacts of, fire.	**A5.7 Siting and design** **A5.7c** For all other short-term accommodation, an APZ to be provided in accordance with Element 2: Siting and Design of Development A2.1 Asset Protection Zone. **A2.1** Asset Protection Zone (APZ) Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements: • Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances. • Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes). • Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones' (see Schedule 1).	✓		**A5.7c** The habitable buildings will be sited and provided with an Asset Protection Zone (wholly contained within the site) with a distance to achieve BAL 29 at each building. The habitable buildings (Class 3 short stay accommodation and Class 1 residence) will be constructed to a BAL 29 standard as described in AS3959:2018. The facilities building will also be constructed (volunteered) to a BAL 29 standard as described in AS3959:2018 for the items where the routine National Construction Code standard is silent for its class. The resistance of the buildings will be enhanced by the establishment of the Asset Protection Zones and seasonal maintenance that can be described in the Bushfire Emergency Evacuation Plan; within the seasonal preparations.

	A5.7d A landscape management plan is to be prepared to identify on-going onsite vegetation management (where appropriate).			A separate landscape plan has been prepared. Landscaping within the Aset Protection Zones will be low threat in accordance with AS3959:2018, s. 2.2.3.2 (f) through the utilisation of irrigated, non-curing, areas and high moisture low flammability species.
	A5.7eWhere an on-site shelter is proposed, to comply with A5.8.2e, it is to meet all the following requirements:…..	N/A		Shelter on site is not proposed as a primary bushfire response.

Vehicular Access – Technical Requirements

Table 6 Column 4

TECHNICAL REQUIREMENTS	1 Public roads	2 Emergency access way[1]	3 Fire service access route[1]	4 Battle-axe and private driveways[2]
Minimum trafficable surface (metres)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (metres)	N/A	6	6	6
Minimum vertical clearance (metres)	4.5			
Minimum weight capacity (tonnes)	15			
Maximum grade unsealed road[3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum grade sealed road[3]		1:7 (14.3%)		
Maximum average grade sealed road		1:10 (10%)		
Minimum inner radius of road curves (metres)		8.5		

P5viii The design and capacity of vehicular access and egress allows the occupants to evacuate to a suitable destination before a bushfire arrives to the site, whilst allowing emergency service personnel to attend the site; or	**A5.8.1** Vehicular access for all proposals A5.8.1a Internal vehicular access/private driveway is to provide emergency egress/access for all patrons and staff, in the event of a bushfire. Where possible, this is to include the provision of at least two internal access/egress points to the public road network.	✓		**A5.8.1a** The proposal provides two separate points of access to the site and the resort. The primary access is to be provided from a new access at the norther section of the site and Wildwood Road. The access is a loop around the outside of the resort. The existing access to the site from Wildwood Road (south of site) is to be retained primarily for the support of agricultural activities at the site (Agriculture Access). It connects to the Primary

it is demonstrated through a risk assessment that the risk can be managed.	A5.8.1b Internal vehicular access/private driveways longer than 70 metres are to meet all the following requirements: Requirements in Table 6, Column 4; • Passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (that is, the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres); and • Turn-around areas as shown in Figure 28.			Access, but it is intended to keep the activities of resort visitors and staff separate to the agricultural activity. **A.5.8.1b** The primary access serving the resort is longer than 70 m and required to comply with the technical requirements. <u>Trafficable surface and clearance</u> The City of Busselton requires all internal tourist driveways/roads to be sealed. The primary access is from the northern junction with Wildwood Road. It incorporates a chicane at the junction with Wildwood Road and runs west up hill to service the hilltop accommodation and facilities building and is created as a loop that also includes the lake side chalets before returning to the chicane from the south and onto Wildwood Road The primary access is to be used by resort staff and clientele. It will have a 4 m wide road seal and 1.2m wide trafficable all-weather shoulders. It will also provide a trafficable surface and horizontal surface no less than 6 m wide and permitting two-way movement along its length. Passing bays are not required. The agriculture access is an all-weather surface and joins onto the primary access in front of the (lake) the chalets. It serves the agricultural production on the land and the workers accommodation. It is not required to be sealed, because it is a secondary access. It is mostly through vineyard/grassland and provides a trafficable surface exceeding a width of 6 m, except for the waterway crossing where it is 4 m wide. The agriculture access connects with perimeter firebreaks provided at the site and the vineyard aisles. The agriculture access provides an alternate access if the primary access is not available. The primary access and the agriculture access are connected to provide separate options for access and egress in a bushfire event. <u>Gradient</u> The gradient at the north of the development (primary access location) from the top of the driveway to Wildwood Road level is 7.8%. Spot gradients of 8.4% were recorded at the site. The gradient at the southern extent from the southernmost unit to the chalets and agriculture access is 8.8%.

				The primary resort access has utilised the chicane to step from Wildwood Road and has been aligned cross gradient sufficient to achieve an average gradient of 1:10 (10%) and avoid any sections up to 1:7 (14.3%) longer than 50 m. The primary concern affecting steep gradient is not the climb but the potential for an uncontrolled descent. The chicane has been used to provide the step from Wildwood Road and enable the average gradient up to the resort to be achieved, but also to provide a control point, to avoid an uncontrolled entry onto Wildwood Road. The southern extent of the gradient for the resort has utilised a cross gradient sweep at the top and through a shallow gully to achieve an average gradient of gradient of 1:10 (10%) and avoid any sections up to 1:7 (14.3%) longer than 50 m.). <u>Maximum Inner Radius</u> The primary access including the chicane has been designed to have an inner radius no less than 8.5 m. The junction from the lake chalets onto the chicane, and the connection with the agriculture access, will be given a compliant radius as part of a requirement to construct the private driveway in accordance with Table 6 column 4. (conditioned) A vehicle turnaround area is available immediately west of the facilities building that is compliant with Figure 28; this is also the proposed location for the bushfire tanks.
	A5.8.1c Signage to be provided within the site, advising of where each access route travels to and the distance and general information signs on what to do in the event of a bushfire.	✓		Directional signage will be provided to assist the evacuation of guests.

	A5.8.2 Vehicular access for short-term accommodation outside of a residential built-out area A5.8.2a Public road access is to be provided in two different directions to at least two different suitable destinations. A5.8.2d A public road is to meet the requirements in Table 6, Column 1.	✓		**A5.8.2a** The site is accessed from Wildwood Road which is an east west public through road compliant with the technical requirements (Table 6 column 1). Wildwood Road connects to Caves Road (west from site) to provide an option for travel to the township of Dunsborough (north) or Margaret River (south). It also provides access to Commonage Road (east from site) and an alternate access to Dunsborough or on to Busselton (north). **A5.8.2d** Wildwood Road is a public road with a 6 m line marked seal and 1.5 m shoulders that provides for two-way traffic. Caves Road and Commonage Road are line marked sealed roads. Access from the site to suitable destinations outside the fireground is available by public roads that are compliant with Table 6 Column 1.
P5ix Provide a permanent water supply that is: – sufficient and available for firefighting purposes; – constructed from non-combustible materials (e.g. steel), or able to maintain its integrity throughout a bushfire; and – accessible, with legal access for maintenance and re-filling by tankers and emergency service vehicles.	**A5.9** Provision of water A5.9b Provision of a water tank (s) in accordance with the requirements of Element 4, Schedule 2 requirements. **Facilities building** A5.15b Provision of a water tanks(s) with a minimum capacity of 10,000 litres per 500 m2 of habitable floor space, up to 50,000 litres; and A5.15c The water tank(s) to be constructed in accordance with Element 4, Schedule 2, 2.2 Technical requirements.	✓		**A5.9b** The proposal will provide 13 water rainwater tanks of 170 000 L dispersed at each accommodation block to provide for the domestic water requirement. The proposal will utilise water from the waterway/lake for the purpose of irrigation. The resort, following the requirements of Element 4, Schedule 2, will require 20 000 L for the facilities building (based on 10 000 L for 500 m^2 habitable floor space), and 10 000L for each hotel accommodation unit building (6), Chalets (4) the proposed dwelling and worker accommodation. Alternative water sources may be available if provided at a standard that complies with the DFES Guidelines and its quality assurances. This is not being pursued by the applicant at this time. A minimum 140 000 L reserved for emergency services is to be provided adjacent the turnaround area west of the facilities building (central to the resort). The location west of the facilities building, as a higher point on the site, will minimise the haulage weight required for emergency vehicles to reach the facility.

5.2 Bushfire Management Strategies

Further bushfire management strategies to those addressed under the bushfire protection criteria are addressed in this instance by the Bushfire Emergency Evacuation Plan (BEEP).

The principles of Emergency Management (listed below) that may apply to the proposal can be divided across the BMP and BEEP working in unison – the BMP determines the suitability of the location, and the BEEP describes the management actions. The two align with emergency management principles as follows:

- Prevention – avoidance and mitigation works undertaken in advance i.e. (Planned Asset Protection Zone).
- Preparation – education, procedures, training i.e. Seasonal maintenance APZ, regular review of (BEEP) requirements, contacts, responsibilities, and warning systems
- Response – actions taken in an event for saving lives (primary) - early evacuation if safe or shelter as a last resort with survival procedures described (BEEP).
- Recovery – return and restoration procedures described (BEEP).

5.2.1 Vulnerable Development Emergency Evacuation (Cl 6.6)

The proposed BEEP is attached in Attachment 1 and follows the State Government's *A Guide to developing a Bushfire Emergency Evacuation Plan* October 2019 and the *Emergency Evacuation Plan template* V1.1. The BEEP has been developed consistent with the Australian Standard AS 3745-2010, Planning for Emergencies in facilities.

The attached BEEP incorporates the requirements listed under section 5.5.4 Guidelines for Planning in Bushfire Prone areas V1.4 and acknowledged in Table 6 below.

Table 7: Compliance with Cl. 5.5.2 *Guidelines for Planning in Bushfire Prone Areas*

The emergency evacuation plan should be concise and consider:	**Addressed in Emergency Evacuation Plan**
The number of visitors at the facility	Accommodation and staff: 150 persons
Whether the occupants are permanent or transient	Transient
Whether there is a caretaker on site	Yes
Whether there are people with a disability, medically dependant, young children, or the elderly	Visitors are able-bodied or expected to be in the care of a patron.
Identification of a safe alternative location if there was a need for evacuation/relocation	City nominated evacuation centre Naturaliste Community Centre, Dunsborough (north) Margaret River Recreation Centre, Margaret River (south)
A proposed method of movement of occupants to a safe location(s)	Private vehicles

Details of suitable access/egress routes for the expected type/volume of traffic, including alternatives when suitable roads are inaccessible, insufficient or inappropriate	A fire from the south, southeast - turn left onto Wildwood Road and right onto Caves Road. Follow to the Town of Dunsborough. A fire from the north, northeast - turn left onto Wildwood Road and left onto Caves Road. Follow to the Town of Margaret River. A fire from the west, turn right onto Wildwood Road and left onto Commonage Road and follow to the Busselton town centre.
Transport options for those without access to private vehicles	Visitors are expected to arrive by private vehicle.
Options to shelter in place as a last resort	Evacuation is the preferred response as per DFES instruction. The facilities building may provide a refuge of last resort for the resort accommodation
Roles and responsibilities of facility personnel and emergency services.	The site will be supervised while operating. The site manager is responsible for alerting visitors to Extreme+ fire danger ratings and the requirement for heightened vigilance. The site manager and an established Emergency Control Organisation will supervise the facility in an emergency event. Predetermined responsibilities and actions are provided in the Bushfire Emergency Evacuation Plan. Emergency procedures and responsibilities shall be clearly displayed within the accommodation units.

The emergency evacuation plan should consider if actions will change based on a series of triggers, such as:	**Addressed in Emergency Evacuation Plan**
Effective warning methods appropriate for the occupants (including consideration of at-risk persons and the demographics of the occupants)	The Chief Warden (Manager) will be responsible for overseeing the response, including alarm (3 horns) and instruct wardens to ensure all rooms are cleared and guests have evacuated to the facilities building. The Chief Warden will be responsible to monitor the media for Fire Danger Rating information. The Chief Warden will be responsible for ensuring that guests are informed of the need to evacuate, the time available, and the safe route.
Closure of facility and early relocation of occupants appropriate to the fire danger rating (FDR) and bushfire warnings	

Any local government bushfire requirements (for example, harvest and vehicle movement bans)	N/A
A suitably qualified emergency management professional should prepare the emergency evacuation plan in collaboration with relevant stakeholders including the landowner/developer and the local government (refer to section 6.14 of the Guidelines)	Anthony Rowe Accreditation Level 3 Accreditation Number: 36690

Note: The preference is for evacuation if safe to do so. If it is not safe to evacuate the site, the contingency is to take refuge as a last resort at the facilities building.

The BMP has identified all reasonable practical measures to increase the resistance of the facilities building to a commensurate bushfire attack by the establishment of an Asset Protection Zone and construction resistance.

The facilities building has sufficient floor area to accommodate all guests, staff and visitors at a capacity not exceeding 1.2 m per person and no closer than 1.2 m to an external wall.

The BEEP also provides a requirement for annual inspection by the owner to identify vulnerability to bush fire by the conditions at the site by ensuring the APZ is in place, materials have not distorted and gaps greater than 2 mm have not occurred, and the response instructions are up to date.

5.3 Spatial representation of the bushfire management strategies

Further to the assessment against the bushfire protection criteria, the key features demonstrating compliance should be represented spatially in the *Spatial representation of the bushfire management strategies*. It represents the required bushfire risk management measures that must be implemented and maintained.

The Spatial representation of the bushfire management strategies is provided in Figure EX1.

6. RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES

The responsibilities for implementation and management of the bushfire measures, summarises the key measures identified to achieve or maintain compliance with the bushfire protection measures following SPP 3.7.

The details contained within the planning application authorised by the responsible decision maker are enforceable under section 214 of the *Planning and Development Act 2005*. The items addressed in the listed responsibilities for implementation and management of the bushfire measures form part of the planning authorisation and where there is conflict supersede the detail of the planning application.

1. The adoption of the Bushfire Emergency Evacuation Plan (provided in Attachment 1).	Prior to operation
2. An Asset Protection Zone is to be maintained compliant with the Standards for Asset Protection Zones Schedule 1, Element 3 Guidelines v1.4. The Asset Protection Zone is to be established only after the City approval of the Landscape Management Plan - affecting the existing vegetation within the extent of the Asset Protection Zone.	Prior to occupation
3. All Class 1 (residence) and Class 3 buildings (tourist accommodation) are to be constructed compliant with section 3 and 7 AS3959:2018 (BAL 29).	Prior to occupation
4. The facilities building is to be constructed compatible with section 3 and 7 AS3959:2018 (BAL 29). *Where the National Construction Code requires a high level of fire protection described in AS3959:2018 the higher standard is to apply.*	Prior to occupation
5. The primary access is to be constructed and maintained compliant with the technical specifications in Table 6 column 4, Guidelines v1.4 including a maximum average grade of 1:10 (10%) and with a 4 m wide sealed trafficable surface within a 6 m wide trafficable surface and at all junctions and corners, an inner radius of 8.5 m.	Prior to occupation
6. The agricultural access, as a secondary access is to be constructed and maintained compliant with the technical specifications in Table 6 column 4, Guidelines v1.4 excepting the water way crossing having a 4m wide trafficable surface.	Prior to occupation
7. Directional signage is to be provided along the driveways at 50 m intervals, at driveway junctions and at the exits onto Wildwood Road.	Prior to occupation
8. A turn around area is provided west of the facilities building (compliant with Figure 28 Guidelines v1.4)	Prior to occupation
9. A dedicated (bushfire) water supply of a minimum 140 000 L is to be provided in compliance with Element 4 Schedule 2 (Guidelines v1.4). The tanks are to be located within 30 m to the west of the Facilities building and adjacent the vehicle turnaround area.	Prior to occupation

10. A notification, pursuant to Section 70A Transfer of Land Act 1893 is to be placed on the certificate(s) of title with a Bushfire Attack Level (BAL) rating The notification is to state as follows: "This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is subject to a Bushfire Management Plan."	Prior to occupation

Advisory notes

1. The landowner is responsible for availing themselves of any promotions and information to assist owners in preparing for and responding to a bushfire event as may be made by the City or the Department Fire and Emergency Services.

Assumed controls

Whilst not directly addressing the proposal, there are a number of Local and State initiatives that reduce the bushfire risk and reduce the loss of life and buildings. The existing controls are acknowledged by the BMP.

They address the mutual obligation between all landowners, and the provision of community services including fire suppression and public alert notification and community response coordination.

The City of Busselton

1. Developing and maintaining district bushfire fighting services and facilities.
2. Administer the *Bush Fires Act 1954* and monitor landowner compliance to maintain land, in a state not conducive to the ignition or spread of bushfire. This is a statutory responsibility assigned to local government.
3. Promoting education and awareness of bushfire prevention and preparation measures though the community.
4. Administering the requirements of the *Planning and Development Act 2005* and the *Building Act 2011*.

State Government

1. Notification of Emergency Alerts - Website and Telecommunication Media
2. Policing operations to minimise the deliberate ignition of bushfires.
3. Maintain fuel reduction on public lands

Acknowledgment - Proponent

The proponent acknowledges the responsibilities as listed above and the requirement to ensure that should the land transfer to a new owner, that the new owner is aware of the BMP and their ongoing responsibility.

ATTACHMENT 1 - Emergency Evacuation Plan

BUSHFIRE EMERGENCY EVACUATION DOCUMENTS

GUNYULGUP Wildwood Resort

1603 (Lot 101) Wildwood Road Yallingup

22 March 2024

This document contains two parts:

1. The preparation compliance with the WAPC A *Guide to developing a BUSHFIRE EMERGENCY EVACUATION PLAN October 2019: and*

2. The Emergency Evacuation Plan contained in Appendix 1. The Emergency Evacuation Plan incorporates the requirement of AS3745-2010 where relevant in the WAPC Emergency Evacuation Plan Template.

Section 1 - does not form part of Emergency Plan

1. ESTABLISHING THE EMERGENCY CONTROL ORGANISATION

In accordance with the DPLH Guidelines for preparing a bushfire emergency evacuation plan an accredited bushfire practitioner was engaged (Anthony Rowe BPAD L3 36690).

The bushfire planning practitioner has been responsible for assisting the Emergency Planning Committee with

- The establishment and implementation of emergency plans and procedures
- Formulation of emergency procedures
- Reviewing the local emergency services

The Emergency Planning Committee with feedback from the Emergency Control Organisation should regularly review the emergency evacuation plan to ensure it remains practical and current.

Emergency Planning Committee (EPC)

The Emergency Planning Committee shall comprise of the owners GUNYULGUP Wildwood Resort

1603 (Lot 101) Wildwood Road Yallingup

The **Emergency Planning Committee** is responsible for overseeing the preparation of the site buildings and grounds for the approaching bushfire season, including attendance to any maintenance required to minimise the risk of damage from bushfire attack.

The Committee is responsible for reviewing the BEEP and overseeing the education and training of the allocated **Emergency Control Organisation.** It is to ensure appropriate resources are provided to prepare for the bushfire season.

Emergency control organisation (ECO)

The Emergency control organisation shall comprise of the following positions occupied by owners, managers and staff.

- The manager in attendance is the Chief Warden
- Area Warden
- Transport Warden
- First Aid Warden

The Chief Warden will be responsible for responding to a bushfire event and ensuring the safety of guests.

Section 1 - does not form part of Emergency Plan

2. PREPARING THE EMERGENCY PLAN

The emergency plan applies to GUNYULGUP Wildwood Resort 1603 (Lot 101) Wildwood Road Yallingup

The Bushfire Management Plan dated **22 March 2024** articulates bushfire safety measures that include:

- Identification of the Asset Protection Zone and maintenance
- Provision of firefighting equipment

The Bushfire Management Plan identified there is a risk of exposure to fatal heat from the forest retained on site and grassfire.

The Facilities building is provided as a safer place on site.

Guests should assemble at the Facilities building.

The preferred evacuation route is via Caves Road.

Evacuation is to the Dunsborough township (north) or the Margaret River township (south) depending on the location and direction of the bushfire.

This Emergency Plan has been prepared in response to bushfire threats identified in the BMP.

It is the responsibility of the Chief Warden to ensure visitors to resort are alerted to conditions where the risk is elevated and of any bushfire likely to threaten the facility.

- The Chief Warden is responsible for checking the DFES Alerts and Warnings web page https://www.emergency.wa.gov.au at regular intervals
- The Chief Warden is responsible for advising guests to evacuate and maintaining contact with guests during any evacuation.

On days where the forecast FDR is Extreme or Catastrophic guests staying at resort accommodation should be advised to confine travel to townships.

Evacuate before the fires arrival when safe to do so.

Section 1 - does not form part of Emergency Plan

3. DETERMINE EMERGENCY ACTION

The **primary action** in response to bushfire threat is **early** evacuation.

Time Required to Evacuate including alarm, briefing and exiting the site

- Dunsborough (north) via Caves Road 40 minutes
- Margaret River (south) via Caves Road 60 minutes.

If the fire is between the site and Margaret River (south) and heading towards the site, then evacuation should be taken to Dunsborough. If the fire is between the site and Dunsborough and Busselton (north), and heading towards the site, then evacuation should be taken to Margaret River.

The evacuation time will vary depending upon the number of people present on the site. The Transport Warden is to monitor the flow onto Wildwood Road and Caves Road and stage release from the site to avoid a grid lock at the intersection and the potential exposure of the vehicles to the firefront.

Vehicles provide poor protection for occupants if within flame contact. If evacuation cannot be completed prior the arrival of the firefront, shelter at the Facilities building is a safer option.

The transportation arrangement for evacuation is by private vehicles.

Groups arriving by bus, should retain the bus on site through the bushfire season.

In a bushfire event, announcements will be made via electronic media and online, regarding bushfire incidents and potential threats to the site.

- Monitor the DFES Alerts and Warnings web page **https://www.emergency.wa.gov.au**
  The On-site Manager is responsible for monitoring this site at regular intervals during the bushfire season

The Trigger to evacuate.

- Emergency WA public advice – Watch and Act or Emergency warnings
- if directly advised to leave by DFES or the police

If smoke or a fire is seen nearby (within 10 km) contact emergency services to seek advice on the availability for safe evacuation

Alarm

The sounding of an airhorn three times will be used to communicate a bushfire alarm.

Section 1 - does not form part of Emergency Plan

4. EVACUATION / SHELTER REQUIREMENTS

Visitors will arrive by their own transport and would evacuate via their own transport.

The primary evacuation destination is Naturaliste Community Centre at 21 Dunsborough Lakes Drive Dunsborough however, in a bushfire emergency, announcements will be made via media and online confirming availability, locations and routes to evacuation centres and safer places. An alternative evacuation centre may be nominated.

PRIMARY AND SECONDARY EMERGENCY PROCEDURES

The Emergency Evacuation Plan must be reviewed annually, ensuring all information, procedures, contact details and any attached publications (e.g., DFES) are current.

Annual review should include:

- The Asset Protection Zones are maintained.
- Roofs and gutters of buildings are free of leaf litter and debris.
- Roof and walls should be checked for gaps exceeding 2 mm which can occur with the ageing of materials.
- Flammable materials are to be removed from near the habitable buildings, 3 m from the base.
- Access is to be clear and easily trafficable, a clearway 6 m wide up to 4.5 m high.
- Directional signage is in place and is clear and accurate.
- Fire hoses are in working order.

A current copy of the emergency plan must be kept at the Facilities building, and an evacuation diagram must be displayed in each chalet and all hotel accommodation rooms.

5. TRAINING REQUIREMENTS

Emergency Control Organisation

Holders of specific roles within the ECO should receive relevant training.

- The Chief Wardens should be trained to maintain awareness of fire danger and incident alerts
- Area Wardens
  - awareness of role and responsibility and allocated areas to alert patrons and clear and secure buildings.
  - Operational firefighting, use of PPE, use of firefighting equipment and personal safety awareness (extreme heat and toxic materials)
  - Awareness of structural fire damage
- First Aid Warden – training and demonstrated competence to administer first aid including injuries expected in a bushfire.

Section 1 - does not form part of Emergency Plan

Emergency Evacuation Plan Preparation Checklist

The following questions will assist the individual in developing or reviewing the Emergency Evacuation Plan to identify an off-site location. For an appropriate off-site location		
If there are occupants with support needs that require a similar facility to support them, is the off-site location suitable?	Yes No	☐ ☒
Comment: Guests with support needs may attend the facility but would have a carer or family member in attendance with them to provide the required support.		
Is the off-site location in an area away from the effects of a bushfire?	Yes No	☒ ☐
Comment: City nominated emergency evacuation facility		
Are there amenities (toilets, food, water etc.) available at the off-site location? (if applicable)	Yes No	☒ ☐
Can the off-site location accommodate the number of occupants?	Yes No	☒ ☐
Comment: City nominated emergency evacuation facility		
Does the route to the off-site location require transporting through bushfire affected areas or areas that may be affected by an approaching bushfire?	**Yes** **No**	☒ ☐
Comment: The route to both the Naturaliste Community Centre and Margaret River Recreation Centre is via Caves Road through roadside forest: Caves Road to Dunsborough passes Leeuwin-Naturaliste National Park forest for 60% of the route and Caves Road to Margaret River adjoins forest for 30% of the route. The routes north and south do not provide expansive views outside of the road, limiting the opportunity to see a fire in advance and avoid it. Early evacuation is required, and advice is to be sought from emergency services to confirm the evacuation destination and the availability of a safe route in a bushfire event.		
Has the owner of the off-site location advised that they are happy to accommodate occupants if evacuation from a bushfire emergency occurs?	Yes No	☒ ☐
Comment: Shire and City nominated emergency evacuation facilities		

Section 1 - does not form part of Emergency Plan

Consider the following questions to assist in planning transport arrangements.	
Do you have your own transport for all occupants? **If no what transport provider will you use?** Visitors will have their own transport	Yes ☐ No ☒
Are private vehicles to be used?	Yes ☒ No ☐
If using private vehicles will there be sufficient vehicles to transport all the occupants, will they be available when you need them, and will there be drivers available? **If no, consider another mode of transport**	Yes ☒ No ☐
Will there be sufficient vehicles to transport all occupants? All visitors will arrive by private transport	Yes ☒ No ☐
Have occupants with support needs been considered when determining transport types and necessary timing to evacuate?	Yes ☒ No ☐
Do you require ambulances? **If yes, St John Ambulance Australia needs to be consulted.**	Yes ☐ No ☒
Is a community bus available?	Yes ☐ No ☒
Will community buses be available when you need them and will drivers be available?	Yes ☐ No ☒
Are other means of transport available?	Yes ☐ No ☒
Do you need any other type of special transport?	Yes ☐ No ☒

Section 1 - does not form part of Emergency Plan

The following questions will assist the individual in developing or reviewing the Emergency Evacuation Plan to identify an on-site building. For an appropriate building, the answers to ***the below questions should receive a 'yes'.***	
Is the property well maintained and kept free from a build-up of fuel and leaf litter in gutters and around buildings?	Yes ☒ No ☐
The standards for Asset Protection Zones in the Guidelines for Planning in Bushfire Prone Areas should be used as a reference	
Is there a building on-site that is away from bushland and is unlikely to be impacted by bushfire?	Yes ☐ No ☒
Is the building constructed in a manner that minimises bushfire attack with appropriate Asset Protection Zones? The Facilities building will be provided with an Asset Protection Zone and construction equivalent to BAL 29.	Yes ☒ No ☐
Can the building accommodate the number of occupants and visitors?	Yes ☒ No ☐
Is there ease of accessibility to the building, and is it easily identifiable? Visitors will be assisted with way finding signage	Yes ☒ No ☐
Is there access to amenities (toilets, food, water, etc.) away from the effects of a bushfire?	Yes ☐ No ☐
NA Early evacuation is recommended. In the event that evacuation is not available, the facilities building is nominated for shelter as a last resort.	

Section 1 - does not form part of Emergency Plan

BUSHFIRE EMERGENCY PLAN

NAME OF FACILITY	GUNYULGUP Wildwood Resort
ADDRESS	1603 (Lot 101) Wildwood Road Yallingup
PREPARED BY	Anthony Rowe, L3 BPAD 36690
OWNER	
OPERATOR	
DATE	22 March 2024
VERSION NUMBER	3

Document Control

Version	Date	Details	Undertaken by
1	17/11/2023	submission	Anthony Rowe
2	19/03/2024	BMP revision	Anthony Rowe
3	22/03/2024	BMP correction	Anthony Rowe

Emergency Management Team

Name	Role	Contact Details
TBA	Owner	TBA

FACILITY DETAILS

GUNYULGUP Wildwood Resort

1603 (Lot 101) Wildwood Road Yallingup

The plan outlines procedures for both **evacuation** and **shelter-in-place** to enhance the protection of occupants from the threat of a bushfire.

The primary action to follow in a bushfire emergency is to:

Evacuate	☒	Shelter in place last resort only	☐

NAME OF CONTACT PERSON		TBA	
POSITION / ROLE OF CONTACT PERSON		TBA	
PHONE NUMBER		TBA	
FACILITY TYPE	Short stay accommodation	NUMBER OF BUILDINGS	11 (resort)
NUMBER OF STAFF	TBA	NUMBER OF OCCUPANTS Resort guests and staff	150
NUMBER OF OCCUPANTS WITH SUPPORT NEEDS		Not applicable	
DESCRIPTION OF SUPPORT NEEDS		Not applicable	

1. Introduction

1.1 Outline of the Bushfire Emergency Evacuation Plan

This Bushfire Emergency Evacuation Plan (BEEP) is based on guidance provided in the following:

- The Department of Planning Land and Heritage *A Guide to Developing a Bushfire Emergency Evacuation Plan 2019*
- *Australian Standard 3745-2010, Planning for Emergencies in Facilities* (Standards Australia 2010).

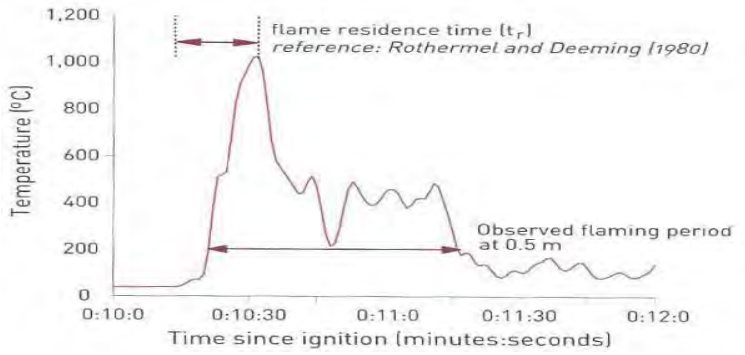
The purpose of this Bushfire Emergency Evacuation Plan is to provide guidance and direction to all staff and visitors by providing:

- Understanding the risks
- Preparing the facility for a bushfire event, including the establishment of the Emergency Management Committee with responsibility to prepare the resort for a bushfire event.
- Responding to a bushfire event including the establishment of the Emergency Control Organisation with responsibility to implement the Emergency Evacuation Plan.
- Recovery - when to re-open and de-briefing and continuous improvement.

The is Bushfire Emergency Evacuation Plan a 'living document' with guidelines that should be reviewed annually and adapted to changing circumstances.

DEFINITIONS

TERM	DEFINITION
Asset Protection Zone	Horizontally and vertically arrange fuels that prevent continuity and the spread of bushfire.
Bushfire Attack Level (BAL)	Arranged in seven categories representing a maximum radiant heat flux for each category i.e. BAL 19 = up to 19 kWm^2 as determined by the methodology in AS3959:2018. The BAL rating reduces as the separation from heat source increases. BAL 29 and less is outside of flame contact. Safe outside shelter is 2 kWm^2 injury occurs above 3 kWm2 and prolonged exposure > 30 seconds can be fatal at 10 kWm^2 10 kWm^2 is considered the maximum protection provided by a vehicle.
Chief Warden	The Chief Warden is responsible for the management of a bushfire emergency.
Emergency Planning Committee (EPC)	The Emergency Planning Committee includes the owners of GUNYULGUP Wildwood Resort. The EPC is responsible for the emergency preparedness arrangements, to ensure resources are available to effectively implement the emergency plan. It overseas the preparation of facilities, the training of staff and the receiving of results from practice drills and event debriefs.

Emergency Control Organisation (ECO)	The Emergency Control Organisation is appointed by the EPC to direct and control implementation of the resort's emergency response. ***The safety of the gusts is prioritised above the protection of any asset.*** All positions are to be approved by the EPC and appropriate training provided.
Evacuation	The orderly movement of people from a place of danger.
Flame Residence time	Resident time is the passing of the firefront, peak flaming. Heat builds prior to the arrival of the fire front and decays quickly and progressively after its passing.  From NCC Handbook: Bushfire Verification Method 2021
Preparedness	The measures taken to eliminate the incidence of emergencies. These include the regulatory and physical measures to ensure that emergencies are prevented.
Prevention	The arrangements made to ensure that should an emergency occur all those resources and services that are needed to cope with the effects can be mobilised and deployed.
Recovery	Measures immediately following the passing of the fire to return to operation.
Response	Actions taken immediately prior to, during and immediately after an emergency or critical incident to ensure that its effects are minimised.
RSET - Require Safe Egress/Evacuation Time	The time taken from alarm to the last person leaving the site. This should be determined through practice drills.
ASET – Available Safe Egress/Evacuation Time	The time available before the resort or the evacuation route is directly impacted by the bushfire and becomes unsafe. The ASET will require verification with Emergency Services (DFES). Unless certain that the ASET + 50% is greater than the RSET, then refuge should be taken at the resort.
The site	1603 (Lot 101) Wildwood Road Yallingup

1.2 Understanding the risk

The aspects of bushfire attack that affect human safety (harm) include:

- Burns from direct flame contact from the bushfire front, including embers, or other ignited materials.
- Burns from radiant heat from the bushfire front or other ignited materials.
- Convective heat carried from the bushfire front – heat stress, lung damage.
- Injuries from airborne particles – eye damage.
- Injuries from blown objects.
- Trips and falls.
- Smoke inhalation – asthma, excessive breathing stress and heart attack.
- Poisoning from Toxic smoke can occur during a bushfire- medical oxygen may be required.
- Dehydration.
- Poisoning from hazardous proceeds of firefighting, contaminated water.
- Poisoning from exposed hazardous building materials i.e. asbestos.
- Building collapse, and sharp object penetrations – cuts.
- Psychological trauma – bushfires are terrifying.

The first aid warden should be prepared/trained for any of the above and provided with appropriate first aid equipment.

In order to avoid harm, patron exposure is best minimised through evacuation from the site.

Vehicles do not provide an effective barrier to extreme heat and the evacuation route from the resort is through forest and potential exposure to fatal heat levels.

Prepared buildings, including Asset Protection Zones and a construction performance commensurate to the bushfire attack level provide a safer option for shelter than a vehicle exposed to extreme conditions.

If time is not available to complete safe evacuation, before the route is exposed to extreme conditions, shelter at the site in a prepared building with wise management through the bushfire event is a safer option.

2. Prepare

2.1 Administration

2.1.1 Emergency Planning Committee

The **Emergency Planning Committee** is responsible for overseeing the preparation of the resort buildings and grounds for the approaching bushfire season, including attendance to any maintenance required to minimise the risk of damage from bushfire attack. A seasonal preparation checklist is provided at **Attachment A**

The Committee is responsible for reviewing the BEEP and broader Emergency Response Plan.

The Committee will assign roles and responsibilities to staff and oversee the undertaking of education and training and evaluating the outcomes of drills and responses (when applicable).

The Committee is responsible for ensuring the safer places are prepared to serve as a shelter of last resort. This includes the Facilities building is constructed and maintained compliant with contemporary bushfire standards.

The Committee is responsible for ensuring all firefighting equipment is inworking order.

2.1.2 Emergency Control Organisation

The Resort is to have an Emergency Control Organisation responsible for the implementation of the response identified in this Bushfire Emergency Evacuation Plan. These are designated resort personnel who have been trained and certified to undertake / provide specific tasks in the event of an emergency: including the operation of firefighting equipment.

Officer Position	Hat	Duties
Chief Warden	White	Determine the evacuation requirement Coordinate Emergency services Enact and coordinate the ECO from 'Alarm' to the completion of 'All Clear' Provide incident control Confirm the All Clear Verify the safety of the facility Determine commencement
Transport Warden	Yellow	Oversee the orderly movement of vehicles from the Facilities building) and onto Wildwood Road and to the evacuation destination, maintaining a separation of emergency service vehicles and evacuation vehicles
First aid Warden	Green	Attend to any injuries, burns, eye injury, and respiratory distress. Supervise guests to remain hydrated. Assists to maintain guest well-being.
Area Wardens assigned to the Facilities Building (2) assigned to clearing all accommodation rooms (2) All staff should also assist to ensure the safety and comfort of patrons.	Yellow	Check buildings and grounds are clear of guests (all assembled at the Facilities building). Secure all resort buildings Prepare grounds; close bins and pre wet areas around the Facilities building Defend the Facilities building until evacuated

2.1.3 - Training

Emergency Control Organisation

Holders of specific roles within the ECO should receive relevant training.

- The Chief Warden must demonstrate awareness of fire danger and incident alerts (tested).
- Area Wardens– Specific training
  - awareness of role and responsibility and allocated areas (to clear and secure buildings).
  - Operational firefighting, use of PPE, use of firefighting equipment and personal safety awareness (extreme heat and toxic materials)
  - Awareness of structural fire damage
- First aid Warden – training and demonstrated competence to administer first aid including the types of injuries expected in a bushfire.

2.2.1 Firefighting equipment

The resort will have onsite firefighting equipment that will be available for trained staff and emergency personnel for small scale events, including:

- Fire extinguishers.
- Fire hose reels capable of applying water to all external parts of a building and 10 m around the building.
- Evacuation maps and diagrams.

All equipment should be maintained annually (as a minimum) in accordance with equipment specifications and the relevant standards, including (but not limited to) *Australian Standard 1851 – 2005 Maintenance of Fire Protection Equipment* (Standards Australia 2012).

2.2.3 Evacuation and Emergency Equipment – Facilities Building

The facilities building has amenities to support an extended stay of up to four hours and immediate access to a carpark and an at door drop off.

First aid kits at the facilities building must be maintained in complete and up to date condition at all times.

First aid kits are available from various suppliers that provide the requirement for bushfire type injuries, i.e. burns, eye injuries – eye wash. The requirements and the capacity of the kit should be informed by the First Aid Warden.

The facilities building is the control centre. It is to be:

- provided with a printed register of all ECO members with mobile phone numbers.
- provided with a printed list of emergency contacts.
- Have access to guest names and contact information
- Provided with PPE equipment for the area wardens.

2.2.4 Communication Equipment

Air horn – 3 separate blasts are required to sound the alarm to commence the evacuation of guests to the facilities building, and to ensure guests remain assembled at the facilities building until they can be advised of safe evacuation routes and destinations.

All ECO members are to have a mobile phone registered for access by the Chief Warden, to be used for coordination throughout the bushfire event.

3. Response

3.1 Monitoring for bushfires

The Chief Warden or delegate should monitor current fire danger ratings and fire activity from a range of official information sources:

- Bureau of Meteorology – Western Australia Fire Danger Ratings
- Emergency WA website
- Department of Fire and Emergency Services
  - Information line – 13 33 37
  - DFES on Twitter
- Local radio
  - ABC local radio 684 AM

Receiving a warning of an approaching fire is enhanced by actively monitoring communications over the internet (i.e. EmergencyWA) and ABC radio and observing the environment surrounding the resort.

The Fire Danger Ratings are based on predicted conditions such as temperature, humidity, wind and the dryness of the landscape and give an indication of the possible consequences of a fire, if one was to start; the higher the fire danger rating, the more dangerous the conditions.

Fire Danger Ratings are issued by the Bureau of Meteorology twice daily (morning and afternoon).



Fire Danger Rating categories

Fire Danger Rating	Public Advice	Resort Action
No Rating	Monitor conditions during the bushfire season	Maintain normal resort operations. - Monitor Emergency WA
Moderate 12-23	Plan and prepare	Maintain normal resort operations. - monitor Emergency WA - Plan and prepare.
High 24-49	Be ready to act	Maintain normal resort operations but: - monitor Emergency WA - know the triggers and be ready to evacuate
Extreme 50-99	Take action now to protect your life and property	
Catastrophic 100+	Catastrophic - For your survival, leave bush fire risk areas	

Note: Catastrophic conditions are extremely rare, and the threat is visceral. Numbers at the resort should be minimised, due to the time delay to evacuate large numbers of people.

3.2 RESPONSE TO A SUDDEN BUSHFIRE EVENT

Bushfire warning stages	
ADVICE 	A fire has started, but there is no known danger. This is general information to keep the public informed and up to date with developments. Chief Warden: – check and patrol the resort regularly for bushfire activity, paying particular attention to the evaporative air conditioners.
WATCH AND ACT 	There is a possible threat to lives and property. Conditions are changing. Chief Wardens must prepare to: – assemble guests at the facilities building. It is vital that the Chief Warden: – accesses bushfire information from official sources – makes an informed decision to stay onsite or evacuate offsite based on advice from Emergency Services. – verifies the evacuation route is safe for the time require to evacuate the resort.
EMERGENCY 	The resort is in danger as its area will be impacted by fire. Take immediate action to survive. The Chief Warden will verify it is safe to leave the resort. If the availability of safe evacuation cannot be confirmed, guests and staff must shelter at the facilities building as the fire burns through the area. Evacuation orders are relayed via official sources, such as Emergency WA. It is vital that the Chief Warden makes an informed decision whether to stay onsite or evacuate offsite based on the advice.
The Chief Warden should not wait for a direction to act if the resort is threatened by bushfire and a safe route is confirmed to be available for the duration required for evacuation, evacuate the Resort. **Or** **If the availability of safe evacuation cannot be confirmed prepare to shelter as a last resort**	

3.3 BUSHFIRE INCIDENT PROCEDURE – Evacuation Procedure

3.3.1 Alarm

- The Chief Warden will
  - Determine the emergency response.
  - Sound the Alarm 3 separate horn soundings.
  - Activate the ECO, each member to wear the hat of their ECO position for identification.

3.3.2 Assembly

- Guests are to assemble at the facilities building – instruct guests to bring a towel (each) from their accommodation unit.
- Guests are to be advised by the Chief Warden that a bushfire is nearby and to remain assembled in the facilities building until directed to evacuate to a confirmed safe destination.
- All guests are to be accounted for at the facilities building.
- Area Wardens will check the grounds and ensure all guests have been accounted for and are assembled in the facilities building.
- Area Wardens are to secure all buildings, turn off air conditioning, close all vents, and close windows and doors.

3.3.3 Evacuation

- The Chief Warden will verify the evacuation route to the evacuation destination will be safe for the required safe evacuation time (RSET).
- The Chief Warden commences the evacuation.
- The Transport Warden will locate to the intersection with Wildwood Road and call the Chief Warden to release vehicles from the site, ensuring there is no back up of vehicles. The Chief Warden is to monitor the time for the arrival of the fire and may choose to discontinue the evacuation.
- Members of the ECO will evacuate the site following evacuation of all guests, visitors and other staff.

3.3.4 Arrival at Evacuation destination

The Chief Warden will determine maintain communication with guests to confirm if and when it will be safe to return to the resort, or if guests should return to their home destinations.

3.3.5 DFES advise of All Clear

If the resort has been evacuated, and DFES have advised it is safe to return, the **Chief Warden** will return to make a preliminary assessment of any building and site damage.

If no building is damaged nor has damage occurred to the grounds and the access route was not directly affected by the fire front, or its impact was insignificant, the Chief Warden will give instructions for the resort to reopen.

3.4 BUSHFIRE INCIDENT PROCEDURE – shelter in building

3.4.1 Alarm

- The Chief Warden will
  - Determine the emergency response.
  - Sound the Alarm 3 separate horn soundings.
  - Activate the ECO, each member to wear the hat of their ECO position for identification.

3.4.2 Assembly

- Guests are to assemble at the facilities building – advise guests to each bring a towel from their accommodation unit.
- Patrons will be advised by the duty Chief Warden that a bushfire is nearby and to remain in the building before evacuating as directed to a safe destination.
- All guests are to be accounted for at the facilities building.
- Area Wardens will check the rooms and grounds are clear and all guests are assembled in the facilities building.
- Area Wardens are to secure all buildings turn off air conditioning, close all vents and close all windows and doors.

3.4.3 Shelter

- The Chief Warden will verify the evacuation route is not safe
- The Chief Warden commences procedures for Shelter in Place as a last resort.

3.4.4 Arrival of the Firefront

The building will be subject to an extreme heat, conditions outside the building are not survivable.

The fire front (peak) will typically pass within 4 minutes; external heat will begin to decay rapidly after the passing of the fire front.

- The Chief Warden should ensure.
  - Guests are protected from radiant heat and kept a minimum of 1 m from any external wall. Each guest should be allocated a notional 1.2 m^2 space to maintain comfort.
  - Guests should stay low to keep out of smoke.
  - Guest towels are to be wet/soaked; towels may be used to filter smoke and provide protection from radiant heat if the building is evacuated.
- Area Wardens should monitor the condition of the facilities building and attend to any fire, to delay the progress as long as possible to increase available evacuation time.
- The Chief Warden will monitor the passage of the fire.
- The Chief Warden will determine if the facilities building is to be evacuated, or for guests to remain in place for evacuation from the site.
- The Chief Warden is to determine if evacuation from the resort is available.

3.4.5 Ignition of the Facilities building

- Should the Facilities building ignite, delay departure for as long as possible and evacuate to an area not exposed to the approaching fire. Patrons may need to move, to avoid heat, as the fire position changes.

The fire front is short lived and the temperatures decay rapidly from the peak. Outside conditions will still be hot and uncomfortable but survivable. The greater the delay after the passing of the fire front the greater the decay in external temperatures.

- Area Wardens will undertake firefighting to delay the spread of fire within the building to maximise the time for departure.
- Area Wardens to take Portable water to the outside assembly area.
- Patrons are to wet towels and place over their head for protection from the heat.

3.4.7 After the passing of the fire

- Area Wardens will inspect the buildings and grounds when safe to do so.
- Area Wardens will extinguish any small fires if safe to do so.
- Area Wardens are to report any large fires to the Chief Warden and if safe to do so attempt to prevent the spread of a fire between buildings.
- Chief Warden
  - Seek DFES/Police advice on the availability for public access to the site.
  - The Chief Warden is to determine if evacuation from the resort is available.

4. **RECOVERY –** following the bushfire incident

4.1 Staff and Guest wellbeing

Bushfires are terrifying. The potential for trauma will be affected by whether the site was calmly (orderly) evacuated, whether any buildings were significantly damaged, and whether shelter was taken on site.

Staff training is important; knowing what to expect can minimise panic and trauma through the event.

4.2 Damaged buildings and grounds

- The Chief Warden will inspect the resort buildings and grounds and audit any damage observed to buildings and grounds. Damaged buildings should not be entered or disturbed and should be left (invited) for investigation by DFES.
- The Chief Warden will advise the owners on the extent of damage.

If there is damage other than superficial requiring the replacement of building materials, stairs and decks, and where there is evidence of internal damage (including the roof cavity) caused by the bushfire event) the owners will determine when the resort can reopen

4.3 Replacement of consumed materials

Bushfires can occur more than once in a bushfire season, and even affect the same place.

Any materials consumed during a bushfire event, i.e. first aid supplies, discharged extinguishers, should be replaced immediately, or before operation of the resort commences.

4.4 Debrief

The Chief Warden together with the Emergency Control Organisation will review the incident to objectively identify success and failures, preparations and procedures to be retained and those requiring improvement.

- The Chief Warden will report ECO findings to the Emergency Planning Committee
- The Bushfire Emergency Evacuation Plan is to be revised to incorporate the learning from the event.
- Capital works and acquisitions recommended are to be considered within the work program and budget.
- Additional training identified in the Debrief should be scheduled prior to the bushfire season.

- **Attachment 1**

PREPAREDNESS

Action	
To be completed just prior to the bushfire season (by November 30 each year) -for the resort	**Confirmed** **Date of inspection**
1. Ensure the required training of the Emergency Management Team has been undertaken, commensurate to the individual responsibilities.	
2. All objects attached to the buildings are non-combustible or easily removable, and the removing mechanism is in working order	
3. The resort buildings Evacuation Diagram must be clearly displayed in all rooms. The Resort Emergency Evacuation Plan is stored at the Facilities building.	
4. Maintain the Asset Protection Zones, specified in the Bushfire Management Plan, around the Resort in accordance with the Standards for Asset Protection Zones Schedule 1, Element 3 Guidelines v1.4.	
5. The resort should be inspected to: • Eliminate external gaps >2mm on the building surface, • Separate flammable materials from the walls of the buildings • Ensure all window screens have a maximum aperture of 2 mm, unbroken and enclose the openable portions of windows.	
6. Any objects attached to habitable buildings are non-combustible or easily removable, and the removing mechanism is in working order	
7. The hoses supplied for firefighting are protected from radiant heat (non-flammable fire reel cover) and in working order	
8. The first aid kits located at the are Facilities building fully stocked.	
9. Personal Protective Equipment (coveralls, gloves, goggles and smoke mask) for each nominated Area Warden is available at the Facilities building.	
10. The ECO members and their mobile phone numbers are available at the Facilities building.	

To be completed during the bushfire season between 1 December and 12 May each year by the Emergency Management Team.

1. Ensure fire extinguishers are charged, ready for use and the instructions on use are attached.
2. Ensure Evacuation Equipment is available • Water available for each visitor • First aid kit is complete and up to date, and includes eyewash
3. All buildings are free of flammable materials, none located within 3 m
4. Regularly check the Incidents and Warnings **www.emergency.wa.gov.au**
5. Emergency Contacts details are current and identified on the Evacuation Diagram

- **Attachment 2**

EMERGENCY PROCEDURE, LOCATION, AND TRANSPORT DETAILS

Evacuation

The following destinations and routes may be available in a bushfire event however current public advice from Emergency WA advice should always be followed to ensure you use the safest evacuation route to the safest destination.

Off-site location (North)

Name of venue	**Naturaliste Community Centre**		
Address of venue	21 Dunsborough Lakes Road Dunsborough		
Nearest cross street	Foxhaven Court	Map reference	94H3+MR Dunsborough
Venue phone number	08 9755 3966		
Primary route to location	Turn left onto Wildwood Road, follow for 900 m to Caves Road then turn right. After 10.3 km take the second exit at the roundabout to stay on Caves Road. At the next roundabout take the third exit onto Dunsborough Lakes Drive. Travel 800 m then take the third exit from the roundabout towards the Naturaliste Community Centre		

Estimated travelling time to destination 15 minutes

Off-site location (South)

Name of venue	**Margaret River Recreation Centre**		
Address of venue	51 Wallcliffe Rd, Margaret River)		
Nearest cross street	Farrelly Street	Map reference	23W9+C2 Margaret River
Venue phone number	08 9754 3600		
Primary route to location	Turn left onto Wildwood Road, follow for 900 m to Caves Road then turn left. After 35 km turn left onto Wallcliffe Road. Travel 4.9 km then right into the Margaret River Recreation Centre carpark.		

Estimated travelling time to destination 40 minutes

Transportation arrangements – PRIVATE VEHICLES

Guests must have transport adequate for all members of their party.

BUSHFIRE EMERGENCY RESPONSE PLAN – FACILITIES BUILDING

Location - 1603 Wildwood Road Yallingup

Facility – GUNYULGUP Wildwood Resort

Visitors – Maximum 150

CONTACT PERSONS

Managers

Evacuation advice- call and confirm safe evacuation route

- DFES assistance 132 500
- Police, 131 444

Chief Wardens Role

- monitoring Emergency Warnings sources (listed below)
- ensure sufficient vehicles remain onsite and available for evacuation of guests at all times during the bushfire season
- **oversee Emergency Evacuation if safe**
- Maintain contact with guests



INFORMATION SOURCES

Local ABC radio	684
DFES information line	13 33 37
Police	000 (threat to life) 131 444 (advice and information)
Emergency WA	www.emergency.wa.gov.au
Emergency WA QR code	

ADVICE - prepare to evacuate

Trigger: Fire is greater than 10 km away

An ADVICE warning has been issued across telecommunications media of an incident nearby (within 10 km).

Response:

The Chief Warden will take the following information into consideration when determining if and when to evacuate:

- The severity of the bushfire incident.
- The location and distance of the bushfire from the site
- Approximate time for the bushfire to impact the facility.
- Emergency services advice – direct or via public information

If the decision is made to evacuate, follow the procedure under Watch and Act.

WATCH AND ACT- Evacuate

DFES or Police have advised EVACUATION IS REQUIRED (Public Notice) OR smoke or fire is observed from the site and DFES or emergency services have confirmed safe evacuation is available.

Confirm with DFES or police the evacuation route which should be taken (public information).

Response:

- **SOUND ALARM 3 HORNS**
- Assemble guests at the facilities building for instruction on the evacuation destination and route.
- **Evacuate if the route is confirmed safe**
- Do not return to the property until management have confirmed it is safe to do so

EMERGENCY - Survival

Trigger:

DFES or Police have advised evacuation by road is not safe

Response

Survival Plan – only to be enacted in the event that DFES or police have advised a safe evacuation route is not available follow the DFES instructions for 'Sheltering in Your Own Home'

- **SOUND ALARM 3 HORNS**
- Assemble guests at the Facilities Building
- Take shelter
- Make sure all doors and windows and vents are closed
- Instruct guests to keep low to limit exposure to smoke.
- Shelter in the Facilities building for as long as possible.
- If the Facilities building ignites and conditions inside become unbearable, evacuate the building, to a space, not exposed to the approaching bushfire. Take water and first aid kit and instruct guests to cover their heads with wet towels
- If the Facilities building is safe, keep guests assembled until an ALL CLEAR is issued for the site.
- Advise Police/DFES of your condition – Do you need assistance

ALL CLEAR

When the fire has passed and it is safe outside or when emergency services have advised the area is safe:

- The Chief Warden and assisting Wardens will
  - check buildings and grounds and extinguish any smouldering objects and
  - determine if it is safe for guests to leave or return
  - advise guests if/when it is safe to leave or return
  - monitor grounds and buildings for 24 hours after the event for smouldering fires and outbreaks

EMERGENCY EVACUATION DIAGRAM



EMERGENCY EVACUATION DIAGRAM

BUSHFIRE EVACUATION PROCEDURES

If you hear the **Alarm – 3 sounds of a horn, repeated;**

or

If you a requested by a staff member

1. Collect your essential items
    - mobile phone
    - finance(money/cards)
2. Dress in, or take with you:
    - long sleeve shirts and pants and closed shoes
    - a bath towel, one for each guest
3. Move to the Facilities Building
4. Register your arrival with the supervising staff member.

At the Facilities building you will receive advice on

- whether to evacuate the resort to a safe destination: or
- shelter is to be taken at the Facilities building.

Do not leave the resort unless you have been advised it is safe to do so.



ATTACHMENT 2 - APZ Guidelines

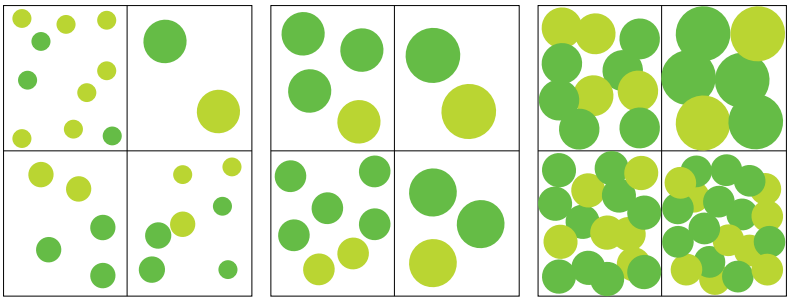


ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ.
Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.

Figure 19: Tree canopy cover – ranging from 15 to 70 per cent at maturity





ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	• Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

** Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes*

ATTACHMENT 3 – Firebreak Notice

PERMITS TO BURN

Permits to Burn are required for the whole of the Restricted Burning Times and can only be obtained from the Fire Control Officer for your area

A list of Fire Control Officers is available on the **Fire and Emergency Services** page on the City's website

Most of our Fire Control Officers are volunteers, make sure you **plan ahead** if you intend to apply for a Permit to Burn

A Permit to Burn must be obtained before any burning takes place and the permit holder **must be in possession** of the permit throughout the duration of the burn

The permit holder shall ensure **all conditions** of the permit, as shown on the permit, are **fully complied** with

NOTIFY DFES COMMUNICATIONS CENTRE

DFES Communications Centre (9395 9209) are to be advised whenever the holder of a permit **commences burning**; and/or whenever a person is carrying out burning activities **outside of the Prohibited and Restricted Burning Times**

HARVEST & VEHICLE MOVEMENT BANS

The City may declare **Harvest & Vehicle Movement Bans** (HVMBs) at any time. For further information or to receive notification of HVMBs please visit the **Fire and Emergency Services** page on the City's website

SMS Notifications for Harvest and Vehicle Movement Bans

The City has implemented an **SMS notification system** to advise community members when a **Harvest and Vehicle Movement Ban is being issued**

To receive these notifications you will need to **register on the City's website**. To register select the **"Resident"** tab on the front page of our website, then the **"SMS notification"** tab under the **"Fire and Emergency Services"** page

HVMBs (issued by the City) are **different from Total Fire Bans** (issued by DFES). **Residents and visitors** to the City are encouraged to **monitor the Emergency WA** website to see if a **TFB is in place**

GENERAL INFORMATION

Burning of Garden Refuse: pursuant to section 24G(2) of the *Bush Fires Act 1954*, the burning of garden refuse is prohibited throughout the District during Prohibited Burning Times, and prohibited in urban areas of the District during Restricted Burning Times

During Restricted Burning Times, a Permit to Burn is required for the burning of garden refuse in Rural Residential or Rural areas

Camping and/or Cooking Fires: pursuant to section 25(1a) of the *Bush Fires Act 1954*, the lighting of fires in the open for the purpose of camping and/or cooking is prohibited throughout the District during Prohibited Burning Times

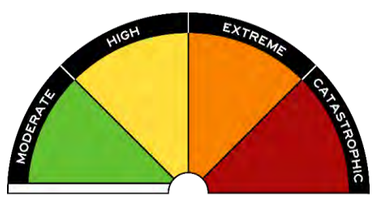
The lighting of fires in the open for the purpose of camping and/or cooking is prohibited at all times when the **Fire Danger Rating** for the District is ***High or above** without the written approval of the City

Fire Pits, Chimineas, and/or Braziers: the lighting of fire pits, Chimineas and/or braziers is prohibited during Prohibited Burning Times, and otherwise prohibited if the **Fire Danger Rating** for the District is ***High or above**

Conditions for the Lighting and Extinguishing of Fires in the Open: when burning garden refuse; or lighting camping and/or cooking fires; or when lighting fire pits, Chimineas and/or braziers the space of ground around the site of the fire, having a radius of at least 3 metres from the site at the centre, shall be clear of all vegetation and other flammable materials

The person who lit the fire, or a person left in attendance at the fire as the case may be, shall completely extinguish the fire by the application of water and/or earth before that person leaves the site unattended

Australian Fire Danger Rating System



Moderate: plan and prepare
High: be ready to act
Extreme: take action now to protect life and property
Catastrophic: for your survival, leave bushfire risk areas

KEY DATES

Dates **may change due to seasonal fire conditions** in which case details will be published in local newspapers and on the City's website

PROHIBITED BURNING TIME
(BURNING IN THE OPEN IS PROHIBITED)

1 December 2023 to 29 February 2024

RESTRICTED BURNING TIMES
(BURNING PERMITS ARE REQUIRED)

15 October 2023 to 30 November 2023
and 1 March 2024 to 30 April 2024
(Burning on Public Holidays Prohibited)

COMPLIANCE DATES

Rural Residential / Urban / Industrial Land

Compliance with this Notice must be achieved no later than 15 November 2023 and maintained until 30 April 2024

Rural Land

Compliance with this Notice must be achieved no later than 15 December 2023 and maintained until 30 April 2024

FIREBREAK INSPECTIONS AND RIGHT OF ENTRY

The City will commence its annual firebreak inspection program on 15 November 2023

Rangers are appointed Bush Fire Control Officers under the provisions of the *Bush Fires Act 1954* and carry out annual inspections

Under the provisions of the Act, Bush Fire Control Officers may in the performance of their duties, enter any land or building including private property

FIREBREAK VARIATIONS

Where there are valid environmental and/or on-ground considerations that prevent full compliance with this Notice, landowners may apply to the City for a firebreak variation. A variation must be lodged in writing on an Application for Variation form that is available on the City's website

City of Busselton
Geographe Bay

FIREBREAK AND FUEL HAZARD REDUCTION NOTICE

2023/2024 BUSH FIRE SEASON

FIRST AND FINAL NOTICE

Take notice that pursuant to Part 3 Division 6 Section 33 of the ***Bush Fires Act 1954***, landowner(s) or occupier(s) of land shall construct firebreaks and carry out fire prevention work in accordance with this Notice

Failure to comply with this Notice may result in a fine of up to

$5,000

This year the City will be prioritising the inspection of properties that were issued Work Orders during the 2022/2023 bush fire season

Should you require assistance or clarification of the requirements of this Notice, please contact the City's Ranger Services on 9781 0444

FIREBREAK CATEGORY CODE AND SUMMARY OF REQUIREMENTS



ALL REQUIREMENTS IN THIS NOTICE ARE TO BE MAINTAINED THROUGHOUT THE ENTIRE DURATION OF THE FIRE SEASON

FAILURE TO COMPLY MAY RESULT IN A $5,000 FINE

PLEASE BE ADVISED THAT YOUR PROPERTY MUST COMPLY WITH CATEGORY REQUIREMENTS AS



CATEGORY *It is the land owner's responsibility to identify the category that relates to their property and to ensure the necessary fire prevention works are completed on time.* *Please contact the City if you are unsure of your category.*	A	B	C	D
CATEGORY 1 **RURAL** Except plantations and vineyards (for tourist chalets, refer to Estate Fire Management Plan or Individual Fire Management Plan) Sections A, C and D apply to this category.	✓		✓	✓
CATEGORY 2 **URBAN RESIDENTIAL & INDUSTRIAL - COMMERCIAL** Sections A, B, D and E1 Trees, apply to this category. Refer to section E - Interpretation and Additional Requirements (E1 Trees).	✓	✓		✓
CATEGORY 3 & 4 **PLANTATIONS** Fire Management Plan applies	N/A	N/A	N/A	N/A
CATEGORY 5 **PROTEA PLANTATIONS / VINEYARDS** (For tourist chalets, refer to Estate Fire Management Plan or Individual Fire Management Plan) Sections A, B, C and D apply to this category.	✓	✓	✓	✓
CATEGORY 6 **RURAL RESIDENTIAL - LOTS WITH INDIVIDUAL (MINERAL EARTH) BOUNDARY BREAKS** Sections A, B, C and D apply to this category unless the property is subject to Estate Fire Management Plan or Individual Fire Management Plan	✓	✓	✓	✓
CATEGORY 7 **RURAL RESIDENTIAL - LOTS WITH A STRATEGIC FIREBREAK ON ONE OR MORE BOUNDARIES** Sections A, B, C and D apply to this category unless the property is subject to Estate Fire Management Plan or Individual Fire Management Plan	✓	✓	✓	✓
CATEGORY 8 **RURAL RESIDENTIAL - LOTS WITHIN A STRATEGIC FIREBREAK AREA WITH NO STRATEGIC FIREBREAKS ON THE LOT BOUNDARIES** Sections B, C and D apply to this category unless the property is subject to Estate Fire Management Plan or Individual Fire Management Plan		✓	✓	✓

A - Firebreak – The term firebreak includes a mineral earth firebreak. A mineral earth firebreak means a 3 metre wide area of the owner(s)/occupiers(s) land, cleared and maintained totally clear of all vegetation material (living or dead) so there is only mineral earth left. Any overhanging trees and other vegetation must be pruned to a height of 5 metres above the ground level of a mineral earth firebreak.

Category 1 – Rural: A mineral earth **FIREBREAK** shall be constructed **3 metres** wide, except in pasture or crop areas where a **FIREBREAK** shall be **2 metres** wide. **FIREBREAKS** shall be located adjacent to all external boundaries of the land. Where the land area exceeds 120 hectares, an additional **FIREBREAK** must divide the land into areas of not more than 120 hectares with each part completely surrounded by a **FIREBREAK.**

Category 2 - **Urban Residential and Industrial-Commercial:** Where the area of land exceeds 2024m² (½ acre) a mineral earth **FIREBREAK** shall be constructed and maintained at least **3 metres** wide and within **6 metres** of the inside of all external boundaries of the land. Where the area of land is 2024m² (½ acre) or less, hazardous material must be removed in accordance with section **B - Fuel Reduction (refer to B1).**

Category 5 - Protea Plantations/Vineyards: A mineral earth **FIREBREAK** shall be 3 metres wide. A low fuel area is to be maintained in accordance with section **B - Fuel Reduction (refer to B2).**

Category 6 and 7 - **Rural Residential:** A mineral earth **FIREBREAK** shall be constructed **3 metres** wide. On Category 6 Rural Residential land with pasture or crop, a **FIREBREAK** shall be **2 metres** wide and located within **6 metres** of all external boundaries of the land. For Category 7 Rural Residential land, free access along a Strategic **FIREBREAK** is to be maintained at all times and including across the boundary of a lot, by means of a **3.5 metres wide field gate** in the adjoining lot boundary fence.

B - Fuel Reduction

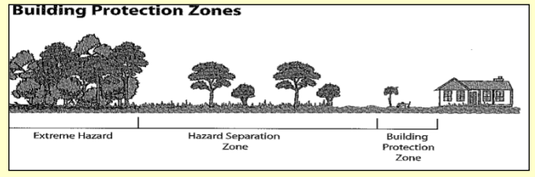
1) **Category 2** - **Urban Residential and Industrial-Commercial:** Where the area of land is 2024m² (½ acre) or less, **ALL HAZARDOUS MATERIAL** must be removed from the whole of the land except living trees. In the area remaining, vegetation is to be maintained to a height of no greater than **10 centimetres**; this includes piles of timber, branches and other vegetation. Trees shall be pruned in accordance with section **E – Interpretation and Additional Requirements (refer to E1).**
2) **Category 5 - Protea Plantations/Vineyards:** A **5 metre** low fuel area is to be maintained between the **3 metre FIREBREAK** and the plantation/vineyard area. In this area, vegetation is to be maintained to a height of no greater than **10 centimetres**; this includes piles of timber, branches and other vegetation.
3) **Category 6, 7 and 8** - **Rural Residential:** Parkland clearing must be carried out in all open paddocks and along the boundary of the property. Clearing means that all dead vegetation and dry grasses (excluding approved crops, pasture areas and living trees/shrubs) including piles of timber and disused materials must be maintained to a height of no greater than **10 centimetres**.

C - Building Protection Zones (BPZ) - This is a modified area of reduced fuel immediately surrounding a building

BPZ's starve the fire by reducing the fuel levels around your house. These requirements are designed to reduce the fire's intensity and minimise the likelihood of flame contact with buildings. The BPZ gives more protection to families should a fire threaten suddenly and they cannot leave. It also provides extra protection for fire fighters and property owners who may decide to stay with their property.

A BPZ shall be provided for buildings in bush fire prone areas. The surroundings of buildings must comply with the following requirements:

1) The BPZ for existing buildings must be at least 20 metres from any external wall of the building unless varied under an approved Fire Management Plan (FMP) in accordance with section **E - Interpretation and Additional Requirements (refer to E4).**
2) The minimum BPZ for buildings constructed after 1 November 2011, in all cases shall be 25 metres.
3) The BPZ must be located within the boundary of the lot that the building is situated on.
4) Hazardous/flammable materials must not exceed the maximum fuel load specified in Point 5 below with grass areas not exceeding a height greater than 10 cm.
5) Fuel loads must be reduced and maintained at 2 tonne per hectare.
6) Isolated trees and shrubs may be retained, however, the first 5 metres around all buildings is to be clear of all hazardous/flammable materials.
7) Reticulated gardens in the BPZ shall be maintained to a height of no greater than 500 millimetres.
8) Wood piles must be at least 10 metres away from habitable dwellings.
9) Trees in the BPZ must comply with section **E - Interpretation and Additional Requirements (refer to E1).**
10) Where the land has an approved FMP, compliance must be achieved in accordance with the FMP. The FMP may vary the above BPZ requirements.
11) A Hazard Separation Zone (HSZ) is also recommended in the absence of a Fire Management Plan. **Section E - Interpretation and Additional Requirements (refer to E3).**



D – Fuel Storage & Haystack Protection Zones

A **3 metre** mineral earth **FIREBREAK** shall be located within **6 metres** of fuel storage tanks, sheds, gas cylinders and haystacks. The mineral earth firebreak shall be maintained so that it is totally clear of all material (living or dead).

E – Interpretation and Additional Requirements

1) **Trees** On **Urban, Industrial, Rural,** and **Rural Residential** land, all tree branches must be removed or pruned to ensure a clear separation of at least **3 metres** back from the eaves of all buildings and **5 metres** above the top of the roof. Branches that may fall on the house must also be removed. In the **BPZ** the following is 'recommended'; the spacing of individual or groups of trees should be 15 metres apart to provide for a 5 metres separation between tree crowns. There is also a requirement of 2.5 metres between trees and power lines so they do not come into contact and start a fire or bring down a power line.
2) **Hazardous and Flammable Materials** means the accumulation of fuel including burn piles (living or dead) such as leaf litter, twigs, trash, bush, dead trees and scrub capable of carrying a running fire, but excludes standing living trees and isolated shrubs. **NOTE**: All remaining vegetation, piles of timber, branches and other living vegetation must be maintained to a height of no greater than 10 centimetres. To measure and determine fuel loads use DFES's *Visual Fuel Load Guide* at http://www.dfes.wa.gov.au/safetyinformation/fire/bushfire/pages/publications.aspx#5 and select *Visual Fuel Load Guide Swan Coastal (Part 1 & 2)*. Surface bush fire fuels should be kept low to the ground.
3) **Hazard Separation Zones (HSZ)** A HSZ is a modified area of reduced fuel load outside of the BPZ and is recommended to assist in reducing the fires intensity when flames are approaching buildings. Both the BPZ and the HSZ are essential strategies for the protection of buildings. A HSZ covers the area 75 metres outside the BPZ.
   The HSZ should be modified to have a maximum fuel load of 6-8 tonne per hectare. This can be implemented by fuel reduction methods such as burning, mowing and slashing to remove the hazard. This should not require the removal of living trees or shrubs. **REMEMBER:** reduce the fuel level of the fire to lower the intensity of the blaze. Further information on fuel loading can be found in the *Visual Fuel Load Guide* available by calling DFES or via their website at www.dfes.wa.gov.au
4) **Fire Management Plan (FMP)** A FMP is a comprehensive plan for the prevention and control of bushfires which may apply to individual land holdings. A notification, pursuant to the Transfer of Land Act 1893 (as amended) may be placed on the Certificate(s) of Title of the land for medium to long term fire management to reduce the occurrence and minimise the impact of uncontrolled bush fires, thereby reducing the threat to life, property and the environment. The land owner must comply with the FMP. **Building in bush fire prone areas**, new dwellings and other forms of accommodation, as well as additions to existing buildings are to be constructed in accordance with in *Australian Standard 3959-2009.* In designated bush fire prone areas, the minimum BPZ in all cases shall be 25 metres. Further information on this and other information relating to fire safety issues can be found on the City's website www.busselton.wa.gov.au

ATTACHMENT 4 – Access

Table 6: Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public roads	2 Emergency access way[1]	3 Fire service access route[1]	4 Battle-axe and private driveways[2]
Minimum trafficable surface (metres)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (metres)	N/A	6	6	6
Minimum vertical clearance (metres)	4.5			
Minimum weight capacity (tonnes)	15			
Maximum grade unsealed road[3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum grade sealed road[3]		1:7 (14.3%)		
Maximum average grade sealed road		1:10 (10%)		
Minimum inner radius of road curves (metres)		8.5		

Notes:

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

[3] Dips must have no more than a 1 in 8 (12.5%-7.1 degree) entry and exit angle.



EXPLANATORY NOTES

E3.6 Private driveways

In areas serviced by reticulated water, where the road speed limit is not greater than 70 km/h, and where the distance from the public road to the further part of the habitable building is no greater than 70 metres, emergency service vehicles typically operate from the street frontage.

In the event the habitable building cannot be reached by hose reel from the public road, then emergency service vehicles will need to gain access within the property. Emergency service vehicles will also need to gain access within the property, where access to reticulated water (fire hydrants) is not possible. In these situations, the driveway and battle-axe (if applicable) will need to be wide enough for access for an emergency service vehicle and a vehicle to evacuate.

Turnaround areas should be available for both conventional two-wheel drive vehicles of residents and Type 3.4 fire appliances. Turn-around areas should be located within 30 metres of habitable buildings. Circular and loop driveway design may also be considered.

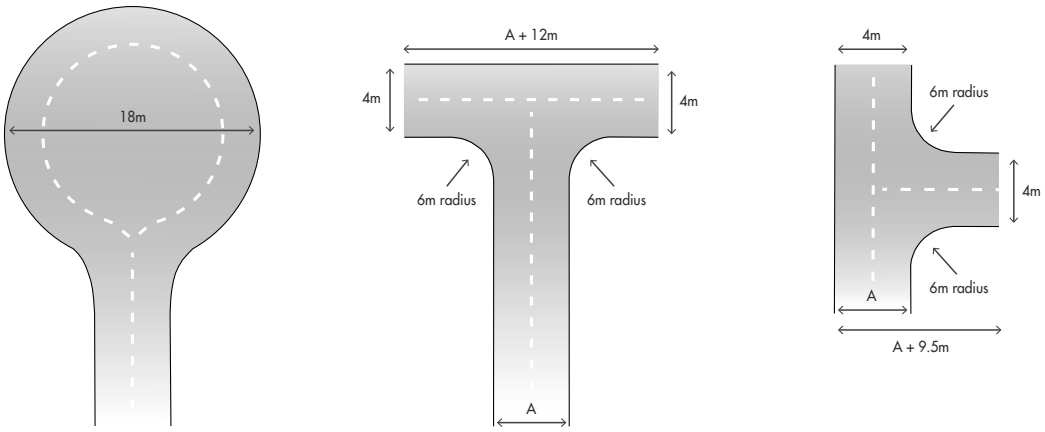


Figure 28: Design requirements for a turn-around area for a private driveway or battle-axe

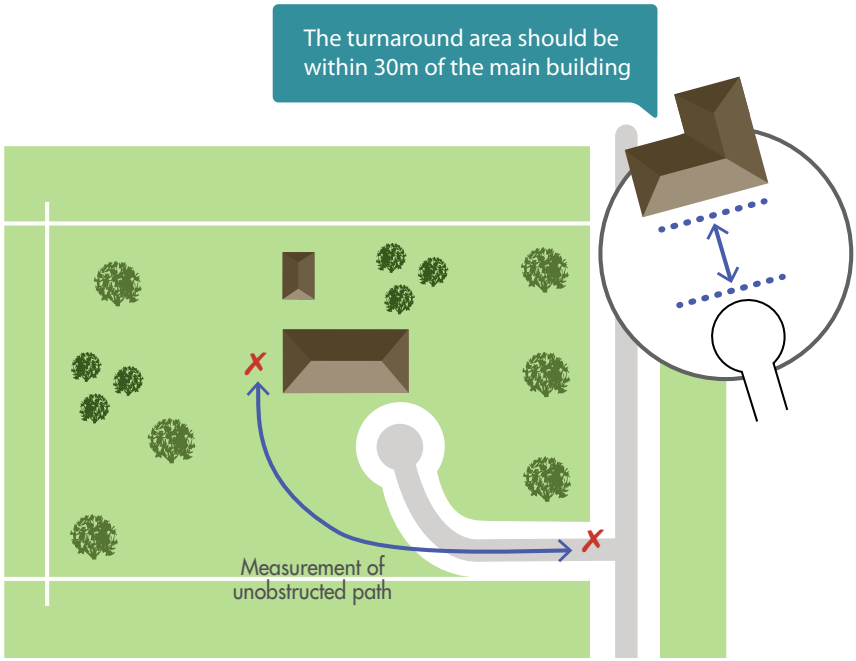


Figure 29: Design requirements for a private driveway where required under A3.6

ATTACHMENT 5 – References

GENERAL REFERENCES

Blanchi R., Whittaker J., Haynes K., Leonard J., Opie K., Holland M., Dreyfuss S., 2015 *Sheltering practices during bushfire,* CSIRO Land and Water Report to the Emergency Management Victoria Natural Disaster Resilience Grants Scheme.

Blanchi R, Leonard J, Haynes K, Opie K, James M, Kilinc M, Dimer de Oliveira F, Van den Hornet R (2012). *Life and house loss database description and analysis*. CSIRO, Bushfire CRC report to the Attorney-General's Department

SA Department of Environment and Natural Resources, Government of South Australia, 2012 *Overall Fuel Hazard Guide for South Australia*

Standards Australia, *Australian Standard AS 3745:2010 Planning for emergencies in facilities*

Standards Australia, *AS 3959:2018 Construction of buildings in bushfire-prone areas*, Sydney

Western Australian Planning Commission (WAPC) 2019 *A Guide to developing a Bushfire Emergency Evacuation Plan* October 2019.

Western Australian Planning Commission (WAPC) *Position Statement: Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design* November 2019

WA Department of Planning Land and Heritage 2016*, Visual Guide for bushfire risk assessment in Western Australia*

Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Western Australian Planning Commission, Perth, Perth

Western Australian Planning Commission and Department of Fire and Emergency Services (WAPC and DFES) 2017, *Guidelines for Planning in Bushfire Prone Areas Version 1.4*, Western Australia

Online references

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ENVIRONMENTAL ASSESSMENT REPORT

LOT 101 (No. 1603) WILDWOOD ROAD, YALLINGUP

November 2023

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Document Control

Version	Date	Author	Reviewer
V1	28/09/2023	PN	KMT
V2	24/10/2023	PN	KMT/MH
V3	20/11/2023	PN	KMT
Filename	2338_Gunyulgup Estate EAR_V3		

Limitations

This report has been prepared by Accendo Australia Pty Ltd in accordance with the scope limitations provided in this report, or as otherwise agreed, between the Client and Accendo.

This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

This report has been prepared based upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report, which Accendo has not independently verified or checked beyond the agreed scope of work. Accendo does not accept liability in connection with such unverified information.

The conclusions and recommendations in this report are based on assumptions made by Accendo described in this report where and as they are required. Accendo disclaims liability arising from any of the assumptions being incorrect.

The report is based on site specific conditions encountered and information received at the time of preparation of this report or the time that site investigations were undertaken. Accendo disclaims responsibility for any changes that may have occurred after this time.

The preparation of this report has been undertaken and performed in a professional manner, in consideration of the scope of services and in accordance with environmental consulting practices. No other warranty is made.

EXECUTIVE SUMMARY

The proponent (Boundary Lane Pty Ltd) is seeking to establish a tourism development at Lot 101 (1603) Wildwood Road, Yallingup (herein referred to as the subject site). The subject site is approximately 43.5 hectares (ha) in size and is located in the municipality of the City of Busselton. It is situated approximately 28 kilometres (km) west of the Busselton town site.

This Environmental Assessment Report (EAR) reviews the environmental values and potential impacts associated with the proposed development in accordance with legislative and policy requirements.

The EAR demonstrates that the subject site is relatively unconstrained and is suitable for the proposed tourism development, based on the assessment of existing environmental factors and values. A summary of the key environmental factors and values are listed below, with management measures provided in **Table i**, where relevant:

- The majority of the subject site has been historically cleared or modified to allow for agricultural activities, primarily viticulture.
- The subject site is classified as having a having a 'moderate to low risk' of Acid Sulfate Soils (ASS) occurring within 3 m of the natural soil for the majority of the site and 'nil' risk for a portion on the southern boundary.
- The *Geomorphic Wetlands of Naturaliste Ridge and Donnybrook to Nannup* dataset indicate that the subject site does not contain any areas mapped as wetlands.
- Given historic clearing and associated agricultural land uses, the majority of flora and vegetation within the subject site has been significantly modified, with most areas containing remnant native vegetation considered to be in a 'Completely Degraded' or 'Degraded' condition. A limited area of vegetation along the onsite dam is in 'Good' condition.
- A targeted flora survey did not record any conservation significant flora within the proposed disturbance footprint.
- Based on the soil and vegetation types, the presence of fauna of conservation significance is possible. This will be verified upon receipt of the black cockatoo habitat survey results. Any habitat identified for significant fauna should be avoided where possible.
- No significant environmental impact is expected to conservation significant flora, vegetation and fauna within the site. Furthermore, significant landscaping is proposed (refer to **Appendix A**) which may result in a net environmental benefit to the site.
- No registered Aboriginal heritage sites have been identified within the subject site.

It has been determined that the limited environmental values of the subject site can be protected in associated with the proposed tourism development or can be managed appropriately through the future development phases in line with the relevant state and local government legislation, policies and guidelines and best management practices.

Table i: Summary of environmental management measures

Aspect	Objective	Management Measure	Timing
Acid Sulfate Soils	Prevent disturbance of ASS material.	• Given the low risk of ASS occurring within the site and that no deep sewer or excavations are required it is unlikely that further ASS investigation/management will be required.	Prior to development
Site contamination	To prevent adverse health related and/or environmental impacts to construction personnel from contamination.	• If any suspected contaminated material is encountered during project implementation, works should cease in the area and the site Project Manager be contacted for advice.	During construction
Hydrology	To maintain the quantity and quality of water so that existing and potential environmental values, including ecosystem function, are protected.	It is recommended that suitable onsite water management measures be implemented during the design phase taking into consideration approaches associated with water supply and conservation, stormwater management and groundwater management. These measures shall consider the following design objectives: • Effectively manage the risk to property damage and environmental degradation from water contamination, flooding and waterlogging. • Maintain and if possible improve water quality (surface and groundwater) within the development in relation to predevelopment water quality. • Implement best management practices in regards to stormwater management. • Maintain existing local drainage patterns and minimise disruption and pollution from potential contaminants such as sediment and hydrocarbons from reaching natural drainage systems.	Prior to development
Vegetation and Flora	To maintain the abundance, species diversity, geographic distribution and productivity of flora and fauna at species and	• No conservation significant flora was recorded during a target flora survey. • In order to minimise the potential impacts associated with vegetation clearing, the following management measures are proposed:	Development design

Aspect	Objective	Management Measure	Timing
	ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	• Clearing operations should be conducted in accordance with the dieback/weed hygiene requirements. • Clearing should be kept to the minimum as far as reasonably practicable and in consideration of bushfire requirements. • The limits of clearing should be clearly marked on site and relevant plans to inform site personnel to contain all activities in the clearing envelope. • Trees to be removed should be felled in a manner that ensures they fall within the approved clearing envelope. • The remainder of cleared vegetation should be salvaged, chipped on site for in situ site rehabilitation and/or soil stabilisation (note: consider the dieback and weed status of the material and its location of dispersal). • Existing cleared areas should be utilised for locating site access, site offices and any temporary laydown areas (but not adjacent to waterways or drainage lines). • No burning of cleared vegetation should be permitted on site.	Construction
Fauna	To maintain the abundance, diversity, geographic distribution and productivity of native fauna at the species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.	• Undertake black cockatoo habitat survey prior to implementation to enable identification of habitat trees within the APZ areas. Retain significant habitat where possible. • Management measures to minimise the impact to fauna and habitat during construction will include: o Provide map and GPS co-ordinates of trees to be retained to the contractor to ensure no unapproved clearing is undertaken; o Clearly mark trees identified for retention with flagging tape and numbered tags; o Undertaking preclearing inspections of trees/vegetation proposed for removal/modification by suitably qualified and licensed fauna spotter; o Use a suitably qualified and licensed fauna spotter during demolition and clearing works to avoid impacts to fauna wherever possible and to rescue trans-locatable fauna that are disturbed during clearing works to assist them to disperse safely or capture them for later translocation as appropriate;	Development design Construction

Aspect	Objective	Management Measure	Timing
		o Contact the DBCA Wildcare Helpline 24 hour emergency hotline if sick or injured animals are encountered.	
Wastewater Management	Enable the onsite treatment and disposal of both domestic and industrial wastewater without endangering public health or the environment	• An SSE has been prepared which recommends flatbed and irrigation systems to be used over the use of leach drains as a greater separation to groundwater is achievable with these systems. • 2,475 m^2 of land application area is required for secondary treated effluent.	Development design

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1 INTRODUCTION

1.1 Background

The proponent (Boundary Lane Pty Ltd) is seeking to establish a tourism development at Lot 101 (1603) Wildwood Road, Yallingup (herein referred to as the subject site). The subject site is approximately 43.5 hectares (ha) in size and is located in the municipality of the City of Busselton. It is situated approximately 28 kilometres (km) west of the Busselton town site (refer to **Figure 1**).

Accendo Australia (Accendo) was commissioned to provide environmental services to determine the environmental impacts and management measures associated with the proposed development.

1.2 Proposed Development

The proponent is proposing to develop tourist accommodation (hotel/guesthouse/chalets) and potentially worker accommodation within the subject site (refer to **Appendix A**).

The subject site is currently zoned as 'Viticulture/Tourism' under the City of Busselton *Local Planning Scheme No. 21*.

1.3 Scope and Methodology

The purpose of this Environmental Assessment Report (EAR) is to demonstrate that all environmental values are understood and potential impacts associated with the future land use can be managed in accordance with legislative and policy requirements, and have been adequately considered in the design of the development.

The environmental assessment involved a review of relevant documentation already prepared for the site, databases and mapping, and relevant government environmental and planning policies. This information has informed the recommendations for the management plan associated with the development.

Based on the findings of the assessment, environmental management measures have been developed to manage and mitigate potential impacts associated with the proposed development.

2 RELEVANT LEGISLATION

2.1 Western Australian Legislation

This assessment has been undertaken in consideration of the relevant Western Australian State legislation which includes the following.

Biodiversity Conservation Act 2016 (BC Act)

The Department of Biodiversity, Conservation and Attractions (DBCA) lists flora and fauna taxa under the provisions of the BC Act as protected according to their need for protection. Flora is given Declared Rare status when their populations are geographically restricted or are threatened by local processes. In addition, under the BC Act, by Notice in the Western Australian Government Gazette of 9 October 1987, all native flora and fauna is protected throughout the State.

Environmental Protection Act 1986 (EP Act)

This EP Act is administered by the Department of Water and Environmental Regulation (DWER) and DBCA. The EP Act provides for conservation, preservation, protection, enhancement and management of the environment and for matters incidental to or connected with it. The Act establishes head powers to provide mechanisms for the development of Environmental Protection Policies (EPP), the referral and assessment of proposals (Environmental Impact Assessment - EIA), the control of pollution and enforcement. The Act also provides for an Environmental Protection Authority (EPA) that is a statutory authority and is the primary provider of independent environmental advice to Government (EPA 2005). The EPA is assisted by the EPA Service Unit comprising the Environmental Impact Assessment and Policy Divisions of the DWER.

Aboriginal Heritage Act 1972

The purpose of this legislation, regulated and enforced by the Department of Planning, Land and Heritage (DPLH), is to protect relics and significant areas of land from undue interference, while at the same time leaving traditional Aboriginal cultural rights in relation to such objects or areas unaffected, consistent with the provisions of the Act. The Act establishes the Aboriginal Cultural Material Committee (ACMC). ACMC provides advice for the assessment of Section 18 Notices which developers are obliged to submit so the ACMC can determine whether or not an Aboriginal site should be disturbed by the development.

Rights in Water and Irrigation Act 1914 (RiWI Act)

The *Rights in Water and Irrigation Act 1914* is administered by the DWER and governs the management of surface and groundwater in Western Australia.

Heritage of Western Australia Act 1990

In accordance with the *Heritage of Western Australia Act 1990*, a place can be placed on the Register of Heritage Places if it is of cultural heritage significance or possesses a special interest related to or associated with cultural heritage.

Heritage places are protected under both State and Commonwealth legislation, with the Heritage Council of Western Australia administering the Register of Heritage Places. Heritage is also protected by local governments via the planning scheme system.

Biosecurity and Agriculture Management Act 2007

The Department of Primary Industries and Regional Development (DPIRD) is responsible for the administration of the *Biosecurity and Agriculture Management Act 2007*.

Two of the main purposes of the *Biosecurity and Agriculture Management Act 2007* are to prevent new animal and plant pests and diseases from entering Western Australia and to manage the impact and spread of those pests already present in the state.

2.2 Federal Legislation

Environmental federal legislation applicable to the subject site includes the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), which is described below.

EPBC Act

The EPBC Act aims to protect *Matters of National Environmental Significance*. Under the EPBC Act, the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) lists Threatened species, Migratory species and Threatened Ecological Communities (TECs) in certain categories determined by criteria provided within the EPBC Act. Actions likely to cause a significant impact on *Matters of National Environmental Significance* should be referred to the DCCEEW for assessment pursuant to the EPBC Act.

3 EXISTING ENVIRONMENT

During the process of this investigation, a range of specific environmental and heritage issues were explored in relation to the subject site. These issues arise from the existing environment of the subject site, its surrounds and the prevailing State and Commonwealth environment policy and legislation.

3.1 Land Use

Historically, the subject site has been used for agriculture and viticulture. Accordingly, the majority of the subject site has been modified with patches of remnant vegetation remaining. Remnant vegetation is present surrounding the waterway and in an area in the south-west of the subject site. The proposed development footprint has been strategically designed to minimise impacts to native vegetation as far as practicable.

The subject site is surrounded by 'Viticulture/Tourism' properties to the south, 'Rural Residential' properties to the north and 'Rural' properties to the west. The subject site is located between Wildwood Road to the east and Caves Road to the west (refer to **Figure 2**).

3.2 Topography

Online mapping from the Department of Primary Industries and Regional Development (DPIRD) (2023) indicates that the topography of the subject site is undulating with topographical elevations ranging between approximately 56 m Australian Height Datum (AHD) at the highest point adjacent to Caves Road in the west to 14 m AHD through the middle of the subject site, adjacent to the waterway (refer to **Appendix B**).

3.3 Landforms and Soils

The landform and soil units of the areas underlying the subject site have previously been mapped within *The Geological Survey of Western Australia* (Belford 1987). The DPIRD's Natural Resource Information (NRInfo) maps the subject site as occurring within the Wilyabrup Valley and Cowaramup Uplands Systems located on the Leeuwin Block, consisting of loamy gravel, sandy gravel and loamy earth and sandy gravel, loamy gravel and grey sandy duplex soils, respectively (refer to **Figure 3**).

Several Soil Phases occur throughout the subject site, which are described below:

- Wilyabrup gentle slope phase: Sideslopes with gradients 5 – 10% containing Forest Grove and Keenan soils.
- Cowaramup gentle slope phase: Gentle slopes (2-5% gradient) with gravelly duplex (Forest Grove) soils.
- Wilyabup moderate slope phase: Sideslopes with gradients 10 – 15% containing Forest Grove and Keenan soils.
- Wilyabrup fertile flats phase: Well drained valley flats and floodplains with deep alluvial soils, often red brown loams (Marybrook soils).
- Wilyabrup narrow valley floor phase: Narrow v shaped depressions.

The proposed development footprint is contained within the Wilyabrup moderate slope Soil Phases.

3.4 Acid Sulfate Soils

Acid sulfate soils (ASS) is the name commonly given to naturally occurring soils and sediment containing iron sulphide (iron pyrite) materials. In their natural state, ASS are generally present in waterlogged and/or anoxic conditions and do not present any risk to the environment. ASS can pose issues when oxidised, producing sulphuric acid, which can present a range of risks for the surrounding environment, infrastructure and human health.

The Department of Water and Environmental Regulation (DWER) provides broad-scale mapping indicating areas of potential ASS risk (DWER 2023). A review of the DWER mapping indicates that the proposed development footprint is classified as having a 'moderate to low risk' of ASS occurring within 3 m of the natural soil (refer to **Figure 4**).

3.5 Site Contamination

A search of the DWER's known contaminated sites database (DWER 2023) identified that the subject site is not listed as a contaminated site. There are no known contaminated sites located within 10 km of the subject site. Furthermore, no evidence of contamination was observed during the site visit undertaken by Accendo.

3.6 Surface Water

The Gunyulgup Brook runs north south through the centre of the subject site. Portions of the brook have been dammed resulting in three dams being located within the subject site. One on the Gunyulgup Brook and two off-stream dams to the east.

3.7 Wetlands

Wetlands within Western Australia are classified on the basis of landform and water permanence pursuant to the Semeniuk (1995) classification system (refer to **Table 1**).

Table 1: Wetland classifications (Semeniuk 1995)

Water Longevity	Landform				
	Basin	Channel	Flat	Slope	Highland
Permanent Inundation	Lake	River	-	-	-
Seasonal Inundation	Sumpland	Creek	Floodplain	-	-
Intermittent Inundation	Playa	Wadi	Barlkarra	-	-
Seasonal Waterlogging	Dampland	Trough	Palusplain	Paluslope	Palusmont

Areas of wetlands have been mapped previously by Semenuik (1995) across the entire Leeuwin Naturaliste Ridge. This mapping has been converted into a digital dataset that is maintained by the DBCA and is referred to as the 'Geomorphic Wetlands of Naturaliste Ridge and Donnybrook to Nannup' dataset. This dataset contains information on geomorphic wetland types and assigns management categories that guide the recommended management approach for each wetland area. The wetland management categories and management objectives are listed in **Table 2**.

Table 2: DBCA wetland management categories (Semeniuk 1995)

Category	Description	Management Objectives
Conservation (C)	Wetlands support a high level of ecological attributes and functions.	Highest priority wetlands. Objective is to preserve and protect the existing conservation values of the wetlands through various mechanisms including: • Reservation in national parks, crown reserves and State-owned land, • Protection under Environmental Protection Policies, and • Wetland covenanting by landowners. No development or clearing is considered appropriate. These are the most valuable wetlands and any activity that may lead to further loss or degradation is inappropriate.
Resource Enhancement (RE)	Wetlands which may have been partially modified but still support substantial ecological attributes and functions.	Priority wetlands. Ultimate objective is to manage, restore and protect towards improving their conservation value. These wetlands have the potential to be restored to Conservation category. This can be achieved by restoring wetland function, structure and biodiversity.
Multiple Use (MU)	Wetlands with few remaining attributes and functions.	Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through landcare.

The subject site does not contain any wetlands mapped within the dataset.

A search of the Ramsar *Convention on Wetlands* (1971) revealed that the subject site does not contain and is not in proximity to any wetlands of international importance.

3.8 Groundwater

The subject site is located within the Cape to Cape North subarea of the proclaimed Busselton - Capel Groundwater Management Area. Pursuant to the RiWI Act, in proclaimed areas it is an offence to take water without an appropriate licence. Site specific groundwater monitoring has not been undertaken at the subject site.

A Site and Soil Evaluation (SSE) (Environmental and Landscape Management 2023) performed for the subject site, involved the excavation of test pits to a depth of 2 m below ground level. No groundwater was observed in any of the test pits, noting that the site investigation was undertaken in May 2023.

To protect the State's drinking water resources the DWER has defined certain Priority Classification Areas within Public Drinking Water Source Areas (PDWSA), providing three levels of groundwater quality protection. These are based on the principles of risk avoidance (Priority 1), risk minimisation (Priority 2) and pollution limiting (Priority 3). The subject site does not lie within any existing or potential PDWSAs. Furthermore, there are no PDWSA located within 10 km of the subject site.

3.9 Sewage Sensitive Areas

The *Government Sewerage Policy 2019* (GSP) (DPLH 2019) was produced to establish the Western Australian Government's position on the provision of sewerage services in the State. It requires reticulated

sewerage to be provided during the subdivision and development of land where possible. Reticulated sewerage is not available within the subject site, therefore sewerage disposal is to adopt a best practice approach in accordance with *Australian/New Zealand Standard 1547 On-site domestic wastewater management* and the GSP.

The general site requirements for on-site effluent disposal are outlined in the GSP and *AS/NZS 1547:2012* and are dependent on whether the site is located within a sewage sensitive area (as defined within the GSP). The subject site is not located within a sewage sensitive area pursuant to mapping prepared in accordance with the GSP (DPLH 2019).

3.10 Flora and Vegetation

3.10.1 Vegetation

The subject site lies within the South West Forest Biogeographic Region of the south-west Botanical Province (Thackway and Cresswell 1995). Historically this biogeographic region has been extensively cleared for both urban and agricultural purposes.

Regional vegetation has been mapped by Mattiske and Havel (1998) at a scale of 1:50,000 based on major geomorphic units within the South West Forest Region. The subject site includes three vegetation complexes as defined by Mattiske and Havel (1998) including:

- Cowaramup (C2) Complex: Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Banksia grandis* on lateritic uplands in perhumid and humid zones.
- Wilyabrup (W2) Complex: Open forest of *Corymbia calophylla-Allocasuarina decussata-Agonis flexuosa* on deeply incised valleys in perhumid and humid zones.
- Wilyabrup (Ww2): Tall open forest of *Corymbia calophylla-Agonis flexuosa* on flats and valleys in perhumid and humid ones.

The mapped vegetation associations can be used to determine vegetation extent and status on the Swan Coastal Plain (refer to **Table 3**). The EPA recognises vegetation associations that are not well represented in reserves as being 'significant'.

Table 3: Extent of pre-European vegetation remaining in the Swan Coastal Plain IBRA region.

System	Pre-European (ha)	Current Extent (ha)	Remaining Extent (%)	Extent in Managed Lands (%)
IBRA Bioregion South West Forests	4,350,580	2,819,348	64.8	50
Local Government City of Busselton	58,581	53,510	62	-
Mattiske Vegetation Association 41 – Cowaramup (C2) Complex	13,692	4,443	32	6
288- Wilyabrup (W2) Complex	4,108	1,317	32	2
309 – Wilyabrup (Ww2) Complex	1,331	503	38	0.5%

The national objectives and targets for biodiversity conservation in Australia have a target to prevent clearance of ecological communities with an extent below 30% of their pre- European extent remaining. In consideration of **Table 3**, the vegetation associations are mapped as retaining greater than 30% of its pre-European extent, denoting that they are well represented.

A site visit was undertaken by Accendo on 30th May 2023 to view the onsite environmental characteristics. Based on site observations, the subject site contains three areas of remnant vegetation described as follows (refer to **Figure 5**):

- *Eucalyptus marginata* and *Corymbia callophylla* woodland over grasses. Evidence of historical and ongoing vegetation management for hazard reduction purposes which has resulted in the removal of the majority of under and midstorey vegetation. Vegetation is likely to be in a Completley Degraded condition (refer to **Plate 1**).
- Planted, introduced tree species, with very occasional *Corymbia callophylla*. Given the predominant absence of native vegetation, the vegetation in this area is in a Completely Degraded condition (refer to **Plate 2**).
- Planted, introduced tree species. Given the absence of endemic vegetation, the vegetation in this area is in a Completely Degraded condition (refer to **Plate 3**).
- *Corymbia callophylla* and *Agonis flexuosa woodland* over *Pteridium esculentum*. The vegetation structure is considered to be in Degraded to Good condition in this area (refer to **Plate 4**).
- *Agonis flexuosa* with occasional *Corymbia callophylla*, and *Acacia longifolia* over exotic grasses and *Pteridium esculentum*. Vegetation within this area has been subjected to a history of disturbances which has resulted in a high degree of weed invasion. Vegetation condition is considered to be Completely Degraded in this area (refer to **Plate 5**).



Plate 1. *Eucalyptus marginata* and *Corymbia callophylla* woodland over grasses.



Plate 2. Planted, introduced tree species, with very occasional *Corymbia callophylla*.



Plate 3. Planted, introduced tree species.



Plate 4. *Corymbia callophylla* and *Agonis flexuosa woodland* over *Pteridium esculentum*.



Plate 5. *Agonis flexuosa* with occasional *Corymbia callophylla*, and *Acacia longifolia* over exotic grasses and *Pteridium esculentum*.

3.10.2 Threatened and Priority Ecological Communities

A search undertaken of the DBCA's Threatened Ecological Communities (TEC) database and the EPBC Act Matters of National Environmental Significance database indicated there is one possible TEC within 5 km of the subject site.

The TEC identified is the Banksia Woodlands of the 'Endangered' Swan Coastal Plain ecological community which is mapped as 'may occur within the subject site'.

To be considered as part of the Banksia Woodlands TEC, a patch of banksia woodland needs to meet the following criteria:

- Occurrence on the Swan Coastal Plain and immediately adjacent areas of the Whicher Scarp, Ridge Hill Shelf and Dandaragan Plateau in well-drained, low nutrient soils on sandplain landforms;
- The structure is that of a low woodland to forest;
- The canopy is commonly dominated by or co-dominated by *Banksia attenuata* and/or *Banksia menziesii*;
- The patch must include at least one of *Banksia attenuata*, *Banksia menziesii*, *Banksia ilicifolia* or *Banksia prionotes*; and
- The canopy may include emergent trees of *Eucalyptus marginata* or *Corymbia calophylla*.

The condition of the patch is also important in determining the presence of the Banksia Woodlands TEC. A patch must meet the criteria for 'Good' condition or better according to the Keighery (1994) condition scale. If a patch is rated as being in 'Good' condition, then it must also be at least 2 ha in size. Vegetation within the subject site is considered to be in a predominantly 'Degraded' condition and Banksia spp. do not dominate or co-dominate the canopy. Accordingly, the Banksia Woodlands TEC is not present within the subject site.

3.10.3 Environmentally Sensitive Areas

Section 51B of the EP Act allows the Minister to declare an Environmentally Sensitive Area (ESA). Once declared, the exemptions to clear native vegetation under the regulations do not apply in these areas. TECs, areas within 50 m of any Declared Rare Flora and defined wetland areas constitute ESAs. However, a number of other areas of environmental significance are also listed. Current declared ESAs are listed in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*.

No ESAs have been identified within the subject site. There are no mapped ESAs located within 1 km of the subject site.

3.10.4 Flora of Conservation Significance

A search for known rare and Priority flora within or in proximity to the subject site was undertaken through a review of the following databases:

- DBCA's Threatened (Declared Rare) Flora database;
- DBCA's *Declared Rare and Priority Flora List*; and
- EPBC Act *Matters of National Environmental Significance* database.

In accordance with the DBCA's *Declared Rare and Priority Flora List*, seven Threatened species, one Priority 1 species, three Priority 2 species, 13 Priority 3 species and seven Priority 4 species have been recorded within 10 km of the subject site. The EPBC Act *Matters of National Environmental Significance* database search identified an additional four 'Endangered' and one 'Vulnerable' flora species. A summary of the

species and their likelihood of occurring within the subject site based on preferred soil types is provided within **Table 4**.

Table 4: Database search results for significant flora known to occur within proximity of the subject site

Species	DBCA Status	EPBC Act Status	Likelihood of Occurrence
Acacia flagelliformis	P4	-	Prefers sandy soils, winter-wet areas. Possible
Acacia inops	P3	-	Prefers black peaty sand, clay. Swamps creeks. Unlikely given absence of preferred soil types.
Acacia latericola var. Glabrous variant	P3	-	Prefers lateritic soils. Unlikely given absence of preferred soil types.
Acacia semitrullata	P4	-	Prefers white/grey sand, sometimes over laterite, clay. Sandplains, swampy areas. Unlikely given current and historical land use.
Amphidium tortuosum	P1	-	Unlikely, absence of suitable habitat.
Banksia sessillis var. cordata	P4	-	Prefers white grey sand, coastal limestone. Unlikely given the absence of preferred soil types.
Boronia anceps	P3	-	Prefers white sand, gravelly laterite and seasonally swampy heaths. Unlikely, outside of known extent.
Boronia capitata subsp. gracilis	P3	-	Prefers white/grey or black sand. Winter – wet swamps, hillslopes. Possible
Boronia sp. Leeuwin	P2	-	Prefers sand and peat with gravelly laterite in winter-wet depressions, swamps and watercourses. Possible
Caladenia abbreviata	P3	-	Sand and sand dunes. Unlikely given absence of sand dunes.
Caladenia busselliana	T	-	Sandy loam, winter -wet swamps. Possible
Caladenia excelsa	T	Endangered	Prefers white, grey or brown sand, sandy loam. Possible
Caladenia huegelii	T	Endangered	Prefers grey or brown sand, clay loam. Possible
Caladenia nivalis	P2	-	Prefers sand, loam, granite and coastal granite outcrops. Unlikely, due to absence of preferred soil types.
Caladenia viridescens	T	-	Prefers loam, grey sand. Unlikely, outside of known extent.
Dampiera triloba	P3	-	Damp peat/loam soil. Unlikely
Dillwynia sp. Capel	P3	-	Prefers littered grey loamy sand, rocky soils in valleys and rangelands. Unlikely.

Species	DBCA Status	EPBC Act Status	Likelihood of Occurrence
Drakaea micrantha	T	Vulnerable	Prefers white-grey sand. Possible
Eucalyptus x phylacis		Endangered	Prefers laterite, loam over granite in coastal areas. Unlikely.
Eucalyptus rudis subsp. cratyantha	P4	-	Prefers loam, flats and hillsides. Unlikely due to absence of suitable soil types.
Gastrolobium argyrotrichum	T	-	Prefers shallow loam soil between large outcropping rocks of granite. Unlikely due to absence of suitable habitat.
Gastrolobium papilio	T	Endangered	Prefers sandy clay over ironstone and laterite on flats plains. Unlikely.
Gahnia scleriodes	P4	-	Loam, sandy soils. Moist shaded situations. Possible
Grevillea brachystylis subsp. Yelverton	P2	-	On edges of winter wet swamp in grey sandy clay. Possible
Johnsonia inconspicua	P3	-	Prefers white-grey or black sand. Low dunes, winter-wet flats. Unlikely
Lepyrodia heleocharoides	P3	-	Moist peaty sand. Dry or seasonally inundated heath or woodland swamps. Unlikely
Netrostylis sp. Blackwood River	P3	-	Loam soils. Unlikely
Olearia strigosa	P3	-	Prefers sandy loam, in open forests. Possible
Pultenaea pinifolia	P3	-	Prefers loam or clay in floodplains and swampy areas. Unlikely due to absence of preferred soil types.
Stylidium lowrieanum	P3	-	Prefers sand or sandy loam over limestone in Eucalypt or Agonis woodland, forest and scrub. Possible
Thysanotus glaucus	P4	-	Prefers white, grey or yellow sand, sandy gravel. Unlikely given current and historical land use.
Tripterococcus sp. Brachylobus	P4	-	Winter wet, sandy flats. Possible.

In consideration of the habitat requirements for the identified conservation significant species, it is considered possible for a number of flora species of conservation significance to occur within the subject site.

A targeted flora survey conducted in September 2023 by Plant Ecology Consulting did not identify any species of conservation significance within the proposed disturbance footprint (refer to **Appendix C**).

3.11 Fauna

A search of the DBCA's Threatened Fauna database (NatureMap) was undertaken to establish whether species declared as 'Rare or likely to become extinct' (Schedule 1), 'Birds protected under an international agreement' (Schedule 3) and 'Other specially protected fauna' (Schedule 4) as listed under the *Biodiversity Conservation Act 2016* have been recorded in proximity to the subject site. The NatureMap Report

identified 14 threatened species, one Priority 3 species, seven Priority 4 species, and two other specially protected fauna species (refer to **Table 5**), within a 10 km radius of the subject site. A search of the EPBC Act *Matters of National Environmental Significance* database identified an additional eight species of conservation significance within a 5 km radius of the subject site.

Table 5: Significant fauna potentially occurring within 5 -10 km of the subject site as identified by State and Commonwealth database searches.

Species	DBCA Status	EPBC Act Status	Likelihood of Occurrence
Austroassiminea letha (Cape Leeuwin freshwater snail)	T	-	Unlikely, absence of rain fed springs.
Bettongia penicillata ogilbyi (Woylie, brush-tailed bettong)	T	Endangered	Unlikely, outside of expected range.
Botaurus poiciloptilus (Australasian Bittern)	-	Endangered	Unlikely, outside of expected range.
Calidris canutus (Red Knot)	-	Endangered	Migratory, unlikely to rely on the habitat for survival.
Calidris ferruginea (Curlew Sandpiper)	-	Critically Endangered	Migratory, unlikely to rely on the habitat for survival.
Calyptorhynchus banksii subsp. naso (Forest Red-tailed Black Cockatoo)	T	Vulnerable	Possible, presence of limited habitat
Calyptorhynchus baudinii (Baudin's Cockatoo)	T	Endangered	Possible, presence of limited habitat
Calyptorhynchus latirostris (Carnaby's Cockatoo)	T	Endangered	Possible, presence of limited habitat
Charadrius leschenaultii (Greater Sand Plover, Large Sand Plover)	-	Vulnerable	Migratory, unlikely to rely on the habitat for survival.
Ctenotus ora (Coastal Plains skink)	P3	-	Unlikely, absence of suitable habitat
Dasyurus geoffroii (Western Quoll)	-	Vulnerable	Unlikely, presence of very limited habitat with lack of connectivity
Engaewa pseudoreducta (Margaret River burrowing crayfish)	T	Critically endangered	Unlikely, outside of known extent.
Engaewa reducta (Dunsborough burrowing crayfish)	T	Critically endangered	Possible, given the presence of a watercourse, however unlikely to be impacted as there will be no impacts to the watercourse.
Falco hypoleucos (Grey falcon)	-	Vulnerable	Unlikely to rely on the subject site for survival.
Falco peregrinus (Peregrine falcon)	OS		Unlikely to rely on the subject site for survival.
Hydromys chrysogaster (water-rat, rakali)	P4		Unlikely, absence of suitable habitat
Isoodon fusciventer (Quenda, Southwestern brown bandicoot)	P4	-	Possible, presence of suitable habitat

Species	DBCA Status	EPBC Act Status	Likelihood of Occurrence
Leipoa ocellata (Malleefowl)	T	-	Unlikely, absence of suitable habitat and outside of known range.
Notamacropus eugenii derbianus (Tammar wallaby)	P4	-	Unlikely, absence of suitable habitat and outside of known range.
Notamacropus irma (Western brush wallaby)	P4	-	Unlikely, absence of suitable habitat
Numenius madagascariensis		Critically endangered	Migratory, unlikely to rely on the habitat for survival.
Oxyura australis (Blue-billed duck)	P4	-	Unlikely, absence of suitable habitat
Petrogale lateralis lateralis (black flanked rock wallaby)	T	-	Unlikely, absence of suitable habitat and outside of known range.
Phascogale tapoatafa subsp. wambenger (South-western Brush-tailed Phascogale)	S4	-	Possible, although does prefer drier areas
Pseudocheirus occidentalis (Western Ringtail Possum, ngwayir)	T	Critically Endangered	Possible, presence of habitat but lack of connectivity
Pseudomys fieldi (Shark bay mouse)	T	-	Unlikely, absence of suitable habitat and outside of known range.
Pseudomys shortridgei (Heath mouse)	T	-	Unlikely, absence of suitable habitat and outside of known range.
Setonix brachyurus (quokka)	T	-	Unlikely, absence of suitable habitat and outside of known range.
Stercorarius antarcticus lonnbergi (Brown skua)	P4	-	Unlikely, marine species.
Sternula nereis nereis (Australian Fairy Tern)	-	Vulnerable	Unlikely, absence of suitable habitat
Thiornis rubricollis (hooded plover)	P4		Unlikely, absence of suitable habitat
Westralunio carteri (Carter's freshwater mussel)	T	Vulnerable	Unlikely, absence of suitable habitat

While migratory and marine bird species may infrequently visit the subject site, they will not rely on it for their persistence in consideration of its degraded condition. Therefore, these species have been omitted from this assessment.

The identified fauna habitats ranged from 'Completely Degraded' (cleared pasture) to 'Good', largely a consequence of historical clearing and ongoing livestock grazing. Given the degree of disturbance the original fauna assemblage within the subject site is likely to be depauperate in many aspects, in particular with respect to ground dwelling species which rely on dense native understory (midstorey and ground cover) vegetation, which is largely absent.

Of the abovementioned conservation significant species, based on preferred habitat types, seven species have the potential to occur within the subject site (all three species of black cockatoo, Western Ringtail Possums, South-western Brush-tailed Phascogale, Quenda and the Dunsborough burrowing crayfish).

A summary of the findings relating to the five species of conservation significance that have potential to occur in the subject site is provided below.

Western Ringtail Possum

The Western Ringtail Possum (WRP) is endemic to the south- west of Western Australia. It was formerly patchily distributed through the near-coastal southwest from approximately 120 km southeast of Geraldton to the southern edge of the Nullabor Plain and its range has now substantially contracted (How *et al.*, 1978, de Tores *et al*., 2005, Jones 2004). Extant populations now occur mostly on the coastal strip from Yalgorup (100km south of Perth) to Waychinicup National Park (just east of Albany), with isolated inland populations in the lower Collie River valley, Harvey River valley and at Perup (Manjimup) (de Tores *et al.*, 2005, Jones 2004, Jones 2007).

With the exception of the few isolated inland populations in Eucalypt forests, the WRP generally occurs in coastal Peppermint (*Agonis flexuosa*) woodlands, Peppermint/Tuart (*Eucalyptus gomphocephala*) woodlands, and Peppermint/Eucalypt woodlands associations, with the highest density populations occurring within the Busselton to Dunsborough coastal strip *(de Tores et al.*, 2005; Jones *et al.*, 2007).

The subject site provides preferential foraging habitat for WRP around the existing watercourse.

Black Cockatoos

The Forest Red-tailed Black Cockatoo occurs in the south-west of Western Australia, approximately southwest of a line between Gingin and the Green Range (near Wellstead, east of Albany). The range of this sub-species is closes associated with the distribution of Marri (*Corymbia calophylla*); its favoured nesting and foraging trees species. This species typically breeds in tree hollows with a depth of 1 – 5 m primarily in Marri (*Corymbia calophylla*) and Jarrah *(Eucalyptus marginata*).

The Forest Red-tailed Black Cockatoo predominately forages on seeds of marri and jarrah. It has also been recorded foraging on *Eucalyptus caesia, E. erythrocorys*, river red gum (*E. camaldulensis*), flooded gum (*E. grandis*), *Allocasuarina* cones, fruits of snottygobble (*Personia longifolia*) and mountain marri (*Corymbia haematoxylon*) (SEWPaC 2012).

Carnaby's Black Cockatoo occurs in the south-west of Western Australia, approximately south-west of a line between the Murchison River (near Kalbarri) and Cape Arid National Park (east of Esperance).

Carnaby's Black Cockatoo generally nest in hollows in live or dead trees of Salmon Gum (*E. salmonophloia*), Wandoo (*E. Wandoo*), Tuart, Jarrah, Flooded Gum (*E. rudis*), York Gum (*E. loxophleba supsp. loxophleba*), Powderbark (*E. accedens*), Karri (*E. diversicolor*) and Marri (SEWPaC 2012).

Carnaby's Black Cockatoo forages in native shrubland, kwongan heathland and woodlands dominated by proteaceous plant species such as Banksia spp., Hakea spp. and Grevillea spp. (SEWPaC 2012).

Baudin's Black Cockatoo occurs in the south-west of Western Australia, approximately south-west of a line between Morangup (near Bullsbrook, north of Perth) and Waychinicup National Park (east of Albany). This species generally breeds in the Karri, Marri and Wandoo forests in the southern parts of the species' range and move north to the Darling Range and Swan Coastal Plain during autumn and winter.

During the breeding season, Baudin's Black Cockatoo primarily forage in Eucalypt woodlands, particularly Marri. Outside the breeding season, the species may feed in fruit orchards (mostly pear and apple, but also persimmon) and tips of Pinus spp. (SEWPaC 2012).

The following flora species are known to be or are potentially used as a direct food source (e.g. seeds, flowers, nectar, bark or grubs) by one or more species of black cockatoo and were recorded within the subject site:

- Marri - *Corymbia calophylla*;
- Jarrah - *Eucalyptus marginata*;
- Peppermint - *Agonis flexuosa*; and
- Planted non-endemic eucalypts (various unidentified species).

Dunsborough Burrowing Crayfish

The Dunsborough Burrowing Crayfish occurs in an area, approximately 6 km^2 between Dunsborough and the Margaret River in Western Australia. It uses a variety of habitats that provide moist sandy/loamy soils and an accessible watertable, including vegetated seepages, swamp plains and swampy headwaters of streams. Vegetation associated with these habitats is native heaths dominated by shrubs (e.g. callistemons, melaleucas) (Burnham, 2005 & Burnham et.al, 2007).

The proposed development will not result in any impacts or disturbances to the onsite watercourses which may provide habitat for the Dunsborough Burrowing Crayfish.

Quenda

The species is widely distributed in the south west from near Cervantes north of Perth to east of Esperance and inland as far as Hyden, though it has a patchy distribution through the jarrah and karri forest and on the Swan Coastal Plain (Harewood 2021).

The species is most often recorded in areas of dense scrubby, often swampy, vegetation with dense cover up to one metre high. Quenda often feed in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland lying close to dense cover. Populations inhabiting jarrah and wandoo forests are usually associated with watercourses. Quendas can thrive in more open habitat subject to exotic predator control (Harewood 2021).

This species is likely to occur anywhere within the subject site where dense ground cover persists (Harewood 2021).

South-western Brush-tailed Phascogale

The present distribution of the south-western brush-tailed phascogale is believed to have been reduced to approximately 50 per cent of its former range. Now known from Perth and south to Albany, west of Albany Highway. Occurs at low densities in the northern jarrah forest. Highest densities occur in the Perup/Kingston area, Collie River valley, and near Margaret River and Busselton (DBCA information pamphlet). Records are less common from wetter forests. Can also persist in floristically degraded areas such as relatively dense and continuous, but parkland cleared woodland in farmland. Previous local records from Kemerton, Binningup, Dardanup and College Grove (Harewood 2021).

This species has been observed in dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover. A nocturnal carnivore relying on tree hollows as nest sites (Harewood 2021)

This species has potential to occur anywhere within the subject site where woodland habitats (with some hollow bearing trees) occur (Harewood 2021).

3.12 Aboriginal Heritage

All Aboriginal sites in Western Australia are provided protection under the *Aboriginal Heritage Act 1972* in which it is an offence for anyone to excavate, damage, destroy, conceal or in any way alter an Aboriginal site without the Minister's permission.

An online search for relevant Aboriginal heritage information was undertaken using the DPLH *Aboriginal Cultural Heritage Inquiry System* (ACHIS) that incorporates both the heritage site register and the heritage survey database (DPLH 2023).

Results of the ACHIS database search did not reveal the presence of any Aboriginal sites within the subject site. The closest registered site, 'Yallingup Brook' is located approximately 1.8 km to the north of the subject site. The proposal will not result in any direct impacts to this or any other registered sites.

4 POTENTIAL IMPACTS AND MANAGEMENT

4.1 Acid Sulfate Soils

4.1.1 Potential Impacts

Management of ASS is addressed by the DWER during the land use planning and development process. The objective of the DWER's ASS policy framework is to manage ASS appropriately to prevent the release of metals, nutrients and acidity into the soil and groundwater system that may adversely affect the natural and built environment and human health.

Based on the existing risk mapping there is a 'moderate to low risk' of ASS occurring within 3 m of the natural soil within the proposed development footprint (refer to **Figure 4**).

4.1.2 Management Measures

The principal management objective for ASS within the subject site is to ensure that any future development that may disturb ASS is appropriately managed to avoid impacts on the environment.

Given the low risk of ASS occurring and the absence of the requirement for deep sewer and excavations, it Is unlikey that further ASS investigations will be required. However, should the construction activities require dewatering or soil disturbance in excess of 100 m^3, a preliminary ASS investigation may be necessary to confirm the presence and determine the extent of any ASS within the subject site. The requirement for ASS investigation/management will be confirmed in accordance with any future development approval conditions once detailed design has progressed.

4.2 Wetlands

4.2.1 Potential Impacts

The subject site is not mapped as containing any wetlands. The closest wetland is located over 600 m to the north of the subject site.

4.2.2 Management Measures

There are not anticipated to be any direct impacts to wetlands of conservation significance as a result of the proposed development, therefore no management measures are proposed.

4.3 Hydrology

4.3.1 Potential Impacts

The development has the potential to impact upon the pre-development hydrological cycle and water quality, including:

- Groundwater quality; and
- Surface water characteristics.

In addition, the proposed development design is also required to consider separation to groundwater to avoid flood damage in developed areas and to prevent erosion of waterways, slopes and banks.

4.3.2 Management Measures

In accordance with the *State Water Strategy for Western Australia* (Government of WA 2003) and *Better Urban Water Management* (WAPC 2008), the incorporation of integrated water cycle management and the application of water sensitive urban design (WSUD) principles is recommended to provide

improvements in the management of stormwater, and to increase the efficient use of other existing water supplies.

The proposed development is unlikely to result in significant changes to the pre-development hydrological cycle, with surface water from rainfall events continuing to be infiltrated within the subject site, or directed to the onsite watercourses. The proposed development will result in additional impermeable surfaces, however this is unlikely to significantly impact peak runoff rates. The implementation of surface water structures (such as culverts and swales) will be addressed during the detailed design.

The proposed development includes chalets located in proximity to the onsite dam. Fringing riparian vegetation will not be impacted and the dams environmental values will be maintained.

It is recommended that suitable onsite water management measures be implemented during the design phase taking into consideration approaches associated with water supply and conservation, stormwater management and groundwater management.

These measures shall consider the following design objectives:

- Effectively manage the risk to property damage and environmental degradation from water contamination, flooding and waterlogging.
- Maintain and if possible improve water quality (surface and groundwater) within the development in relation to predevelopment water quality.
- Implement best management practices in regards to stormwater management.
- Maintain existing local drainage patterns and minimise disruption and pollution from potential contaminants such as sediment and hydrocarbons from reaching natural drainage systems.

Groundwater and surface water can be appropriately managed to ensure the pre-development hydrological regime is maintained. It is anticipated that management of groundwater and surface water will be addressed at the detailed design stage in collaboration with the project civil engineers and landscape architect.

4.4 Wastewater Management

4.4.1 Potential Impacts

It is understood that no existing reticulated sewerage network is located in close proximity to the subject site. Accordingly, it is anticipated that reticulated sewer will not be available for the subject site and onsite wastewater management will be required.

The *Government Sewerage Policy* (DPLH 2019) provides a best practice approach to the provision of onsite sewage treatment and disposal and should be undertaken in accordance with *Australian/New Zealand Standard 1547 On-site domestic wastewater management.*

The subject site is not located within a sewage sensitive area (DPLH 2019). The principle management objective for wastewater is to enable the onsite treatment and disposal of wastewater without endangering public health or the environment.

4.4.2 Management Measures

A Site and Soil Evaluation (SSE) has been prepared for the subject site in accordance with the *Government Sewerage Policy* (DPLH 2019). Soils were found to be similar across the whole site being comprised of sandy topsoil, sandy loams over loamy clay at depth. Based on site specific results, the SSE found that the subject site is suitable for on-site disposal of effluent through the use irrigation, leach drains or flatbed systems. Flatbed and irrigation systems were recommended over the use of leach drains as a greater separation to

groundwater is achievable with these systems. Sufficient space was found to be available for the required 2,475 m^2 of land application area for secondary treated effluent. Depending on Council regulations, there could be more or less footprint for leach drains/flatbeds (Environmental & Landscape Management, 2023)

4.5 Flora and Vegetation

4.5.1 Potential Impacts

The subject site's historical use for agriculture has resulted in vegetation in a predominantly 'Completely Degraded' to 'Good' condition. The value of areas of intact remnant vegetation have been recognised and therefore the clearing footprint has been restricted as far as practicable. This has resulted in clearing of predominantly non-endemic vegetation and where clearing of native vegetation is required, this is largely within degraded areas which will constitute the Asset Protection Zones (APZ) and therefore vegetation of conservation significance can be retained (i.e. habitat trees). To enable sufficient sight lines for the proposed access the removal of a multi-stemmed habitat tree is required. The tree does not appear to contain any hollows.

Consequently, it is anticipated that the proposed development will have minimal impact on native vegetation at a regional or local scale, given that the existing vegetation values will be retained.

4.5.2 Management Measures

Native vegetation will only be removed where required to achieve a suitable Bushfire Attack Level (BAL) for the construction of the chalets and to allow the access road to be constructed. A targeted flora survey did not identify any conservation significant flora within the subject site.

In order to minimise the potential impacts associated with vegetation clearing, the following management measures are proposed:

- Clearing operations should be conducted in accordance with the dieback/weed hygiene requirements.
- Clearing should be kept to the minimum as far as reasonably practicable and in consideration of bushfire requirements.
- The limits of clearing should be clearly marked on site and relevant plans to inform site personnel to contain all activities in the clearing envelope.
- Trees to be removed should be felled in a manner that ensures they fall within the approved clearing envelope.
- The remainder of cleared vegetation should be salvaged, chipped on site for in situ site rehabilitation and/or soil stabilisation (note: consider the dieback and weed status of the material and its location of dispersal).
- Existing cleared areas should be utilised for locating site access, site offices and any temporary laydown areas (but not adjacent to waterways or drainage lines).
- No burning of cleared vegetation should be permitted on site.

4.6 Fauna

4.6.1 Potential Impacts

Areas of the subject site may provide suitable habitat for conservation significant fauna species (i.e. black cockatoo, WRPs, South-western brush-tailed phascogale, quenda and the Dunsborough burrowing crayfish). However, the development footprint is considered to have low biodiversity value from a fauna

perspective due to the 'Completely Degraded' and 'Degraded' nature of the vegetation. Therefore, no significant impacts to fauna of conservation significance are anticipated.

4.6.2 Management Measures

The management objective for fauna within the subject site will be principally focused on maximising retention of existing habitat values, and ensuring development works are undertaken in a manner that minimises harm to native fauna.

Spatial considerations during the design of the proposed development relating to fauna have included the following:

- Locating the proposed buildings within previously cleared/disturbed areas. A portion of the proposed road and limited areas of the APZ are located within remnant vegetation. The majority of these areas are infested with weed species or have previously been disturbed. The key environmental features (i.e. habitat trees) can be retained (i.e. the road can meander through the vegetation to enable retention of habitat trees and habitat trees can be retained within the APZ).

Some areas of remnant vegetation will be modified or removed as part of the proposed development and fauna may be disturbed during this process. Management measures to minimise the impact to fauna and habitat will include:

- Undertake black cockatoo habitat survey prior to implementation to enable identification of habitat trees within the APZ areas. Retain significant habitat trees where possible.
- Provide a map and GPS co-ordinates of trees to be retained to the contractor to ensure no unapproved clearing is undertaken;
- Clearly mark trees identified for retention with flagging tape and numbered tags;
- Undertaking preclearing inspections of trees/vegetation proposed for removal/modification by suitably qualified and licensed fauna spotter;
- Use a suitably qualified and licensed fauna spotter during clearing works to avoid impacts to fauna wherever possible and to rescue trans-locatable fauna that are disturbed during clearing works to assist them to disperse safely or capture them for later translocation as appropriate;
- Contact the DBCA Wildcare Helpline 24 hour emergency hotline if sick or injured animals are encountered.

The management of the fauna and the associated fauna habitat values can be appropriately managed through the development approval process and through the preparation and implementation of a fauna management plan. As part of preparing the fauna management plan, additional investigations are recommended to inform the detailed design and fauna management practices. Fauna habitat will be largely retained and impacts are likely to only be short-term, with the fauna species expected to remain, or re-establish after the development of the site is completed.

5 CONCLUSION

The key environmental issues and management measures associated with the proposed development are detailed within **Table i.** These include:

- Wastewater;
- Flora and vegetation; and
- Fauna.

The proposed development recognises the importance of the key environmental and landscape attributes of the subject site. Consequently, at this stage, the identified key environmental features are unlikely to present as being a constraint to the proposed development. This has been achieved with the avoidance and management measures summarised in **Table i** in the Executive Summary.

Overall, the known environmental attributes and values of the site can be accommodated through the development plan design, or can be managed appropriately through the future development phases in line with the relevant state and local government legislation, policies and guidelines and best management practices.

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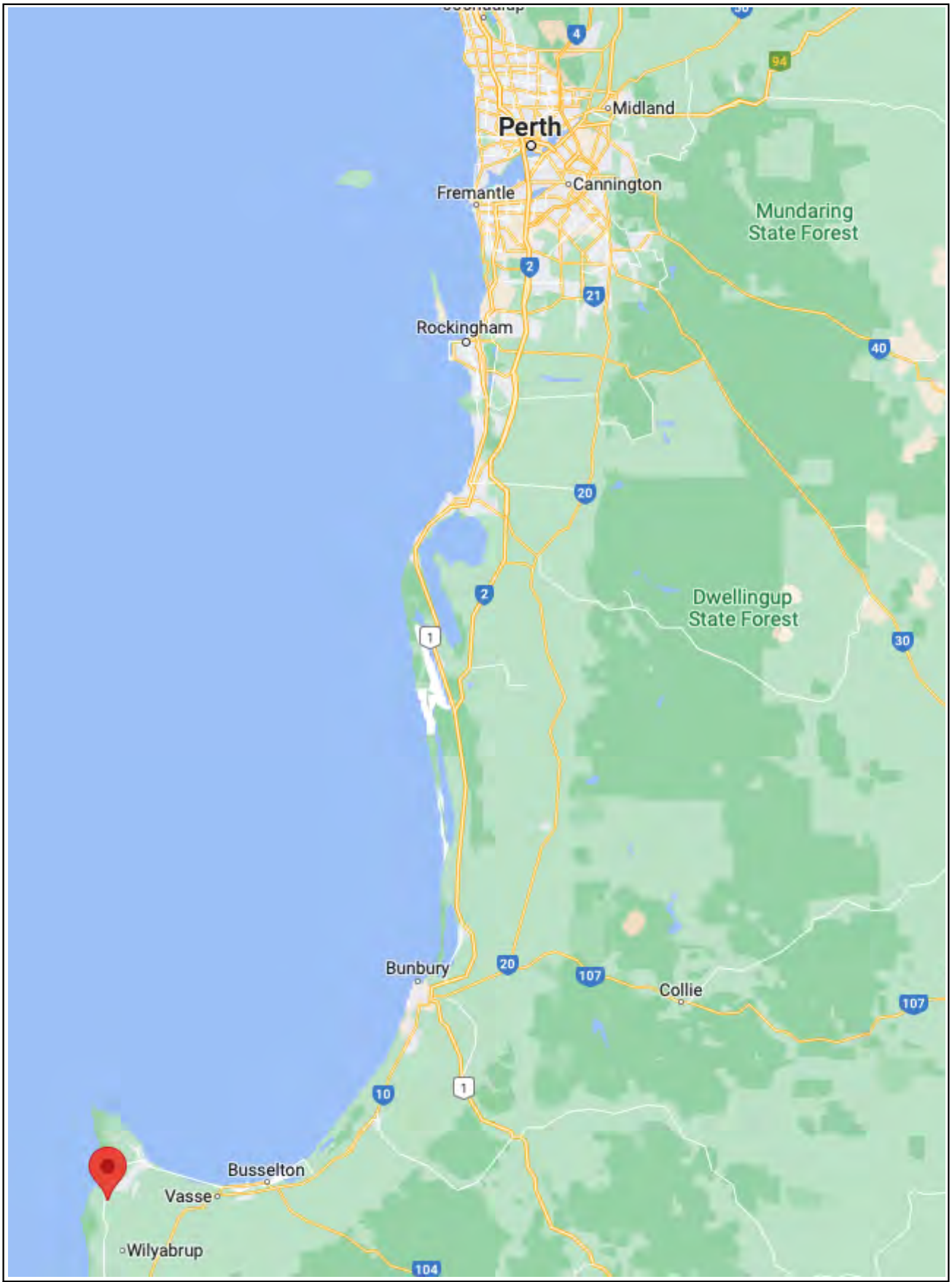
FIGURES



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			2338	Figure 1	A
DRAWING TITLE	Figure 1 – Site Locality		Designed PN	Checked	
			Drawn PN	Approved	
CLIENT	Boundary Lane Pty Ltd		Date	29/09/2023	
			Local Authority	City of Busselton	
			Sheet 1 of 1		

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PROJECT	Lot 101 Wildwood Road, Yallingup	Project Number	Drawing Number	Revision
		2338	Figure 2	A
DRAWING TITLE	Figure 2 – Site Extent	Designed PN	Checked	
		Drawn PN	Approved	
CLIENT	Boundary Lane Pty Ltd	Date	28/08/2023	
		Local Authority	City of Busselton	
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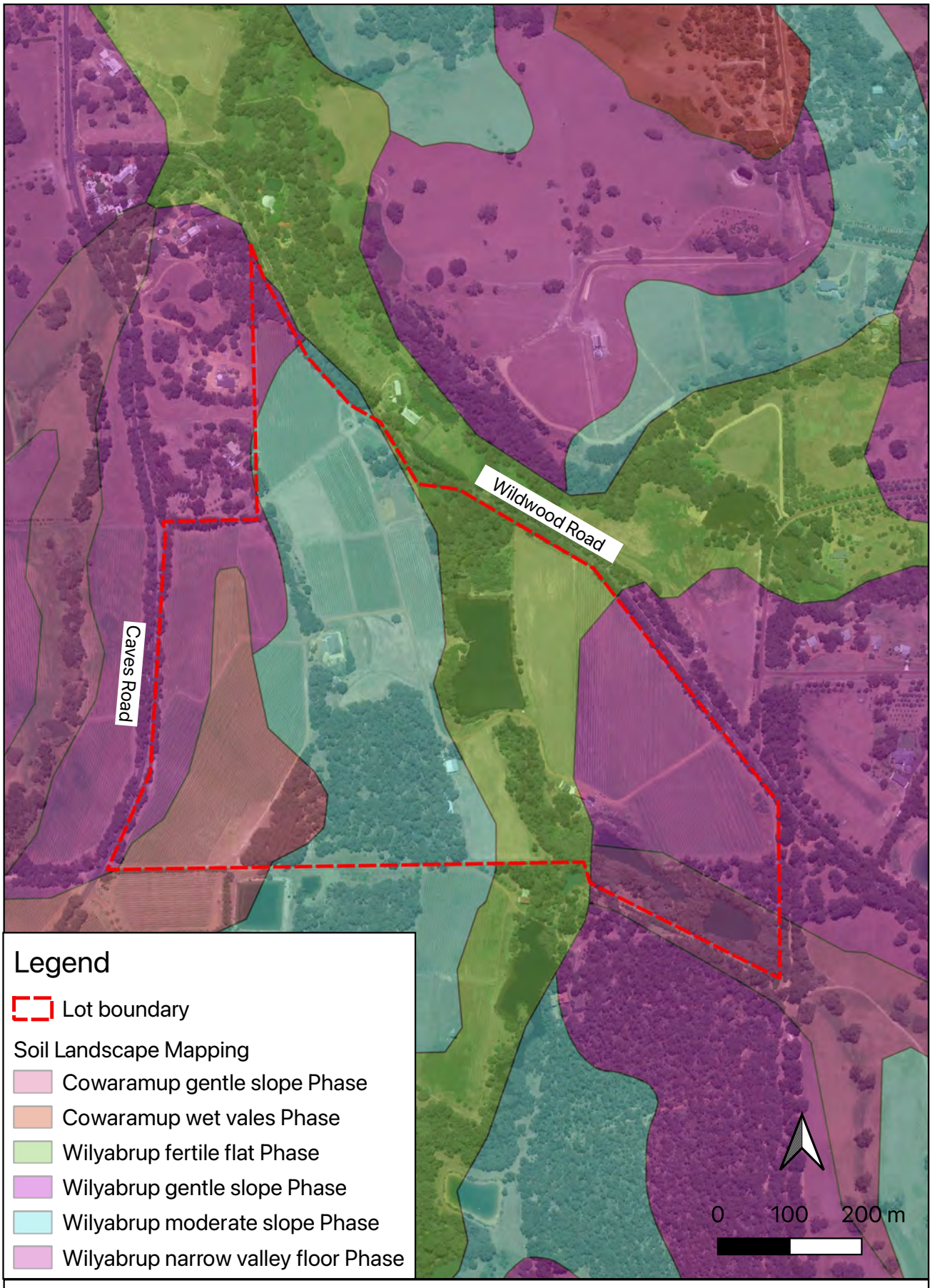

PROJECT	Lot 101 Wildwood Road, Yallingup	Project Number	Drawing Number	Revision
		2338	Figure 3	A
DRAWING TITLE	Figure 3 – Soil Landscape Mapping	Designed PN	Checked	
CLIENT	Boundary Lane Pty Ltd	Drawn PN	Approved	
		Date	28/08/2023	
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PROJECT	Lot 101 Wildwood Road, Yallingup
DRAWING TITLE	Figure 4 – Acid Sulfate Soil Mapping
CLIENT	Boundary Lane Pty Ltd

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Project Number	Drawing Number	Revision
2338	Figure 4	A

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Legend

Lot boundary

Vegetation types

- Agonis flexuosa with occasional Corymbia callophylla,and Acacia longifolia over exotic grasses and Pteridium esculentum
- Corymbia callophylla and Agonis flexuosa woodland over Pteridium esculentum
- Eucalyptus marginata and Corymbia callophylla woodland
- Planted,introduced tree species
- Planted,introduced tree species,with very occasional Corymbia callophylla

PROJECT	Lot 101 Wildwood Road, Yallingup	Project Number	Drawing Number	Revision
		2338	Figure 5	A
DRAWING TITLE	Figure 5 – Vegetation types	Designed PN	Checked	
		Drawn PN	Approved	
CLIENT	Boundary Lane Pty Ltd	Date	28/9/2023	
		Local Authority	City of Busselton	
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APPENDIX A- CONCEPT PLAN



1 PROPOSED SITE PLAN
A1 - 1:2000

NOTES.

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LEGEND

- NEW SEALED BITUMEN ROAD
- EXISTING AGRICULTURAL GRAVEL ACCESS ROAD
- NEW MANAGED LANDSCAPED AREA
- MODIFIED SOIL CUT/FILL
- STONE PITCH BANKING
- EXISTING VINEYARD
- EXISTING TREE LAND VEGETATION
- EXISTING WALKTRAILS
- EXISTING TREE LAND VEGETATION OUTLINE

REV.	DATE.	ITEM.	BY.
0	13/11/23	Issued for Development Application	VD

DEVELOPMENT APPLICATION

BROOKING DESIGN ARCHITECTS

BROOKING DESIGN ARCHITECTS PTY. LTD.

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web > www.brookingdesign.com email > tom@brookingdesign.com
architects board of WA registration > 2431 acn > 079 710 982

PROJECT.

PROPOSED TOURIST DEVELOPMENT

Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING.

PROPOSED SITE PLAN

STATUS / CHECKED.					DRAWN BY.	SCALE.
DA	T	CD	BP	FC	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.2	0

Member Australian Institute of Architects
Design Institute of Australia

APPENDIX B – TOPOGRAPHICAL SURVEY

N

SETBACK

100M SETBACK

20M SETBACK

100M SETBACK

100M SETBACK

100M SETBACK

MGA94Z50

APPENDIX C – TARGETED FLORA SURVEY

50 New Cross Rd
Kingsley, WA 6026
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E shane@plantecology.com.au

ABN 18 849 210 133

23 October 2023

Kirsten Muir-Thompson
Principal Consultant
Accendo Australia
PO Box 5178
West Busselton, WA 6280

Dear Kirsten,

This letter outlines the results of a targeted flora survey undertaken by myself on the 20th September 2023 of three stands of remnant vegetation totalling approximately 0.5 ha within 1603 Wildwood Rd, Yallingup, in the City of Busselton (the site; Figure 1). A targeted flora survey of the site was required to inform development of accommodation within the site.

1 Introduction

1.1. Existing Environment

The site comprises three zones of remnant native vegetation within a viticultural property, two adjacent to a dam and the third on an upland with an eastern facing slope. The vegetation consists of an open forest of *Corymbia calophylla* and *Agonis flexuosa* over a sparse shrubland of *Spyridium globulosum, Hibbertia cuneiformis* and *Acacia pulchella* over a largely non-native grassland and herbland of **Ehrharta longiflora, *Anthoxanthum odoratum* and **Trifolium* spp. (Plates 1 - 6). *Pteridium esculentum* dominates the understorey in Zones 1 and 2.

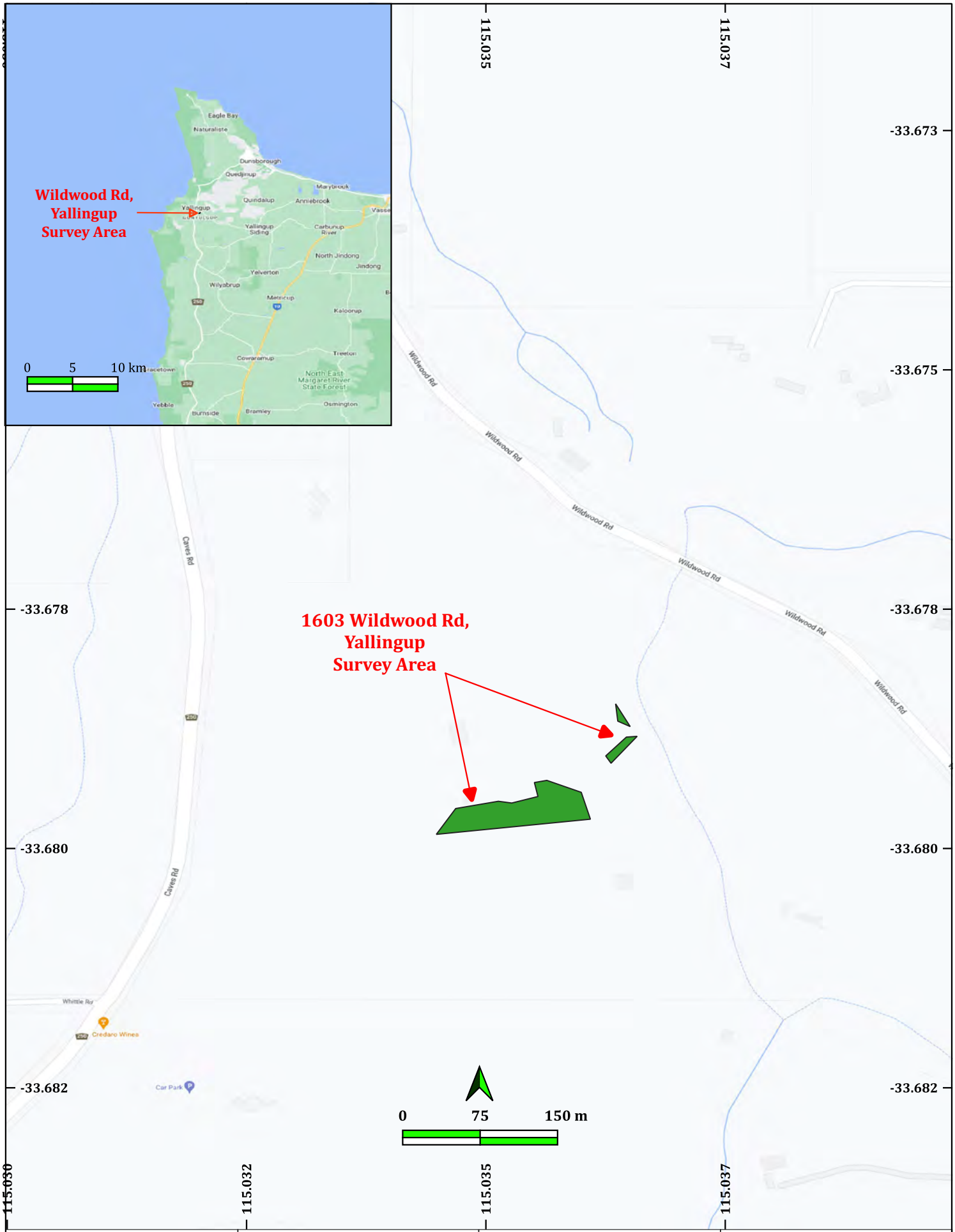
The vegetation has been highly disturbed from agricultural grazing and is rated as being in a 'Completely Degraded' condition (Table 1). Introduced shrub species such as **Acacia longifolia* subsp. *longifolia* and **Acacia iteaphylla* are common and additional weed taxa include *Zantedeschia aethiopica, *Asparagus asparagoides, *Briza maxima* and *Moraea flaccida.*

1.2. Conservation Significant Flora

Under the Biodiversity Conservation Act 2016 ('BC Act'), the Minister for the Environment produces a gazetted list of Threatened Flora under three categories: Critically Endangered, Endangered and Vulnerable. The Department of Biodiversity, Conservation and Attractions (DBCA) also produces a list of Priority Flora that have not been assigned statutory protection under the BC Act but may be under some degree of threat (DBCA 2023). The DBCA recognises four Priority Flora levels. The definitions for each category of Threatened and Priority Flora are shown in Appendix A.

As well as protection under State legislation, selected flora are also afforded statutory protection at a Federal level pursuant to the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The EPBC Act provides for the protection of Threatened species, pursuant to Schedule 1 of the Act, and are defined as "Critically Endangered", "Endangered", "Vulnerable" or "Conservation Dependent" under Section 179. Definitions of these categories are also shown in Appendix A. Any action likely to have a significant impact on a species listed under the EPBC Act requires approval from the Commonwealth Minister for the Environment.

Searches of the State databases (Reference Number: 66-0923FL) identified 51 conservation significant taxa with the potential to occur within the survey area (Table 1). Those records within



Plantecology CONSULTING 50 New Cross Rd Kingsley WA 6026	Scale: 1:3500 Basemap Source: Google Road Datum: GDA2020 Projection: EPSG 7844	Client: Accendo Australia Project: Wildwood Rd Flora Survey Location: 1603 Wildwood Rd, Yallingup Author: S.T.S. Chalwell Drawn: S.T.S. Chalwell	**Figure 1: Locality Plan**

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Table 1: Vegetation Condition Scale (Keighery 1994)

Vegetation Condition	Definition
Pristine (1)	Pristine or nearly so, no obvious signs of disturbance.
Excellent (2)	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

approximately 10 km of the survey area are shown in Figure 2. Of the identified taxa, 12 are listed as Threatened under the BC Act, seven of which are orchids. *Drakaea micrantha* (Dwarf Hammer Orchid) occurs in white-grey sand and flowers from September to October. *Caladenia excelsa* (Giant Spider Orchid) occurs in sands beneath jarrah, marri and banksia woodlands and flowers between September and October. *Caladenia procera* (Carbanup King Spider Orchid) occurs on alluvial flats beneath jarrah, marri and peppermint woodlands and flowers between September and October. *Caladenia busselliana* (Bussell's Spider Orchid) occurs in sandy loams of winter-wet swamps and flowers from September to October. *Caladenia huegelii* (Grand Spider Orchid) occurs in low-lying grey or brown sands and clayey loams. It flowers between September and October. *Caladenia viridescens* (Dunsborough Spider Orchid) occurs in marri and peppermint woodlands on lateritic loam, sand or sandy clay. It flowers between September and October. *Caladenia caesarea* subsp. *maritima* (Cape Mustard Orchard) occurs in low heath in shallow soil pockets of coastal granite. It flowers between August and September.

There are numerous records of *Caladenia excelsa* within 4 km of the site, as well as some records for *Drakaea micrantha* and *Gastrolobium argyrotrichum.* These taxa are the most likely to occur within the site (Figure 2). Other conservation significant flora within 4 km of the site include *Gahnia scleroides* (P4), *Acacia inops* (P3), *Stylidium lowrieanum* (P3), *Caladenia nivalis* (P1) *Caladenia abbreviata* (P3).

1.3. Purpose

The purpose of this survey was to search the site for the presence of Threatened or Priority Flora.

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Table 2: Threatened and Priority Flora potentially occurring within the survey area based on database searches. (VU = Vulnerable; EN = Endangered; CR = Critically Endangered; T = Threatened; 1 – 4 = Priority Flora Category)

Taxon	PWS Ranking	EPBC Act Category	Flowering Period
Acacia flagelliformis	4		Jul-Sep
Acacia inops	3		Oct-Nov
Acacia lateriticola var. Glabrous variant (B.R. Maslin 6765)	3		
Acacia semitrullata	4		Jun-Aug
Amphidium tortuosum	1		-
Andersonia sp. Echidna (A.R. Annels ARA 5500)	2		
Austrostipa mundula	3		Sep - Oct
Banksia sessilis var. *cordata*	4		Sep-Oct
Banksia squarrosa subsp. *argillacea*	T	VU	Jul-Aug
Boronia anceps	3		Sep-Jan
Boronia capitata subsp. *gracilis*	3		Jun-Aug
Boronia sp. Leeuwin (J. Scott 235)	2		-
Caladenia abbreviata	3		Nov-Dec
Caladenia busselliana	T	EN	Sep-Oct
Caladenia caesarea subsp. *maritima*	T	EN	Aug-Sep
Caladenia excelsa	T	EN	Sep-Oct
Caladenia huegelii	T	EN	Aug-Oct
Caladenia nivalis	2		Sep-Oct
Caladenia procera	T	CR	Spe-Oct
Caladenia viridescens	T	EN	Sep-Oct
Calothamnus graniticus subsp. *graniticus*	4		Jun
Cyanothamnus tenuis	4		-
Cyathochaeta teretifolia	3		-
Dampiera triloba	3		Aug – Dec
Daviesia elongata	T		Sep - Feb
Dillwynia sp. Capel (P.A. Jurjevich 1771)	3		Sept-Oct
Drakaea micrantha	T	VU	Sep-Oct
Eucalyptus marginata x megacarpa	4		-
Eucalyptus rudis subsp. *cratyantha*	4		-
Eucalyptus virginea	4		Dec - Jan
Eucalyptus x phylacis	T	EN	Feb-Mar
Gahnia sclerioides	4		-
Gastrolobium argyrotrichum	T	CR	Dec
Gonocarpus pusillus	4		Nov-Dec
Grevillea brachystylis subsp. Yelverton (A. Webb AW09122)	2		-
Johnsonia inconspicua	3		Nov
Lepyrodia heleocharoides	3		Dec
Loxocarya magna	3		-
Meionectes tenuifolia	3		Nov-Dec
Millotia tenuifolia var. *laevis*	2		Sep-Oct
Netrostylis sp. Blackwood River (A.R. Annels 3043)	3		
Olearia strigosa	3		Dec - May

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Taxon	PWS Ranking	EPBC Act Category	Flowering Period
Pimelea ciliata subsp. *longituba*	3		Sep-Nov
Pultenaea pinifolia	3		Oct
Stylidium lowrieanum	3		Oct - Nov
Tetratheca parvifolia	3		Oct
Thelymitra variegata	2		Aug-Sep
Thysanotus glaucus	4		Nov-Feb
Tripterococcus sp. Brachylobus (A.S. George 14234)	4		Feb
Verticordia lehmannii	4		Oct
Verticordia plumosa var. *ananeotes*	T	EN	Dec

2 Methods

The site was traversed on foot by an experienced botanist on the 20th September 2023 to search for any conservation significant flora that may be present and photographs for illustrative purposes were taken at four locations (Figure 3). The timing of the survey was chosen to intercept the usual flowering period of Threatened orchid taxa, which are perennial geophytes and only identifiable when in flower. The flowering periods of all the Threatened orchids that potentially occur within the site overlap in September. The remaining Threatened Flora are perennial taxa and would be observable at all times of year if present.

3 Results

No conservation significant flora were recorded during the survey. The site has been open to the adjacent pastures and the native groundlayer has been replaced largely by pasture grasses. The vegetation condition is therefore rated as 'Completely Degraded'. The current habitat conditions would be unsuitable for most native annual and/or herbaceous taxa and, although some native shrubs and trees are present, none are of conservation significance.

4 Discussion

No conservation significant flora were recorded during the survey. Most of the conservation significant flora with potential to occur within the site are perennial taxa and would be observable if present. Although individual orchids may not flower every year and the rainfall in the preceding three months for the Margaret River area was below average, the 'Completely Degraded' condition of the vegetation indicates that it is highly unlikely that any Threatened or Priority Flora occur within the site.

Should you require any further information or have any other queries, please feel free to contact me.

Sincerely yours,



Dr. Shane Chalwell

Plantecology Consulting

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5 References

Keighery, BJ (1994), Bushland plant survey: A Guide to Plant Community Survey for the Community, Wildflower Society of WA (inc), Nedlands, Western Australia.

DBCA (2023) Conservation Codes for Western Australian Flora and Fauna, Department of Biodiversity, Conservation and Attractions, Perth.

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Plates

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Plate 1 (Photopoint 1): View of vegetation within Zone 1 of the survey area at 1603 Wildwood Rd, Margaret River.



Plate 2 (Photopoint 2): View of vegetation within Zone 2 of the survey area at 1603 Wildwood Rd, Margaret River.

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Plate 3 (Photopoint 3): View of vegetation (looking north) within Zone 3 of the survey area at 1603 Wildwood Rd, Margaret River.



Plate 4 (Photopoint 3): View of vegetation (looking south) within Zone 3 of the survey area at 1603 Wildwood Rd, Margaret River.

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Plate 5 (Photopoint 4): View of vegetation (looking north east) within Zone 3 of the survey area at 1603 Wildwood Rd, Margaret River.



Plate 6 (Photopoint 4): View of vegetation (looking north) within Zone 3 of the survey area at 1603 Wildwood Rd, Margaret River.

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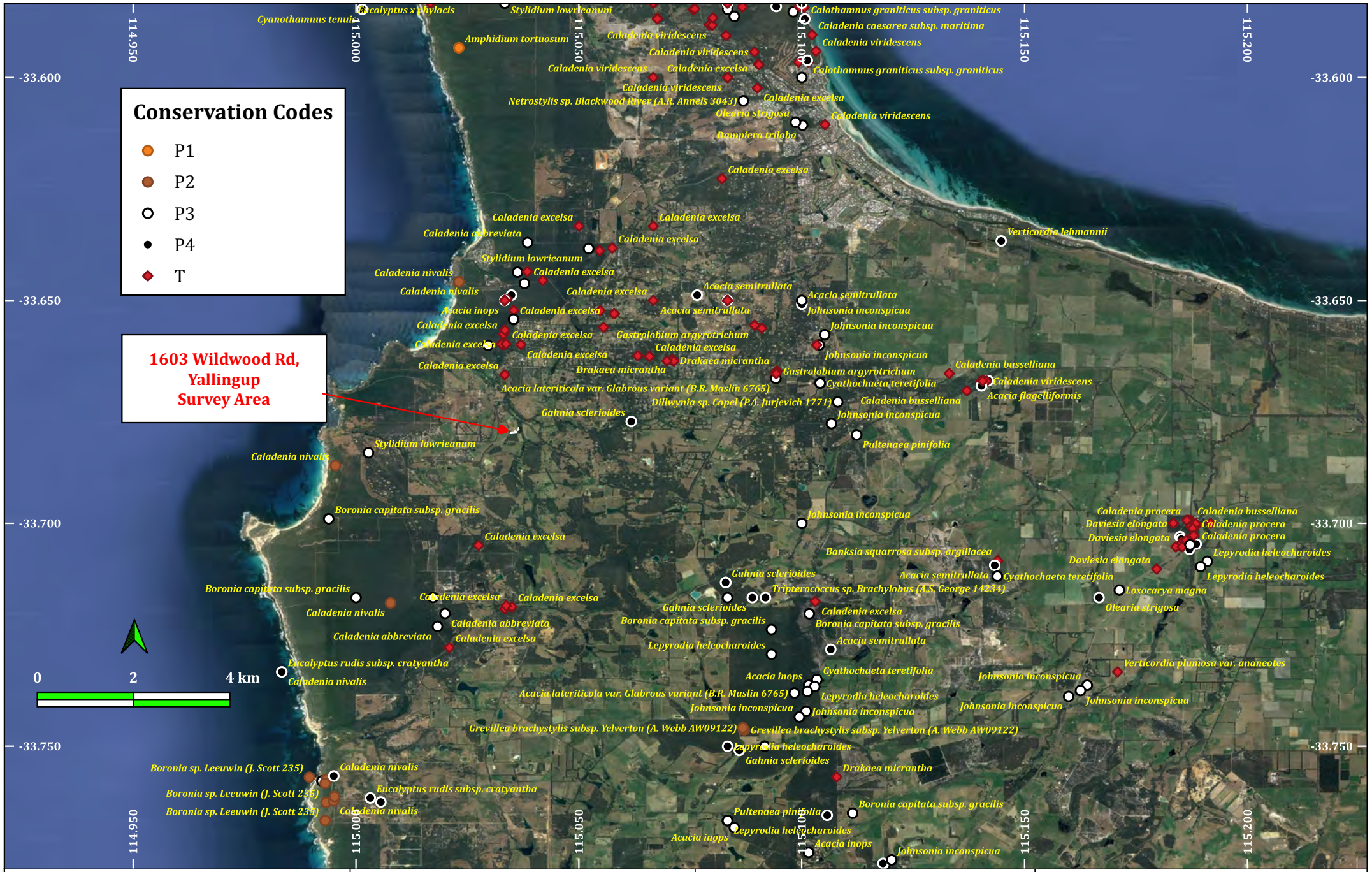
Figures



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50 New Cross Rd
Kingsley WA 6026

Scale: 1:75 000
Basemap Source: Google Satellite
Datum: GDA2020
Projection: EPSG 7844

Client: Accendo Australia
Project: Wildwood Rd Flora Survey
Location: 1603 Wildwood Rd, Yallingup
Author: S.T.S. Chalwell
Drawn: S.T.S. Chalwell

Figure 2: Conservation Significant Flora



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50 New Cross Rd
Kingsley WA 6026

Scale: 1:800
Basemap Source: Google Satellite
Datum: GDA2020
Projection: EPSG 7844

Client: Accendo Australia
Project: Wildwood Rd Flora Survey
Location: 1603 Wildwood Rd, Yallingup
Author: S.T.S. Chalwell
Drawn: S.T.S. Chalwell

Figure 3: Photo Locations

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Appendix A

Definitions of Threatened and Priority Flora

Conservation Codes for Western Australian Flora and Fauna

Specially protected fauna or flora are species* which have been adequately searched for and are deemed to be, in the wild, either rare, at risk of extinction, or otherwise in need of special protection, and have been gazetted as such. Conservation codes have been transitioned under regulations 170, 171 and 172 of the *Biodiversity Conservation Regulations 2018.*

T Threatened species – Schedules 1-4

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

- **Threatened fauna** is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.
- **Threatened flora** is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR Critically endangered species

Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN Endangered species

Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU Vulnerable species

Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife*

Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

EX Presumed extinct species

Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW Extinct in the wild species

Species that "*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018.*

CD Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P Priority species

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

Priority 1: Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

Priority 2: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

Priority 3: Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

Priority 4: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

*Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

Western Australian Ecological Communities

Threatened Ecological Communities

The BC Act provides for the statutory listing of threatened ecological communities (TECs) by the Minister.

Presumed Totally Destroyed (PD)

An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.

Critically Endangered (CR)

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.

Endangered (EN)

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

Vulnerable (VU)

An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

Priority Ecological Communities

Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community List under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community. Ecological communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

Priority One: Poorly-known ecological communities

Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤ 100ha).

Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.

Priority Two: Poorly-known ecological communities

Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.

Priority Three: Poorly known ecological communities

(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or:

(ii) communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), or;

(iii) munities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change etc.

Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.

Priority Four: Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.

(i) Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands.

(ii) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for a higher threat category.

(iii) Ecological communities that have been removed from the list of threatened communities during the past five years.

Priority Five: Conservation Dependent ecological communities

Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Commonwealth of Australia Conservation Codes

Threatened Flora and Fauna

Threatened fauna and flora may be listed under Section 178 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in any one of the following six categories:

Extinct

A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.

Extinct in the wild

A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time:

a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

Critically endangered

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered

A taxon is Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable

A taxon is Vulnerable when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a high risk of extinction in the wild.

Conservation dependent

A native species is eligible to be included in the conservation dependent category at a particular time if, at that time:

a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or
b) the following subparagraphs are satisfied:
    i. the species is a species of fish;

ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised;
iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory;
iv. cessation of the plan of management would adversely affect the conservation status of the species.

The EPBC Act does not provide for listing in a data deficient category. Where sufficient data (evidence) is unavailable to allow assessment by the Threatened Species Scientific Committee against the criteria for listing, the species are found to be ineligible. A recommendation is made to the Minister to not include the species in any category under the EPBC Act. For reasons of transparency and to inform future research, the Threatened Species Scientific Committee publishes the names of those species found to be data deficient. As data deficient is not a listing category under the EPBC Act, this has no statutory implications and the species is not considered to be listed under the EPBC Act.

Threatened Ecological Communities

Threatened Ecological communities under the EPBC Act are listed in three categories.

Critically endangered

If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).

Endangered

If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).

Vulnerable

If, at that time, an ecological community is not critically endangered or endangered, but is facing a high risk of extinction in the wild in the medium–term future (indicative timeframe being the next 50 years).

Categories of Threatened Species pursuant to the Environment Protection and Biodiversity Conservation Act 1999

EPBC Act Category	Department of Environment and Energy Definition
Extinct	A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
Extinct in the wild	A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time: (a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or (b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically endangered	A native species is eligible to be included in the critically endangered category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
Endangered	A native species is eligible to be included in the endangered category at a particular time if, at that time (a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
Vulnerable	A native species is eligible to be included in the vulnerable category at a particular time if, at that time: (a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria.
Conservation dependent	A native species is eligible to be included in the conservation dependent category at a particular time if, at that time: (a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or (b) the following subparagraphs are satisfied: (i) the species is a species of fish; (ii) the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; (iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory; (iv) cessation of the plan of management would adversely affect the conservation status of the species.

APPENDIX C – TARGETED FLORA SURVEY

50 New Cross Rd
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E shane@plantecology.com.au

ABN 18 849 210 133

23 October 2023

Kirsten Muir-Thompson
Principal Consultant
Accendo Australia
PO Box 5178
West Busselton, WA 6280

Dear Kirsten,

This letter outlines the results of a targeted flora survey undertaken by myself on the 20th September 2023 of three stands of remnant vegetation totalling approximately 0.5 ha within 1603 Wildwood Rd, Yallingup, in the City of Busselton (the site; Figure 1). A targeted flora survey of the site was required to inform development of accommodation within the site.

1 Introduction

1.1. Existing Environment

The site comprises three zones of remnant native vegetation within a viticultural property, two adjacent to a dam and the third on an upland with an eastern facing slope. The vegetation consists of an open forest of *Corymbia calophylla* and *Agonis flexuosa* over a sparse shrubland of *Spyridium globulosum, Hibbertia cuneiformis* and *Acacia pulchella* over a largely non-native grassland and herbland of **Ehrharta longiflora, *Anthoxanthum odoratum* and **Trifolium* spp. (Plates 1 - 6). *Pteridium esculentum* dominates the understorey in Zones 1 and 2.

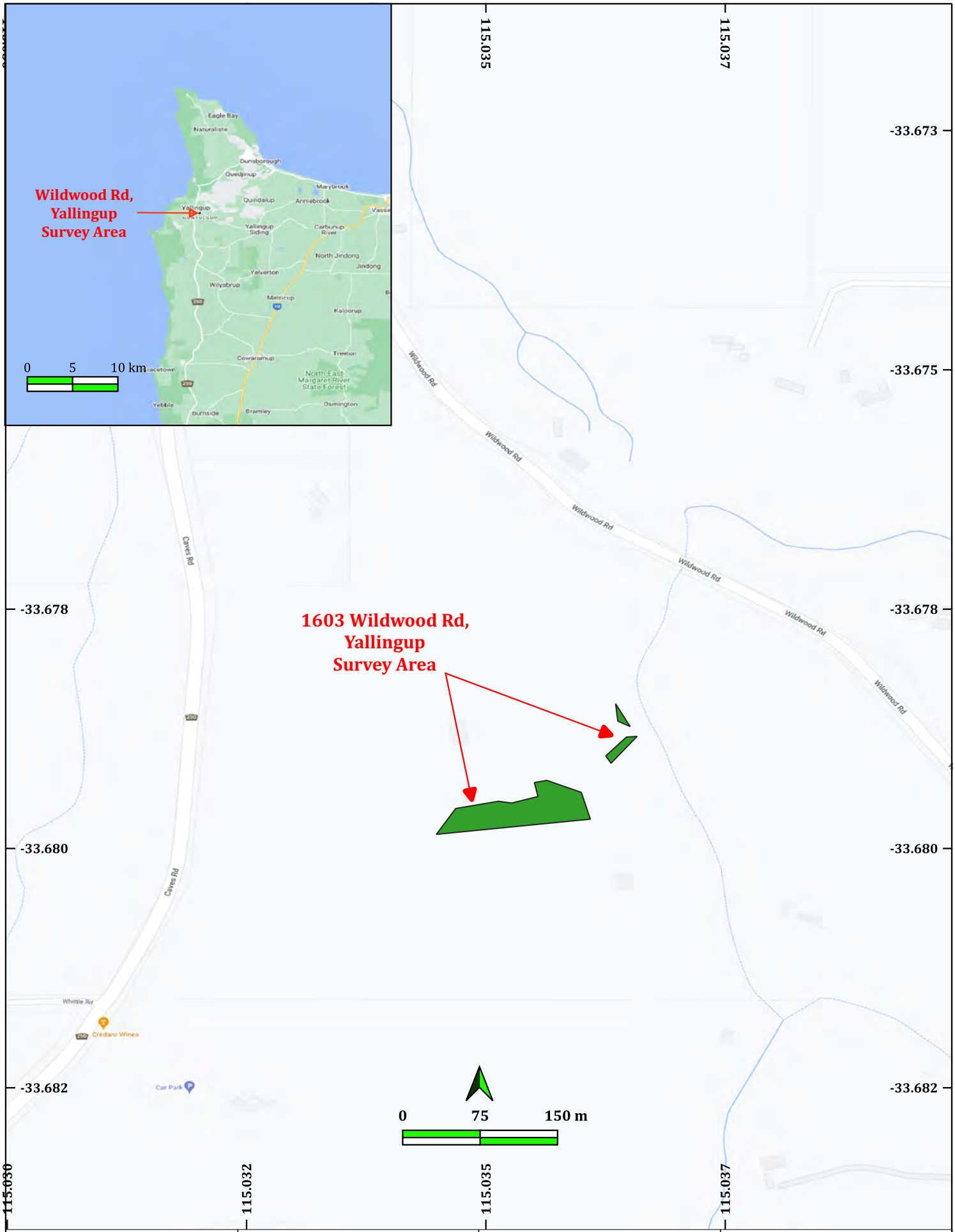
The vegetation has been highly disturbed from agricultural grazing and is rated as being in a 'Completely Degraded' condition (Table 1). Introduced shrub species such as **Acacia longifolia* subsp. *longifolia* and **Acacia iteaphylla* are common and additional weed taxa include *Zantedeschia aethiopica, *Asparagus asparagoides, *Briza maxima* and *Moraea flaccida.*

1.2. Conservation Significant Flora

Under the Biodiversity Conservation Act 2016 ('BC Act'), the Minister for the Environment produces a gazetted list of Threatened Flora under three categories: Critically Endangered, Endangered and Vulnerable. The Department of Biodiversity, Conservation and Attractions (DBCA) also produces a list of Priority Flora that have not been assigned statutory protection under the BC Act but may be under some degree of threat (DBCA 2023). The DBCA recognises four Priority Flora levels. The definitions for each category of Threatened and Priority Flora are shown in Appendix A.

As well as protection under State legislation, selected flora are also afforded statutory protection at a Federal level pursuant to the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The EPBC Act provides for the protection of Threatened species, pursuant to Schedule 1 of the Act, and are defined as "Critically Endangered", "Endangered", "Vulnerable" or "Conservation Dependent" under Section 179. Definitions of these categories are also shown in Appendix A. Any action likely to have a significant impact on a species listed under the EPBC Act requires approval from the Commonwealth Minister for the Environment.

Searches of the State databases (Reference Number: 66-0923FL) identified 51 conservation significant taxa with the potential to occur within the survey area (Table 1). Those records within



Plantecology CONSULTING 50 New Cross Rd Kingsley WA 6026	Scale: 1:3500 Basemap Source: Google Road Datum: GDA2020 Projection: EPSG 7844	Client: Accendo Australia Project: Wildwood Rd Flora Survey Location: 1603 Wildwood Rd, Yallingup Author: S.T.S. Chalwell Drawn: S.T.S. Chalwell	**Figure 1: Locality Plan**

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Table 1: Vegetation Condition Scale (Keighery 1994)

Vegetation Condition	Definition
Pristine (1)	Pristine or nearly so, no obvious signs of disturbance.
Excellent (2)	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

approximately 10 km of the survey area are shown in Figure 2. Of the identified taxa, 12 are listed as Threatened under the BC Act, seven of which are orchids. *Drakaea micrantha* (Dwarf Hammer Orchid) occurs in white-grey sand and flowers from September to October. *Caladenia excelsa* (Giant Spider Orchid) occurs in sands beneath jarrah, marri and banksia woodlands and flowers between September and October. *Caladenia procera* (Carbanup King Spider Orchid) occurs on alluvial flats beneath jarrah, marri and peppermint woodlands and flowers between September and October. *Caladenia busselliana* (Bussell's Spider Orchid) occurs in sandy loams of winter-wet swamps and flowers from September to October. *Caladenia huegelii* (Grand Spider Orchid) occurs in low-lying grey or brown sands and clayey loams. It flowers between September and October. *Caladenia viridescens* (Dunsborough Spider Orchid) occurs in marri and peppermint woodlands on lateritic loam, sand or sandy clay. It flowers between September and October. *Caladenia caesarea* subsp. *maritima* (Cape Mustard Orchard) occurs in low heath in shallow soil pockets of coastal granite. It flowers between August and September.

There are numerous records of *Caladenia excelsa* within 4 km of the site, as well as some records for *Drakaea micrantha* and *Gastrolobium argyrotrichum.* These taxa are the most likely to occur within the site (Figure 2). Other conservation significant flora within 4 km of the site include *Gahnia scleroides* (P4), *Acacia inops* (P3), *Stylidium lowrieanum* (P3), *Caladenia nivalis* (P1) *Caladenia abbreviata* (P3).

1.3. Purpose

The purpose of this survey was to search the site for the presence of Threatened or Priority Flora.

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Table 2: Threatened and Priority Flora potentially occurring within the survey area based on database searches. (VU = Vulnerable; EN = Endangered; CR = Critically Endangered; T = Threatened; 1 – 4 = Priority Flora Category)

Taxon	PWS Ranking	EPBC Act Category	Flowering Period
Acacia flagelliformis	4		Jul-Sep
Acacia inops	3		Oct-Nov
Acacia lateriticola var. Glabrous variant (B.R. Maslin 6765)	3		
Acacia semitrullata	4		Jun-Aug
Amphidium tortuosum	1		-
Andersonia sp. Echidna (A.R. Annels ARA 5500)	2		
Austrostipa mundula	3		Sep - Oct
Banksia sessilis var. *cordata*	4		Sep-Oct
Banksia squarrosa subsp. *argillacea*	T	VU	Jul-Aug
Boronia anceps	3		Sep-Jan
Boronia capitata subsp. *gracilis*	3		Jun-Aug
Boronia sp. Leeuwin (J. Scott 235)	2		-
Caladenia abbreviata	3		Nov-Dec
Caladenia busselliana	T	EN	Sep-Oct
Caladenia caesarea subsp. *maritima*	T	EN	Aug-Sep
Caladenia excelsa	T	EN	Sep-Oct
Caladenia huegelii	T	EN	Aug-Oct
Caladenia nivalis	2		Sep-Oct
Caladenia procera	T	CR	Spe-Oct
Caladenia viridescens	T	EN	Sep-Oct
Calothamnus graniticus subsp. *graniticus*	4		Jun
Cyanothamnus tenuis	4		-
Cyathochaeta teretifolia	3		-
Dampiera triloba	3		Aug – Dec
Daviesia elongata	T		Sep - Feb
Dillwynia sp. Capel (P.A. Jurjevich 1771)	3		Sept-Oct
Drakaea micrantha	T	VU	Sep-Oct
Eucalyptus marginata x megacarpa	4		-
Eucalyptus rudis subsp. *cratyantha*	4		-
Eucalyptus virginea	4		Dec - Jan
Eucalyptus x phylacis	T	EN	Feb-Mar
Gahnia sclerioides	4		-
Gastrolobium argyrotrichum	T	CR	Dec
Gonocarpus pusillus	4		Nov-Dec
Grevillea brachystylis subsp. Yelverton (A. Webb AW09122)	2		-
Johnsonia inconspicua	3		Nov
Lepyrodia heleocharoides	3		Dec
Loxocarya magna	3		-
Meionectes tenuifolia	3		Nov-Dec
Millotia tenuifolia var. *laevis*	2		Sep-Oct
Netrostylis sp. Blackwood River (A.R. Annels 3043)	3		
Olearia strigosa	3		Dec - May

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Taxon	PWS Ranking	EPBC Act Category	Flowering Period
Pimelea ciliata subsp. *longituba*	3		Sep-Nov
Pultenaea pinifolia	3		Oct
Stylidium lowrieanum	3		Oct - Nov
Tetratheca parvifolia	3		Oct
Thelymitra variegata	2		Aug-Sep
Thysanotus glaucus	4		Nov-Feb
Tripterococcus sp. Brachylobus (A.S. George 14234)	4		Feb
Verticordia lehmannii	4		Oct
Verticordia plumosa var. *ananeotes*	T	EN	Dec

2 Methods

The site was traversed on foot by an experienced botanist on the 20th September 2023 to search for any conservation significant flora that may be present and photographs for illustrative purposes were taken at four locations (Figure 3). The timing of the survey was chosen to intercept the usual flowering period of Threatened orchid taxa, which are perennial geophytes and only identifiable when in flower. The flowering periods of all the Threatened orchids that potentially occur within the site overlap in September. The remaining Threatened Flora are perennial taxa and would be observable at all times of year if present.

3 Results

No conservation significant flora were recorded during the survey. The site has been open to the adjacent pastures and the native groundlayer has been replaced largely by pasture grasses. The vegetation condition is therefore rated as 'Completely Degraded'. The current habitat conditions would be unsuitable for most native annual and/or herbaceous taxa and, although some native shrubs and trees are present, none are of conservation significance.

4 Discussion

No conservation significant flora were recorded during the survey. Most of the conservation significant flora with potential to occur within the site are perennial taxa and would be observable if present. Although individual orchids may not flower every year and the rainfall in the preceding three months for the Margaret River area was below average, the 'Completely Degraded' condition of the vegetation indicates that it is highly unlikely that any Threatened or Priority Flora occur within the site.

Should you require any further information or have any other queries, please feel free to contact me.

Sincerely yours,



Dr. Shane Chalwell

Plantecology Consulting

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ABN 18 849 210 133

5 References

Keighery, BJ (1994), Bushland plant survey: A Guide to Plant Community Survey for the Community, Wildflower Society of WA (inc), Nedlands, Western Australia.

DBCA (2023) Conservation Codes for Western Australian Flora and Fauna, Department of Biodiversity, Conservation and Attractions, Perth.

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Plates

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Plate 1 (Photopoint 1): View of vegetation within Zone 1 of the survey area at 1603 Wildwood Rd, Margaret River.



Plate 2 (Photopoint 2): View of vegetation within Zone 2 of the survey area at 1603 Wildwood Rd, Margaret River.

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Plate 3 (Photopoint 3): View of vegetation (looking north) within Zone 3 of the survey area at 1603 Wildwood Rd, Margaret River.



Plate 4 (Photopoint 3): View of vegetation (looking south) within Zone 3 of the survey area at 1603 Wildwood Rd, Margaret River.

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Plate 5 (Photopoint 4): View of vegetation (looking north east) within Zone 3 of the survey area at 1603 Wildwood Rd, Margaret River.



Plate 6 (Photopoint 4): View of vegetation (looking north) within Zone 3 of the survey area at 1603 Wildwood Rd, Margaret River.

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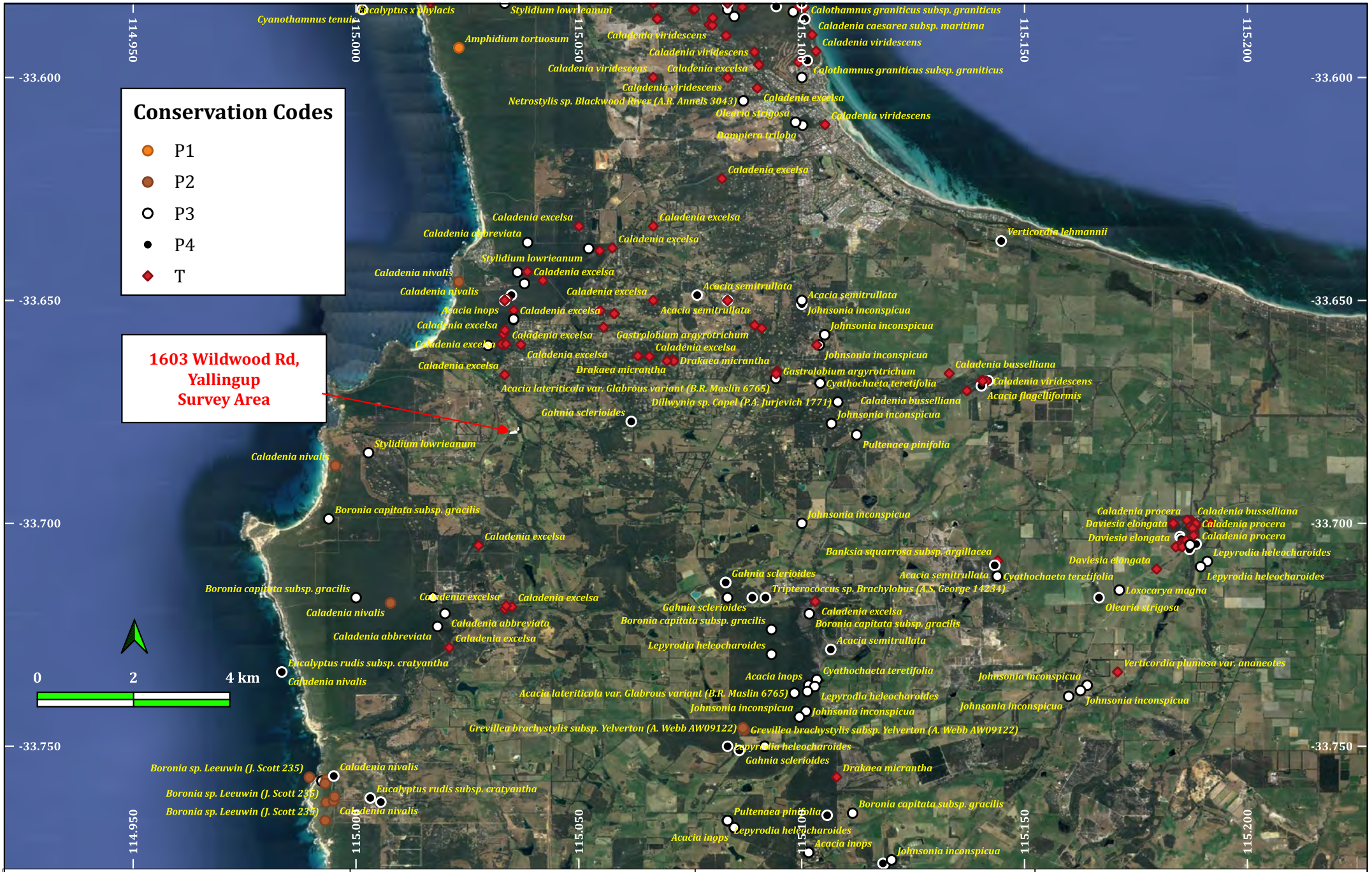
Figures



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50 New Cross Rd
Kingsley WA 6026

Scale: 1:75 000
Basemap Source: Google Satellite
Datum: GDA2020
Projection: EPSG 7844

Client: Accendo Australia
Project: Wildwood Rd Flora Survey
Location: 1603 Wildwood Rd, Yallingup
Author: S.T.S. Chalwell
Drawn: S.T.S. Chalwell

Figure 2: Conservation Significant Flora



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50 New Cross Rd
Kingsley WA 6026

Scale: 1:800
Basemap Source: Google Satellite
Datum: GDA2020
Projection: EPSG 7844

Client: Accendo Australia
Project: Wildwood Rd Flora Survey
Location: 1603 Wildwood Rd, Yallingup
Author: S.T.S. Chalwell
Drawn: S.T.S. Chalwell

Figure 3: Photo Locations

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Appendix A

Definitions of Threatened and Priority Flora

Conservation Codes for Western Australian Flora and Fauna

Specially protected fauna or flora are species* which have been adequately searched for and are deemed to be, in the wild, either rare, at risk of extinction, or otherwise in need of special protection, and have been gazetted as such. Conservation codes have been transitioned under regulations 170, 171 and 172 of the *Biodiversity Conservation Regulations 2018.*

T Threatened species – Schedules 1-4

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

- **Threatened fauna** is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.
- **Threatened flora** is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR Critically endangered species

Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN Endangered species

Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU Vulnerable species

Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife*

Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

EX Presumed extinct species

Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW Extinct in the wild species

Species that "*is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI Migratory species

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018.*

CD Species of special conservation interest (conservation dependent fauna)

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS Other specially protected species

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

P Priority species

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

Priority 1: Poorly-known species

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

Priority 2: Poorly-known species

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

Priority 3: Poorly-known species

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

Priority 4: Rare, Near Threatened and other species in need of monitoring

(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.

(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

*Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

Western Australian Ecological Communities

Threatened Ecological Communities

The BC Act provides for the statutory listing of threatened ecological communities (TECs) by the Minister.

Presumed Totally Destroyed (PD)

An ecological community that has been adequately searched for but for which no representative occurrences have been located. The community has been found to be totally destroyed or so extensively modified throughout its range that no occurrence of it is likely to recover its species composition and/or structure in the foreseeable future.

Critically Endangered (CR)

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or that was originally of limited distribution and is facing severe modification or destruction throughout its range in the immediate future, or is already severely degraded throughout its range but capable of being substantially restored or rehabilitated.

Endangered (EN)

An ecological community that has been adequately surveyed and found to have been subject to a major contraction in area and/or was originally of limited distribution and is in danger of significant modification throughout its range or severe modification or destruction over most of its range in the near future.

Vulnerable (VU)

An ecological community that has been adequately surveyed and is found to be declining and/or has declined in distribution and/or condition and whose ultimate security has not yet been assured and/or a community that is still widespread but is believed likely to move into a category of higher threat in the near future if threatening processes continue or begin operating throughout its range.

Priority Ecological Communities

Possible threatened ecological communities that do not meet survey criteria or that are not adequately defined are added to the Priority Ecological Community List under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community. Ecological communities that are adequately known, and are rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list, are placed in Priority 4. These ecological communities require regular monitoring. Conservation Dependent ecological communities are placed in Priority 5.

Priority One: Poorly-known ecological communities

Ecological communities that are known from very few occurrences with a very restricted distribution (generally ≤5 occurrences or a total area of ≤ 100ha).

Occurrences are believed to be under threat either due to limited extent, or being on lands under immediate threat (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) or for which current threats exist. May include communities with occurrences on protected lands. Communities may be included if they are comparatively well-known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under immediate threat from known threatening processes across their range.

Priority Two: Poorly-known ecological communities

Communities that are known from few occurrences with a restricted distribution (generally ≤10 occurrences or a total area of ≤200ha). At least some occurrences are not believed to be under immediate threat (within approximately 10 years) of destruction or degradation. Communities may be included if they are comparatively well known from one or more localities but do not meet adequacy of survey requirements, and/or are not well defined, and appear to be under threat from known threatening processes.

Priority Three: Poorly known ecological communities

(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or:

(ii) communities known from a few widespread occurrences, which are either large or with significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat (within approximately 10 years), or;

(iii) munities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change etc.

Communities may be included if they are comparatively well known from several localities but do not meet adequacy of survey requirements and/or are not well defined, and known threatening processes exist that could affect them.

Priority Four: Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.

(i) Rare. Ecological communities known from few occurrences that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection, but could be if present circumstances change. These communities are usually represented on conservation lands.

(ii) Near Threatened. Ecological communities that are considered to have been adequately surveyed and that do not qualify for Conservation Dependent, but that are close to qualifying for a higher threat category.

(iii) Ecological communities that have been removed from the list of threatened communities during the past five years.

Priority Five: Conservation Dependent ecological communities

Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

Commonwealth of Australia Conservation Codes

Threatened Flora and Fauna

Threatened fauna and flora may be listed under Section 178 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in any one of the following six categories:

Extinct

A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.

Extinct in the wild

A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time:

a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or
b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

Critically endangered

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

Endangered

A taxon is Endangered when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a very high risk of extinction in the wild.

Vulnerable

A taxon is Vulnerable when the best available evidence indicates that it meets any of the five criteria for the category identified in Part 7.01 of the EPBC Regulations, and it is therefore considered to be facing a high risk of extinction in the wild.

Conservation dependent

A native species is eligible to be included in the conservation dependent category at a particular time if, at that time:

a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or
b) the following subparagraphs are satisfied:
    i. the species is a species of fish;

ii. the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised;
iii. the plan of management is in force under a law of the Commonwealth or of a State or Territory;
iv. cessation of the plan of management would adversely affect the conservation status of the species.

The EPBC Act does not provide for listing in a data deficient category. Where sufficient data (evidence) is unavailable to allow assessment by the Threatened Species Scientific Committee against the criteria for listing, the species are found to be ineligible. A recommendation is made to the Minister to not include the species in any category under the EPBC Act. For reasons of transparency and to inform future research, the Threatened Species Scientific Committee publishes the names of those species found to be data deficient. As data deficient is not a listing category under the EPBC Act, this has no statutory implications and the species is not considered to be listed under the EPBC Act.

Threatened Ecological Communities

Threatened Ecological communities under the EPBC Act are listed in three categories.

Critically endangered

If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).

Endangered

If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).

Vulnerable

If, at that time, an ecological community is not critically endangered or endangered, but is facing a high risk of extinction in the wild in the medium–term future (indicative timeframe being the next 50 years).

Categories of Threatened Species pursuant to the Environment Protection and Biodiversity Conservation Act 1999

EPBC Act Category	Department of Environment and Energy Definition
Extinct	A native species is eligible to be included in the extinct category at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.
Extinct in the wild	A native species is eligible to be included in the extinct in the wild category at a particular time if, at that time: (a) it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or (b) it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically endangered	A native species is eligible to be included in the critically endangered category at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
Endangered	A native species is eligible to be included in the endangered category at a particular time if, at that time (a) it is not critically endangered; and (b) it is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
Vulnerable	A native species is eligible to be included in the vulnerable category at a particular time if, at that time: (a) it is not critically endangered or endangered; and (b) it is facing a high risk of extinction in the wild in the medium term future, as determined in accordance with the prescribed criteria.
Conservation dependent	A native species is eligible to be included in the conservation dependent category at a particular time if, at that time: (a) the species is the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or (b) the following subparagraphs are satisfied: (i) the species is a species of fish; (ii) the species is the focus of a plan of management that provides for management actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; (iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory; (iv) cessation of the plan of management would adversely affect the conservation status of the species.

2023

Site and Soil Evaluation Gunyulgup Estate – Lot 101 1603 Wildwood Road,



Environmental & Landscape Management

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2. INTRODUCTION

Gunyulgup Estate at Lot 101, 1603 Wildwood Road, Yallingup, is subject to a proposal tourist use of the site. The City of Busselton generally requires that a site and soil evaluation be undertaken. The site is located approximately 9.5 kilometres south-east of the Dunsborough town centre. The site location and context are shown in Figure 1 below.



Figure 1: Site context (image courtesy of the City of Busselton online mapping).

SCOPE OF REPORT

The consultant was asked to provide an assessment of the soils to determine the suitability of the site for disposal of wastewater using either a conventional septic tank system or Secondary Treatment System (STS). The assessment has been carried out in accordance with the requirements of AS1547:2012 On-site domestic wastewater management.

3. BACKGROUND

WASTEWATER DISPOSAL

Several options are available for wastewater disposal depending on the suitability of the site. The easiest and cheapest option to install consists of a septic tank with leach drains. Another option includes the use of a Secondary Treatment System (STS). Both of these options are controlled under Regulations, or a Code of Practice overseen by the Health Department of WA.

The local government generally requires that a few issues are addressed in such assessments to determine if the development proposal sites are suitable for effective disposal of wastewater. These issues include:

1. Depth to highest ground water from ground level.
2. Depth to bedrock or impervious clay.
3. Depth of free draining soil.
4. Set back from water bodies.
5. Soil structure and profile to a depth of 2 metres or more.

6. Phosphate Retention Index to 1 metre.
7. Infiltration rate of the soil (L/m^2/day).

The State Government has adopted the Government Sewerage Policy in September 2019. The policy outlines the state government's position on the provision of reticulated sewerage for the rezoning, structure planning, subdivision, and development of land. The policy seeks to promote reticulated sewerage over other forms of on-site treatment. The policy adopts a risk management approach to sewage management that is consistent with Australian/New Zealand Standard 1547 On-site domestic wastewater management. This risk management approach is to be used for guidance when assessing planning proposals where on-site sewage disposal is proposed.

The policy further sets out minimum requirements for on-site sewage disposal regarding separation to groundwater, groundwater source areas, private bores, waterways, significant wetlands, surface drains and areas subject to flooding. Schedules attached to the policy outline the supporting information that is required where on-site sewage disposal is proposed.

The Australian Standard (AS1547:2012) On-site domestic wastewater management outlines a risk management process and details the various roles that are required to carry out assessments at a range of scales from planning stage to implementation. The process for site and soil evaluation is set out within the standard with performance requirements, a general methodology and soil categorisation with further details outlined in several appendices attached to the standard.

4. THE STUDY AREA

TENURE AND VESTING

The overall site is 42.544 hectares in size and is zoned Viticulture and Tourism.

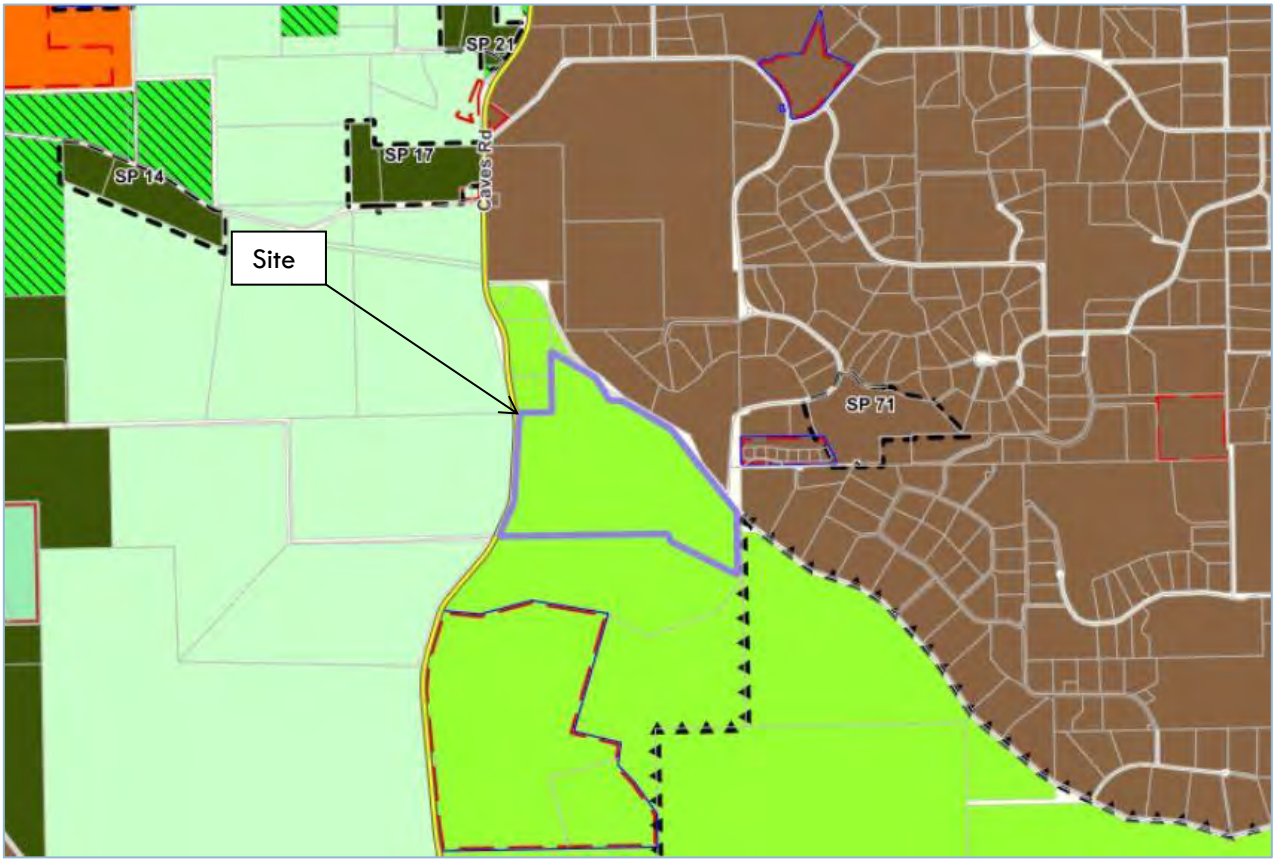

Figure 2: Town Planning Scheme zoning for the lot under consideration (source: City of Busselton)

The site falls within the 'Landscape Value' Special Control Area.

HISTORICAL LAND USE

The site is likely to have been used for pasture and other agriculture as part of a larger farm following clearing by European settlers.

ADJACENT LAND USE

The site is located adjacent other lots zoned Vituculture and Tourism, with Rural Residential lots north of Wildwood Road and Rural zoned lots west of Caves Road.

5. THE NATURAL ENVIRONMENT

THE PHYSICAL ENVIRONMENT

LANDFORM

The site is located on the Leeuwin Block, a narrow area along the coast between Cape Naturaliste and Cape Leeuwin, which is dominated by a gently undulating lateritic plateau (Department of Agriculture, 2003). The plateau is dissected by a series of valley systems and has formed on lateritized granitic and gneissic basement rock (Tille and Lantzke, 1990).

LOCAL SOILS/GEOLOGY

The eastern and western parts of the property encompass the Wilyabrup Gentle Slopes Phase (WL3). These soils are characterised as gentle valley slopes on colluvium and weathered mantle over granite with loamy gravels, duplex sandy gravels, brown deep loamy duplexes, and friable red/brown and brown loamy earths. Typical vegetation includes marri-jarrah forest and woodland, with pockets of karri (DPIRD, 2023).



Figure 3: Delineation of soil classifications across the overall site (DPIRD, 2023).

The central western portion of the site contains the Wilyabrup Moderate Slopes Phase (WL4) (DPIRD, 2023). These soils occur on moderate valley slopes on colluvium and weathered mantle over granite. Soils consist of loamy gravels, duplex sandy gravels, brown deep loamy duplexes, and friable red/brown and brown loamy earths. Typical vegetation includes marri-jarrah forest and woodland.

The soils in the central eastern portion of the lot are classified as the Wilyabrup fertile flats phase (WLf) (DPIRD, 2023). These soils occur on well drained valley flats and floodplains with deep alluvial soils. Soils consist of friable red/brown loamy earths and brown loamy earths. Typical vegetation includes marri-jarrah-blackbutt-peppermint forest and woodland. Around 10 per cent of the soils in this classification have a very high risk of waterlogging.

The southwestern corner of the site contains the Cowaramup Gentle Slopes Phase (CO2). These areas are usually lateritic rises and gentle slopes on weathered mantle over granite in the Margaret River district between Eagle Bay and Augusta. Soils are usually loamy gravels and duplex sandy gravels. The vegetation type is usually marri-jarrah forest and woodland (DPIRD, 2023). There is a very high risk of phosphorous export for 3% of soils within this soil classification. Around 5% of the soil type has a high risk of waterlogging. There is a very high risk of water erosion for 3% of the soils in this group.

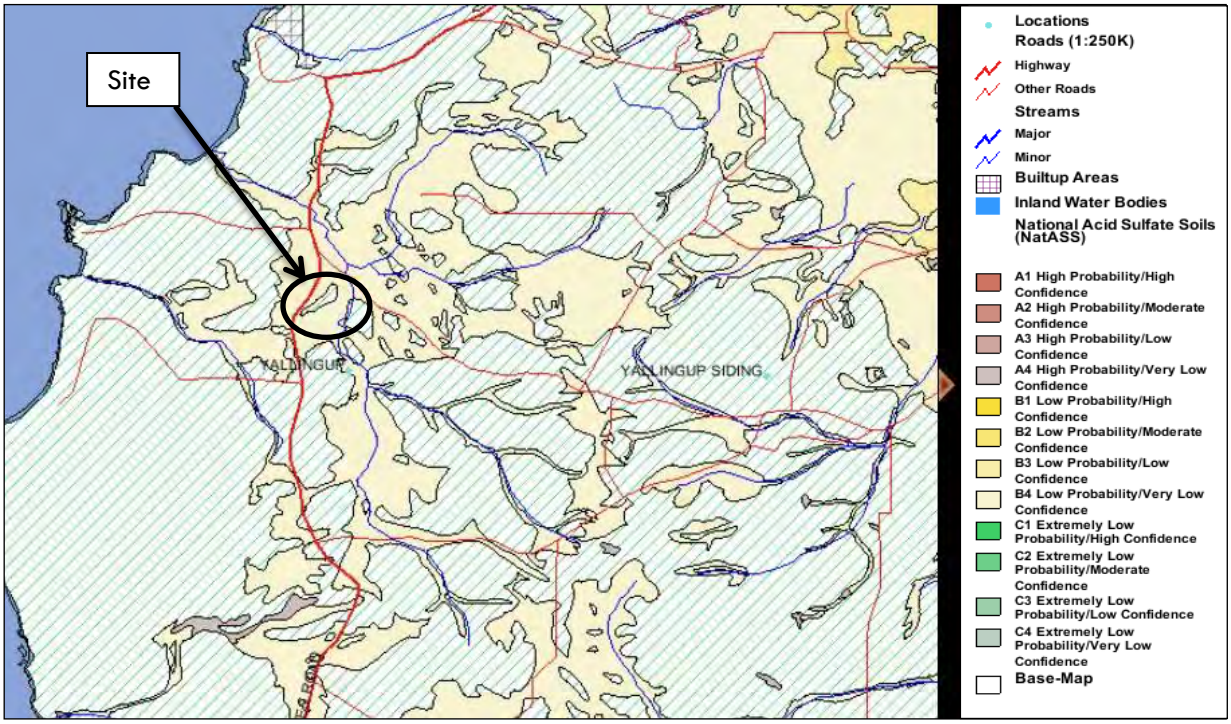

Figure 4: Acid sulphate soils risk in the local area (image courtesy of ASRIS, 2023).

There is a low probability with low confidence of acid sulphate soils (see Figure 4) occurring across the site (ASRIS, 2023). No testing for the presence of Acid Sulphate Soils was undertaken for the site.

HYDROLOGY

The overall area of the lot has a generally moderate slope and is approximately 14 to 56 metres above sea level. This equates to a slope of approximately 6-8% across the steeper parts of the site.

A tributary of the Gunyulgup Brook crosses the property and provides water for the dams on the site. There is minimal risk of flooding across most of the site according to mapping provided by the Department of Primary Industries and Regional Development (see Figure 6).



Figure 5: Contours across the site (source: DPIRD)

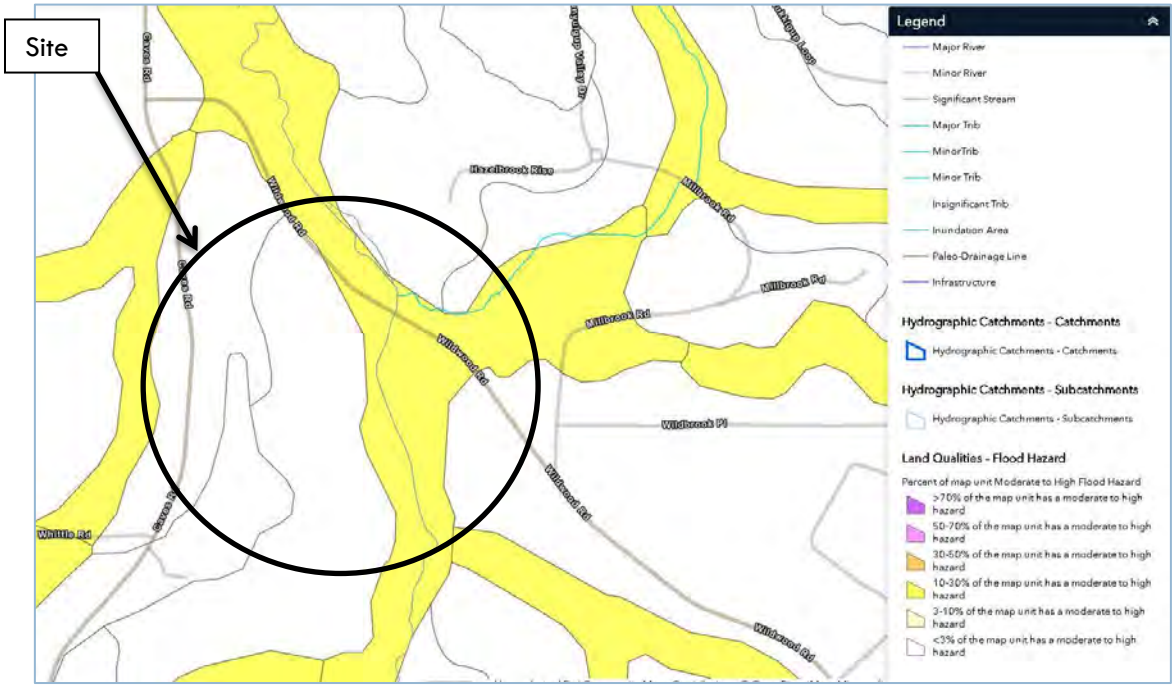

Figure 6: Nearby areas with increased flood hazard (source: DPIRD).

COMMENT ON FLOOD HAZARD RISK

Flood hazard mapping prepared by DPIRD (2023) is shown in Figure 6. Most of the site is outside any major flooding risk, although there is a moderate to high hazard of some flooding for 30% of Wilyabrup fertile flats phase soil unit (WvWLf – see Figure 3).

There are no Environmentally Sensitive Areas on or near the site (see Figure 8).

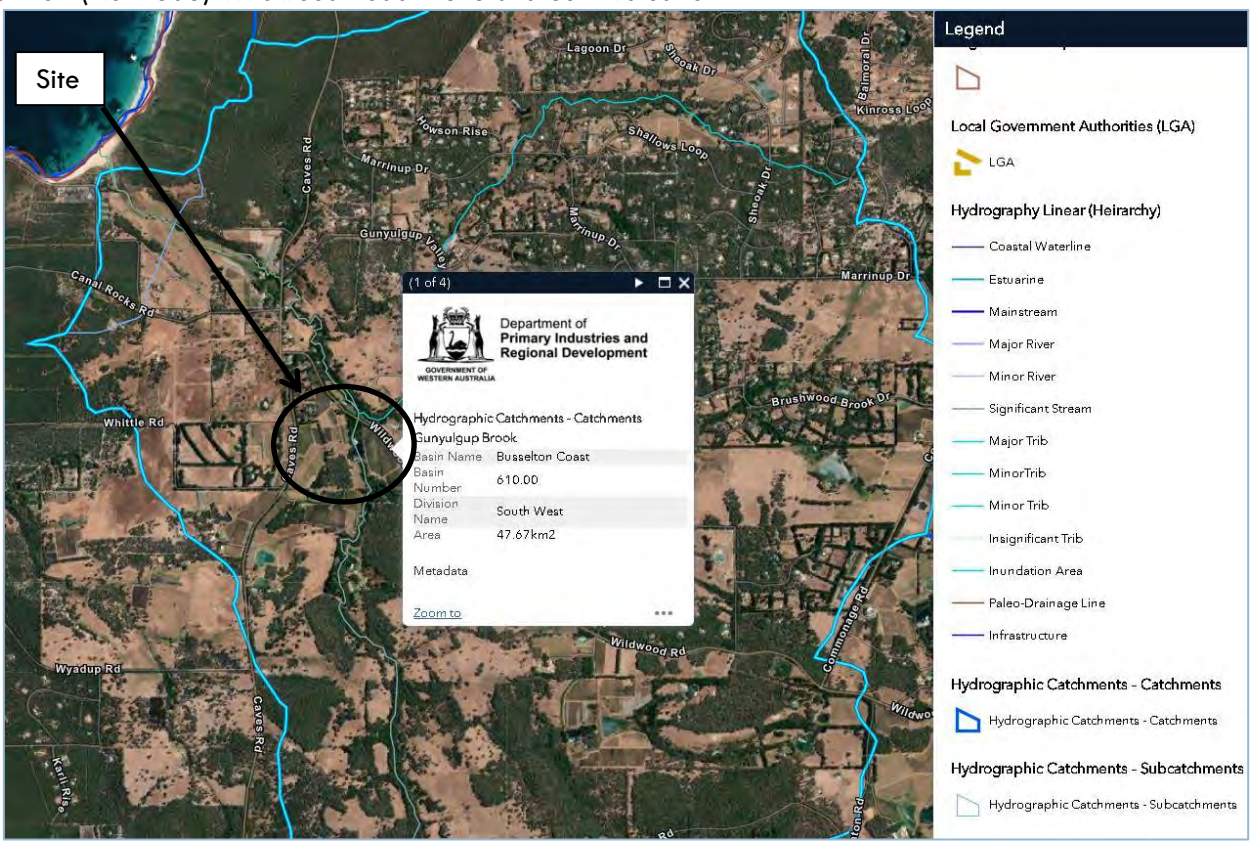

Figure 7: Local catchments

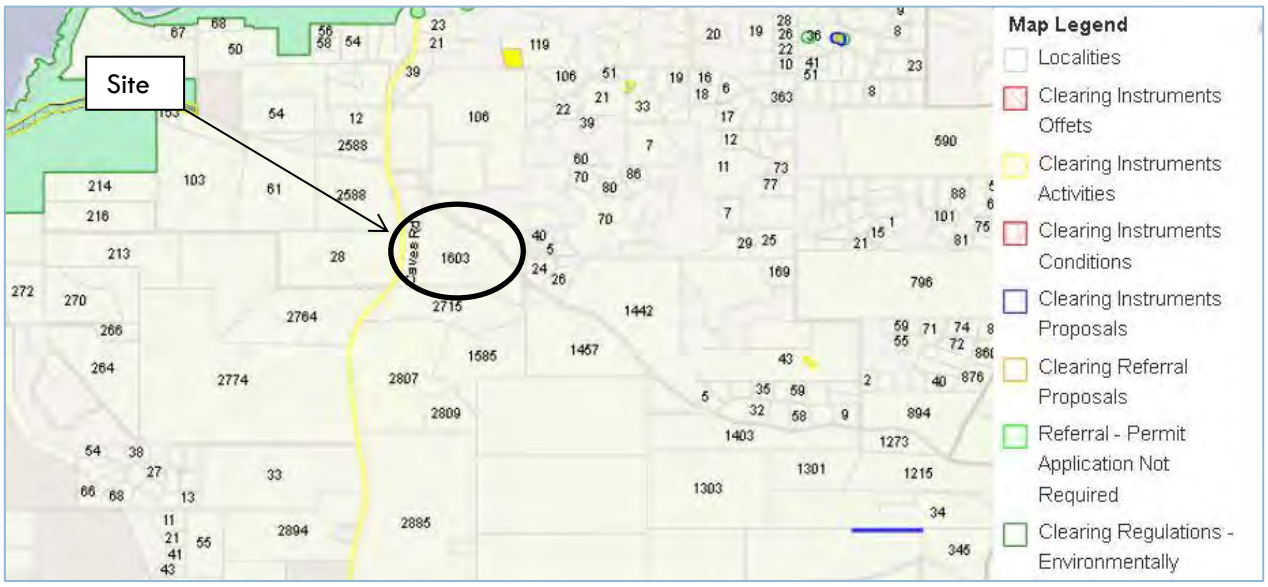

Figure 8: Environmentally Sensitive Area near the site (image courtesy of Department of Water).

LOCAL INFRASTRUCTURE

Reticulated sewerage is not available in the local area, nor is it planned.

Table 1: Summary description of the site and/or development.

Development Characteristic	Description
Site Address	Lot 101 Number 1603 Wildwood Road, Yallingup
Owner/Developer	Peter Medich
Local Government	City of Busselton
Zoning	Viticulture and Tourism
Lot size	42.544 hectares

Proposal	Tourism development
Water Supply	Water tank, dam – more information provided in the Discussion
Anticipated Wastewater Load	Calculations in Section 8
Availability of Sewer	The area is unsewered and highly unlikely to be sewered for several years, if at all.
Development located within (tick as appropriate)	☐ Public drinking water source area ☐ Sewage sensitive area ☑ Neither

6. SITE ASSESSMENT

METHODOLOGY

The initial site investigation took place on May 25, 2023. A total of 3 test pits were dug with an excavator, aiming for a depth of at least 2 m. During the assessment, permeability determination was undertaken with a hand auger. Soil samples were randomly selected from the excavated spoil, but typically from the middle to lower areas of the soil profile. Topsoil was not included.

Location of test pits excavated during the initial assessment is shown in the image below (Figure 9).



Figure 9: Test pit locations (image courtesy Google Earth).

7. RESULTS

METHODS

The site's soils have been assessed for their capability for onsite sewage management by a combination of soil survey, permeability studies, laboratory assessment and a desktop review of published soil survey information as outlined in the pages that follow.

PUBLISHED SOILS INFORMATION

Suspected soils of the site have been investigated via several web-based sites (such as Dept. Primary Industries and Regional Development) and publications such as "Geology and soils of the Margaret River wine region".

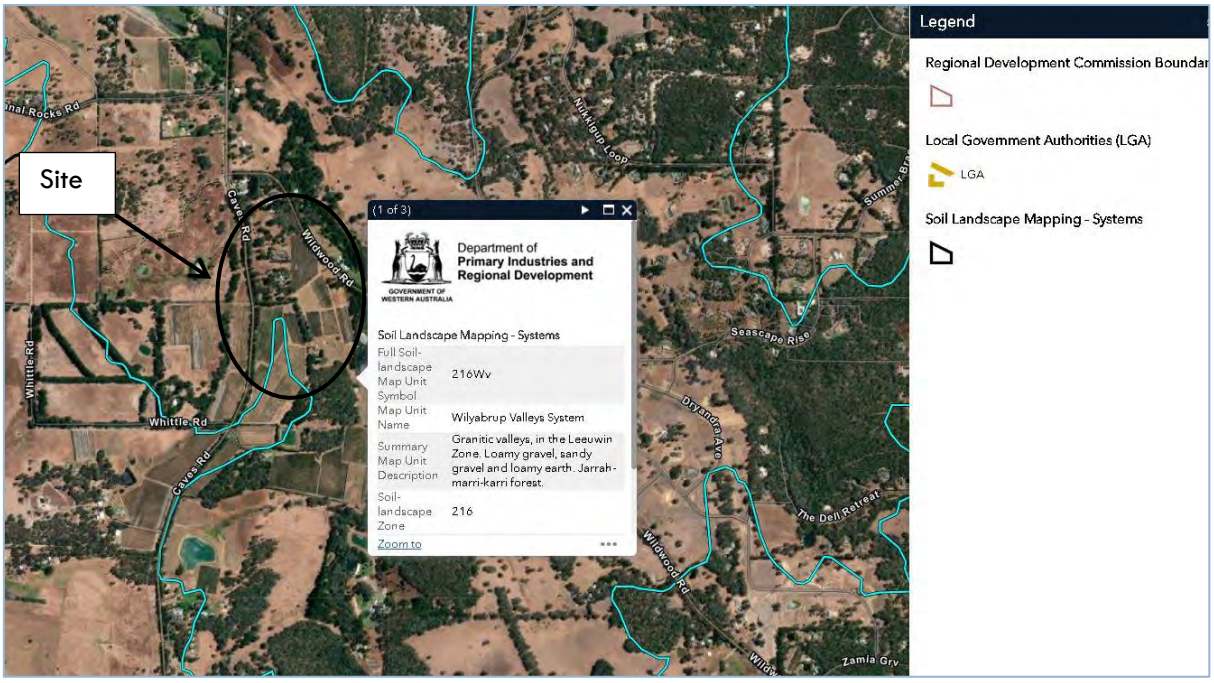

Figure 10: Geology of the area. Area marked. Source DPIRD.

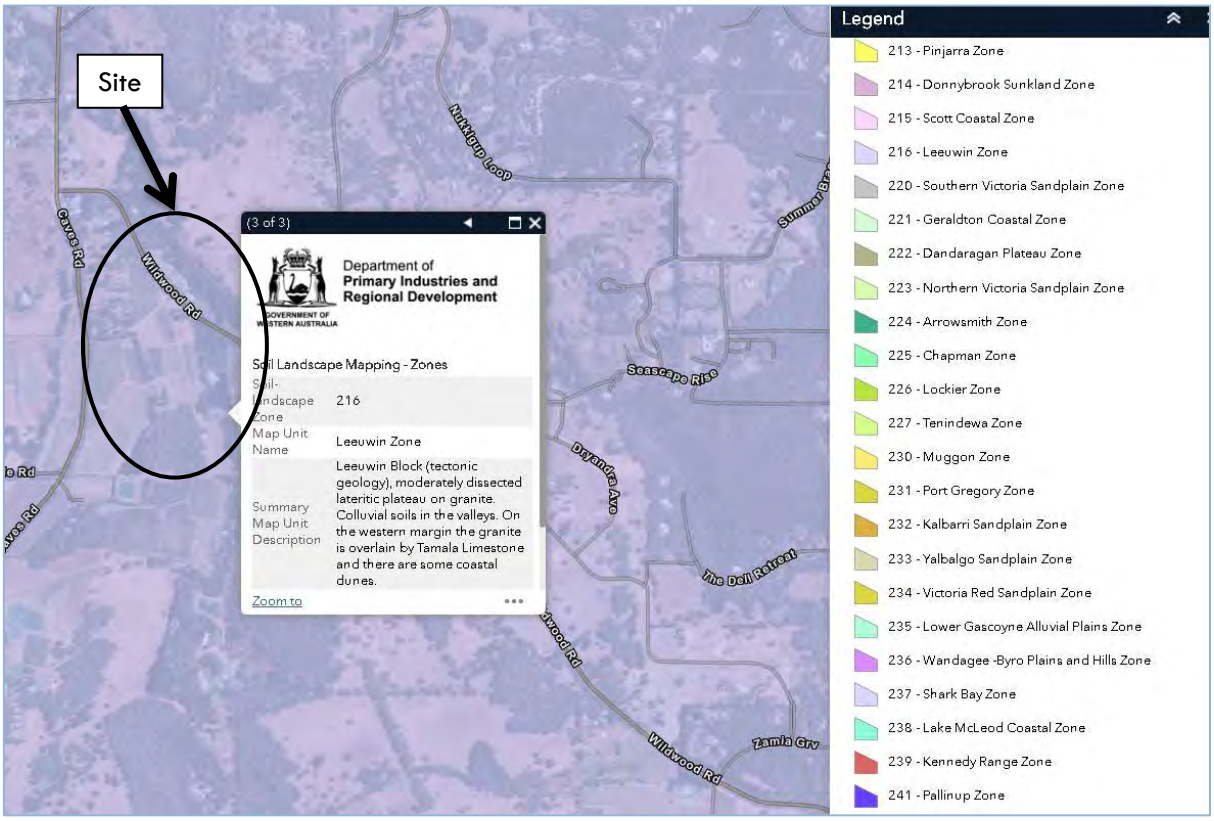

Figure 11: Soil landscape zones. Source: Natural Resource Information. DPIRD.

From Figures 10 to 13, soils typically found in the region are sandy gravel, loamy gravel, and loamy earths – as part of the Wilyabrup Valleys System.

The Leeuwin zone (Figure 11) consists of a moderately dissected lateritic plateau on granite, with colluvium in valleys and Tamala limestone over the granite on the western margin with sand dunes.

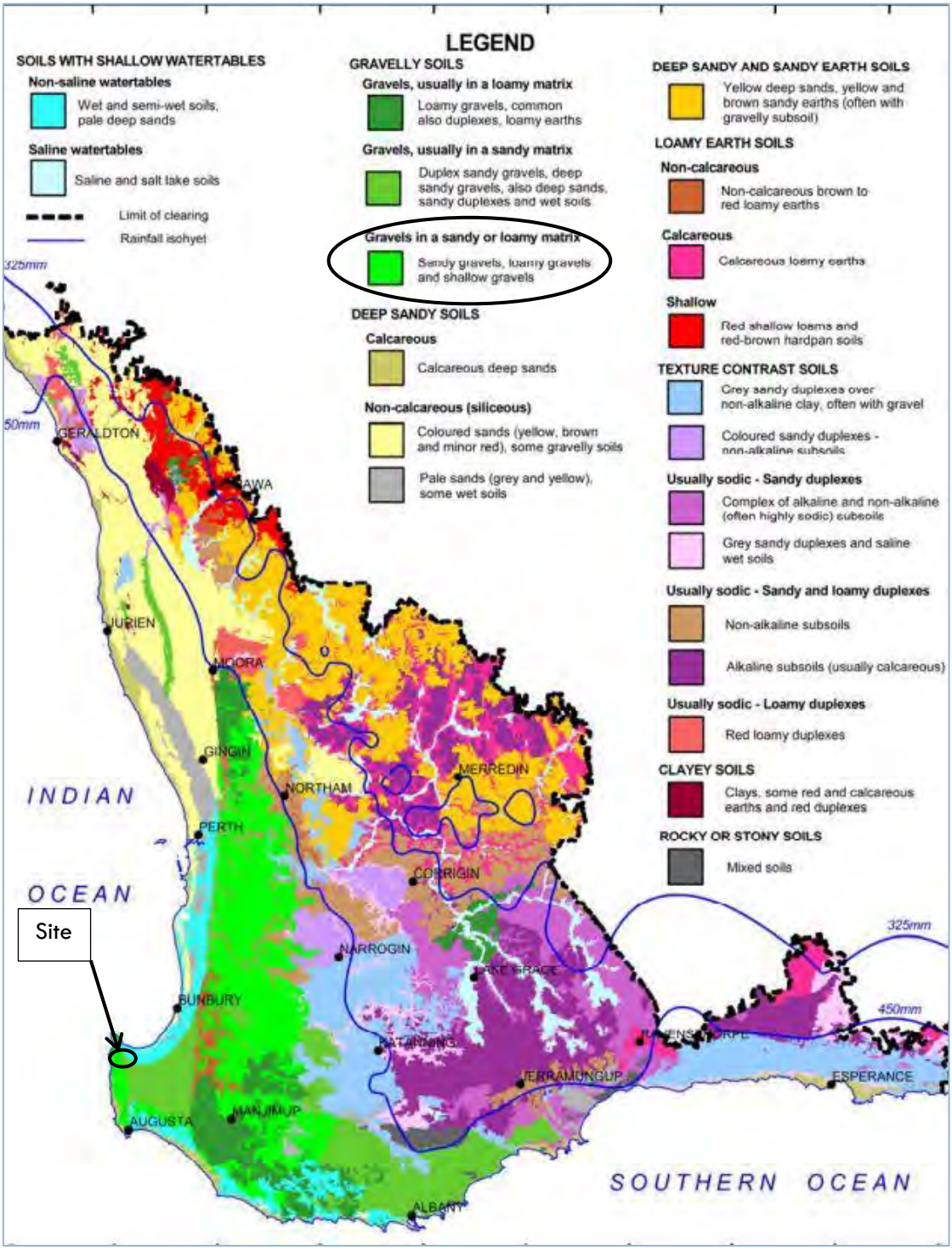

Figure 12: Soil groups in the south-west. Source: DPIRD.

The Wilyabrup Valleys System consists of granitic valleys of the Leeuwin zone, with ironstone gravel soils with a predominantly loamy matrix.

Soils were also classified in accordance with the Dept. of Agriculture and Food publication "Soil Groups of Western Australia" as shown in Figure 12 – see references. Soil is determined as loamy gravel.

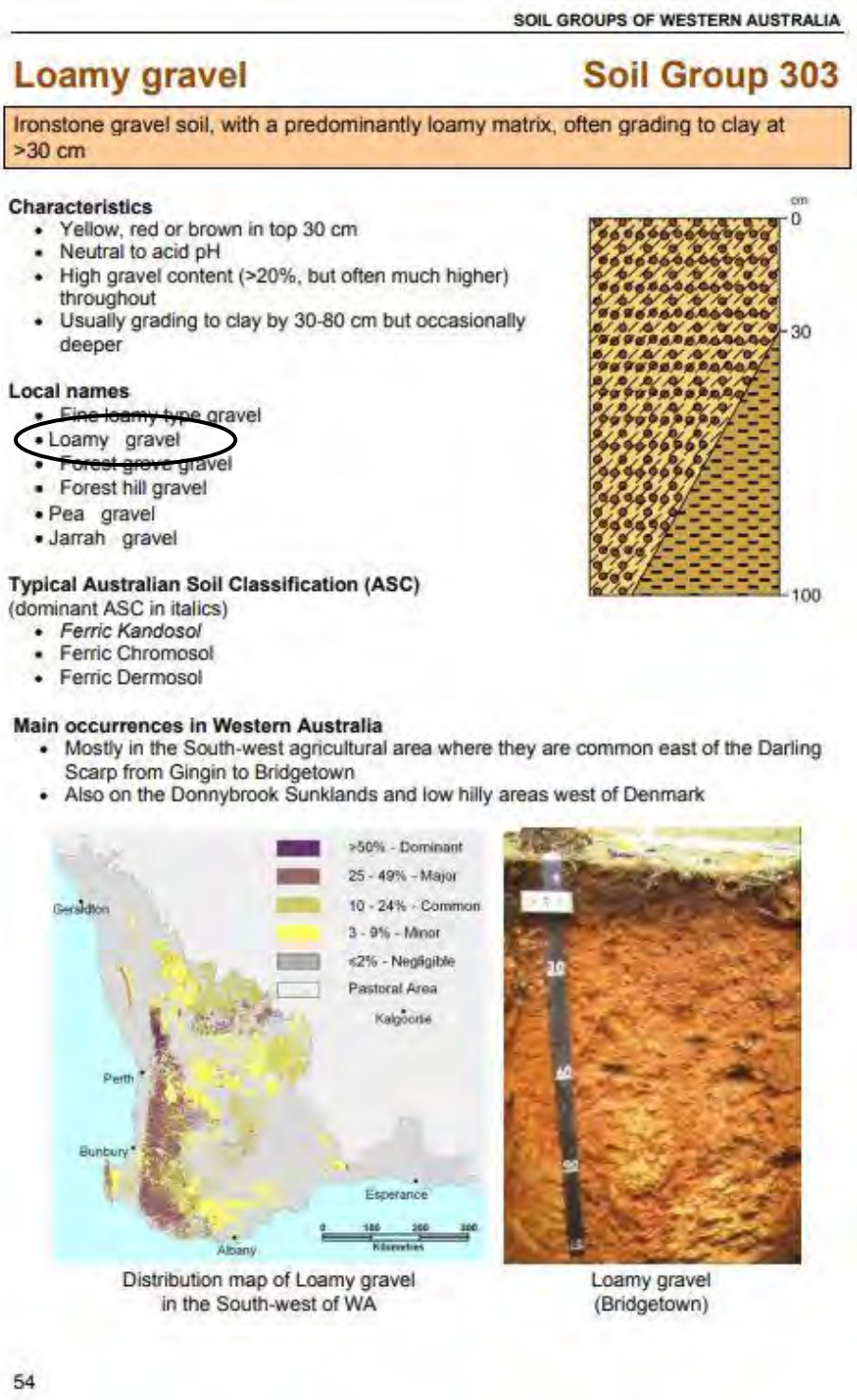

Figure 13: Characteristics of loamy gravels.

SOIL SURVEY AND ANALYSIS

A soil survey was carried out at the site to determine capability for the application of treated effluent. Soil investigations were conducted at three locations, as shown in Figure 9, using excavator-dug test pits (TP1 to TP3) endeavouring to reach 2 m depth. The soils were similar in the test pits, so only minor variations would be expected throughout the area of interest. The same soil type was encountered in these investigations, with minor differences in their content. Soil descriptions are provided in the relevant sections that follow.

A soil permeameter test was undertaken at the same time and soil from this location was sent to the CSBP soil testing laboratory. The subsequent laboratory analysis included pH, electrical conductivity, nutrient content,

Phosphorus Retention Index and Emerson Aggregate Class or similar dispersion test. Various tables in each section describe the soil constraints in detail for the soils encountered.

MUNSELL SOIL COLOUR

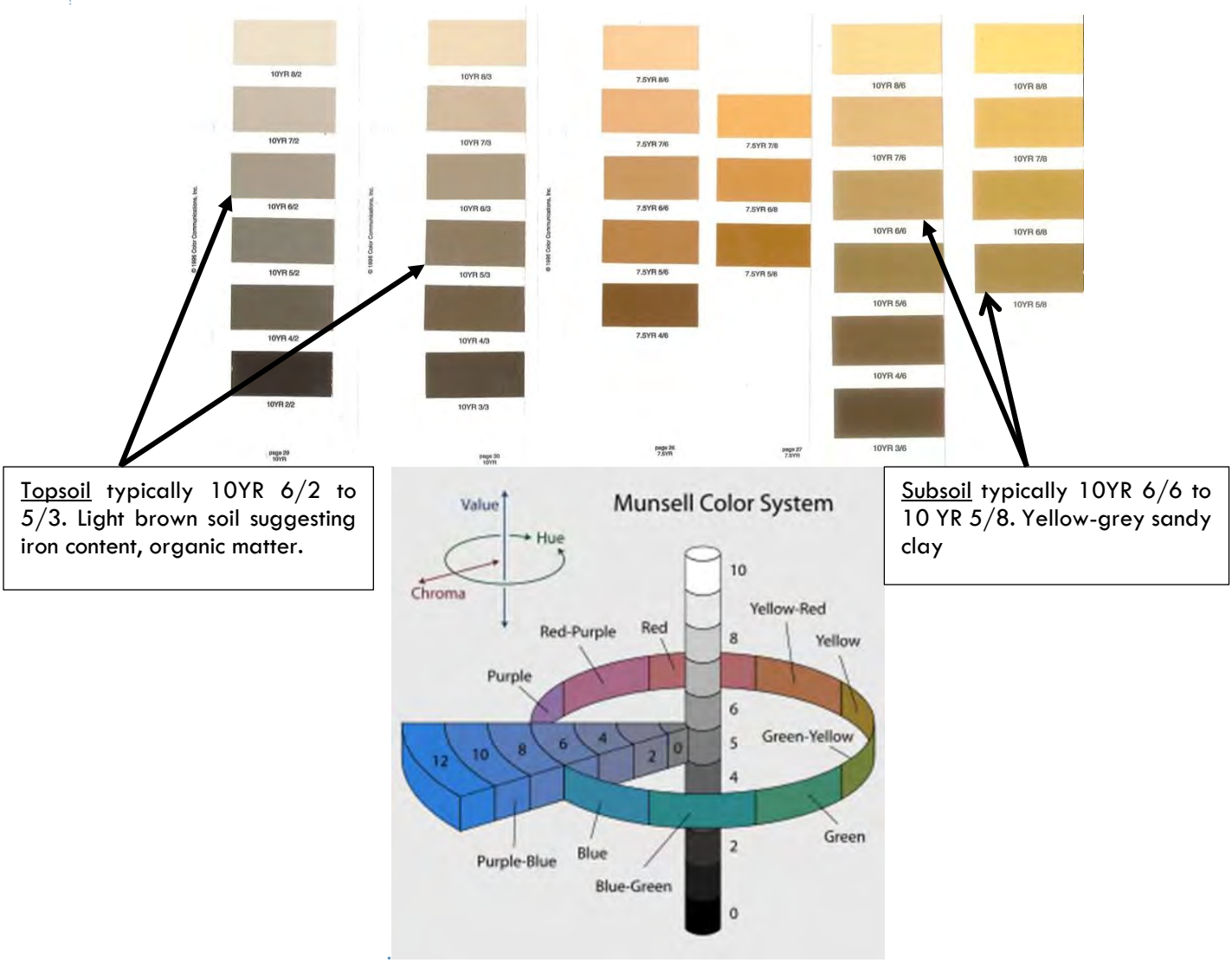

Figure 14: Typical colours of soils present on site

CLIMATE

The southwest region of Western Australia experiences a Mediterranean climate with warm dry summers and cool wet winters. The closest weather monitoring station is based at Cape Naturaliste. The average annual rainfall recorded at the station is 798 mm, with most of the rain falling between April and October (Bureau of Meteorology, 2023). The average daily temperature is between 16.6 and 18.9 degrees.

HYDROLOGY

A review of published literature was used to assess any possible constraints about the site, and then to make recommendations of appropriate wastewater treatment and land application areas.

In particular, the Government Sewerage Policy (GSP) requires that an onsite sewage system is not to be located within any area subject to inundation and/or flooding in a 10 percent Annual Exceedance Probability (AEP) rainfall event.

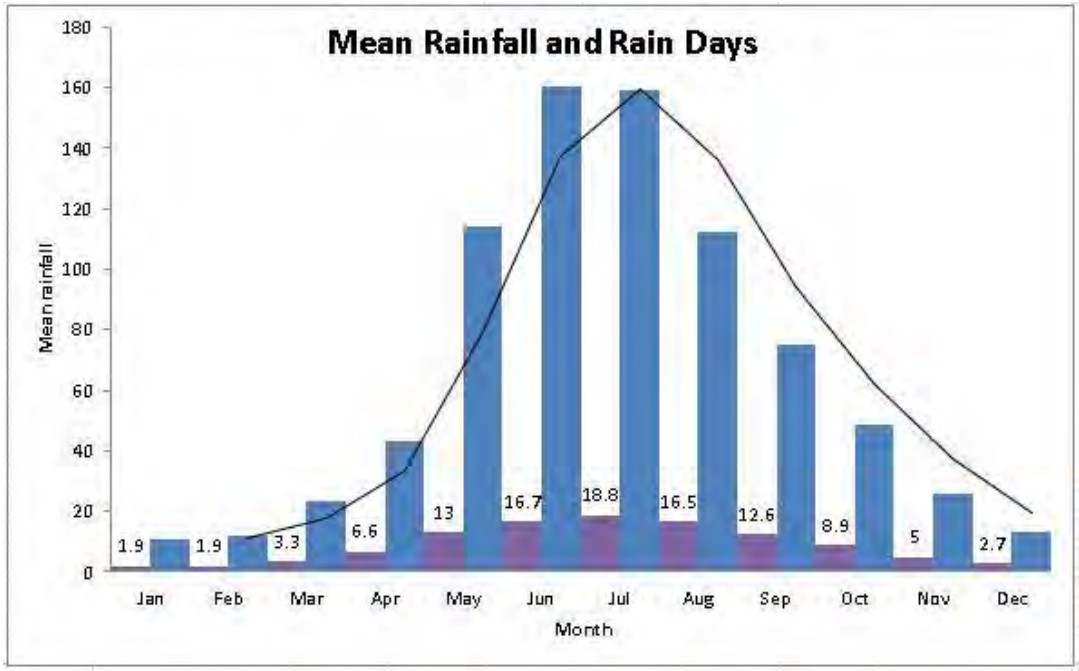

Figure 15: Average monthly rainfall for Cape Naturaliste.

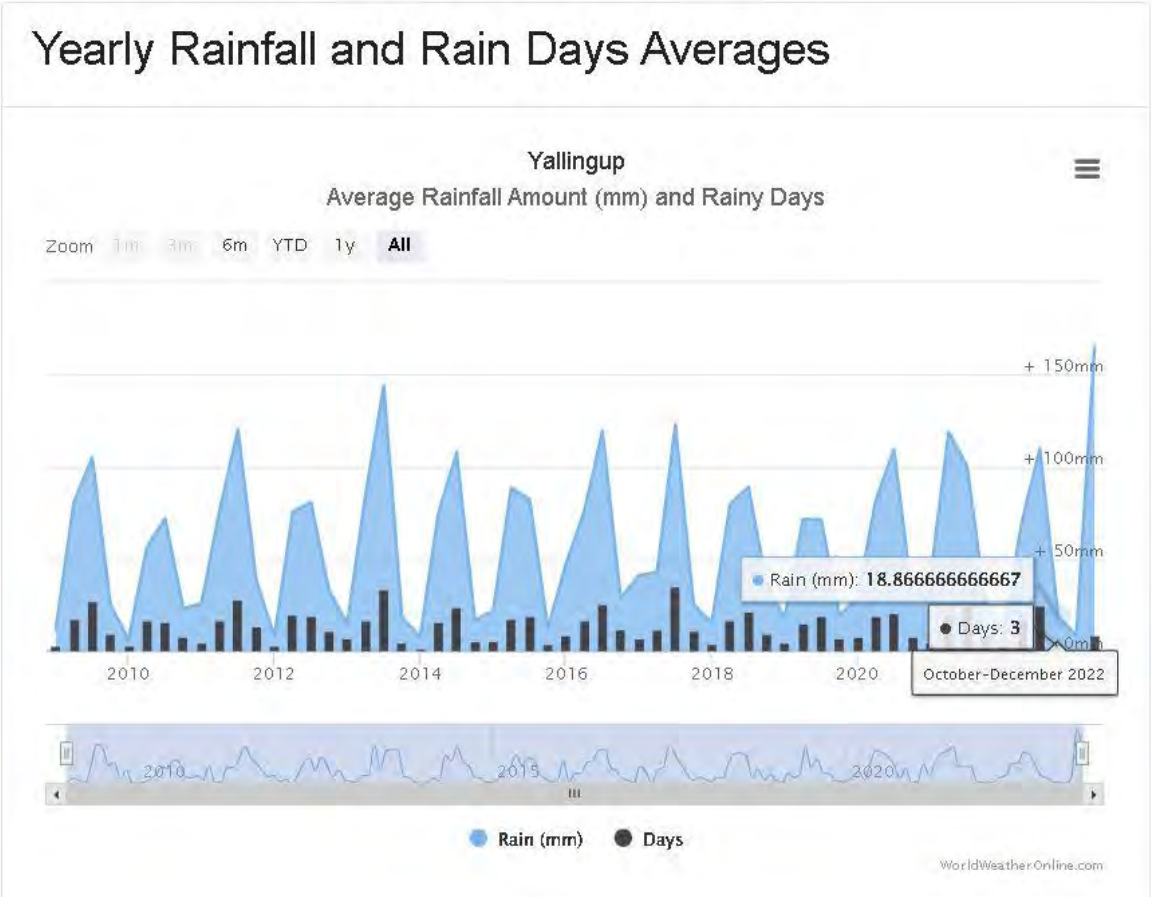

Figure 16: Typical rainfall amount and rainy days for Margaret River

From Figures 15, 16 and 17 most rainfall falls in winter, but rainfall does fall in every month, and this pattern is consistent from year to year. Furthermore, even in winter, the number of rainy days rarely exceeds 19 or about two-thirds of each month. Annual rainfall is 798 mm at Cape Naturaliste, and number of rainy days = 152.

Yallingup Long-Term Averages

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Mean Max (°C)	26.2	26.7	25.2	22.3	19.8	17.8	16.8	16.9	17.8	19.6	22.1	24.5	21.3
Mean Min (°C)	15.5	16.0	15.4	14.0	12.8	11.6	10.6	10.2	10.5	11.2	12.6	14.1	12.9
Mean Rain (mm)	10.8	12.2	22.8	44.1	113.4	160.1	158.8	112.6	75.0	48.9	26.0	13.[illegible]	797.0
Mean Rain Days	3.8	3.7	5.6	10.4	17.5	21.3	23.4	21.4	17.8	13.5	8.5	5.2	152.0

Figure 17: Yallingup long-term climate averages.

Information for flood hazard risk (Natural Resource Information) and Sewage sensitive areas (Dept Planning, Lands and Heritage) is shown later. There are no records of the site in the Perth groundwater map (Dept. Water website).

Peak flows for various ARI events and the Intensity Frequency Duration (IFD) data for Yallingup is shown in Figures 18 and 19. With a duration of 5 minutes, and the probability of a severe rainfall event as 10% (AEP 10), then the graph and table suggest a Design Rainfall Depth of about 12.8 mm. This is likely to be higher as storm events are considered, than the anticipated maximum rainfall intensity for Yallingup Maximum Rainfall of about 160.1 mm for June = 5.3 mm/day average or 7.5 mm/rainy day.

Location

Label: 1603 Wildwood Road

Latitude: -33.6807 [Nearest grid cell: 33.6875 (S)]

Longitude: 115.0353 [Nearest grid cell: 115.0375 (E)]



IFD Design Rainfall Depth (mm)

Issued: 15 June 2023

Rainfall depth for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).

FAQ for New ARR probability terminology

Table | Chart

	Annual Exceedance Probability (AEP)						
Duration	63.2%	50%#	20%*	10%	5%	2%	
1 min	2.23	2.52	3.43	4.07	4.72	5	
2 min	3.74	4.17	5.61	6.70	7.85	9.43	10.7
3 min	5.03	5.62	7.58	9.03	10.6	12.6	14.3
4 min	6.12	6.85	9.28	11.0	12.9	15.3	17.3
5 min	7.05	7.92	10.7	12.8	14.8	17.7	19.9
10 min	10.3	11.6	15.9	18.9	21.9	25.9	29.2
15 min	12.4	14.0	19.1	22.7	26.3	31.3	35.2
20 min	13.9	15.7	21.5	25.5	29.6	35.2	39.7
25 min	15.2	17.1	23.3	27.7	32.2	38.3	43.3
30 min	16.2	18.2	24.8	29.5	34.3	40.9	46.2
45 min	18.6	20.8	28.2	33.6	39.1	46.8	53.1
1 hour	20.4	22.8	30.8	36.6	42.7	51.2	58.1
1.5 hour	23.3	25.9	34.7	41.2	48.1	57.7	65.6
2 hour	25.6	28.4	37.8	44.8	52.2	62.6	71.2
3 hour	29.2	32.3	42.7	50.5	58.6	70.2	79.7
4.5 hour	33.4	36.9	48.5	57.0	65.9	78.6	89.1

Design rainfall depth at 10% AEP and storm duration 5 mins.

Figure 18: Rainfall depth for duration for Annual Exceedance Probabilities (AEP).

Given an AEP 10% and storm duration of 5 minutes then the anticipated rainfall intensity is 154 mm/hr as calculated below. Using this value and the runoff coefficient for a grassed area (Figure 20) then a runoff flow value can be calculated. The catchment area is deemed to be about the size of one zone of the LAA so that the impact of a severe rainfall event can be determined.

Rainfall intensity = Design rainfall depth (mm) / Duration (hrs) *Duration = 5 mins = 0.0833 hr*

Rainfall intensity = 12.8 / 0.0833 = 154 mm/hr

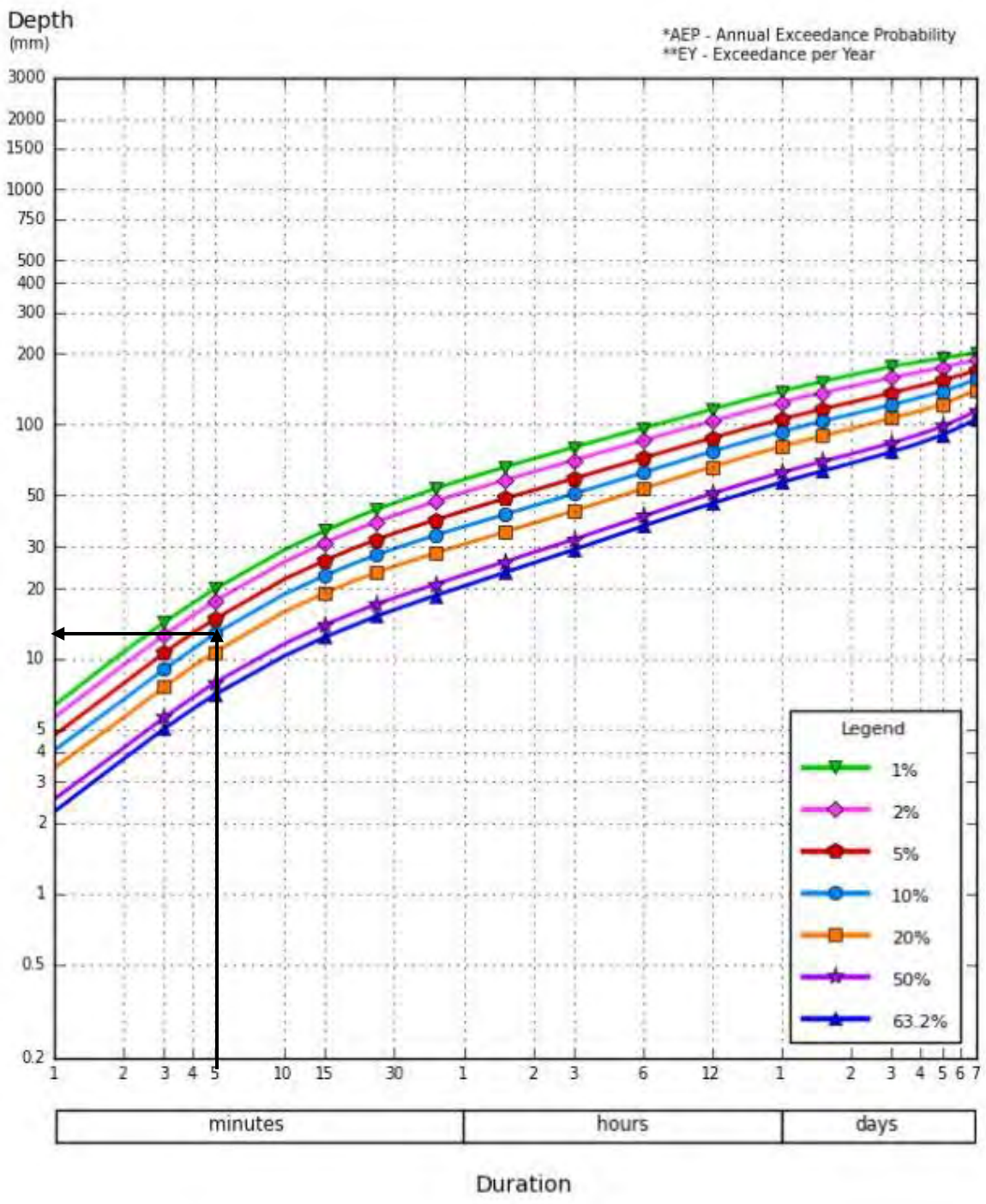

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Figure 19: Graph of Design Rainfall Depth (mm) at various AEP levels.

COEFFICIENT OF RUNOFF = RUNOFF / RAINFALL

SOIL TEXTURE	COEFFICIENT OF RUNOFF
Concrete, Roof, or Asphalt	1.00
Clay – Bare	0.70
Clay – Light Vegetation	0.60
Clay – Dense Vegetation	0.50
Gravel – Bare	0.65
Gravel – Light Vegetation	0.50
Gravel – Dense Vegetation	0.40
Loam – Bare	0.60
Loam – Light Vegetation	0.45
Loam – Dense Vegetation	0.35
Sand – Bare	0.50
Sand – Light Vegetation	0.40
Sand – Dense Vegetation	0.30
Grass Areas	0.35

Runoff flow (L/s) = CIA/3600
Where:-
C = Coefficient of runoff, I = Rainfall Intensity (mm/hr), A = Catchment Area (m^2)
C = 0.45 (light vegetation/grass areas), I = 154 mm/hr and A = 225 m^2 (one zone of proposed LAA)

Runoff Flow = $\frac{0.45 \times 154 \times 225}{3600}$ = 4.33 L/s

With a slope of about 3-4º then the velocity of water movement across the sandy loam grassed-covered landscape would be less than 1 m/s (assuming width of irrigation area 10 m and 10 mm depth of water).

This poses no threat to the land application area, as water will be able to drain away through the natural ground.

Figure 20: Runoff coefficients for soils.

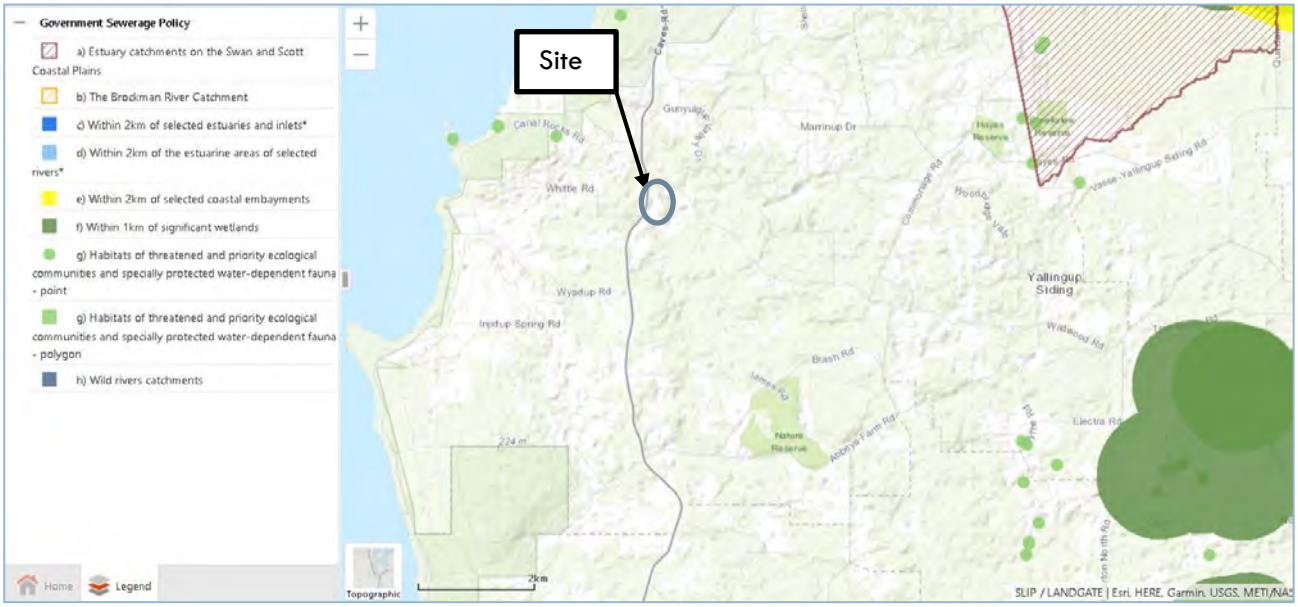


Figure 21: Sewage sensitive areas. Source: DPL&H.

COMMENT ON SSA

As indicated in Figure 21 the site is not within a sewage sensitive area.

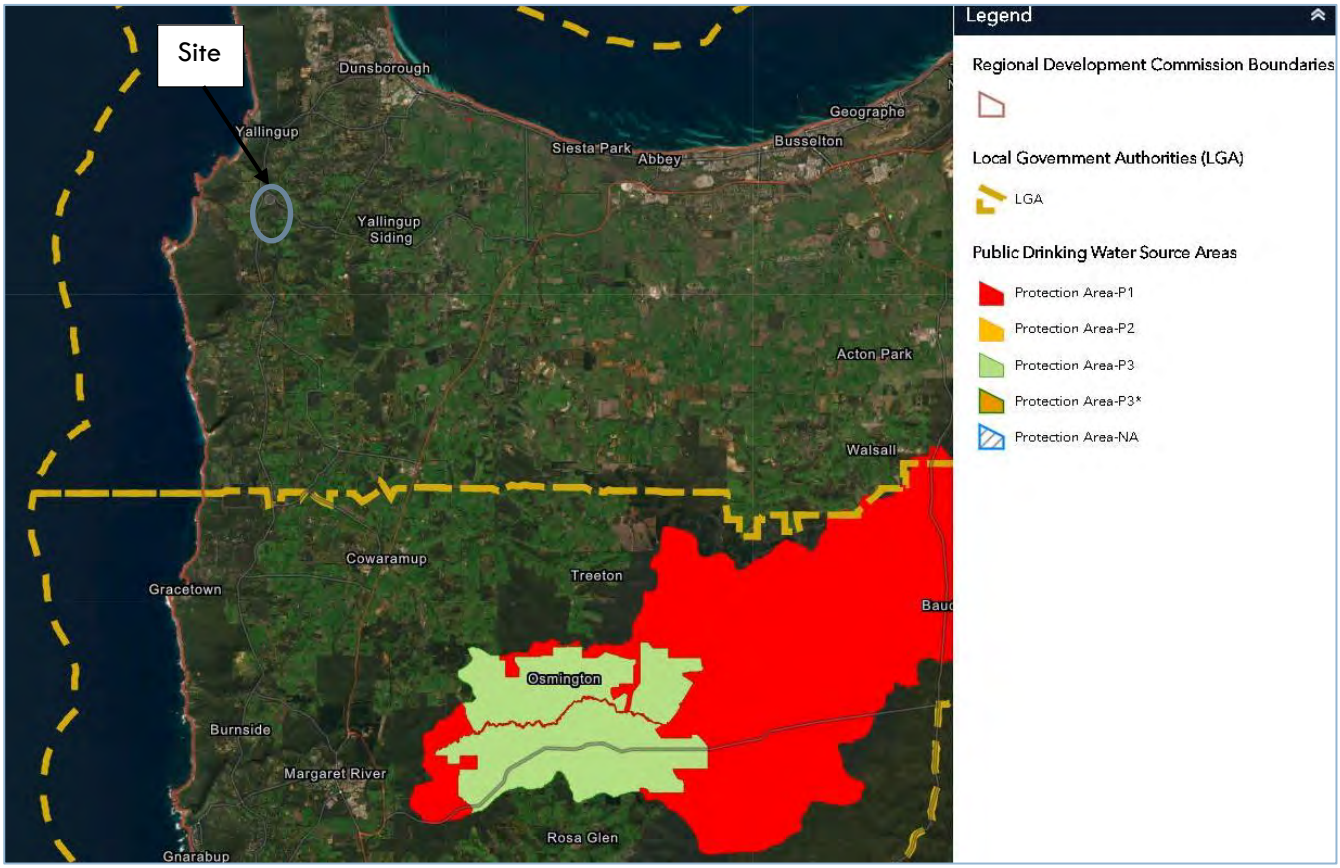


Figure 22: Public drinking water source areas. Source: DPIRD.

COMMENT ON PUBLIC DRINKING WATER SOURCE AREAS.

As indicated in Figure 22 the site is not within a public drinking water source area.

GROUNDWATER MONITORING

Groundwater monitoring was carried out during the initial assessment and no groundwater was observed in any of the test pits at around 2 metres depth.

SOIL TESTING RESULTS

Table 2: Laboratory Test results. CSBP Bibra Lake.

	UNITS	RESULTS		
		TP 1	TP 2	TP 3
Colour		BR	BRYW	DKBR
Gravel	%	5-10	5-10	5-10
Texture		2	2	1.5
Ammonium nitrogen	mg/kg	1	2	1
Nitrate nitrogen	mg/kg	4	1	2
Phosphorous Colwell	mg/kg	5	4	15
Potassium Colwell	mg/kg	159	93	113
Sulfur	mg/kg	38.1	49	6.6
Organic Carbon	%	0.86	0.25	1.3
Conductivity	dS/m	0.098	0.055	0.051
pH level (CaCl2)		5.4	7.1	6.1
pH level (H2O)		6.3	7.8	6.9
DTPA Copper	mg/kg	0.26	0.11	0.72
DTPA Iron	mg/kg	15.3	13.1	25.3
DTPA Manganese	mg/kg	1.06	0.99	1.19
DTPA Zinc	mg/kg	0.16	0.11	0.84
Exc. Aluminium	meq/100g	0.095	0.094	0.104
Exc. Calcium	meq/100g	2.22	1.69	5.05
Exc. Magnesium	meq/100g	3.08	1.19	0.9
Exc. Potassium	meq/100g	1.32	0.2	0.23
Exc. Sodium	meq/100g	0.45	0.09	0.1
Boron Hot CaCl2	mg/kg	0.79	0.52	0.7
Phosphorous Retention Index		> 1000.0	685.7	185.3
Dispersion Index		10	10	10

GENERAL COMMENTS

Soils in general are slightly acidic or neutral, moderately high in iron, with mostly a very high phosphorus retention index. Dispersion index = 10 for all the test pits (some dispersion). Nutrients are moderate or low, with moderate levels of phosphorous and potassium. Soil is typically sand loam or loam (CSBP = 1.5-2.0), gravel is 5 to 10 %. Results for cations calcium and magnesium were used to compare to sodium to enable Sodium Absorption Ratio (SAR) to be calculated. SAR is used to determine the sodicity of a soil and an assessment of any dispersion of clay aggregates. No dispersion is found in soils with a SAR value less than 3. The exchangeable sodium percentage (ESP) measures the proportion of cation exchange sites occupied by sodium. Soils are considered sodic when the ESP is greater than 6% and highly sodic when the ESP is greater than 15%. Calculations in Table 3 suggest sodicity is not likely to be an issue for most of the test pits, slight sodicity for Pit 1. The jar tests as shown in the section that follows indicates that gypsum will be an effective treatment for dispersion.

$$SAR = \frac{[Na]}{\sqrt{\tfrac{1}{2}[Ca + Mg]}}$$

$$ESP = \frac{[Na] \times 100}{[Ca + Mg + K + Na]}$$

Table 3: Calculations of SAR and ESP values.

Soil/site	Calcium meq/L	Magnesium meq/L	Potassium meq/L	Sodium meq/L	SAR	ESP
1. TP1	22.2	30.8	13.2	4.5	0.87	6.36%
1. TP2	16.9	11.9	2	0.9	0.24	2.84%
1. TP3	50.5	9	2.3	1	0.18	1.59%

Table 4: Site Assessment

Feature	Description	Level of Constraint	Mitigation Measures
Climate	Average annual rainfall Yallingup is 798 mm. Average no. of rain days per year 160.1 days. Average annual pan evaporation is about 1400 mm.	Low	NN*
Vegetation	Mixture of grasses, understorey shrubs and trees, both exotic and native.	Nil	NN
Slope, Erosion and Landslip	Slope is moderate, with no evidence of sheet or rill erosion, and the erosion hazard is moderate. No evidence of landslip and landslip potential is low. Slope =3-4° (6-8%)	Moderate	NN
Landform	Typical soils of the Leeuwin Zone. In this case, loam, or deep sand over loamy clay.	Low	NN
Rock Outcrops	No evidence of laterite, limestone or granite surface rocks and outcrops near land application areas.	Low	NN
Exposure and Aspect	Subject to good wind and sun exposure in cleared areas.	Low	NN
Drainage	No visible signs of surface dampness, spring activity or hydrophilic vegetation in the proposed effluent management area. Sandy loam soil, degrading into clay at depth, was observed in all test pits.	Low	Adopt DIR or DLR as per permeability studies.
Groundwater	Groundwater table not encountered in any test pits. Generally fair drainage in first metre or so.	Low	May be an issue for leach drains.
Imported Fill	No imported fill material was observed on the site.	Nil	NN
Land Available for LAA**	Considering all the constraints and buffers, the site has suitable land for the land application area for treated effluent.	Low	NN
Slope of LAA	The proposed effluent management areas are reasonably level.	Low	NN
Run-on and Runoff	Negligible stormwater run-on and minor run-off hazard.	Low	NN
Buffer Distances	All relevant buffer distances in the regulations are achievable from the proposed effluent management area.	Low	NN

*NN: not needed **LAA: Land Application Area

TEST PITS

TEST PIT 1 WP 677 S33 40.866 E115 02.190, 35 M, 5° SLOPE



Figure 23: Soil profile (L) spoil (R)

COMMENTS ON TP 1

Dark brown topsoil was found in the first 100 mm grading into brown/orange gravel down to 1200 mm. Brown, white and red gravel/clay dominate before the excavation stopped at 2000 mm.

DISPERSION AND GYPSUM RESPONSIVENESS

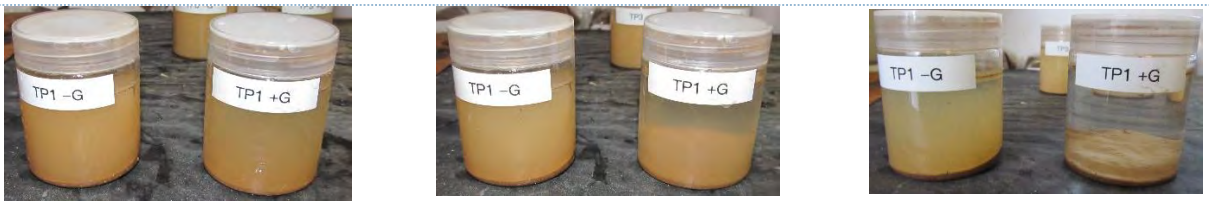


Figure 24: Dispersion and gypsum responsiveness TP1. In each photo the RHS jar is soil in gypsum solution. LHS jar is soil in water. (L) after 15 mins, (M) after 2 hrs, (R) after 20 hrs.

COMMENTS ON DISPERSION OF SOILS TP1

Some dispersion is evident as the water jar is generally murky over the course of the day, suggesting soil is slightly dispersive. The good response to gypsum suggests that this could be used to enable better water infiltration in the irrigation area, but probably unnecessary.

PERMEABILITY STUDIES

A sample of soil from the profile was taken and a simple ribbon test performed: the results of which are shown in Table 5. A constant head permeameter was employed to measure the infiltration rate into the soil, and the results are summarised in Table 6.

SOIL CATEGORY BY RIBBON TEST

Estimated soil category by ribbon test found in Table 5.

Table 5: Results of ribbon test. TP1

Ribbon length (mm)	15-20
Feel of sample	Gritty
Soil category	2 – sandy loam/ loam



Figure 25: Ribbon test TP1

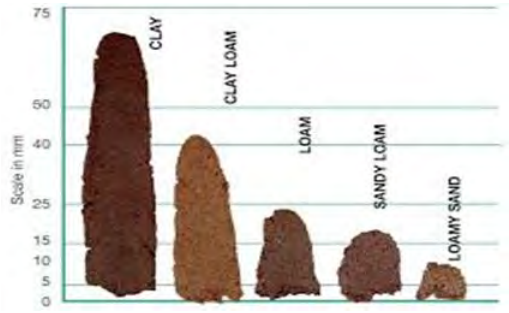


Figure 26: Ribbon test soil categories

SOIL CATEGORY BY PERMEABILITY

Use of permeameter to measure water movement into the soil as per ASNZS 1547:2012.
Depth of auger hole = 50 cm Depth of water in auger hole = 40 cm
Average radius of auger hole = 5 cm. Depth to any impermeable layer (if known) > 2000
Soil was: wet . ☐ moist ✔ dry ☐ at time of investigation.

Table 6: Results of permeability studies TP1.

Time (mins)	Level in tube (mm reading)	Drop in level (mm)
Start 0	50	
0.5	550	500
1	820	270
	Average	770/min
K_{sat} (from AS1547)	5.07 m/day	



Figure 27:Permeability

Soil category from permeability readings: 2 (weakly structured sandy loam).



Figure 28: Soil fractions for sample TP1.

COMMENTS OF SOIL FRACTIONS

Soil is mainly sandy, with much smaller amounts of gravel, silt, and clay present. Soil category = 2 CSBP results: 5-10% gravel. Texture 2.0 – loam. Colour brown.

Ksat VALUES

Instrument Data

Reservoir internal Diameter (mm)	===>	45	4.5
Breather pipe Outer Diameter (mm)	===>	0	0
Test Hole radius (mm)	===>	50	5
Water Depth in Test Hole (mm)	===>	400	40

Test Results

Water Fall Rate (mm)/min		Flow Rate cm3/min	Ksat cm/min	Ksat m/day
770	77	1224.63	0.352	5.07
771	77.1	1226.22	0.3526	5.08
772	77.2	1227.81	0.3530	5.08
773	77.3	1229.40	0.3535	5.09
774	77.4	1230.99	0.3540	5.10
775	77.5	1232.58	0.3544	5.10
776	77.6	1234.17	0.3549	5.11
777	77.7	1235.77	0.3553	5.12
778	77.8	1237.36	0.3558	5.12
779	77.9	1238.95	0.3562	5.13
780	78	1240.54	0.3567	5.14
781	78.1	1242.13	0.3572	5.14
782	78.2	1243.72	0.3576	5.15
783	78.3	1245.31	0.3581	5.16
784	78.4	1246.90	0.3585	5.16
785	78.5	1248.49	0.3590	5.17
786	78.6	1250.08	0.3594	5.18
787	78.7	1251.67	0.3599	5.18
788	78.8	1253.26	0.3604	5.19
789	78.9	1254.85	0.3608	5.20

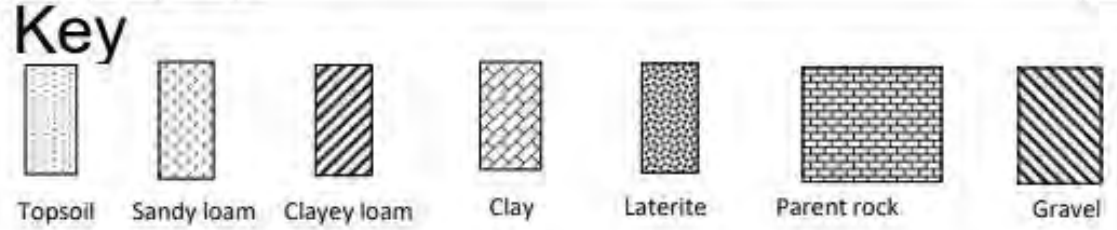
Figure 29: Ksat determination TP1.

Soil Profile Borehole Log | Date: May 25, 2023 | Test Pit number. TP1

Client, Address, Contact numbers. Peter Medich, Gunyulgup Estate, 1603 (Lot 101) Wildwood Road, Yallingup

Excavation type: Machine digging | Groundwater Depth: None observed

Depth (metres)	Ease of excavation	Graphic Log	Material description and field notes **Soil Group Name:** colour, grain size, other descriptors: Wilyabrup Valleys, Leeuwin Zone: **Rock Description:** type, hardness, structure. Loamy gravel over ironstone and granite:	Moisture
	VE		Dark brown sandy topsoil with organic matter	D
0.5	F		Brown/orange gravel with clay	
1	H		Brown, white and red gravel/clay	
1.5	VH			
2			End of excavation	



Ease of excavation
VE very easy E easy F firm H hard VH very hard

Moisture content of soil
D = dry. M = moist soil. W = wet, saturated soil

Figure 30: Soil log TP1

Note: these comments are a review of the generic soil fraction. This is both a summary and comments of the laboratory testing as shown in Table 2.

Table 7: Soil Assessment – TP1

Feature	Assessment	Level of Constraint	Mitigation Measures
Cation Exchange Capacity (CEC)	Main cations have low to moderate concentration (except iron as expected from yellow to brown soils), and the sodium level is low compared to calcium and magnesium.	Low	Soil amelioration with gypsum beneficial
Electrical Conductivity	EC and TDs moderate (62.72 mg/L). [0.098 dS/m]	Low	Monitoring of EC not necessary
Emerson Aggregate Test	Some dispersion. EA Class 2. CSBP test result = 10 which suggests minor sodium saturation of soil.	Low	Soil amelioration may be beneficial but probably unnecessary
pH	5.4 (water = 6.3) which is very slightly acidic. Would expect soil conditions to have a minor effect on plant growth.	Low	Addition of alkaline wastewater may restore to optimum pH level
Rock Fragments	Occasional stone to 10 mm and larger rocks at depth. Approximately 5-10% gravel. Figure 28 shows a range of gravel stones in the screen.	Low	No consideration required.
Sodicity (ESP)	Sodium concentration is low – 4.5 ppm. Exchangeable Sodium Percentage (ESP) 6.36%, (non-sodic <6%).	Low	NN
Sodium Absorption Ratio (SAR)	Sodium concentration is lower than Magnesium and Calcium concentrations in the tested samples; SAR is low (0.87). Dispersion tests confirm low sodicity. SAR is usually only a problem for dispersion and permeability if value >5.	Medium	Sodicity and dispersion issues are not likely to pose a constraint.
Phosphorus Retention Index	>1000 Very High PRI, sufficient to remove phosphates. Soils above PRI 20 are accepted to remove phosphorus from wastewater.	Low	NN*. Nutrient retention system is not required.
Soil Depth	Topsoil: 100-150 mm	Low	Shallow subsurface irrigation in topsoil possible.
	Subsoil: 1200 mm. Sandy to loamy clay soil for most of pit. Loamy clay at end of excavation.	Medium	Shallow subsurface irrigation may be useful
Soil Permeability and Design Loading Rates	Measured at 5.07 m/day saturated conductivity (K_{sat}) (AS/NZS1547:2012). Category 2 (weakly structured sandy loam); Design Loading Rate (DLR) for primary system 25 mm/d and 50 mm/d for STS. 5 mm/d for dripline irrigation system.	Low	Shallow subsurface irrigation can be used.
Soil Texture and Structure	Sandy loam (Category 2). Permeability soil category = 2 Gravel 5-10%. Texture 2.0 – loam (CSBP)	Low to Medium	Shallow subsurface irrigation can be used
Watertable Depth	No groundwater encountered	Medium	Shallow irrigation or inverted leach drains can be used

*NN: not needed



Figure 31: (L) Soil profile. (R) Spoil.

COMMENTS ON TP 2

Dark brown coarse sand topsoil with visible organic matter was found in first 300 mm. Gritty light brown sand extended 300 mm then yellow gravel with yellow/red and white clay to 2000 mm.

DISPERSION AND GYPSUM RESPONSIVENESS

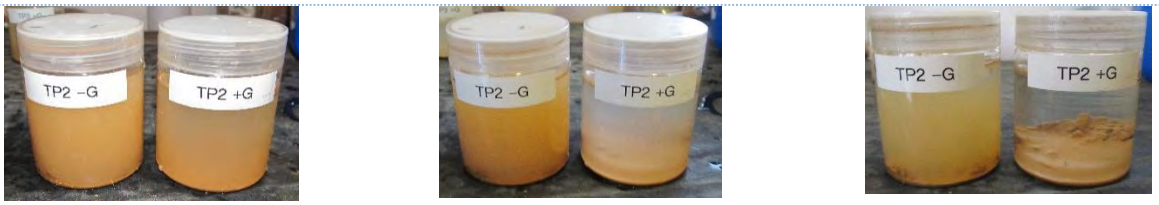


Figure 32: Dispersion and gypsum responsiveness TP2. In each photo the RHS jar is soil in gypsum solution. LHS jar is soil in water. (L) after 15 mins, (M) after 2 hrs, (R) after 20 hrs.

COMMENTS ON DISPERSION OF SOILS TP2

Some dispersion is evident as water jar generally murky over the course of the day, suggesting soil is slightly dispersive. The good response to gypsum suggests that this could be used to enable better water infiltration in the irrigation area, but probably unnecessary.

PERMEABILITY STUDIES

A sample of soil from the profile was taken and a simple ribbon test performed: the results of which are shown in Table 8. A constant head permeameter was employed to measure the infiltration rate into the soil, and the results are summarised in Table 9.

SOIL CATEGORY BY RIBBON TEST

Estimated soil category by ribbon test found in Table 8.

Table 8: Results of ribbon test. TP2

Ribbon length (mm)	10-15
Feel of sample	Gritty loam
Soil category	2 – sandy loam/ loam



Figure 33: Ribbon test TP2

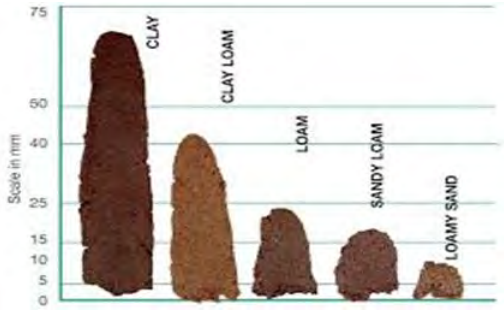


Figure 34: Ribbon test soil categories

SOIL CATEGORY BY PERMEABILITY

Use of permeameter to measure water movement into the soil as per ASNZS 1547:2012.
Depth of auger hole = 50 cm Depth of water in auger hole = 40 cm
Average radius of auger hole = 5 cm. Depth to any impermeable layer (if known) > 1800
Soil was: wet . ☐ moist ☑ dry ☐ at time of investigation.

Table 9: Results of permeability studies TP2

Time (mins)	Level in tube (mm reading)	Drop in level (mm)
Start 0	40	
0.5	650	610
0.45	890	280
	Average	1170/min
K_{sat} (from AS1547)	7.70 m/day	



Figure 35:Permeability

Soil category from permeability readings: 2 (weakly structured sandy loam).



Figure 36: Soil fractions for sample TP2

COMMENTS OF SOIL FRACTIONS

Soil is mainly sandy, with much smaller amounts of silt and clay present. Soil category = 2. CSBP results: 5-10% gravel. Texture 2– loam. Colour brown/white.

Ksat VALUES

Instrument Data

Reservoir internal Diameter (mm)	===>	45	4.5
Breather pipe Outer Diameter (mm)	===>	0	0
Test Hole radius (mm)	===>	50	5
Water Depth in Test Hole (mm)	===>	400	40

Test Results

Water Fall Rate (mm)/min		Flow Rate cm3/min	Ksat cm/min	Ksat m/day
1170	117	1860.80	0.5351	7.70
1171	117	1862.40	0.5355	7.71
1172	117	1863.99	0.5360	7.72
1173	117	1865.58	0.5364	7.72
1174	117	1867.17	0.5369	7.73
1175	118	1868.76	0.5373	7.74
1176	118	1870.35	0.5378	7.74
1177	118	1871.94	0.5383	7.75
1178	118	1873.53	0.5387	7.76
1179	118	1875.12	0.5392	7.76
1180	118	1876.71	0.5396	7.77
1181	118	1878.30	0.5401	7.78
1182	118	1879.89	0.5405	7.78
1183	118	1881.48	0.5410	7.79
1184	118	1883.07	0.5415	7.80
1185	119	1884.66	0.5419	7.80
1186	119	1886.25	0.5424	7.81
1187	119	1887.84	0.5428	7.82

Figure 37: Ksat determination TP2.

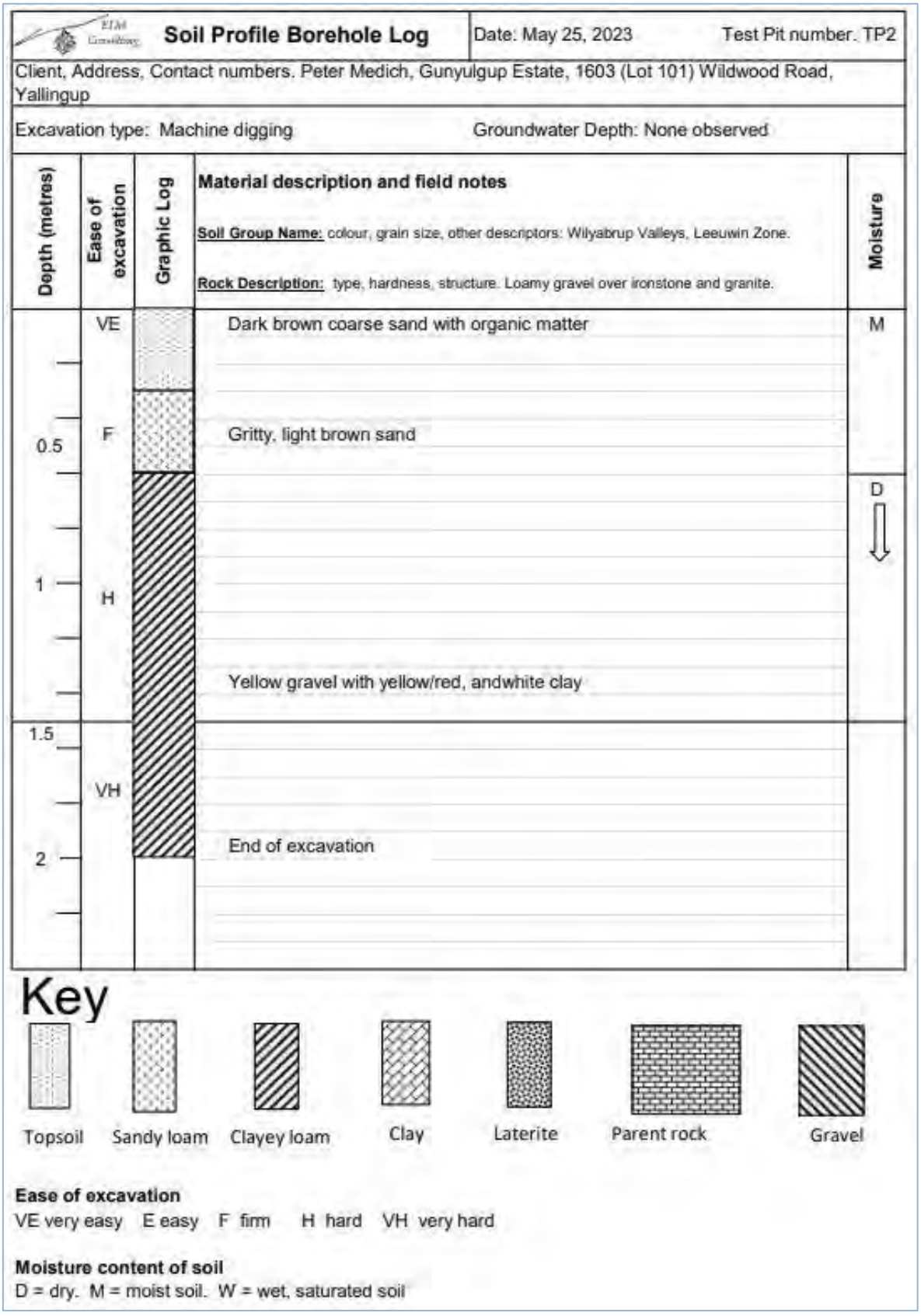


Figure 38: Soil log TP2

Note: these comments are a review of the generic soil fraction. This is both a summary and comments of the laboratory testing as shown in Table 2.

Table 10: Soil Assessment – TP2

Feature	Assessment	Level of Constraint	Mitigation Measures
Cation Exchange Capacity (CEC)	Main cations have low to moderate concentration (except iron as expected from yellow to brown soils), and the sodium level is low compared to calcium and magnesium.	Low	Soil amelioration with gypsum may be beneficial
Electrical Conductivity	EC and TDs moderate (35.2 mg/L). [0.055 dS/m]	Low	Monitoring of EC not necessary
Emerson Aggregate Test	Slight dispersion. EA Class 2. CSBP test result = 10 which suggests low rates of gypsum may be beneficial.	Low	Soil amelioration may be beneficial.
pH	7.1 (water = 7.8) which is neutral. Would not expect soil conditions to have any effect on plant growth.	Low	NN
Rock Fragments	Occasional stone to 10 mm. Figure 36 shows some small stones in the screen.	Low	No consideration required.
Sodicity (ESP)	Sodium concentration is low – 0.9 ppm. Exchangeable Sodium Percentage (ESP) 2.84%, (non-sodic <6%).	Low	NN
Sodium Absorption Ratio (SAR)	Sodium concentration is lower than Magnesium and Calcium concentrations in the tested samples; SAR is low (0.24). Dispersion tests confirm low sodicity. SAR is usually only a problem for dispersion and permeability if value >5.	Medium	Sodicity and dispersion issues are not likely to pose a constraint.
Phosphorus Retention Index	685.7 Very high PRI, sufficient to remove phosphates. Soils above PRI 20 are accepted to remove phosphorus from wastewater.	Low	NN*. Nutrient retentive soil can be added to the disposal field.
Soil Depth	Topsoil: 300 mm	Low	Shallow subsurface irrigation in topsoil possible.
	Subsoil: >600 mm. Sandy loam to loam soil for most of pit. Clayey loam to clay expected at depth	Medium	Shallow subsurface irrigation can be used
Soil Permeability and Design Loading Rates	Measured at 7.70 m/day saturated conductivity (K_{sat}) (AS/NZS1547:2012). Category 2 (loam); Design Loading Rate (DLR) for primary system 25 mm/d and 50 mm/d for STS. 5 mm/d for dripline irrigation system.	Low	Shallow subsurface irrigation can be used
Soil Texture and Structure	Sandy loam (Category 2). Permeability soil category = 2 Gravel 5-10%. Texture 2 – loam (CSBP)	Low to Medium	Shallow subsurface irrigation can be used
Watertable Depth	No groundwater encountered at 2m.	Medium	Shallow irrigation can be used Not in sewage sensitive area.

*NN: not needed



Figure 39: (L) Soil profile. (R) Spoil.

COMMENTS ON TP 3

Dark brown sandy topsoil and visible organic matter was found in first 300 mm. Yellow/brown coarse sandy gravel extended another 600 mm before transitioning to yellow, white, and red gritty clay before excavation stopped at 2000 mm.

DISPERSION AND GYPSUM RESPONSIVENESS

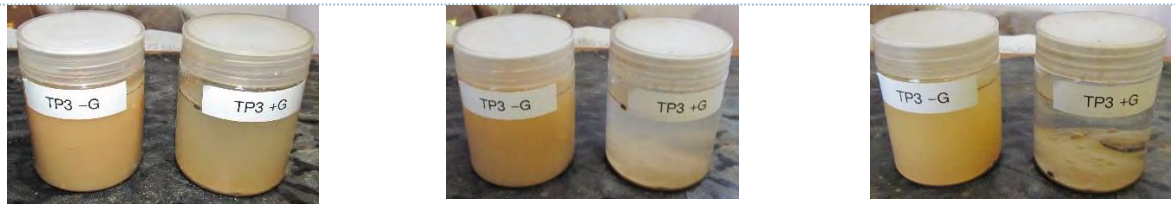


Figure 40: Dispersion and gypsum responsiveness TP3. In each photo the RHS jar is soil in gypsum solution. LHS jar is soil in water. (L) after 15 mins, (M) after 2 hrs, (R) after 20 hrs.

COMMENTS ON DISPERSION OF SOILS TP3

Some dispersion is evident as water jar generally murky over the course of the day, suggesting soil is slightly dispersive. The good response to gypsum suggests that this could be used to enable better water infiltration in the irrigation area, but probably unnecessary.

PERMEABILITY STUDIES

A sample of soil from the profile was taken and a simple ribbon test performed: the results of which are shown in Table 11. A constant head permeameter was employed to measure the infiltration rate into the soil, and the results are summarised in Table 12.

SOIL CATEGORY BY RIBBON TEST

Estimated soil category by ribbon test found in Table 11.

Table 11: Results of ribbon test. TP3

Ribbon length (mm)	15-20
Feel of sample	Gritty
Soil category	2 – sandy loam/ loam



Figure 41: Ribbon test TP3

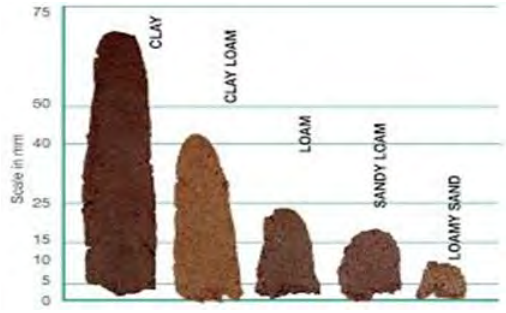


Figure 42: Ribbon test soil categories

SOIL CATEGORY BY PERMEABILITY

Use of permeameter to measure water movement into the soil as per ASNZS 1547:2012.
Depth of auger hole = 50 cm Depth of water in auger hole = 40 cm
Average radius of auger hole = 5 cm. Depth to any impermeable layer (if known) > 1800
Soil was: wet ☐ moist ✔ dry ☐ at time of investigation.

Table 12: Results of permeability studies TP3

Time (mins)	Level in tube (mm reading)	Drop in level (mm)
Start 0	25	
0.5	110	85
1	170	60
1.5	230	60
2.0	280	50
	Average	128/min
K_{sat} (from AS1547)	0.84 m/day	



Figure 43:Permeability

Soil category from permeability readings: 3 (moderately structured clay loams).



Figure 44: Soil fractions for sample TP3

COMMENTS OF SOIL FRACTIONS

Soil is mainly sandy, with much smaller amounts of silt and clay present. Soil category = 2 CSBP results: 5-10% gravel. Texture 1.5 – sand/loam. Colour dark brown.

Ksat VALUES

Instrument Data

Reservoir internal Diameter (mm)	===>	45	4.5
Breather pipe Outer Diameter (mm)	===>	0	0
Test Hole radius (mm)	===>	50	5
Water Depth in Test Hole (mm)	===>	400	40

Test Results

Water Fall Rate (mm)/min		Flow Rate cm3/min	Ksat cm/min	Ksat m/day
128	12.8	203.58	0.0585	0.84
129	12.9	205.17	0.0590	0.85
130	13	206.76	0.0595	0.86
131	13.1	208.35	0.0599	0.86
132	13.2	209.94	0.0604	0.87
133	13.3	211.53	0.0608	0.88
134	13.4	213.12	0.0613	0.88
135	13.5	214.71	0.0617	0.89
136	13.6	216.30	0.0622	0.90
137	13.7	217.89	0.0627	0.90
138	13.8	219.48	0.0631	0.91
139	13.9	221.07	0.0636	0.92
140	14	222.66	0.0640	0.92
141	14.1	224.25	0.0645	0.93
142	14.2	225.84	0.0649	0.94
143	14.3	227.43	0.0654	0.94
144	14.4	229.02	0.0659	0.95
145	14.5	230.61	0.0663	0.95
146	14.6	232.20	0.0668	0.96
147	14.7	233.79	0.0672	0.97
148	14.8	235.38	0.0677	0.97
149	14.9	236.97	0.0681	0.98

Figure 45: Ksat determination TP3

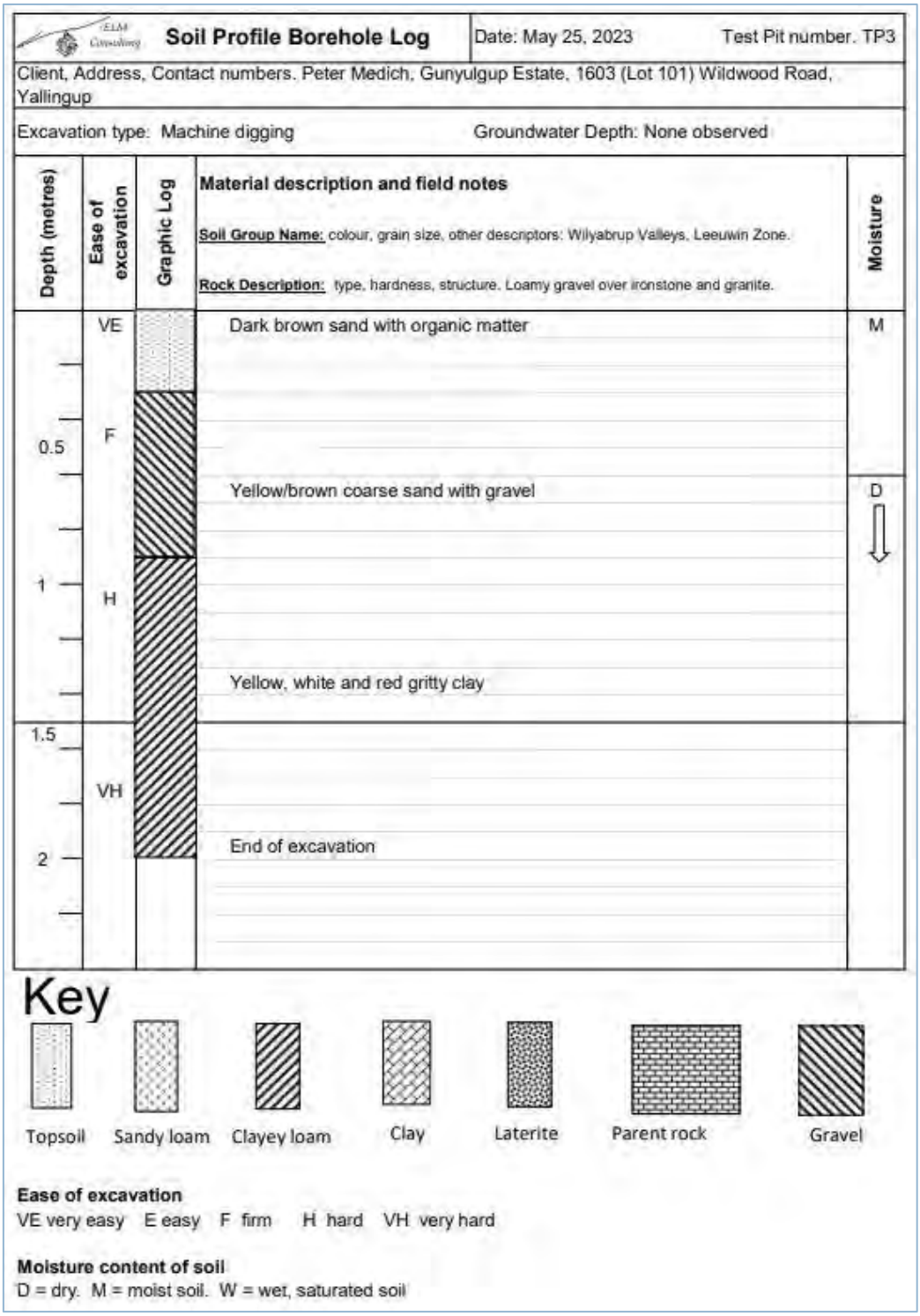


Figure 46: Soil log TP3

Note: these comments are a review of the generic soil fraction. This is both a summary and comments of the laboratory testing as shown in Table 2.

Table 13: Soil Assessment – TP3

Feature	Assessment	Level of Constraint	Mitigation Measures
Cation Exchange Capacity (CEC)	Main cations have low to moderate concentration (except iron as expected from yellow to brown soils), and the sodium level is low compared to calcium and magnesium.	Low	Soil amelioration with gypsum beneficial
Electrical Conductivity	EC and TDs moderate 32.64mg/L). [0.051dS/m]	Low	Monitoring of EC not necessary
Emerson Aggregate Test	Some dispersion. EA Class 2. CSBP test result = 10 which suggests gypsum addition may be beneficial.	Low	Soil amelioration with gypsum may be beneficial
pH	6.1 (water = 6.9) which is very slightly acidic. Would expect soil conditions to have a minor effect on plant growth.	Low	Addition of alkaline wastewater may restore to optimum pH level
Rock Fragments	Occasional stone to 10 mm and a small number of larger rocks at depth. Approximately 5-10% gravel. Figure 44 shows a range of gravel stones in the screen.	Low	No consideration required.
Sodicity (ESP)	Sodium concentration is low – 1 ppm. Exchangeable Sodium Percentage (ESP) 1.59%, (non-sodic <6%).	Low	Sodicity and SAR low.
Sodium Absorption Ratio (SAR)	Sodium concentration is lower than Magnesium and Calcium concentrations in the tested samples; SAR is low (0.18). Dispersion tests confirm low sodicity. SAR is usually only a problem for dispersion and permeability if value >5.	Low	Sodicity and dispersion issues are not likely to pose a constraint.
Phosphorus Retention Index	185.3 Very high PRI, sufficient to remove phosphates. Soils above PRI 20 are accepted to remove phosphorus from wastewater.	Low	NN*. Nutrient retention system is not required.
Soil Depth	Topsoil: 300 mm	Low	Shallow subsurface irrigation may be used.
	Subsoil: >600 mm. Sandy to sandy loam soil for most of pit. Loamy clay at end of excavation.	Medium	Shallow subsurface irrigation may be used.
Soil Permeability and Design Loading Rates	Measured at 0.84 m/day saturated conductivity (K_{sat}) (AS/NZS1547:2012). Category 3 (moderately structured clay loam); Design Loading Rate (DLR) for primary system 15-25 mm/d and 50 mm/d for STS. 4 mm/d for dripline irrigation system.	Low to Medium	Shallow subsurface irrigation may be used.
Soil Texture and Structure	Sandy loam (Category 3). Permeability soil category = 3 Gravel 5-10%. Texture 1.5– sand/loam (CSBP)	Low to Medium	Shallow subsurface irrigation may be used.
Watertable Depth	No groundwater encountered at base of test pit	Low	Shallow irrigation or inverted leach drains may be used.

*NN: not needed

8. DISCUSSION

It is reasonable to suggest that soils over whole site are similar – sandy topsoil, sandy loams over loamy clay at depth. Permeability was generally high, and Category 2 and 3 soils are found on site (weakly structured sandy loam to moderately structured loam). Flatbed drains and conventional leach drains are possible depending on local siting of the system, which is determined upon excavation. There is also enough clear area for dripline.

GOVERNMENT SEWERAGE POLICY

Relevant sections (e.g., 5.2.1, 5.2.2, 5.2.3 and 5.2.5) that discuss setbacks and separation from the water table and in relation to lot size and soil types are briefly:

- An onsite sewage system is not permitted in any area subject to inundation and/or flooding in a 10% Annual Exceedance Probability (AEP) rainfall event. This is discussed in detail in Section 7 of this report.
- In loams and heavy soils, a vertical separation distance from the highest known groundwater table is to be a minimum of 1.5 m (for lots within sewage sensitive areas).
- Where slope exceeds one in five (1:5 or 20%) the land application area should be engineered to prevent run-off (including levelling, bunding of LAA and interceptor/cut-off drains to divert stormwater intrusion to LAA).
- Local government may approve the location of land application areas outside of building envelopes where the proposed location meets the requirements outlined above.
- Secondary treatment systems with nutrient removal will generally be required in public drinking water source areas and sewage sensitive areas.

All the relevant conditions can be met in the proposed development with the use of semi-inverted leach drains, flatbed drains or dripper irrigation.

Considering the whole site, calculations of loading rates based on soil assessments are as follows (based on worst-case scenario):

HYDRAULIC/DESIGN LOADING RATE

From AS/NZS 1547:2012, Tables L1 and M1, Soil Category 3 – moderately structured loam (Ksat approx 0.84m/d and above).

DLR Trenches and beds (Table L1) 15-25 mm/d for primary systems and 50 mm/d for Secondary Treatment Systems.
DIR Drip or spray irrigation (Table M1) = 4 mm/d.

Furthermore, the GSP provides information in Schedule 2, Table 3 with Soil category 3 loams the required LAA required is 429 m^2 for primary treatment and 225 m^2 for secondary treatment in the context of domestic lots. However, in this case, a commercial enterprise is proposed and appropriate calculations follow.

LAND APPLICATION AREA (LAA) CALCULATIONS

The following outlines options for the wastewater irrigation systems. These are provided as examples of appropriate system sizing.

The proposal is for a range of accommodation options on the site to allow for couples and families to stay. Allowing for 100% booking of 90 customers and 3 staff with 100L of wastewater per day = 9300L. This allows for usual kitchen and bathroom water use, with no allowance for laundry use. Laundry for linen and towels can be done on site, allowing for 3 cycles at 200L each for every day of the year. This allows for a total of 9900L per day, at full occupancy.

Lot 101 (No. 1603) Wildwood Road – Site and Soil Evaluation
Based on the results of the site and soil assessment, Health Regulation 49 that describes the surface area of drains and the calculations listed above, the overall land capability of the proposed onsite sewage system is as follows:

Primary treatment:

Dripline irrigation cannot be used.
Leach drains 9900 ÷ (1.5 x 15) = 440 m. Assume DLR = 15, SA drains 1.5 m^2. Proposal 24 drains of 18 m length – would require wastewater to be pumped.
Flatbeds 9900 ÷ (2.4 x 15) = 275 m. Proposal 14 beds x 20 m long drain – would require wastewater to be pumped.

Secondary Treatment System:

Dripline irrigation 9900 ÷ 4 = 2475 m^2.
Leach drains 9900 ÷ (1.5 x 50) = 132 m. Assume DLR = 50, SA drains 1.5 m^2. Proposal 8drains of 20 m length – wastewater will need pumped.
Flatbeds 9900 ÷ (2.4 x 50) = 82.5 m. Proposal 6 beds (two sets of alternating beds) x 15 m long drain – wastewater will need to be pumped.

Given the amount of infrastructure required for leach drains or flatbeds, a Secondary Treatment System with dripline irrigation is likely to be the most practical option.

As conventional leach drains require greater depth of burial, and groundwater may be encountered in some areas of the site, then flatbed drains, or dripline irrigation is recommended. However, the developer has choice.

Proposed location for a wastewater system and LAA is found in Figure 31.

SECONDARY TREATMENT SYSTEM (STS) RECOMMENDATIONS

Extra nutrient retention to increase PRI is not required for the disposal field. For dripline you will need to ensure disinfection as dispersal is typically substrata, and may be exposed at some times, but for flatbeds and leach drains this is not required as this is situated in subsoil.

Drains will require a diversion valve which can be changed at every service (3 months) by the service technician or caretaker. Alternatively, a KRain or similar hydraulic valve, which automatically shifts water to a different bed each time the pump is employed, can be installed.

Figure 47 indicates that the Land Application Area could easily be placed adjacent to Wildwood Road or within the planted tree line immediately south of the proposed chalets.



Figure 47: Indicative area for wastewater treatment system.

FINAL STATEMENT REGARDING WASTEWATER DISPOSAL

There is enough land application area space available on the site. Permeability is generally good so at most 2475 m^2 of irrigated area for a secondary treatment system is required. Depending on Council regulations, there could be more or less footprint for leach drains/flatbeds.

For secondary treatment systems the irrigation area can easily be located away from the dwellings. Effluent is typically pumped; hence drains can be a little longer than 20 m.

WATER SUPPLY

A Water Appraisal Report was prepared for the site by Dr Ross Mars dated July 27, 2022. The report outlines how water tanks with suitable first flush devices, leaf screens, filtration and UV sterilisation will be suitable for potable water supplies. The volumes presented within the report were based on a smaller development proposal and therefore these have been revised. The dam on the site is recommended for non-potable water uses.

With the current proposal, most chalets accommodate up to 8 persons. Based on an average consumption of 100L per day and a likely occupancy of 300 days of the year, the proposal will need to allow 30,000L per person = 240,000L in total.

Figure 17 shows that the average annual rainfall for the local area is 800mm. The chalets have an average roof area of 405 to 480 m^2. Over a 12-month period, the smaller chalets have the capacity to collect 324,000L of water. On this basis, a 170kL tank will fill almost two times over, allowing for water use throughout the months of higher rainfall. Therefore, the proposed 170kL tanks shown in Figure 48 below will be adequate for the current proposal.



Figure 48: Water supply outline

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10. INFORMATION ON SECONDARY TREATMENT SYSTEMS (STS)

This is a generic description of considerations for a STS. Further information about the operation and maintenance of these systems can be found from manufacturers and suppliers.

1. Consequences of overloading system.

Every Secondary Treatment System (STS) or septic or wastewater treatment system gradually accumulates sludge and scum. This is because the scum that floats on the surface is mainly oils, grease and fats, and these substances are not readily broken down by the bacteria. Sludge builds up on the bottom as this is foodstuffs and materials that aren't broken down, as well as a build-up of dead bacteria. Literally millions of bacteria die every day and this accumulates as sludge.

Should the system experience overloading from too many people using and contributing to the wastewater stream then there is simply not enough retention time for the microbes and processes that occur to satisfactorily break down the solids, so more sludge and scum occur and untreated sewage passes from one chamber to another, and may eventually be pumped out to irrigation.

In this scenario, eventually, your system will require a pump out – typically anywhere from two to five years.

2. Consequences of under-loading the system.

A Secondary Treatment System relies on a balance between food (household wastewater) and microbes. If not enough wastewater enters the treatment plant (due to homeowners away on holiday, few people staying in home) then microbes run out of food and die – more sludge accumulates. However, the most important effect is that should a large volume of wastewater suddenly enter the system then there is isn't enough microbes to break this down and so untreated sewage passes through the system.

3. Requirements for servicing and maintenance (by authorised Service Technician).

Service Personnel need clear access to your system so that they can carry the required testing and cleaning equipment from their vehicle to the tank/s, and so that they can easily remove hatches and undertake the range of tasks performed at each service. Please:

- Do not cover tanks and hatches with soil, cement, paving or any material.
- Do not prevent quick and easy access to any inspection openings.
- Do not allow roof or surface water to enter any part of the system.
- Allow free access to your property for the service person. Ensure that the gates are unlocked, your dogs are locked up and your children are supervised.
- Keep plants and grass monitored and maintained on land application areas (irrigation zone/s).

4. Homeowners responsibilities

Here are some suggestions that will help to ensure the optimum operation of your wastewater treatment system.

Washing Machines

Try to evenly spread your washing over a period of a week. Avoid where possible to wash everything in one day. It puts too much water and alkaline substances in the system in a short time and your treatment plant will struggle to cope. Liquid soaps breakdown easier than powder types, and they generally contain less salt and are at a lower pH – both of which will affect soils and plant growth. Try not to use too much soap of any type.

Things to Avoid

Chlorine, disinfectant, ammonia, acids, bleaches, caustics and heavy chemical products, nappy pre-soaker products, antibacterial products, fat, oil, grease, milk, toilet deodorizers and cleaners etc are some of the types of products that will cause the bacteria to die off in your STS. It will recover but may cause some odours in the short term.

Don't allow foreign objects, (eg. Nappy liners, disposable nappies, tampons, pads, condoms etc) to enter the system. They do not breakdown and can cause problems.

Avoid pouring large quantities (½ litre or more) of beer, flour, yeast, wine, milk, fruit juice or oils into the system. Products that are acidic may affect bacteria production. (Milk, beer and fruit juices, for example, often contain large amounts of sugar which is digested by some bacteria that rob the water of oxygen, and this, in turn, stops the growth and working of those bacteria that rely of oxygen to survive).

5. Types of products and materials that should not enter the STS plant.
You must try to use environmentally-friendly cleaning products as any product used that kills bacteria is harmful to your system. If you wish to use some of the harsher cleaning products, such as bleach, nappy cleaning products and any disinfectants, it is suggested that you use a bucket and discard the contents in a hole in a disused area of the garden.
Some other things that may cause problems are antibiotics or people who are on chemotherapy. Antibiotics are designed to kill bacteria in your body and they also wipe out these good bacteria working hard in the STS. We do not suggest that you stop your medication, just expect that the treatment system may not function well for a short time.
It is fair to suggest that all products should be used in moderation.

Surface cleaners - when using surface cleaners try to wipe excess cleaner with a disposable cloth and discard contents into the bin.

Toilet cleaners - cream cleaner or washing soda (Sodium carbonate).

General cleaners – bicarb soda (Sodium hydrogen carbonate), vinegar (not too much).

Floor cleaners - use hot water and detergent.

Laundry powders and liquids - use suitable products that contain low phosphorus and low salt (used as bulking/fill agents).

Do Not Allow These to Enter Your STS (not down the drain)

- oil, paint and chemicals
- drain cleaning or clearing products
    - methylated spirits, kerosene, acetone or any other solvents
    - flea or tick wash
- oven cleaners
- plastics of any type
- disposable nappies, sanitary napkins

LOT 101 WILDWOOD ROAD

VISUAL CONTEXT REVIEW

ecoscape

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1 INTRODUCTION

PROJECT CONTEXT

Ecoscape prepared the Visual Context Report for the proposed development at Lot 101 Wildwood Road. The report aims to identify any planning requirements relating to the consideration of visual impacts arising from development in the area.

The proposed development at Lot 101 Wildwood Road consists of eleven buildings containing from 1 to 8 dwellings each, and a central reception / facilities building. Most proposed buildings are grouped along the eastern side of the ridge, with two of the dwellings on the western shore of the existing dam (refer **Map 7: Proposed Site Plan**).

2 METHODOLOGY

DOCUMENT REVIEW

Ecoscape researched and reviewed planning documents related to the visual amenity of the area within which Lot 101 Wildwood Road is situated. The following documents were reviewed:

- *State Planning Policy No. 6.1: Leeuwin-Naturaliste Ridge Policy*, WAPC 1998
- *Local Planning Policy No. 4.6: Caves Road Visual Management*, City of Busselton 2010
- *Local Planning Policy No. 2.4: Rural Tourist Accommodation*, City of Busselton 2010
- *City of Busselton Local Planning Scheme No. 21*, Department of Planning, Lands & Heritage 2014.

A summary of the relevant parts from each document is provided in **Section 3 Document Review.**

SITE VISIT

Ecoscape undertook a site visit to Lot 101 Wildwood Road on Thursday 21 July 2022. The purpose of the site visit was to gather an understanding of the site conditions and identify any key viewpoints or vistas that may be affected by the proposed development.

Photos were taken from:

- proposed building locations on the site
- points along Wildwood Road with views into the site.
- points along Caves Road with views into the site
- A significant vista from Swings & Roundabouts identified in *Local Planning Policy No. 4.6: Caves Road Visual Management*, City of Busselton 2010, which looks toward the site.

A summary of the photo locations is provided in **Appendix One.**

PROJECT ANALYSIS

Following the site visit, Ecoscape analysed the propcsed development in the context of the visual amenity requirements of the relevant planning policies, using information gathered on site. The analysis identified areas where the proposal was in line with policy requirements, and areas where further resolution of the development design would be required to ensure alignment with visual amenity objectives.

The project analysis is available in **Section 4 Project Analysis.**

VIEWSHED ANALYSIS

Viewshed analysis is a GIS mapping technique that indicates where in the surrounding landscape a point can theoretically be seen, based on the topography of the landscape.

Ecoscape prepared a viewshed analysis of the proposed built form to assess where the development could be visible from in the surrounding area (refer **Map 8: Viewshed Analysis**). The viewshed analysis map is based on the locations and roof heights of the proposed built form. A single point was allocated to each of the 12 proposed buildings, and the resulting mapping indicates how many of these points is visible at a given location in the landscape.

The following data sources were used in the development of the viewshed mapping:

- Source Data: Proposed Building Locations and Viewshed (Brooking Design 2023)
- Contours (DPIRD-072) (1999)
- Road Network (MRWA 2023)
- Surface Hydrology Lines (National) (Geoscience Australia 2015)
- Basemap: ESRI World Imagery Map
- Imagery: Maxar (2022)
- Service Layers: World Topographic Map: ESRI, Here, Garmin, USGS, NGA
- World Imagery: Maxar.

Please note that viewshed mapping is based on topographical data only. It does not account for vegetation and built form that might screen views on site.

3 DOCUMENT REVIEW

Ecoscape has identified the following clauses from the documents reviewed as relevant to the visual aspects of the proposed development at Lot 101 Wildwood Road.

STATE PLANNING POLICY NO. 6.1: LEEUWIN-NATURALISTE RIDGE POLICY, WAPC 1998

Lot 101 Wildwood Road is located within the policy area boundary for the *Leeuwin-Naturaliste Ridge Policy*, (refer **Map 1: Leeuwin-Naturaliste Ridge Policy Area**).

The vision for this policy is to achieve *"Creative, vital and sustainable communities living in balance with economic development and the unique landscape and environmental values of the Leeuwin-Naturaliste Ridge policy area"*.

The site is located in an area of Rural Landscape Significance and is classified predominantly as the 'Valley' landscape character unit, with a small area of 'Plateau' landscape character unit in an area not affected by the proposed development (refer **Map 2: Leeuwin-Naturaliste Ridge Policy Character Units**).

Parts of the policy relate to the protection of the landscape character of the area. The parts relevant to the visual aspects of the proposed development at Lot 101 Wildwood Road are reproduced below.

4.3 LANDSCAPE

Statement of Intent

This is an extraordinary landscape which is part of the nation's heritage. Its unique values will be conserved by land use strategies and development assessment processes, having particular regard for—

- *protection of the natural character of the Leeuwin-Naturaliste Ridge, including the coastal and marine interfaces and areas of remnant vegetation;*
- *maintenance of the mosaic of land uses evident in existing agricultural areas, while providing for change in agricultural land uses;*

Policies

PS 3.1 The Landscape Classes map (refer **Map 3: Leeuwin-Naturaliste Ridge Policy Landscape Classes**) *and the Landscape Character Units map* (refer **Map 4: Caves Road Visual Management Policy**) *form part of this LNRSPP.*

PS 3.2 Development must be responsive to local values, and be compatible with the natural characteristics and traditional settlement patterns of the area.

PS 3.3 Development will have due regard for the landscape integrity and value of Ridge backdrops when viewed from the coastline, bays or Travel Route Corridors.

PS 3.8 Where the LNRSPP identifies development opportunities on the Ridge, such development will—

- *maintain the natural character where this exists;*
- *utilise sites of least visual impact;*

4.5 TOURISM

Statement of Intent

A diverse and sustainable tourism base which complements the existing character and lifestyle of the policy area will be facilitated by—

- *encouraging nature-based and cultural tourism opportunities;*
- *focusing coastal tourism in designated nodes;*
- *integrating large-scale tourist development into Principal Centres and other settlements;*
- *promoting low-scale tourist development that is consistent with local characteristics;*
- *encouraging innovative tourism development that responds to the local natural and cultural environment;*
- *assessing land use proposals for their impact on tourism; and*
- *conserving those landscape, cultural and environmental values that offer future tourism potential.*

PS 5.4 Low-impact tourist development will be considered in rural locations where the development—

- *will not adversely affect the character of the surrounding area;*
- *comprises only buildings or structures which are small in scale and unobtrusive;*

LOCAL PLANNING POLICY NO. 4.6: CAVES ROAD VISUAL MANAGEMENT, CITY OF BUSSELTON 2010

The Lot 101 Wildwood Road site is located within an area covered by the Caves Road Visual Management Policy. The policy relates primarily to the management and protection of the visual landscape character as seen from Caves Road, which borders the western edge of Lot 101 Wildwood Road. It is noted as having High Visual Quality and being within Policy Area 2 (Moderate Visual Absorption) (refer **Map 4: Caves Road Visual Management Policy**).

The parts relevant to the visual aspects of the proposed development at Lot 101 Wildwood Road are reproduced below.

2. PURPOSE

Background

The broad intent of the City is to maintain, enhance and protect the natural and rural landscape, cultural and tourist values of Caves Road and its environs through provisions formalising the outcomes of the Caves Road Visual Management Study.

These provisions are a result of, and are based on, the Caves Road Visual Management Study (July 1995) undertaken on the City's behalf by Bill James Landscape Architect. The study was designed to assist and provide guidance on the future planning and management of the Caves Road Viewshed.

2.2 Application

These provisions apply to all development requiring consent on all land that is visible from Caves Road between Dunsborough and the southern boundary of the City of Busselton, as shown on Policy Plan 1 (refer **Map 4: Caves Road Visual Management Policy**).

2.3 Relationship to other policies

Caves Road is also located within a 'Landscape Value Area' as set out in the Town Planning Scheme and all development is required to comply with the specific requirements of this area designation (refer **Map 5: City of Busselton Intramaps Extract**).

2.4 Objectives

- *To maintain and enhance the visual quality of the natural and rural landscape as viewed from Caves Road.*
- *To retain the rural landscape as the dominant visual experience of the Caves Road Viewshed.*
- *To maintain the significant views experienced from Caves Road.*

These will be achieved by:

- *Ensuring appropriate forms of development that reflect the varying visual significance and sensitivity of areas as viewed from Caves Road.*
- *Establishing basic parameters for development within the Caves Road Viewshed.*
- *Establishing appropriate requirements for those proposing to develop within the Caves Road Viewshed.*
- *Establishing procedures and criteria for assessing development within the Caves Road Viewshed.*

4. POLICY STATEMENT

4.1.2 Visual Management Policy Area 2

Landscapes within this Policy Area have a moderate visual absorption capacity. Appropriate development will have a moderate visual impact only. Introduced visual elements will be apparent in the landscape but, through careful design, can potentially add to, rather than detract from, the visual amenity.

4.2 General Provision and Assessment Criteria

4.2.3 Development shall comply with the Objectives for the Visual Management Policy Area within which it is located.

4.2.6 Development shall have no impact on view corridors or major landscape elements as identified on Policy Plan 1 (refer **Map 4: Caves Road Visual Management Policy**).

Building Form and Site Design

4.2.10 All buildings shall generally be below the crown/canopy height of remnant vegetation in the immediate vicinity.

LOCAL PLANNING POLICY NO. 2.4: RURAL TOURIST ACCOMMODATION, CITY OF BUSSELTON 2010

The parts relevant to the visual aspects of the proposed development at Lot 101 Wildwood Road are reproduced below.

2. PURPOSE

2.1 Statement of intent

The intent in preparing and adopting these provisions is to pursue the principle that commercial tourist development should generally occur within the urban areas of Busselton City and that opportunities should be provided for small scale and low impact tourist accommodation and related activities in rural areas.

4. POLICY STATEMENT

4.3 Minimum site area requirements

OBJECTIVES

a) To provide a rural ambience and setting for Rural Tourist Accommodation;
b) To allow sufficient scope for the siting of buildings in sympathy with landscape features and distant from neighbouring properties and important roads;
c) To avoid clutter, over-development and the appearance of commercial development;

4.5 Setbacks

OBJECTIVES

a) To maintain scenic quality and tourism appeal of local road systems, particularly Caves Road, Bussell Highway, Wildwood Road, Vasse-Yallingup Siding Road, Abbey Farm Road, Metricup Road, Cape Naturaliste Road, Meelup Road and Eagle Bay Road.
b) To achieve screening or filtered views only of development from neighbouring properties and roads.

STANDARDS

b) Guesthouses, Chalets, Rural Holiday Resorts and Caravan Parks and Camping Grounds must be setback:
- *100 metres from any highway, important regional road, or nominated tourist road.*
- *50 metres from any other property boundary except if that other property contains Prime Agricultural Land.*
- *100 metres from any other property boundary if that other property contains Prime Agricultural Land.*

c) Reductions to the above setbacks to a minimum of 30 metres may be considered in circumstances where a densely vegetated minimum buffer of 30 metres exists between the proposed development and the boundary or road.

4.10 Preferred development

c) Is low profile, both physically and in setting, and is designed in harmony with existing buildings and character, being especially Bed and Breakfast Establishments and Guesthouse developments.

The City will actively discourage development that:

a) Is situated in visually significant locations, such as on ridges or along unscreened sections of regional or tourist roads.

CITY OF BUSSELTON LOCAL PLANNING SCHEME NO. 21, DEPARTMENT OF PLANNING, LANDS & HERITAGE 2014

Local Planning Scheme No. 21 applies to the whole of the district of the City of Busselton. Under LPS No. 21, Lot 101 Wildwood Road site is zoned as Viticulture & Tourism (refer **Map 6: LPS Map No. 36 of 43 Yallingup Locality**). The parts relevant to the visual aspects of the proposed development at Lot 101 Wildwood Road are reproduced below.

3.2 ZONE OBJECTIVES

Viticulture & Tourism

a) To provide for the maintenance or enhancement of specific local rural character.
b) To provide for development and expansion of the viticultural, winemaking and associated industries, in addition to general rural pursuits, in a manner that does not cause adverse environmental impact.
c) To facilitate the development of tourist facilities of a scale and nature appropriate in rural settings without prejudice to the scenic quality of land within this zone and without creating or increasing ribbon development on any road.
d) To provide for the operation and development of existing, future and potential rural land uses by limiting the introduction of sensitive land uses.
e) To provide for a range of non-rural land uses where they have demonstrated benefit and are compatible with surrounding rural uses.
f) To maintain and enhance the environmental qualities of the landscape, vegetation, soils and waterways.

Under LPS No. 21, Lot 101 Wildwood Road also exists within a special control area for 'Landscape Value' (refer **Map 5: City of Busselton Intramaps Extract**). The parts relevant to the visual aspects of the proposed development are reproduced below.

5.4 LANDSCAPE VALUE AREA

5.4.1 Development within the Landscape Value Area requires the prior development approval of the local government.

5.4.2 The local government shall not grant development approval for the clearing or development of any land identified within a Landscape Value area on the Scheme map, unless it has considered –

a) whether the development will be compatible with the maintenance and enhancement, as far as is practicable, of the existing rural and scenic character of the locality;
c) disturbance to the natural environment, including -
i. visual effects of clearing for development;
ii. maintenance of rural character; and
iii. habitat disturbance.

5.4.3 The local government shall not grant development approval for the carrying out of development on land within the Landscape Value area or on land on or near any ridgelines where, in the opinion of the local government, that development is likely to substantially detract from the visual amenity of the area, having regard to, among other things, the cumulative visual effect of the development related to other development that may be anticipated in the locality and in the area generally.

5.4.4 Before granting development approval for the erection of a building on land within the Landscape Value area, the local government shall make an assessment as to whether it should impose conditions relating to –

a) the siting of the proposed building;
b) the use of prescribed materials on the external surfaces of the building; and
c) the number, type and location of existing trees and shrubs which are to be retained and the extent of landscaping to be carried out on the site.

5.4.5 In clause 5.4.4 -

"external surfaces" means the external walls and cladding (if any), external doors, external door and window frames, columns, roofs, fences and any surface of a building or work visible from the exterior of a building or work; and

"prescribed materials" means materials with dark tones or dark colouring and of low reflective quality or materials which are painted or similarly treated with dark toned or dark coloured paint or pigment of low reflective quality.

4 PROJECT ANALYSIS

STATE PLANNING POLICY NO. 6.1: LEEUWIN-NATURALISTE RIDGE POLICY, WAPC 1998

PS 3.3 Development will have due regard for the landscape integrity and value of Ridge backdrops when viewed from the coastline, bays or Travel Route Corridors.

PS 3.8 Where the LNRSPP identifies development opportunities on the Ridge, such development will—

- *maintain the natural character where this exists;*
- *utilise sites of least visual impact;*

Wildwood Road and Caves Road are identified as *Travel Route Corridors* (refer **Map 3: Leeuwin-Naturaliste Ridge Policy Landscape Classes**). The existing built form on the property is inevident from Caves Road and from many parts of Wildwood Road due to vegetated screening or topography. Where it is evident, the built form does not skyline against the horizon, either by being located below the top of a slope, or by having tree canopy behind the built form.



Figure 1 Existing residence viewed from Wildwood Road



Figure 2 Built form located below ridge line, viewed from entry at Wildwood Road

The proposed dwellings near the dam are situated at lower elevations, and therefore won't skyline against the horizon.

The line of built form grouped along the eastern slope of the ridge has potential to skyline when viewed from Wildwood Road depending on the angle of the view and built form, but retention of the canopy behind and proposed additional tree planting minimises this risk. Additionally, views to these buildings would be partially screened by roadside vegetation, and generally seen by a viewer in a car at 80 kph, therefore would be transitory views that minimise the view duration.

PS 5.4 Low-impact tourist development will be considered in rural locations where the development—

- *will not adversely affect the character of the surrounding area;*
- *comprises only buildings or structures which are small in scale and unobtrusive;*

The architectural design and scale of the built form shown on the 'Proposed Site Plan' (refer **Map 7: Proposed Site Plan**) aligned towards the top of the ridge is of a similar scale to the existing building on the site (approximately 25m frontage x 15m), and on the surrounding properties. Rooms Block 06 (containing 8 dwellings) further down the slope has a frontage of approximately 50m, which although longer is not significantly longer in comparison to dwellings on surrounding properties.

The grouping of built form in the 'Proposed Site Plan' means that buildings may read as one entity, and the visual continuity of the proposed development may be more apparent from Wildwood Road. Mitigation of the visual impacts is achieved through the proposed use of natural building materials that complement the surrounding landscape, and dark-coloured roofing that blends with the canopy backdrop. Refer **Appendix Two** for proposed architectural form and finishes.



Figure 3 Dwellings visible on neighbouring properties

LOCAL PLANNING POLICY NO. 4.6: CAVES ROAD VISUAL MANAGEMENT, CITY OF BUSSELTON 2010

2.4 Objectives

- *To maintain and enhance the visual quality of the natural and rural landscape as viewed from Caves Road.*
- *To retain the rural landscape as the dominant visual experience of the Caves Road Viewshed.*
- *To maintain the significant views experienced from Caves Road.*

4.2 General Provision and Assessment Criteria

4.2.3 Development shall comply with the Objectives for the Visual Management Policy Area within which it is located.

4.2.6 Development shall have no impact on view corridors or major landscape elements as identified on Policy Plan 1.

Lot 101 Wildwood Road shares its western boundary with Caves Road and parts of the property are visible from Caves Road. However, due to the undulating topography of the landscape, the proposed development will not be visible from Caves Road as it is situated on the eastern slope of a hill facing away from Caves Road.



Figure 4 View from Caves Road, looking east to Lot 101 Wildwood Road

This is further demonstrated by the viewshed from Caves Road (refer **Figure 5 –** generated in Google Earth). The green area denotes the approximate area theoretically visible from Caves Road. This shows that views to the east of Caves Road are limited by topography, and do not extend over the hill to the proposed development area. Note, the accuracy of this viewshed is limited by the topographic data used in Google Earth and does not account for local variations in topography and screening from vegetation. The actual viewshed is likely to be more limited than shown.



Figure 5 Viewshed from Caves Road

The viewshed analysis produced by Ecoscape using the top of roof heights in **Appendix Two** demonstrates the built form will not be visible from the portion of Caves Road adjacent to Lot 101 (refer **Map 8: Viewshed Analysis**). The seen area encompasses Caves Road north of the Wildwood Road intersection, however in reality this is unlikely due to the distance and established vegetation between the viewer and the proposed development (refer **Figure 6**).



Figure 6 View southeast from Caves Road, south of Canal Rocks Road (source Google Streetview)

Plan 1 in LPP No. 4.6 (refer **Map 4: Caves Road Visual Management Policy**) also identifies a significant view from Caves Road, in the vicinity of the Swings & Roundabouts restaurant. This view is towards the northeast, providing a scenic vista across the hills, waterbody and valleys.



Figure 7 Significant vista, as viewed from Swings & Roundabouts restaurant

This view is shown on Plan 1 as encompassing pasts of Lot 101 Wildwood Road. However, the portion of the site on which the development is situated is on the back side of a hill, and therefore will not be visible in this view. This is further demonstrated by the viewshed taken from this point (refer **Figure 8** – generated in Google Earth).



Figure 8 Viewshed from significant view at Swings & Roundabouts restaurant

The viewshed analysis produced by Ecoscape using the top of roof heights in **Appendix Two** also demonstrates the built form will not be visible from this significant viewpoint (refer **Map 8: Viewshed Analysis**).

Given the above, it is not expected that the proposed development will have any impact on the visual amenity of Caves Road.

LOCAL PLANNING POLICY NO. 2.4: RURAL TOURIST ACCOMMODATION, CITY OF BUSSELTON 2010

4.5 Setbacks

OBJECTIVES

c) *To maintain scenic quality and tourism appeal of local road systems, particularly Caves Road, Bussell Highway, Wildwood Road, Vasse-Yallingup Siding Road, Abbey Farm Road, Metricup Road, Cape Naturaliste Road, Meelup Road and Eagle Bay Road.*
d) *To achieve screening or filtered views only of development from neighbouring properties and roads.*

STANDARDS

b) *Guesthouses, Chalets, Rural Holiday Resorts and Caravan Parks and Camping Grounds must be setback:*
   - *100 metres from any highway, important regional road, or nominated tourist road.*
   - *50 metres from any other property boundary except if that other property contains Prime Agricultural Land.*
   - *100 metres from any other property boundary if that other property contains Prime Agricultural Land.*

d) *Reductions to the above setbacks to a minimum of 30 metres may be considered in circumstances where a densely vegetated minimum buffer of 30 metres exists between the proposed development and the boundary or road.*

A review of the proposed buildings in the Lot 101 Wildwood Road 'Proposed Site Plan' (refer **Map 7: Proposed Site Plan**) confirms that the locations comply with the minimum setbacks outlined in LPP No. 2.4, including the northernmost building which is closest to both the adjacent residential property and Wildwood Road.

Additionally, the site is partially screened from Wildwood Road and the adjacent properties by established vegetation both within Lot 101 and the Wildwood Road road reserve.



Figure 9 Filtered view of Wildwood Road



Figure 10 Filtered view of adjacent residence

4.10 Preferred development

c) Is low profile, both physically and in setting, and is designed in harmony with existing buildings and character, being especially Bed and Breakfast Establishments and Guesthouse developments.

The City will actively discourage development that:

a) Is situated in visually significant locations, such as on ridges or along unscreened sections of regional or tourist roads.

The architectural form of the proposed buildings is single-storey buildings, consistent with surrounding properties (refer **Appendix Two**).

The layout of proposed buildings in the Lot 101 Wildwood Road 'Proposed Site Plan' (**refer Map 7: Proposed Site Plan**) appears to be aligned with the objectives of preferred development under LPP No. 2.4. The proposed buildings are located below the ridgeline, and views from the adjacent tourist road (Wildwood Road) are screened by established vegetation.

CITY OF BUSSELTON LOCAL PLANNING SCHEME NO. 21, DEPARTMENT OF PLANNING, LANDS & HERITAGE 2014

5.4 LANDSCAPE VALUE AREA

5.4.2 The local government shall not grant development approval for the clearing or development of any land identified within a Landscape Value area on the Scheme map, unless it has considered –

a) whether the development will be compatible with the maintenance and enhancement, as far as is practicable, of the existing rural and scenic character of the locality;

c) disturbance to the natural environment, including -

iv. visual effects of clearing for development;

v. maintenance of rural character; and

vi. habitat disturbance.

5.4.3 The local government shall not grant development approval for the carrying out of development on land within the Landscape Value area or on land on or near any ridgelines where, in the opinion of the local government, that development is likely to substantially detract from the visual amenity of the area, having regard to, among other things, the cumulative visual effect of the development related to other development that may be anticipated in the locality and in the area generally.

5.4.4 Before granting development approval for the erection of a building on land within the Landscape Value area, the local government shall make an assessment as to whether it should impose conditions relating to –

d) the siting of the proposed building;
e) the use of prescribed materials on the external surfaces of the building; and
f) the number, type and location of existing trees and shrubs which are to be retained and the extent of landscaping to be carried out on the site.

The extent of disturbance required in the development of the site has been minimised through the placement of buildings in cleared areas, which means existing mature vegetation can be retained. The proposed architectural form is single-storey, consistent with surrounding dwellings, and the use of natural building will complement the surrounding landscape (refer **Appendix Two**).

These considerations indicate that the proposed development is likely to be in keeping with the existing rural and scenic character of the locality.

CONCLUSION

Based on the information provided about the proposed development at Lot 101 Wildwood Road, Ecoscape has not identified any major issues relating to the visual management objectives contained within:

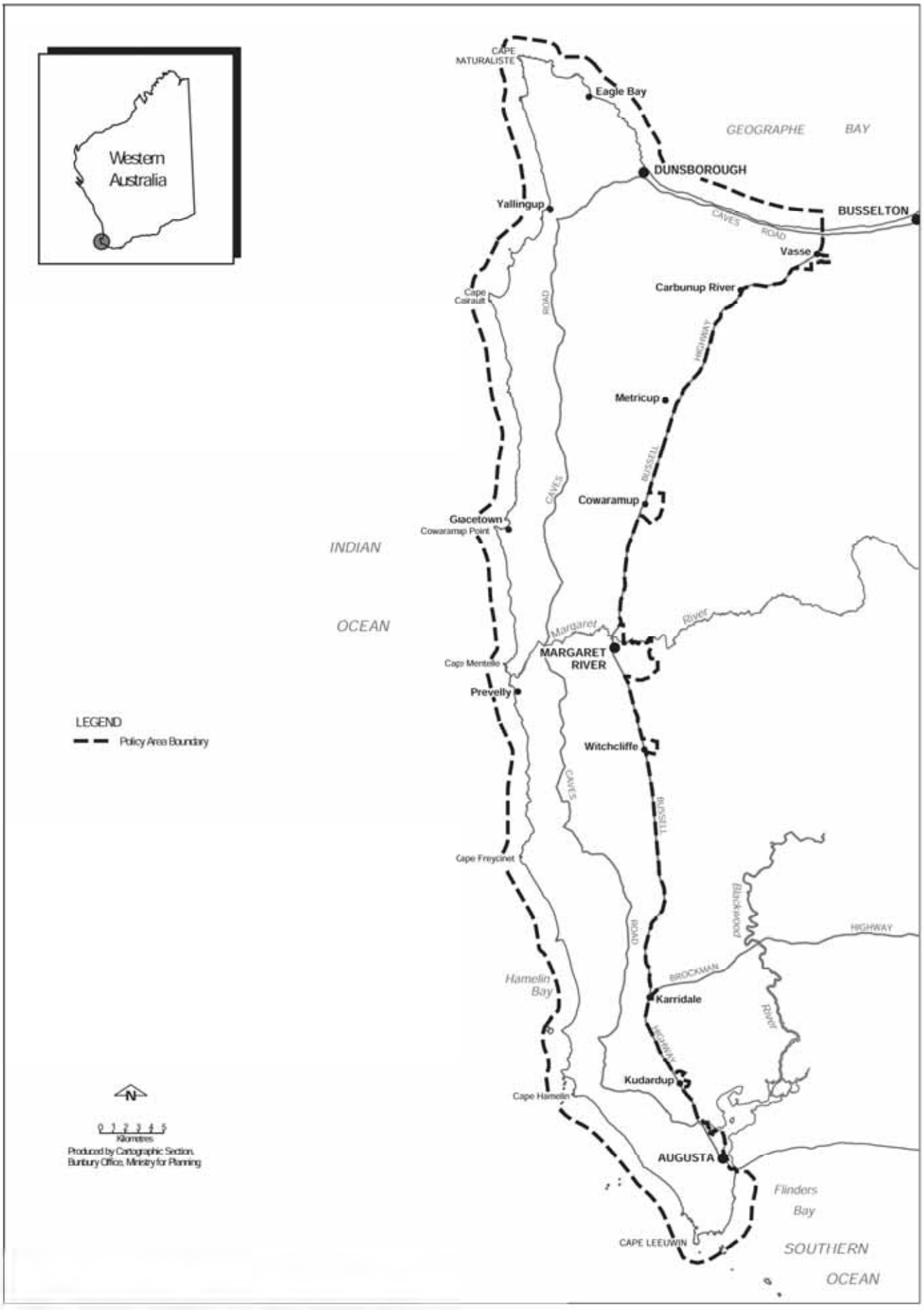
- *State Planning Policy No. 6.1: Leeuwin-Naturaliste Ridge Policy,* WAPC 1998
- *Local Planning Policy No. 2.4: Rural Tourist Accommodation,* City of Busselton 2010
- *Local Planning Policy No. 4.6: Caves Road Visual Management*, City of Busselton 2010
- *City of Busselton Local Planning Scheme No. 21*, Department of Planning, Lands & Heritage 2014.

The proposed built form appears to be sensitively situated on the site, so that it does not negatively impact views from the nearby tourist routes of Wildwood Road and Caves Road. Appropriate setbacks and screening also reduce the impact on neighbouring properties.

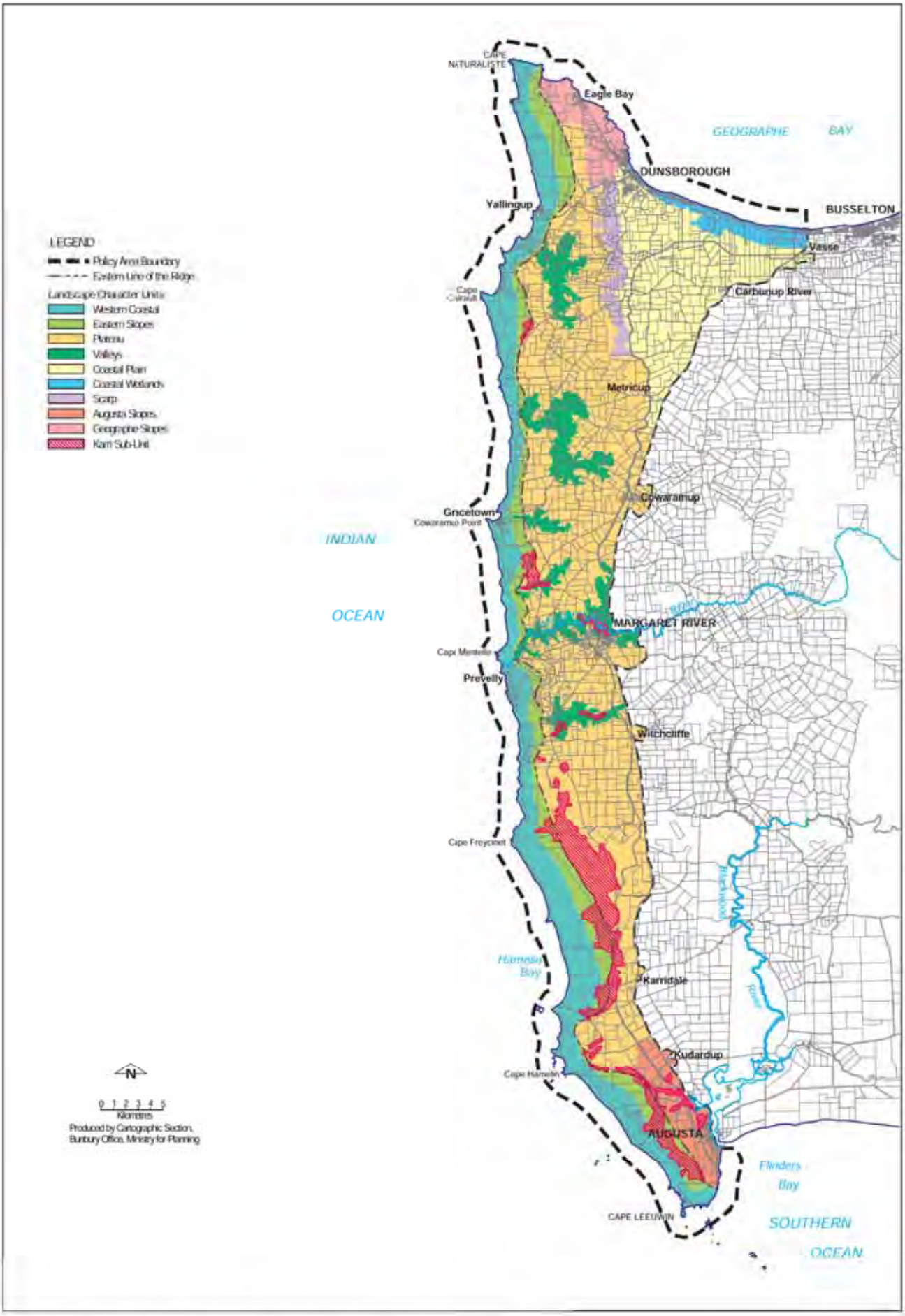
Views from the identified tourist road, Wildwood Road, are likely to be from a vehicle and therefore transitory and fleeting. Additional screening could provide further visual separation if desired.

The proposed architectural design and materiality of the built form indicates the development will be in keeping with the existing rural and scenic character of the locality.

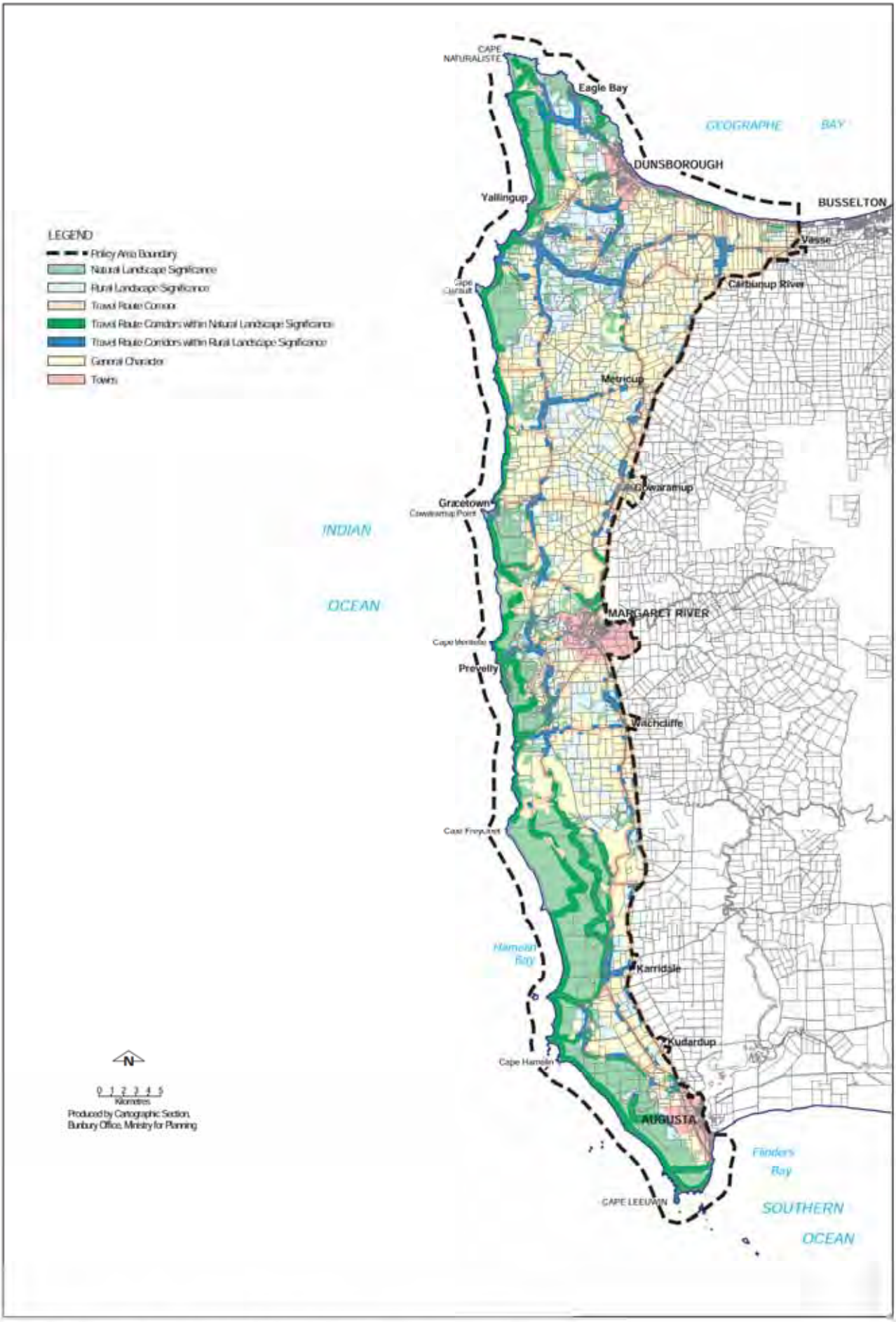
MAPS



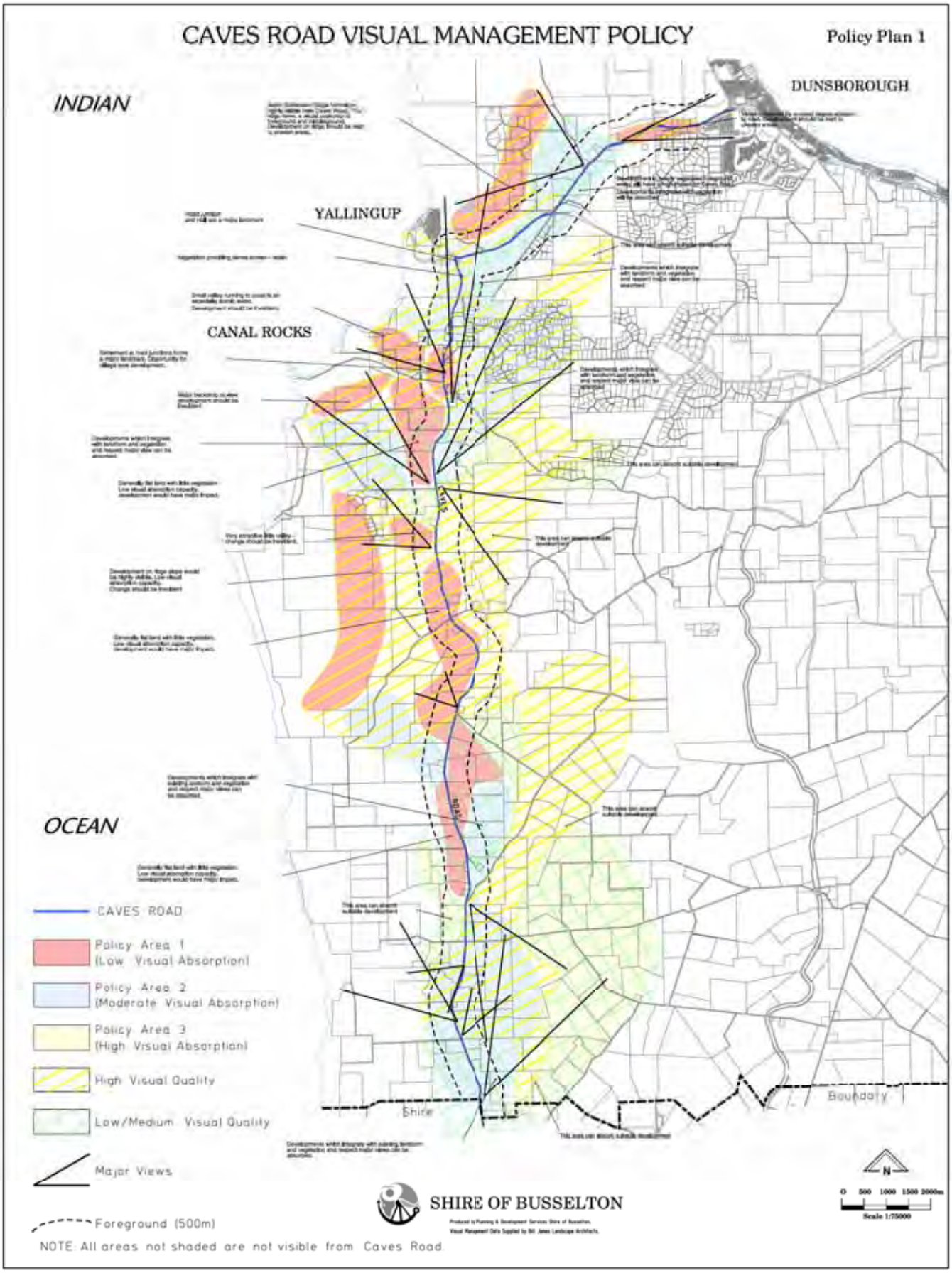
Map 1: Leeuwin-Naturaliste Ridge Policy Area



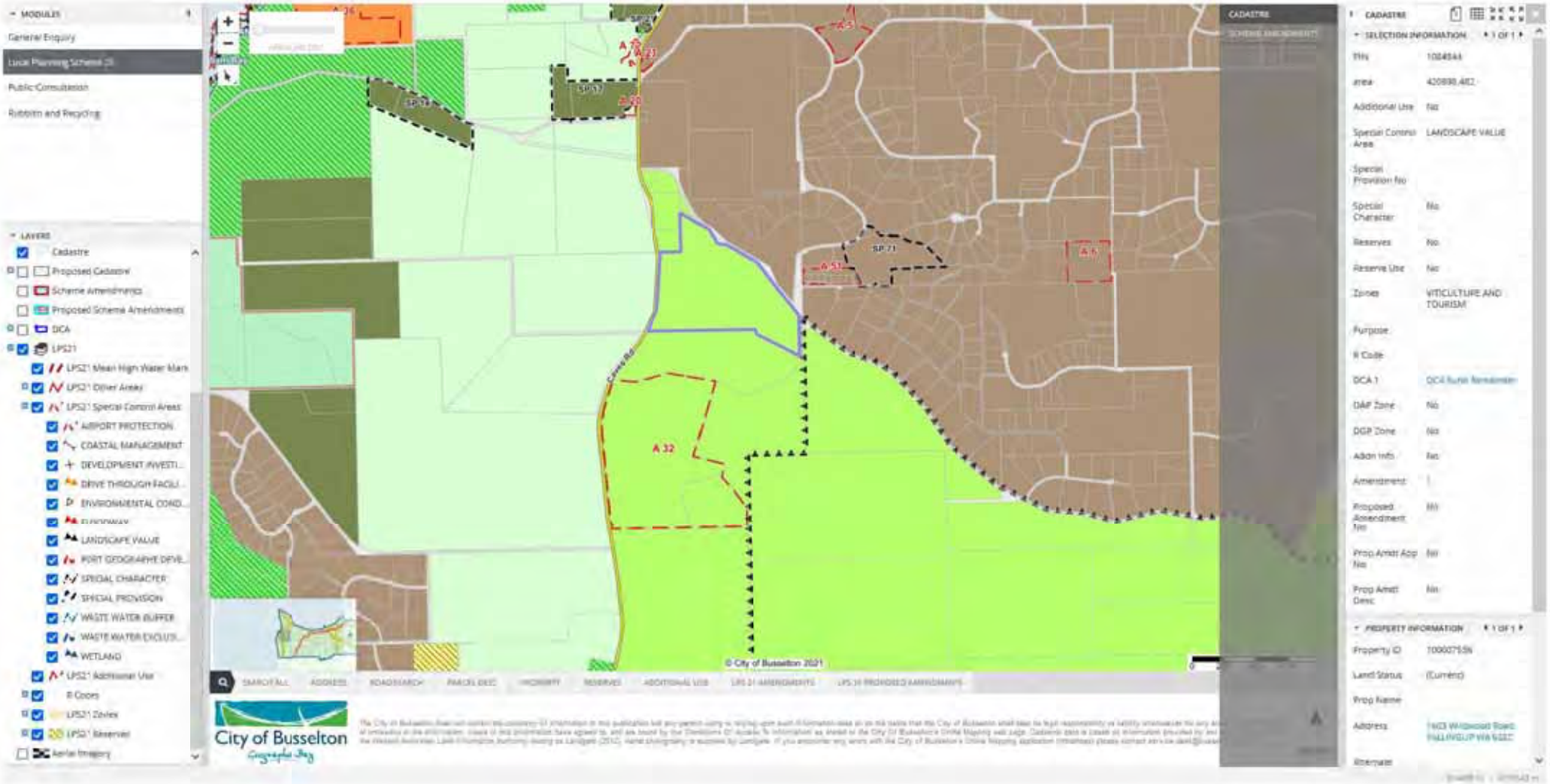
Map 2: Leeuwin-Naturaliste Ridge Policy Character Units



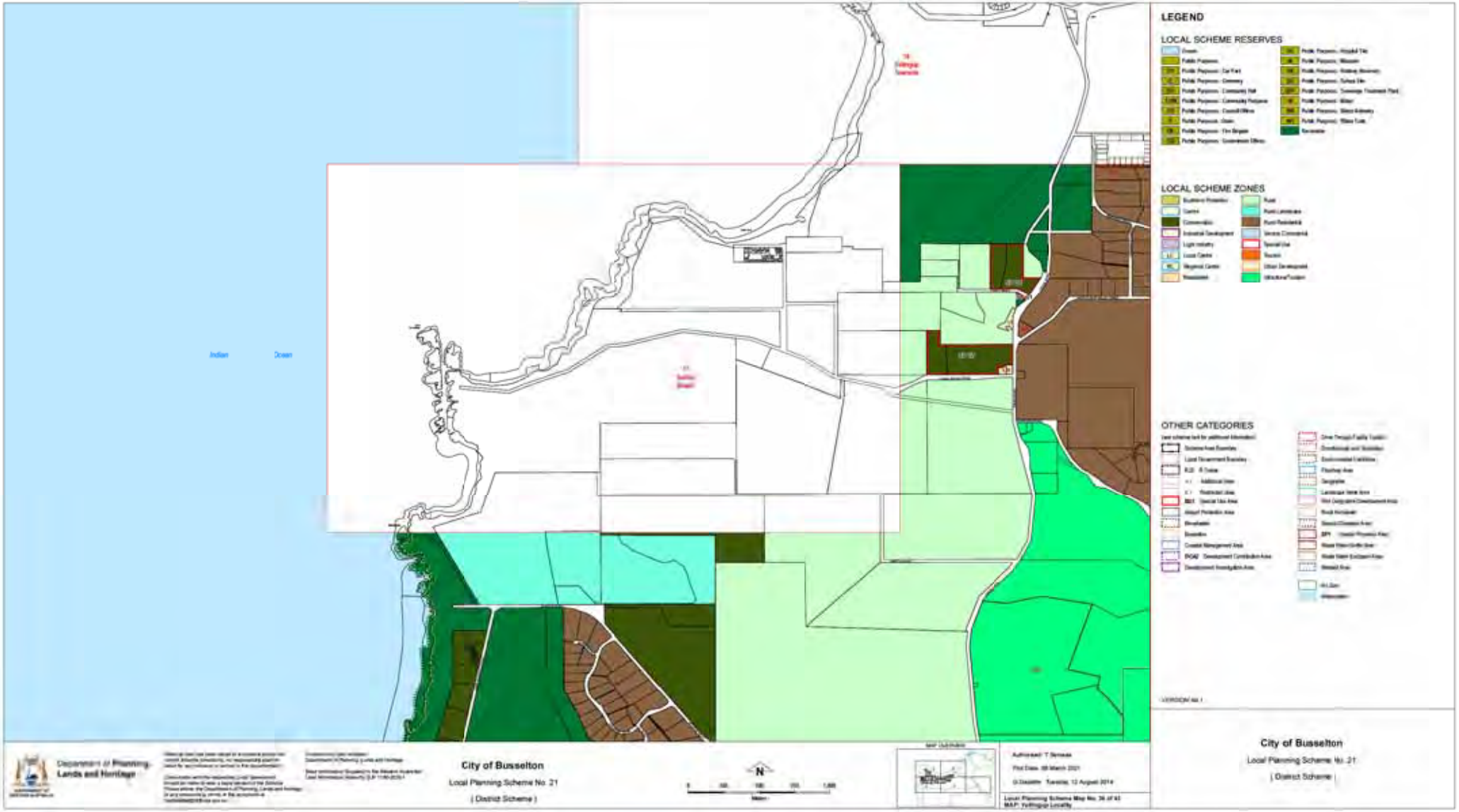
Map 3: Leeuwin-Naturaliste Ridge Policy Landscape Classes



Map 4: Caves Road Visual Management Policy



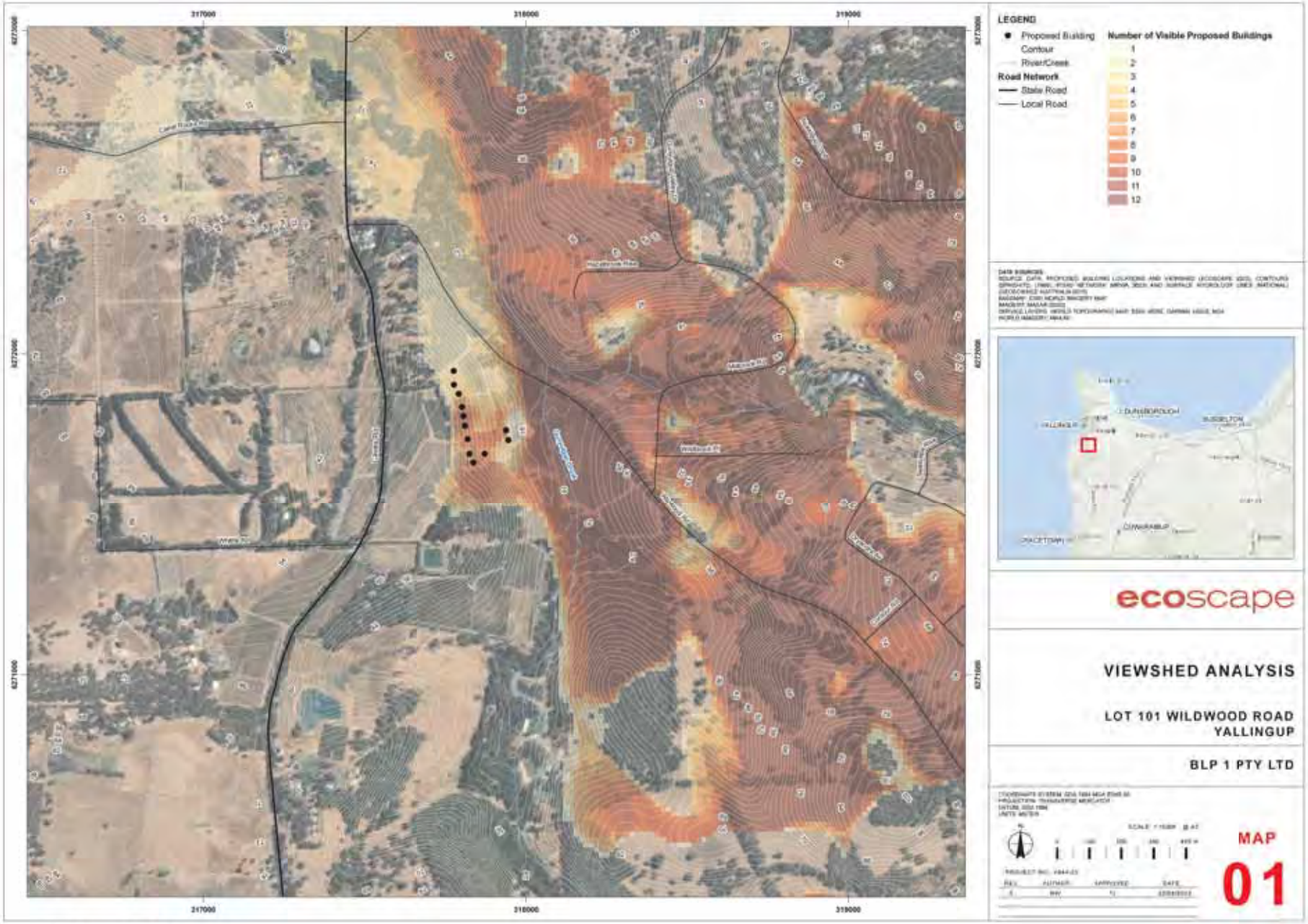
Map 5: City of Busselton Intramaps Extract



Map 6: LPS Map No. 36 of 43 Yallingup Locality



Map 7: Proposed Site Plan



Map 8: Viewshed Analysis

APPENDIX ONE PHOTO LOCATIONS

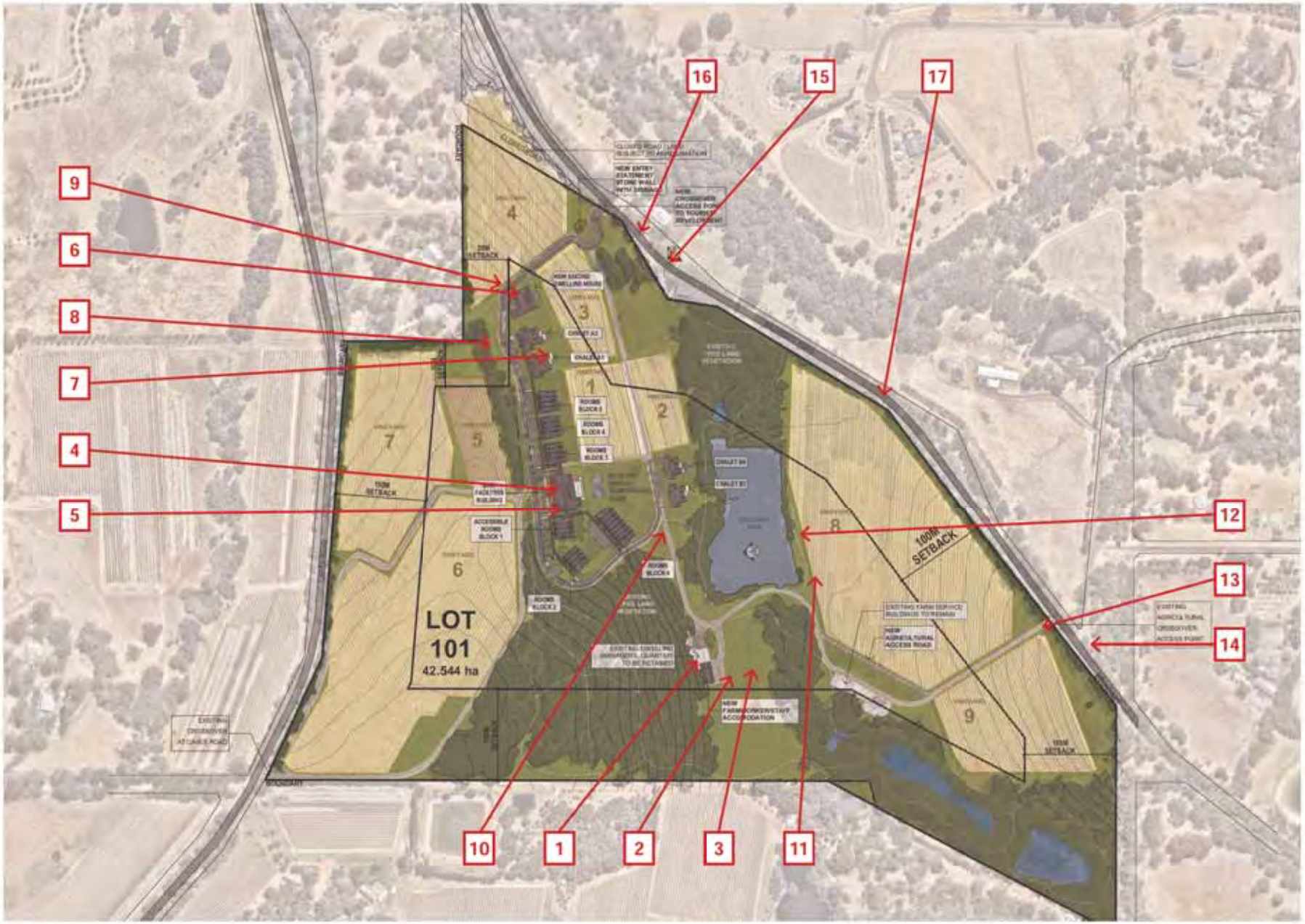


Photo Locations



1.1



1.2



1.3



1.4



2.1



2.2



2.3



2.4



3.1



3.2



3.3



3.4



4.1



4.2



4.3



4.4



5.1



5.2



5.3



5.4



6.1



6.2



6.3



6.4



7.1



7.2



7.3



7.4



8.1



8.2



8.3



8.4



9.1



9.2



10.1



10.2



11.1



11.2



11.3



11.4



12.1



12.2



12.3



12.4



13.1



13.2



13.3



13.4



14.1



14.2



14.3



14.4



15.1



15.2



16.1



16.2



17.1



17.2



17.3



17.4



18.1



18.2



18.3



18.4



19.1



19.2



19.3



19.4

APPENDIX TWO DEVELOPMENT APPLICATION SET












Harley Dykstra

1 : 2000

FEATURE & CONTOUR SURVEY

Boundary Lane Pty Ltd

Lot 101 on Diagram 84201
1603 Wildwood Road
YALLINGUP

23336-01A

DEVELOPMENT APPLICATION

BROCKING DESIGN ARCHITECTS PTY. LTD.

PROJECT
PROPOSED
TOURIST DEVELOPMENT
Lot 101 (No. 1603)
Wildwood Rd, Yallingup WA

SITE SURVEY

17109 | A0.1 | 0



NOTES

LEGEND

DEVELOPMENT APPLICATION

BROOKING DESIGN ARCHITECTS PTY. LTD.

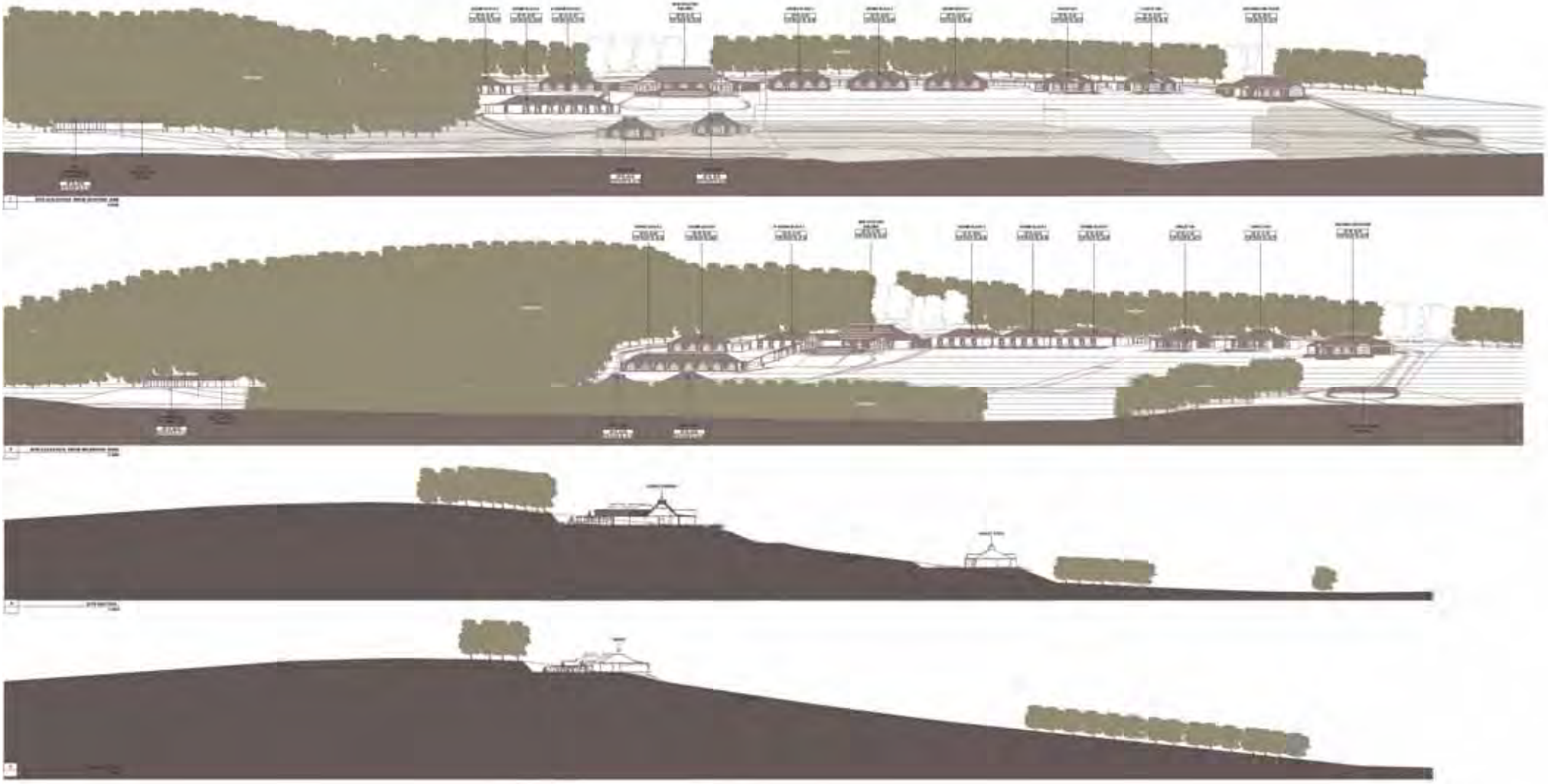
PROJECT
PROPOSED
TOURIST DEVELOPMENT
Lot 101 (No. 1503)
Wildwood Rd, Yallingup WA

PROPOSED SITE PLAN

STATUS / CHECKED	DRAWN BY	SCALE
DA / T / CD / BP / FE	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV
17109	A0.2	0


DEVELOPMENT APPLICATION
BROOKFIELD
PROPOSED TOURIST DEVELOPMENT
PROPOSED GROUND FLOOR GENERAL PLAN
17109
A0.3
0



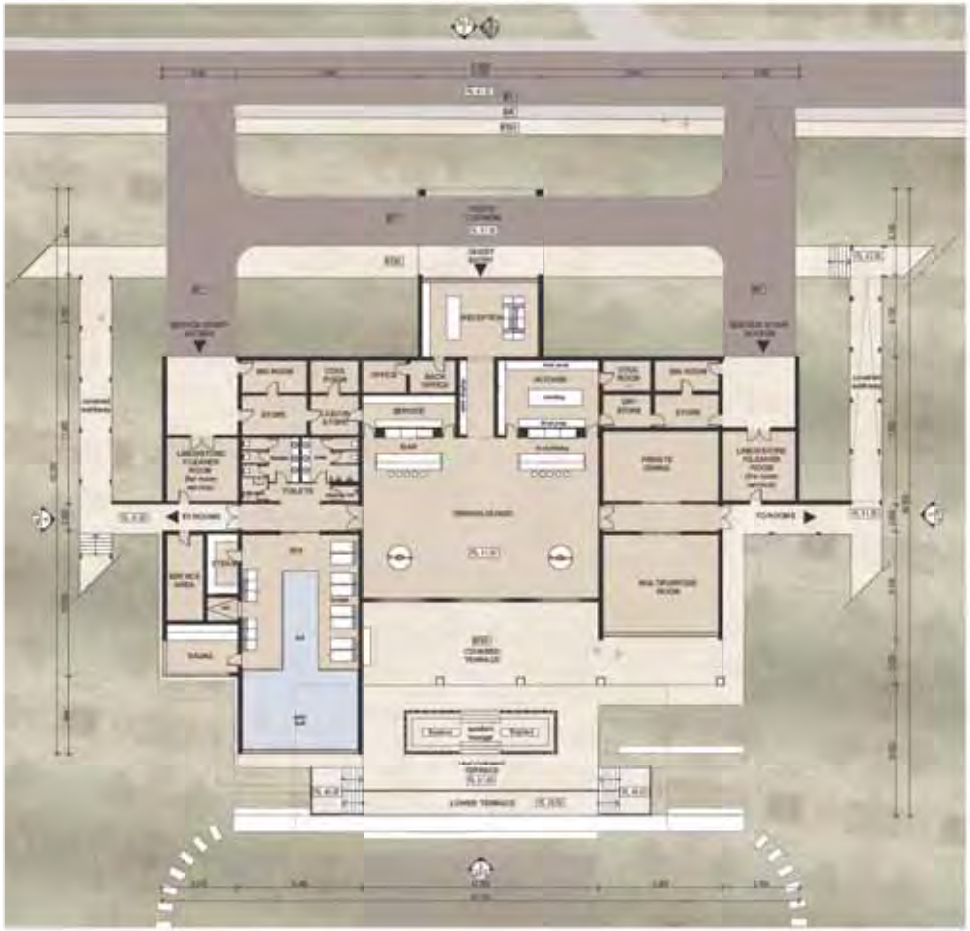
DEVELOPMENT APPLICATION

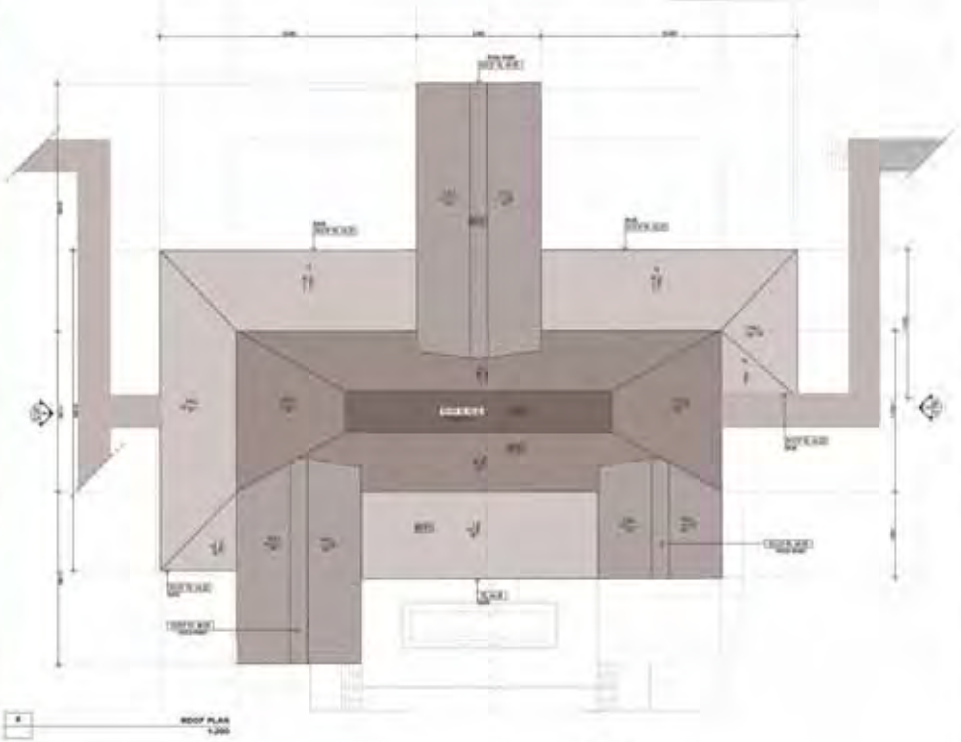
BROOKFIELD

PROPOSED TOURIST DEVELOPMENT

PROPOSED RTS ELEVATIONS & SECTIONS

17109 | A0.4 | 0

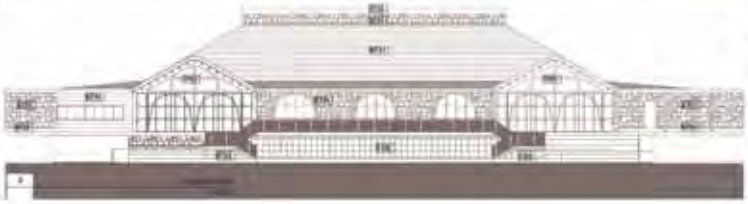


















DEVELOPMENT APPLICATION

BROOKING DESIGN ARCHITECTS PTY. LTD.

PROPOSED
TOURIST DEVELOPMENT
Lot 101 (No. 1603)
Wildwood Rd, Yallingup WA

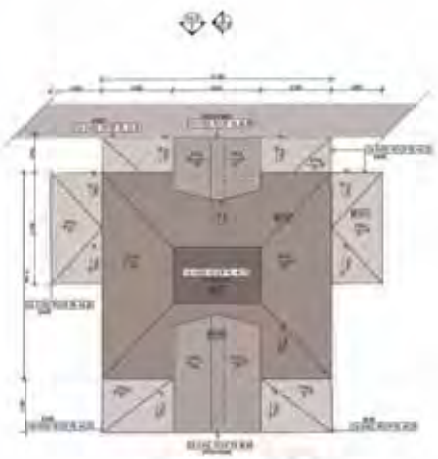
PROPOSED FACILITIES
BUILDING FLOOR PLAN

DA / CD / BP / FC	VD	AS NOTED
17109	A0.5	0



1 CHALET TYPE A FLOOR PLAN
1:200





13 CHALET TYPE A ROOF PLAN
1:200



5 CHALET TYPE A SECTION
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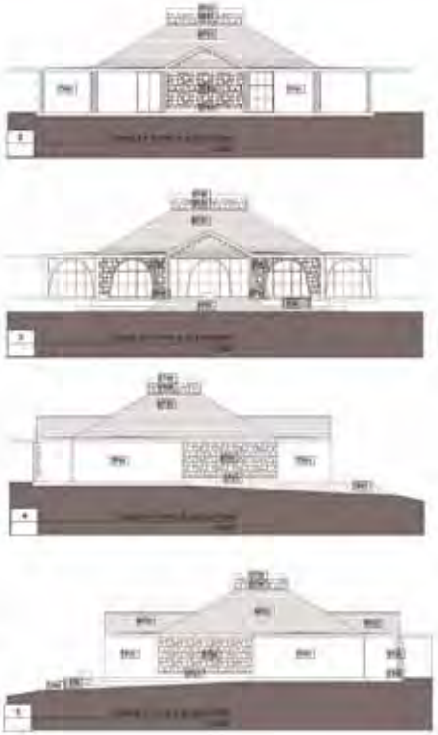



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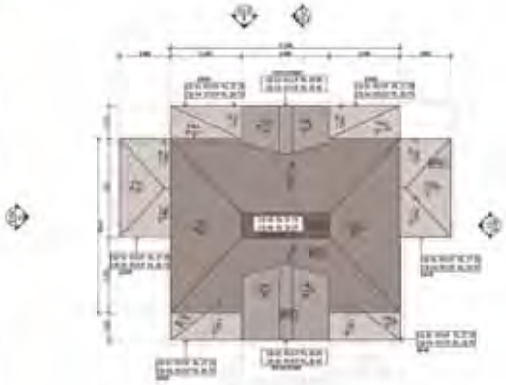
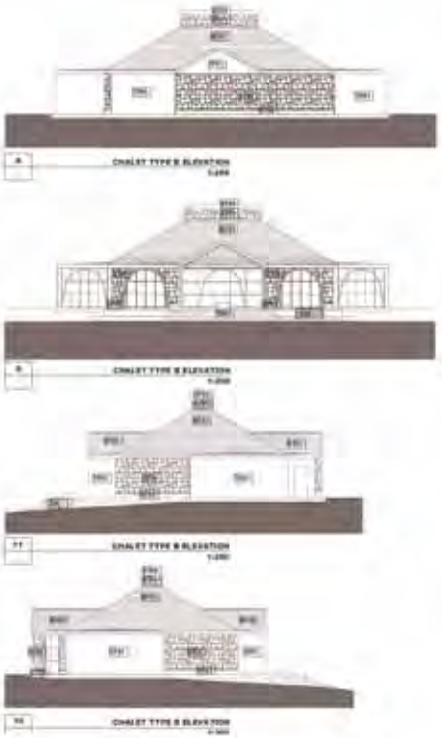


16 CHALET TYPE B ROOF PLAN
1:200



12 CHALET TYPE B SECTION
1:200



8 CHALET TYPE B ELEVATION
1:200

9 CHALET TYPE B ELEVATION
1:200

11 CHALET TYPE B ELEVATION
1:200

10 CHALET TYPE B ELEVATION
1:200

NOTES

FINISH SCHEDULE

DBC		CARBON BOARD
CTC		CHOCOLATE STONE
DCC		STONE CARBON WALL
GTC		GRAVEL SELECTING EXTERNAL FLOORING
MTC		CHAMBER BEAM CHAMBERS MOTORS
TTC		TEAK SAND TIMBER CLADDING
TTC		TIMBER MULTI-PURPOSE FLOOR TIMBER
SC		SHALES BYTHEM ROOF
SR		SHALES SUPERCEDING ROOF
TR		SHAND FOLLOWING LANDSCAPE

3	18/11/13	Issued for Development Application
DATE	DATE	TITLE

DEVELOPMENT APPLICATION

BROOKING 230

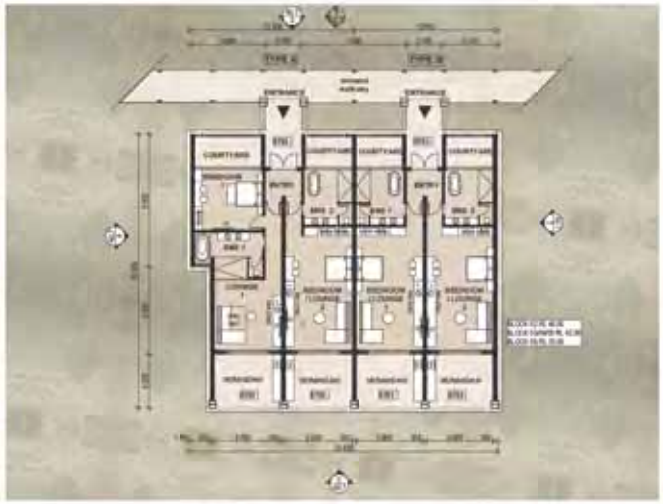
BROOKING DESIGN ARCHITECTS PTY. LTD.

PROJECT
PROPOSED
TOURIST DEVELOPMENT
Lot 101 (No. 1603)
Wildwood Rd, Yallingup WA

PROPOSED CHALET FLOOR PLAN

STATUS	CHECKER	DRAWN BY	SCALE
DA	F, CD, BP, FE	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.6	0



1 ROOMS FLOOR PLAN - BLOCK 32 TO 36
1:200





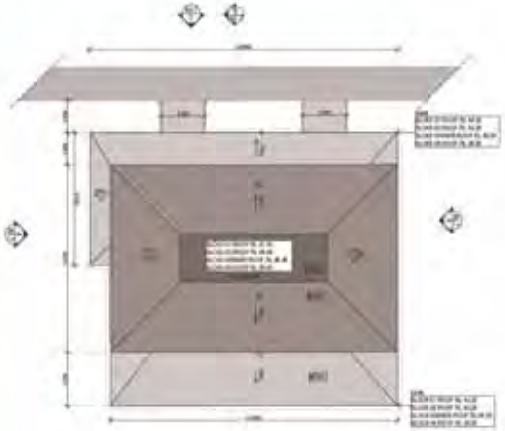
10 ACCESSIBLE ROOMS FLOOR PLAN- BLOCK 1
1:200







6 SECTION
1:200



10 ROOMS ROOF PLAN
1:200



5



4



3



2



9 FARMWORKER ACCOMMODATION FLOOR PLAN
1:200





15



17





11 FARMWORKER ACCOMMODATION ROOF PLAN
1:200



14 SECTION
1:200



13



12

NOTES:

ROOMS FINISHES

Item		
Brick		
Brick		
Brick		
Brick		
Tiles		
Tiles		
Tiles



1 SECOND DWELLING FLOOR PLAN
1:200



2 SECOND DWELLING ROOF PLAN
1:200











3 ELEVATION
1:200



NOTES

[illegible]	[illegible]	
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[illegible]	[illegible]	

DEVELOPMENT APPLICATION

BROOKING 230

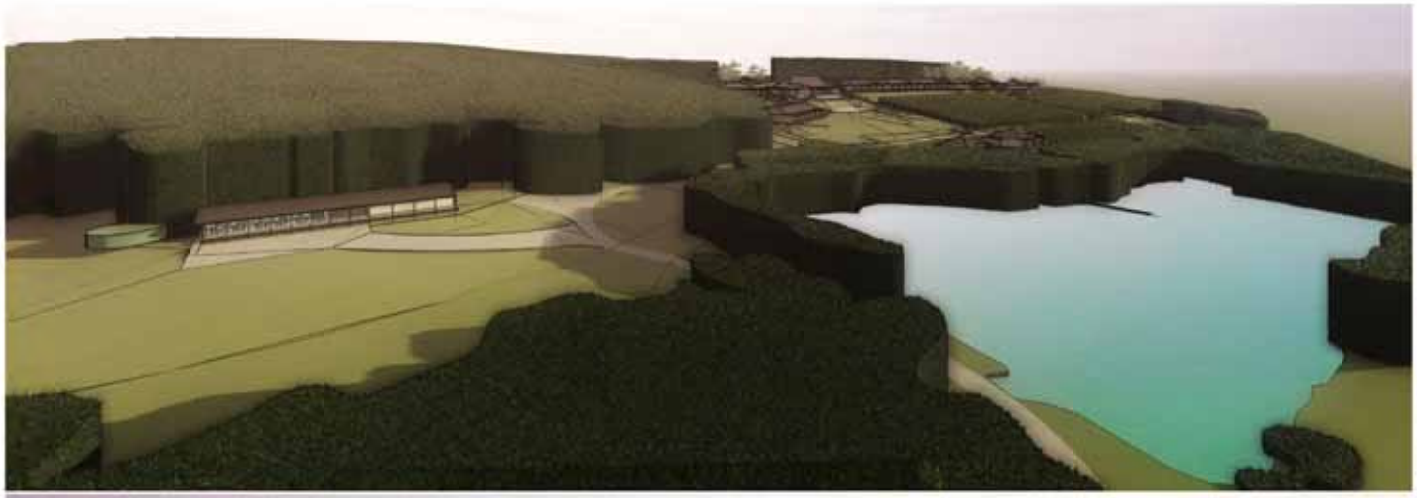
BROOKING DESIGN ARCHITECTS PTY. LTD.

PROJECT
PROPOSED
TOURIST DEVELOPMENT
Lot 101 (No. 1603)
Wildwood Rd, Yallingup WA

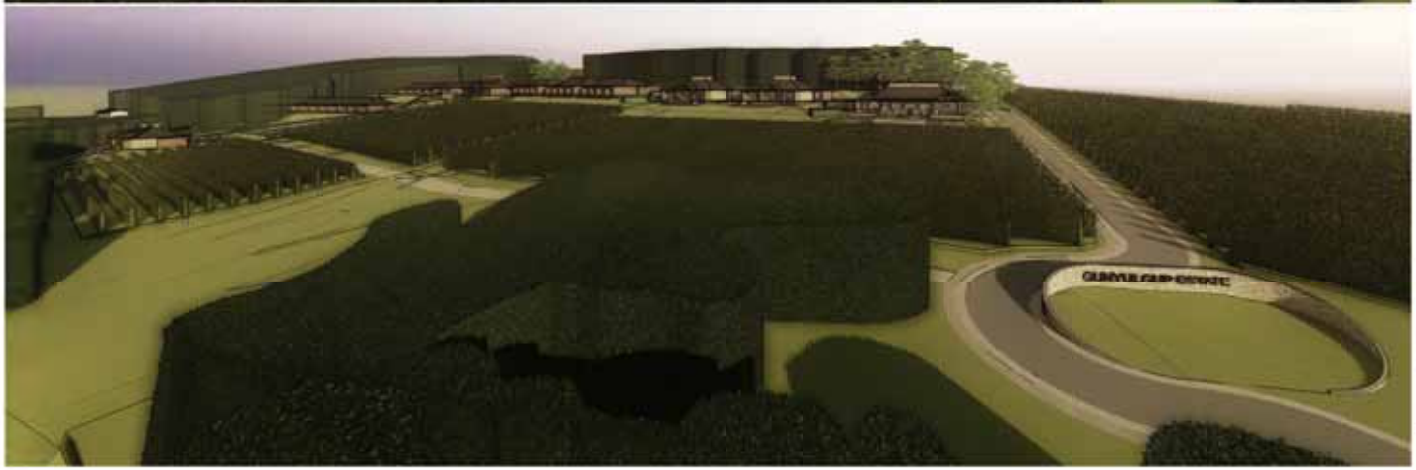
PROPOSED SECOND DWELLING
HOUSE FLOOR PLAN

STATUS / CHECKED	DRAWN	SCALE
DA / CD / BP / EE	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV
17109	A0.8	0











REV	DATE	ITEM	BY
0	[illegible]	Issued for Development Application	VC

DEVELOPMENT APPLICATION

BROOKING DESIGN ARCHITECTS PTY. LTD.

PROJECT
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603)
Wildwood Rd, Yallingup WA

DRAWING
PROPOSED SITE 3D VEWS

STATUS	CHECKED	DRAWN BY	SCALE
DA	T / KD / BP / FC	VC	AS NOTED

PROJECT NO.	DRAWING NO.	REV
17109	A0.9	0

Traffic Impact Statement
Lot 101 Wildwood Road, Yallingup - Tourist Development Proposal

Prepared for
P Medich

By ASCENT ENGINEERING

Ascent Engineering Pty Ltd
Tel: 0419 925 370
ABN 51 771 579 448

Date	Rev	Issue	Prepared by
4.08.22	A	Original Issue	Steve Disley
14.07.23	B	Changed development proposal/ interim report for client & architect review	Steve Disley
25.08.23	C	Update with August 2023 Wildwood Rd traffic data etc	Steve Disley
12.09.23	D	Correction to number of units	Steve Disley
27.11.23	E	Final site plans added in Appendix C & minor text amendments	Steve Disley

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Appendix A - Wildwood Road Summarised Traffic Counts and Estimates

Appendix B - Wildwood Road 2023 Traffic Count Data

Appendix C - Brooking Design Architects Site Plans A0.2 and A0.3

1 Introduction

P Medich has commissioned Ascent Engineering Pty Ltd to prepare this Traffic Impact Assessment report for a proposed Tourist Development at Lot 101 Wildwood Road, Yallingup.

Lot 101 (the Site) location is shown in a regional context in Figure 1.1 and in a local context In Figure 1.2.



Figure 1.1: Site Location (Regional)

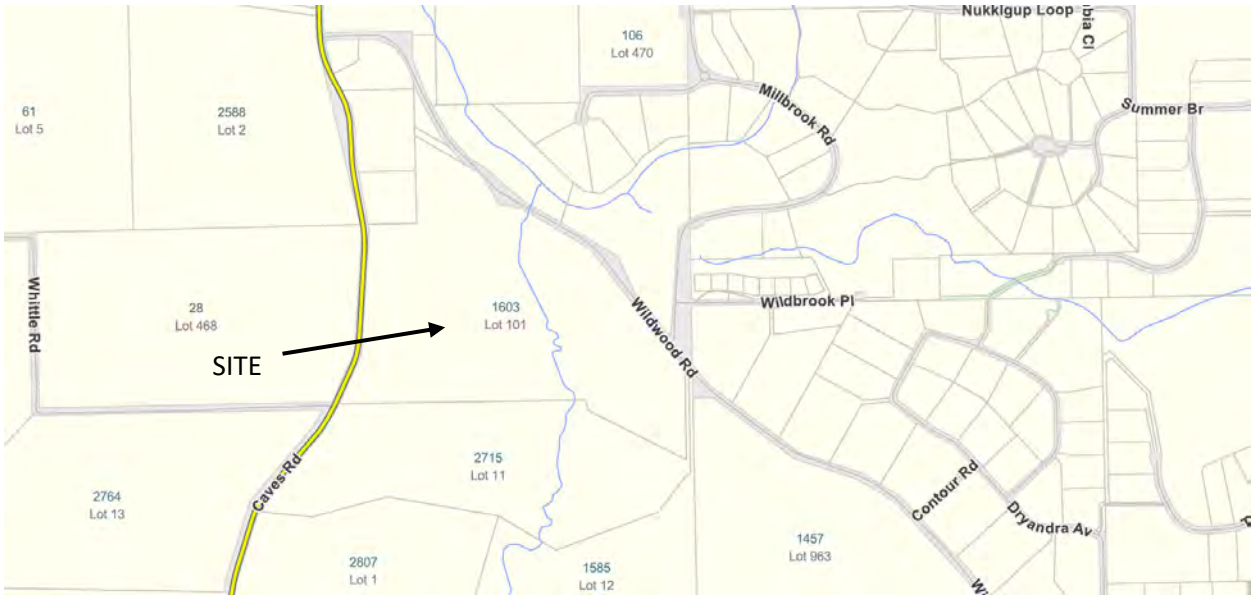

Figure 1.2: Site Location (Local)

2 Existing Site Access and Land Use

The Site is located in the City of Busselton municipal area and is zoned for "Viticulture and Tourism" under the City's Local Planning Scheme 21.

The site is southeast of the Caves Road/Wildwood Road intersection and abuts Wildwood Road along its north boundary and Caves Road along its west boundary - refer to Figure 1.2 and the proposed development master plan in Appendix C.

The Site has a total area of 42.54 ha in two portions separated by a closed unmade road reserve located within the northern apex of the site. The major portion south of the closed road reserve is 42.09 ha, representing 99% of the total site area. The minor portion north of the closed road reserve is 0.45 ha, representing only 1% of the total site area.

The closed road reserve has an area of 2643m^2 (0.26 ha) and is indistinguishable on site from the two adjacent Lot 101 portions, due to existing planted vineyard extending across the closed road reserve from the adjacent portions.

Planted vineyard occupies 20.13 ha or 47% of the total site area and there is a large dam 1.16ha in size located centrally within the site.

The site contains two dwellings and other sheds associated with the existing vineyard operations.

There is no winery or cellar door sales operating on site.

Existing primary access to site is from an unsealed crossover on Wildwood Rd (at location "B" in Appendix C), approximately 1300 metres southeast of the Caves Road intersection, or approximately 40 metres northwest of the Millbrook Road intersection.

Existing secondary accesses to site is also available from an existing gated crossovers on Caves Road at location C in Appendix C.

A disused access gate exists on Wildwood Road at location A, approximately 600 metres southeast of the Caves Road intersection, which the developer proposes to re-establish as the new primary site access for the proposed tourist accommodation facilities.

3 Proposed Development

The proposed development is shown on the plan in Appendix C and comprises the construction of tourist accommodation facilities including a "Main Facilities Building" in addition to the ongoing vineyard land use, also with farm worker/staff accommodation added in support of that existing vineyard use, as listed in Table 3.1.

Table 3.1: Proposed Development

Building Description	Number of Buildings (A)	No of guest or workers "units" per bldg (B)	No of beds per unit (C)	Max Occupants residing (D = A x B x C)
Main Facilities Building	1	n/a	n/a (main building provides reception, wellness centre, dining and bars only to on-site customers occupying the accommodation rooms and chalet units	0
Rooms (Blocks 1 to 5)	5	4	2 (one double or twin-single)	40
Rooms (Block 6)	1	8	2 (one double or twin-single)	16
Chalets (A1, A2, B3 & B4)	4	1	8 (two double rooms and two twin-single rooms per chalet)	32
Manager's Quarters (existing dwelling)	1	n/a	n/a	2 (assumed)
Farm workers Accommodation	1	5	1	5
New second dwelling house	1	n/a	n/a	2 (assumed)
Total	**14**			**97**

One existing dwelling on site will be retained as manager's quarters, with the new farm worker accommodation built alongside. The other existing dwelling on site will be demolished to make way for the Main Facilities Building. That demolished dwelling will be replaced by the 'new second dwelling' located at the north end of the new tourist accommodation facilities, where shown in Appendix C.

Crossover A is proposed to be developed as the primary site access for the guests using the on-site accommodation, with existing crossover B to remain in use for separate ongoing dedicated vineyard access.

Separate crossovers A & B are proposed in consideration of vineyard safety and bio-security issues as well as to meet bushfire management plan requirements for public vehicular access in two different

directions onto Wildwood Road. These requirements are best achieved by having the guests access the site from Location A, and retaining the existing crossover B for vineyard use.

4 Site Context with Surrounding Land Uses

Surrounding land uses include:

- Lot 11 abutting the site south boundary is the Credaro vineyard and cellar door sales, zoned and used for "Viticulture and Tourism". Credaro's Lot 11 is a "battle-axe" lot with its "battle-axe leg" adjoining the development site's east boundary. Credaro's Lot 11 has primary access from a sealed crossover on Caves Road. An unsealed driveway built along the Lot 11 battle axe leg to Wildwood Road provides a secondary rear access to Credaro's Lot 11. That rear driveway also provides primary road access for neighbouring Lot 12.
- Lot 963 east of the development site and immediately beyond the aforementioned Lot 11/12 battle-axe legs, is zoned for Viticulture and Tourism. It contains no vineyards; instead has pastoral land including two dwellings.
- Northeast of the site, on the opposite side of Wildwood Road, are two rural residential properties, lots 206 & 207 Wildwood Road, each containing a single dwelling.
- North west of Lot 101, between Caves Road and Wildwood Road are four lots, from north to south Lots 40, 41, 2 and 3. All four are zoned for Viticulture and Tourism although none contain vineyards:
    - Lot 40 is the Yallingup Steiner School, catering for 135 students in kindergarten through to Year-6 classes;
    - Lot 41 is the Premalaya Guest House, and tourist accommodation facility and Wellness Retreat;
    - Lots 2 and 3 directly abut the west boundary of the site and each contain a single residential dwelling with crossover access from Caves Road.
- West of the site on the opposite side of Caves Road is Lot 101, which is zoned "Rural" and contains a vineyard, the "Marri Wood Park & Guinea Run".

5 Traffic Management on the Frontage Streets

5.1 Frontage Streets & Property Access

Caves Road along the site's west boundary and Wildwood Road along the site's north boundary are both single carriageway (undivided) two-lane sealed roads.

Caves Road is a State Road under the control of MRWA, classified in MRWA road hierarchy as a "Primary Distributor". It has a posted speed limit of 80 km/h adjacent to the site.

Wildwood Road is a local road under control of the City of Busselton, classified in MRWA road hierarchy as a "Local Distributor". Wildwood Road has a posted speed limit of 60 km/h for the first 340 metres east of the Caves Road intersection, and thereafter increases to 80 km/h heading further east.

The site's Wildwood Road frontage is 1080 metres long and its northwest corner is 320m east of the Caves Road intersection. Consequently, the 60 km/h speed zone extends only 20m along the site frontage before increasing to 80 km/h for the remaining 1060 metres of Wildwood Road frontage, i.e. for almost the entire frontage.

Crossover A is proposed 600m east of the Caves Road intersection, placing it 280m inside the current 80 km/h posted speed zone.

Existing crossover B is 1290m east of the Caves Road intersection and is also inside the 80 km/h posted speed zone

Wildwood Road along the site's northern boundary has mostly 3.1m wide lanes and 0.5m wide sealed shoulders (total seal width = 7.2m). Wildwood Road was only recently upgraded to this standard by the City of Busselton in early 2022, including audible edge line treatments added at that time. Wildwood Road is marked with a double-barrier "no-overtaking" line along the entire site frontage.

At Millbrook Road intersection, 30 metres east of existing crossover "B", Wildwood Road westbound lane is widened to approximately 4.6 metres which, together with additional sealed shoulder widening provided there, is generally consistent with a Basic Right Turn (BAR) intersection treatment prescribed by Austroads Guide to Road Design Part 4A- 2017 (AGRD-04A-17) Figure 7.5 for two-lane rural roads. The continuation of the westbound lane tapering from 4.6m wide at the Millbrook Rd intersection to the prevailing width of 3.1m approximately 110 metres further west results in the westbound lane being 3.9m wide immediately in front of crossover "B". The eastbound lane is 3.1m wide at crossover "B".

At proposed crossover A both the westbound and eastbound lanes are 3.1m wide.

Photo 5.1 (viewing south), shows the proposed site entry crossover location "A" on Wildwood Road.

Photo 5.2 (also viewing south), shows the existing crossover location "B" on Wildwood Road. The 3.1m wide eastbound lane is seen in the foreground and the 3.9m wide westbound lane is in the background of photo 5.2; the lane widths are measured from the painted centreline to the respective marked edge-lines.



Photo 5.1: Proposed Site Entrance/Crossover Location "A" on Wildwood Road



Photo 5.2: Existing Site Entrance/Crossover "B" on Wildwood Road

The existing gate at location B (photo 2) is set back 10 metres from the painted edge line although the property boundary is only 5 metres from the edge line, therefore the gate is 5 metres inside the property boundary. Having the gate set back inside the property in this manner is appropriate to enable an entering vehicle to stand clear of traffic while opening the gate. This report recommends a relatively minor upgrade of the existing crossover B geometry as well as sealing from the edge of Wildwood Road bitumen to the fence/gate. It is recommended that the gate be relocated to a slightly deeper setback distance of 15m from the painted edge line, to comfortably accommodate a 12.5m maximum legal length of a rigid (single-unit) truck.

Note that the existing fence at crossover location A (photo 1) is similarly set back 12 metres from the edge line where the property boundary is only 5 metres from the edge line; i.e. that fence is 7 metres inside the property boundary. However, a vehicle's ability to stand clear of traffic at location A is not a consideration given that new crossover A will not be gated.

5.2 Intersection Sight Distance Assessments (Crossovers A & B)

5.2.1 General

Ascent Engineering undertook on-site assessments of sight distances at proposed crossover A and at existing crossover B on 22 June 2023 and on 22 July 2022 respectively. AGRD04A-17 prescribes minimum "Safe Intersection Sight Distance (SISD)" required for new "intersections", as the minimum sight distance which should be provided on the major road at any intersection and is viewed as illustrated in Figure 5.1 (AGRD04A-17 Figure 3.2) hereunder:

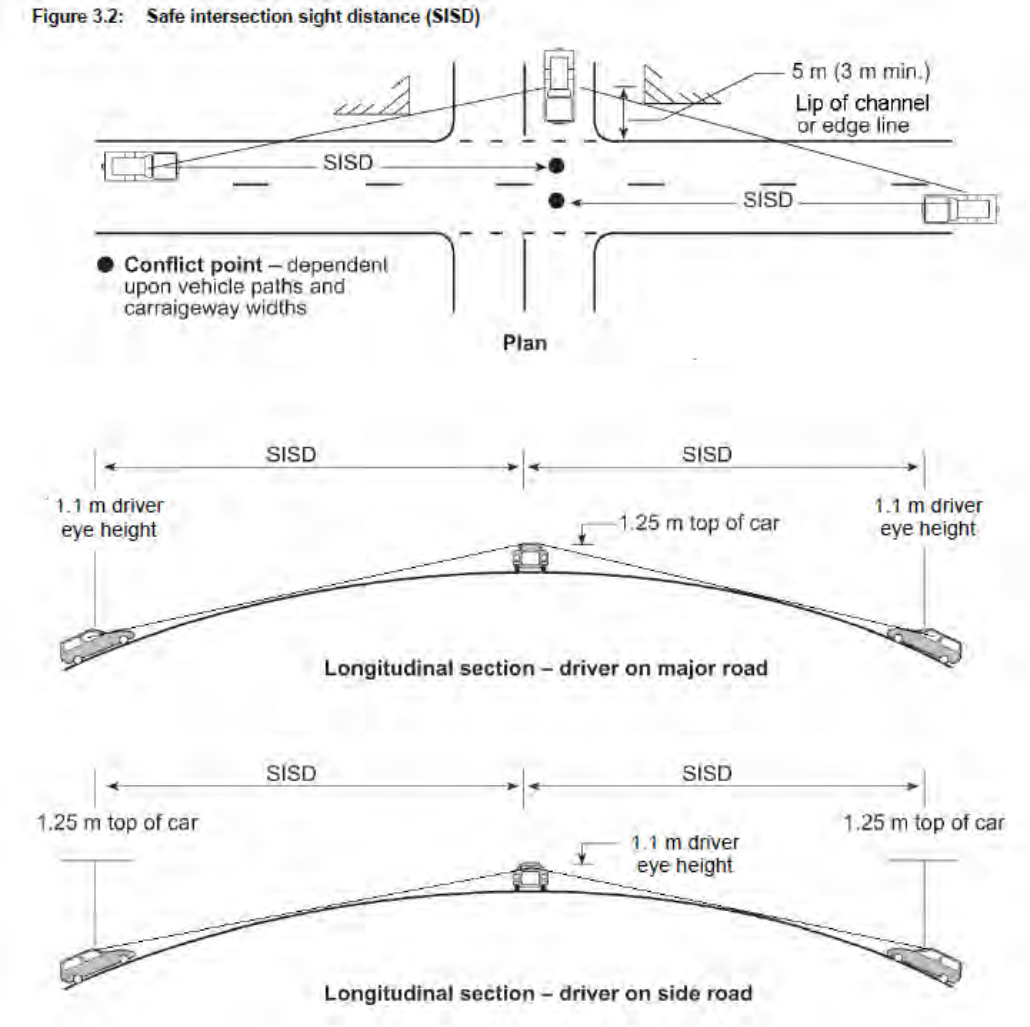

Figure 5.1: AGTM04A-17 Fig 3.2 - Safe Intersection Sight Distance (SISD)

However, MRWA standards for sight distances at property entrances state that, *Safe Intersection Sight Distance should be provided at driveways in accordance with AGRD04A-Table 3.2 (which is the "normal" minimum distances required for "intersections"). However, where this is not possible due to constraints, sight distance equal to the Stopping Sight Distance for the design speed of the road shall be provided as an absolute minimum.*

Local Authorities generally follow MRWA guidelines and recommendations.

Initial sight distance assessments by Ascent Engineering found that sight distances at both locations A and B were constrained to less than the "normal" standards applicable to intersections, due to the tight horizontal and vertical alignment and roadside vegetation. Consequently, the sight distance assessments at each crossover are presented in this report with comparison to both:

- AGRD04A-17 "normal" SISD intersection design requirements; and
- absolute minimum SISD for property accesses, equal to Stopping Sight Distance (SSD).

Initial discussion of this aspect with City of Busselton officer Justin Smith indicates the City is likely to be supportive of sight distances at both crossovers A and B being deemed satisfactory if meeting the absolute minimum requirements applicable to property entrances where they cannot otherwise meet minimum distances otherwise prescribed for intersections.

The 85th percentile vehicle speeds adopted for each sight distance assessment were as follows:

- Location B: An operating speed of 90 km/h was adopted, assuming the operating (85th percentile) speed to be 10 km/h above the posted speed limit as per normal practice adopted in absence of existing speed measurements; i.e.. the 85th percentile traffic speed is likely to be approximately 90 km/h in each direction, considering the 80 km/h posted limit and relatively straight horizontal road geometry approaching location B for each respective approach, with no significantly tight horizontal curves to constrain the approach speeds to less than 90 km/h;

- Location A: The 85th percentile approach speeds at crossover A are limited by horizontal road geometry to the following speed measurements that were obtained from traffic counters placed on Wildwood Road, exactly at the location A, for the period 7 August 2023 to 15 August 2023:
    - westbound operating (85th percentile) speed = 77.4 km/h
    - eastbound operating (85th percentile) speed = 76.3 km/h

Based on these measurements, operating speeds of 80 km/h were adopted for the eastbound and westbound approaches to location A.

5.2.2 Sight Distance Assessment - Location A

The sight distance assessments at location A are presented in Table 5.1a relative to the AGRD04A-17 intersection criteria, and in Table 5.1b relative to the absolute minimum property access criteria (equal to SSD).

Table 5.1a: SISD Assessments - Proposed Crossover Location A: Intersection Criteria

Sight dist. #	Direction of approaching Wildwood Road traffic	Photo #	SISD available (m)	Minimum SISD Required				
				Design Speed (km/h)	Min. SISD (m) required: flat grade[1]	Approx. Approach Grade (%)[2]	Grade Corr'n (m)	Min. SISD (m) required: grade corrected
SISD-A1	Westbound: to/from vehicle on crossover[3] - without tree clearing	5.3 & 5.4	**58m**	80 km/h	181m	2% up	-4m	177m
SISD-A2	Westbound: to/from vehicle on crossover[3] - with tree clearing	5.3 & 5.4	**178m**	80 km/h	181m	2% up	-4m	177m
SISD-A3	Westbound: to/from propped R-turn veh.[4]	n/a	**140m**	80 km/h	181m	2% up	-4m	177m
SISD-A4	Eastbound: to/from vehicle on crossover[3]	5.5	**160m**	80 km/h	181m	0% (flat)	0m	181m
SISD-A5	Eastbound: to/from propped R-turn veh.[4]	n/a	**120m**	80 km/h	181m	0% (flat)	0m	181m

The available sight distances ranging between 120m and 178m (after tree clearing) mostly (other than SISD-A2) fall short of the minimum required distance of approximately 180m required for normal intersection design.

[1] A driver reaction time of 2.0 seconds has been adopted, with deceleration d = 0.36.

[2] Approach gradient in each direction varies; the inserted value is average gradient estimated within the required SISD length

[3] SISD-A1, SISD-A2 & SISD-A4 were assessed to/from a viewing point on proposed crossover "A" setback 3.0m from the painted edge line

[4] SISD-A3 & SISD-A5 were assessed to/from a car propped on Wildwood Road waiting to turn right into crossover A

Table 5.1b: SISD Assessments - Proposed Crossover Location A: Absolute minimum property access criteria

Sight dist. #	Direction of approaching Wildwood Road traffic	Photo #	SISD available (m)	Minimum SISD Required (using SSD)				
				Design Speed (km/h)	Min. SSD (m) required: flat grade[5]	Approx. Approach Grade (%)[6]	Grade Correction (m)	Min. SSD (m) required: grade corrected
SISD-A1	Westbound to/from vehicle on crossover[7] - without tree clearing	5.3 & 5.4	**58m**	80 km/h	114m	2% up	-4m	110m
SISD-A2	Westbound: to/from vehicle on crossover[7] - with tree clearing	5.3 & 5.4	**178m**	80 km/h	114m	2% up	-4m	110m
SISD-A3	Westbound: to/from propped R-turn veh.[8]	n/a	**140m**	80 km/h	114m	2% up	-4m	110m
SISD-A4	Eastbound: to/from vehicle on crossover[7]	5.5	**160m**	80 km/h	114m	0% (flat)	0m	114m
SISD-A5	Eastbound: to/from propped R-turn veh.[8]	n/a	**120m**	80 km/h	114m	0% (flat)	0m	114m

The available sight distances ranging between 120m and 178m (after tree clearing) satisfy the absolute minimum property access stopping sight distance requirements of 110m westbound and 114m eastbound.

[5] AGRD03-10 Table A9 using A driver reaction time of 2.0 seconds has been adopted, with deceleration d = 0.46.

[6] Approach gradient in each direction varies; the inserted value is average gradient estimated within the required SISD length

[7] EDD SISD-1, SISD-2 & SISD-4 were assessed to/from a viewing point on proposed crossover "A" setback 3.0m from the painted edge line

[8] EDD SISD-3 & SISD-5 were assessed to/from a car propped on Wildwood Road waiting to turn right into crossover A



Photo 5.3: Crossover "A" - SISD-1 view of westbound traffic approaching



Photo 5.4: Crossover "A" enlarged SISD-1 view of westbound traffic approach - showing tree obstruction to SISD



Photo 5.5: Crossover "A" SISD-4 view of eastbound traffic approaching

Summary for Location A:

i. Westbound SISD-A1 is constrained by roadside vegetation (photo 5.4) to only 58m. Ahead of any other consideration, a crossover built at location A requires roadside clearing of the offending tree, which will then improve the available sight distance to 178m (SISD-A2), which only just satisfies the "normal" minimum SISD-2 intersection requirement of 177m (Table 5.1a), but comfortably satisfies the absolute minimum property access sight distance requirement 107m (Table 5.1b);
ii. Notwithstanding the SISD-1 tree clearing considerations at note i, other sight distance assessments SISD-A3, SISD-A4 & SISD-A5 all have sight distances falling short of "normal" minimum distances listed in table 5.1a, but otherwise can be accepted based on satisfying the absolute minimum property access SSD requirements listed in Table 5.1b

In summary, crossover location A can be considered acceptable subject to roadside clearing being able to be approved and undertaken as described at note i.

In regard to the proposed tree clearing, it is noteworthy that the Wildwood Road pavement at this location is misaligned outside of its road reserve. The site's lot boundary coincides approximately with the painted road edge-line marking, and the entire verge in the right side of the photo 5.4 (including the problem tree) sits inside the development site.

5.2.3 Sight Distance Assessments - Location B

The sight distance assessments at location B are presented in Table 5.2a relative to the AGRD04A-17 intersection criteria, and in Table 5.2b relative to the relative to the absolute minimum property access criteria (equal to SSD).

Table 5.2a: SISD Assessments - Proposed Crossover Location B - Intersection Criteria

Sight dist. #	Direction of approaching Wildwood Road traffic	Photo #	SISD available (m)	Minimum SISD Required				
				Design Speed (km/h)	Min. SISD (m) required: flat grade[9]	Approx. Approach Grade (%)[10]	Grade Corr'n (m)	Min. SISD (m) required: grade corrected
SISD-B1	Westbound: to/from vehicle on crossover[11]	5.5	**130m**	90 km/h	214m	4% down	+11m	225m
SISD-B2	Westbound: to/from propped R-turn veh.[12]	n/a	**130m**	90 km/h	214m	4% down	+11m	225m
SISD-B3	Eastbound: to/from vehicle on crossover[11]	5.6	**245m**	90 km/h	214m	6% up	-13m	201m
SISD-B4	Eastbound: to/from propped R-turn veh.[12]	n/a	**>245m**	90 km/h	214m	6% up	-13m	201m

The available eastbound sight distances of 245m for SISD-B3, and >245m for SISD-B4, satisfy the minimum required (grade corrected) distance of 201m required for normal intersection design, however the westbound available sight distance of 130m falls significantly short of the minimum required (grade corrected) distance of 225m.

[9] A driver reaction time of 2.0 seconds has been adopted, with deceleration d = 0.36.

[10] Approach gradient in each direction varies; the inserted value is average gradient estimated within the required SISD length

[11] SISD-B1, & SISD-B3 were assessed to/from a viewing point on proposed crossover "B" setback 3.0m from the painted edge line

[12] SISD-B2 & SISD-B4 were assessed to/from a car propped on Wildwood Road waiting to turn right into crossover B

Table 5.2b: SISD Assessments - Proposed Crossover Location B: Absolute minimum property access criteria

Sight dist. #	Direction of approaching Wildwood Road traffic	Photo #	SISD available (m)	Minimum SISD Required (using SSD)				
				Design Speed (km/h)	Min. SSD (m) required: flat grade[13]	Approx. Approach Grade (%)	Grade Correction (m)	Min. SSD (m) required: grade corrected
SISD-B1	Westbound to/from vehicle on crossover[14]	5.5	**130m**	90 km/h	139m	4% down	+11m	150m
SISD-B2	Westbound: to/from propped R-turn veh.[15]	n/a	**130m**	90 km/h	139m	4% down	+11m	150m
SISD-B3	Eastbound: to/from vehicle on crossover[4]	5.6	**245m**	90 km/h	139m	6% up	-13m	126m
SISD-B4	Eastbound: to/from propped R-turn veh.[5]	n/a	**>245m**	90 km/h	139m	6% up	-13m	126m

The available eastbound sight distances of 245m for SISD-B3, and >245m for SISD-B4, comfortably satisfy the minimum required (grade corrected) distance of 150m required for absolute minimum property access stopping sight distance, however the westbound available sight distance of 130m falls continues to fall short (only slightly) of the absolute minimum property access (grade corrected) stopping sight distance of 150m.
the

Summarised Findings for Location B:

The available eastbound sight distances of 245m and greater (SISD-B3 & B4) already satisfy the minimum normal intersection design requirements shown in Table 5.2a.

However, the westbound available sight distance of 130m (SISD-B1 & B2) falls significantly short of the normal minimum intersection SISD distance of 225m listed in Table 5.2a and falls slightly short of the minimum property access stopping sight distance requirements of 150m listed in Table 5.2b, for 90 km/h operating speed.

Despite being an extant crossover proposed to be retained with no significant change to current (vineyard only) traffic usage, approval agencies may ultimately require further consideration given to relocating this crossover westwards, perhaps as little as 30m in pursuit of achieving absolute minimum westbound property access SISD-B1/B2 sight distance of no less than 150m whilst at the same time ideally maintaining eastbound intersection SISD-B3/B4 ideally no less than 201m (Table 5.2a) and absolutely no less than 126m (Table 5.2b), assuming the posted speed limit is to remain 80 km/h).

However, if MRWA downgrades this portion of Wildwood Road to be a 70 km/h posted speed limit (refer section 5.5), the minimum required sight distances will be less than those shown in Tables 5.2a and 5.2b such that, in that event, crossover B in its present location will satisfy the absolute minimum distances required for property accesses.

[13] AGRD03-10 Table A9 using A driver reaction time of 2.0 seconds has been adopted, with deceleration d = 0.46..

[14] EDD SISD-B1 & SISD-B3 were assessed to/from a viewing point on proposed crossover "A" setback 3.0m from the painted edge line

[15] EDD SISD-B2 & SISD-B4 were assessed to/from a car propped on Wildwood Road waiting to turn right into crossover B

Alternatively, in absence of amendment to the current posted 80 km/h speed limit, the City may be receptive to retain the existing crossover B location as an extant non-compliant crossover, considering its very low turning volumes are actually being reduced by the development proposal (refer to section 5.3.3, Table 5.4 column 4 compared to column 1).



Photo 5.5: Location B (viewing eastwards - Wildwood Road westbound approaching vehicles)



Photo 5.6: Location B (viewing westwards - Wildwood Road eastbound approaching vehicles)
This photo shows a departing vehicle; the approaching vehicle viewpoint for SISD assessment is the middle of the lane that is right of the road centreline

5.3 Traffic Volumes & Turn Lane Warrants

5.3.1 Turn Treatments

This section identifies the type of turn treatment (i.e. intersection or property access horizontal geometry) required at access locations A & B based on an assessment of turning volumes and through traffic volumes using Austroads Guide to Traffic Management Part 6-2020 (AGTM06-20) Figure 6.

Table 5.3 lists the various types of treatments and associated guideline drawings published on MRWA's website; local authorities take guidance from these guideline drawings.

Table 5.3: MRWA Turn Treatments

Application	Turn Treatment	MRWA Guideline Drawing
Property Accesses	Simple Turn Treatments (SR, SL)	202231-0008
Intersections	Basic Turn Treatments (BAR, BAL)	200131-0081 (Rural) 202231-0009 (Urban)
	Auxiliary Turn Treatments (AUR, AUL)	200131-0083
	Channelised Turn Treatments (CHR, CHL)	200131-0084 200131-0085 (CHL Free flow) 201931-0044

5.3.2 Existing Traffic (on Wildwood Road)

Ascent Engineering obtained from the City of Busselton Wildwood Road traffic count data summarised in Appendix A and has used that data as further detailed in Appendix A to derive the following estimates of Wildwood Road peak hour traffic adjacent to the site in the future design year-2038, based on a 15-year forward planning horizon from 2023. The 2023 traffic data summarised in Appendix A (and provided in full in Appendix B) was recorded exactly at proposed crossover location A, but can be applied equally to existing crossover location B where the Wildwood Road traffic volume will have negligible difference:

- AADT (two-way), 2023 measured = 533 vpd

Year 2038 traffic estimates:

- AADT (two-way) = 1084 vpd
- AM peak (10%) (11:00am-12:00 noon):
    - 2-way = 108 vph
    - eastbound (44%) = 48 vph
    - westbound (56%) = 60 vph
- PM peak (11%) (2:00pm-3:00pm):
    - 2-way = 119 vph
    - eastbound (47%): 56 vph
    - westbound (53%): 63 vph

These year 2038 Wildwood Road traffic estimates together with estimates of the traffic generated by the development in section 5.3.3 are used for assessing warrants for pavement widenings, auxiliary lanes and channelisation at crossover locations "A" and "B", in section 5.3.4.

5.3.3 Traffic Generated by the Proposed Development

Table 5.4 provides an estimate of average annual daily traffic generated by the site, pre-development and post development;

Table 5.4: Estimate of Average Annual Daily Traffic (AADT) generated by the proposed development

	Column 1	Column 2	Column 3	Column 4
Land Use	**Existing (pre-development)**	**Future (post-development)**		
Using Crossover location ...	**B**	**TOTAL (A & B)**	**A**	**B**
existing detached dwellings (x2)	18 vpd[16]	n/a	n/a	n/a
Manager's Quarters	n/a	9 vpd[17]	0 vpd	9 vpd
vineyard workers & deliveries	10 vpd[18]	10 vpd[18]	0 vpd	10 vpd
guest rooms (x28)	n/a	84 vpd[19]	84 vpd	0 vpd
guest chalets (x4)	n/a	24 vpd[20]	24 vpd	0 vpd
on-site dining	n/a	negligible[21]	negligible	0 vpd
new second dwelling house	n/a	9 vpd[(16)]	9 vpd	0 vpd
Total AADT	**28 vpd**	**136 vpd**	**115 vpd**	**19 vpd**

The predicted 136 vpd AADT (column 2) is a relatively low daily volume for a commercial development and is a result of the proposed development not catering for, therefore not attracting, significant general public visitation as would otherwise arise from other tourism land uses such a cellar door sales or a public restaurant.

[16] detached dwellings typically generate between 8 and 10 vehicle trips per day;

[17] on-site manager's quarters is assumed to generate the same 9 vpd traffic generation as a detached dwellings;

[18] 10 vpd (AADT) existing daily traffic movements is based on discussions held by Ascent with the current vineyard operator and is considered to remain a reasonable estimate when seasonal on-site worker accommodation is added for 5 persons (max);

[19] based on typical daily vehicle trips for motels, identified as 3 per unit, (in this case x 28 units);

[20] based intuitively on each (8 person) chalet generating double the daily traffic volume as each (2 person) homestead unit, therefore 6 vpd which compares as 2/3rds of the 9 vpd typically generated by detached (non-tourist) residential dwellings;

[21] On-site dining will be limited to visitors using the site accommodation. It will not be open to the general public and so will not generate vehicle trips on the external road network that would normally arise from restaurants and cafes open to the general public. There will be a small number of trips generated by deliveries and works engaged to operate this dining facility however that number of trips will be small and is ignored on basis that it will in considered to be included in the vehicle trips per guest room allowance.

The following assumptions are adopted for distributing the estimated traffic generated by the development over the external road network:

- Peak AM and PM volumes are modeled as 10% and 11% respectively of the daily volumes, assuming the same ratios observed for the major (Wildwood) Road traffic volumes in the City's 2023 count;
- 50% of all trips will be inbound to the site, and 50% will be outbound, during each of the AM (11:00am-12:00 noon) and PM (2:00pm-3:00pm) peak periods;
- 50% of all traffic generated by the site will travel to/from the west along Wildwood Road; to access cellar doors and other tourism attractors along Caves Road, the Dunsborough town site, Cape Naturaliste (lighthouse, Eagle Bay & Meelup etc, coastal town sites of Yallingup, Gracetown, Prevelly etc, Cape-to-Cape west-coast beach recreation sites and Margaret River via Caves Road. 50% of all traffic generated by the development site will travel to/from the east along Wildwood Road (to access inland cellar doors and tourism attractors), town sites of Carbanup, Vasse & Busselton, and Margaret River via the inland Bussell Highway route.

Based on these assumptions, the projected peak-hour turning movements at the proposed site accesses crossovers A & B on Wildwood Road and , together with through-traffic flows from section 5.2.4.1 are as shown on Figures 5.2 and 5.3.

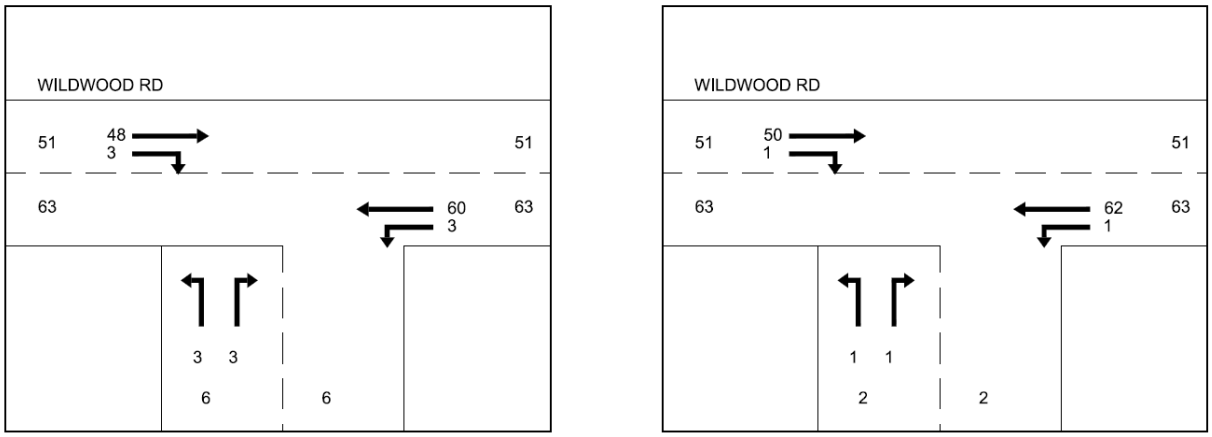

Figure 5.2: AM Peak Hour Traffic Movements

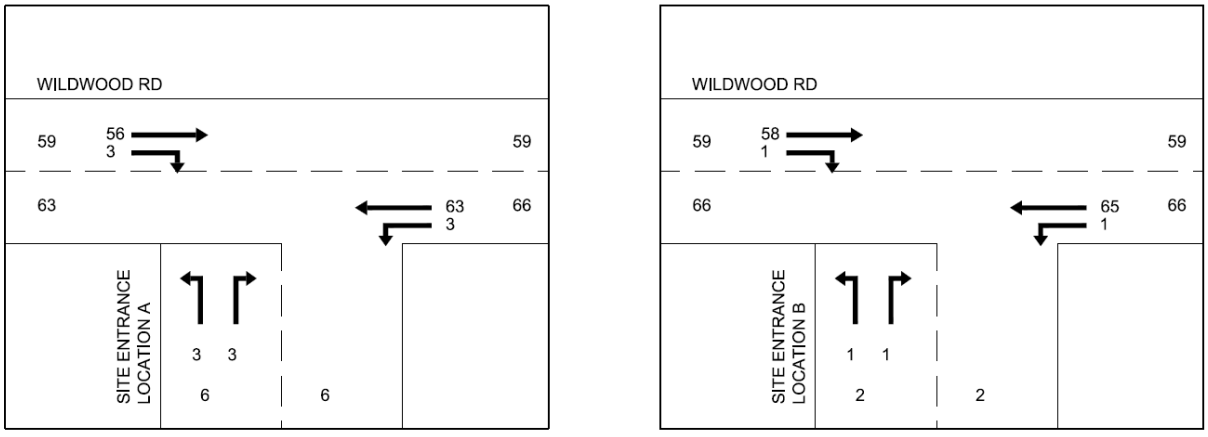

Figure 5.3: PM Peak Hour Traffic Movements

5.3.4 Auxiliary and Widening an Turn

The turn volumes at crossover B are so low as to warrant no further consideration, i.e. crossover B should be acceptable to remain as a "property access simple turn treatment" with geometry based on MRWA drawing 200431-0193-2, "Rural Driveway Setout - Single Unit Truck", and including sealing from the Wildwood Road pavement at least to the property boundary.

Warrants for left and right turn pavement widening, auxiliary lane and channelisation treatments for the proposed driveway location A are assessed by plotting the location A estimated traffic volumes on AGTM06-20 Figure 3.25, as shown on Figure 5.4 hereunder.

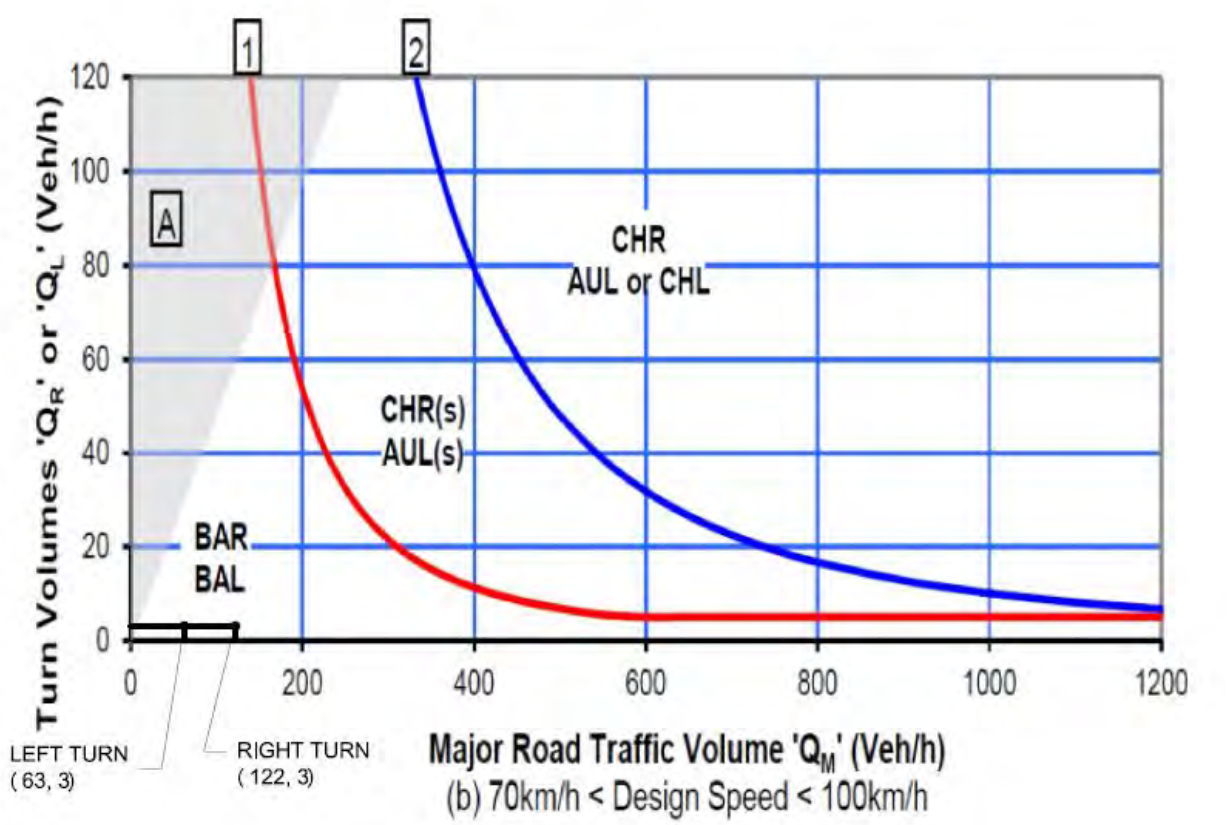

Figure 5.4: AGTM06-20 Fig 3.25 - Warrants for Left and Right Turn Treatments at Location A

Left Turn:

The critical left turn at crossover A is the PM peak hour left turn into proposed crossover location A, with 3 vehicles per hour (QL) projected to turn left, with a through movement volume (QM) of 63 vehicles per hour. This level of activity at most warrants a Basic Left Turn treatment (BAL) based on left turn aspects of MRWA standard drawing 200131-0081.

Right Turn:

The critical right turn movement will be the PM peak hour right turn into the proposed access road from Wildwood Road. The projected volume of turning traffic (QR) is 3 vehicles per hour, with a through movement volume of 56 vehicles per hour, and turning against an opposing traffic volume of 66 vehicles per hour, giving a total major road traffic volume (QM) of 122 vehicles per hour. This level of activity at most warrants only a Basic Right Turn treatment (BAR) based on right turn aspects of MRWA standard drawing 200131-0081.

5.4 Property Access Geometry

5.4.1 Crossover A

The minimum BAL/BAR intersection treatments shown on MRWA guideline drawing 200131-0081, would require extensive road upgrade and roadside clearing if adopted at his constrained brownfield site, which Ascent Engineering believes is not warranted for this relatively low volume property access.

For low volume property accesses MRWA publishes a suite of rural driveway guideline drawings with geometric requirements that vary according to the design vehicle. In this case the relevant MRWA guideline drawing 200431-0193 "Rural Driveway Setout - Single Unit Truck" is appropriate assuming a need to cater for single-unit trucks but not semi-trailers.

Initial verbal advice obtained from the City of Busselton supports this view, that driveway geometry at location A having geometry should be based on MRWA guideline drawing 200413-0193.

5.4.2 Crossover B

Regardless of whether crossover B remains in its present location or being relocated further west as discussed in section 5.2.3, it should be upgraded as required to achieve single unit truck turn geometry, again generally as shown on MRWA guideline drawing 200431-0193, the same as proposed for crossover A, including a bitumen seal at least from the Wildwood road pavement to the property gate.

5.5 Possible Amendment to Wildwood Road Posted Speed Limits

Ascent Engineering as part of undertaking this traffic impact assessment made initial approaches to both the City of Busselton & to MRWA to gauge support, if any, for reduced speed limits particularly covering location A, resulting in the following advice:

- City of Busselton (Engineering Tech Officer Justin Smith) anticipates the City would most likely support a speed reduction at the west end of Wildwood Road if it is warranted by measurement of existing traffic speeds confirmed to be no more than 80 km/h along the development frontage (not otherwise just to suit this new development). The City is also presently liaising with Augusta Margaret River Shire and others, collectively doing a wholistic review of speed limits and road safety on rural roads across both municipalities, which may ultimately have some influence on decisions made for Wildwood Road.

- MRWA (Alan Roberts - Network Operations Manager SW Region): advised that MRWA may support reduced speed limits on Wildwood Road if warranted by road geometry and the proposed traffic counter speed results (to be) obtained (or otherwise perhaps based on crash statistics). However, rather than extend the 60 km/h zone further across the front of the development, MRWA advise it would instead be more inclined (if investigation justifies) to drop the entire 80km/h speed zoned length of Wildwood Road (from Caves Road to Carbanup) down to a 70 km/h posted limit.

The aforementioned advice was obtained prior to the recent installation of traffic counters confirming 85th percentile speeds in both directions along Wildwood Road to be less than 80 km/h at location "A".

Given the traffic data now obtained confirms 85th percentile speeds at location "A" to be less than 80 km/h, It is not crucial to the development that MRWA necessarily implement reduced speed limits at this time. However, that is something that MRWA and the City of Busselton may wish to further consider with the benefit of the additional traffic data now obtained (in Appendix B)

6 Vehicle Access & Parking

6.1 Sealed Access Roads

City of Busselton property development standards state,

> *"The criteria or warrant for road sealing internal (private) access roads, shall be where the ADT for the expected level of development is 50 or more vehicles per day.*
> *Development of more than 5 chalets or equivalent in traffic generation in other forms of development, shall be deemed to require a sealed entry, driveway and road access. For roads, a 3 metre wide single coat seal or asphalt surface, is the minimum required."*

A reasonable interpretation of this requirement applied to the proposed development is that the proposed driveway from Wildwood Road crossover location A should be sealed to the Main Facilities Building, guest rooms (blocks) and chalets, although the final portion of access roads directly serving the last two chalets B3 & B4 could, at the discretion of the proponent, be provided only as unsealed gravel driveway access. (Note - section 5.3.3 estimates an ADT of 12 vehicles per day traffic generated in total by the last two chalets B3 & B4).

Access driveways directly serving only the Manager's quarters, the farmworker/staff accommodation and the existing farm service sheds also do not need to be sealed, although crossover B from the Wildwood Road pavement to the site boundary should also be sealed.

6.2 Parking Facilities

Car Parking

The minimum number of car parking bays required for the proposed development is prescribed by Table 6.1 hereunder, extracted from the City of Busselton's *Local Planning Policy No. 2.1 - Car Parking.*

Table 6.1: Minimum Number of car parking bay (CoB Local Planning Policy No. 2.1)

LAND USE	MINIMUM NO. OF ON-SITE CAR PARKING SPACES (outside the CBD)
ALL RESIDENTIAL	
Dwelling Units:	As per the R Codes
OTHER RESIDENTIAL	
Residential Building *or* Residential Hotel *or* Boarding House	1.5 spaces per bed
Professional Consulting Rooms	1 space for the residence plus 3 spaces per consultant
TOURIST	
Motel	1 space per unit plus 1 visitor space per 4 units plus provision for bus parking for 20 units or more
Caravan Park/Chalet Park/Tent Park Bed & Breakfast Establishments	1 per site plus 1 visitor space for every 4 sites 2 spaces per dwelling plus 1 space for each guest room
Backpacker Hostel Accommodation	0.3 per bed plus 2 bays per manager / caretaker and 1 for every additional member of staff
Guesthouse	1 per suite plus 1 for manager plus 1 for each additional member of staff
RETAIL AND COMMERCIAL	
Hotel	1 space per bedroom plus 1 space for every $3m^2$ of public bar area plus 1 space for every $4m^2$ of lounge area
Tavern	1 space per $3m^2$ of public area
Restaurant/Refreshment Room	1 space per 4 seats/$6m^2$ of public area
Licensed Club or Cabaret	1 space per $5m^2$ of bar and lounge area
Service Station	2 spaces per working bay and 1 for each employee
Roadhouse	*Parking shall be provided in accordance with the minimum number of on-site car parking spaces required for the uses "Shop" and "Restaurant/Refreshment Rooms".*
Shop	1 space per $30m^2$ of net lettable area (NLA) plus 1 loading bay per development

Table 6.2 interprets Local Planning Policy No. 2.1 (Table 5.1) applied to this development with a comparison to the number of bays proposed on the plan in Appendix C, to demonstrate compliance to Car Parking Policy No. 2.1.

Table 6.2 - Car Parking Bays

Building Description	**Minimum Bays Required**	**Basis**	**Number of Bays provided**
New second dwelling house	2	dwelling unit as per the R Codes (clause 3.1)	3
Main Facilities Building	0	Nil additional to the "motel land use" guest parking provided for the rooms (blocks)	0
Chalets A1 & A2 (north of main facilities building)	4 (2 per chalet)	Guest house land use is considered best fit: "1 per suite (treating each two-bedroom side of each chalet as 1 suite)" requires 2 bays per chalet	13 (incl. 1 disabled bay)
Rooms (blocks 3, 4 & 5 north of main facilities building)	15	Motel land use is considered best fit - "1 space per unit plus 1 visitor space per 4 units: - applied to these 12 rooms =15 bays	22 (incl. 3 disabled bays)
Rooms (blocks 1 & 2, south of main facilities building)	10	Motel land use is considered best fit: "1 space per unit plus 1 visitor space per 4 units: - applied to these 8 rooms = 10 bays	14 (incl. 4 disabled bays)
Rooms (block 6 southeast of main facilities building)	10	Motel land use is considered best fit: "1 space per unit plus 1 visitor space per 4 units: - applied to these 8 rooms = 10 bays	10 (incl. 1 disabled bay)
Chalets B3 & B4 (east of main building)	4 (2 per chalet)	Guest house land use is considered best fit: "1 per suite (treating each two-bedroom side of each chalet as 1 suite)" requires 2 bays per chalet	9 (incl. 1 disabled bay)
Manager's Quarters & Farm Workers Accommodation	7	Guesthouse is considered the best fit: "1 per suite" (requires 5 bays) "plus 1 for manager plus 1 for each additional member of staff" (allow +2 bays for manager + staff) (5+2 = 7 min.)	2 on "existing access" + 7 on new bays =9 (incl. 1 disabled bay)
Total	**52**		**80**

Parking for the Disabled

The City of Busselton's Local Planning Policy No. 2.1 also requires, "*Special parking spaces for disabled should be provided, at the rate of two spaces per hundred spaces provided overall ... should be located as close as possible to entrances, areas or facilities which are likely to be visited by disabled persons and should be connected by pathways or ramps that conform with the Australian Standard AS 1428- 1977 "Design Rules for Access by the Disabled*".

Note that dimensions for dedicated disabled parking bays and associated shared areas are prescribed in Australian Standard AS2890.6-2022, "Off-street Parking for People with Disabilities"

Policy 2.1 is interpreted to require only 2 disabled bays to be located amongst the 80 car bays being provided, which is markedly exceed by the number of disabled bays proposed.

6.3 Internal Driveway Geometry (access for buses & service vehicles, vehicle turnaround areas and driveway widths)

6.3.1 General

There is no expectation of any bus or coach access required to the proposed development.

There is also no expectation or requirement for large combination or articulated semi-trailer vehicles to access the proposed development.

On that basis, crossover and internal roadway geometry should be designed sufficient for rigid (non-articulated) truck access for occasional purposes that include:

- deliveries to site, and transport off-site, associated with the ongoing vineyard operation;
- service deliveries associated with the guest facilities, i.e. the proposed homestead building and chalets, such as food deliveries, linen service etc.;
- rubbish collection and transport from the site, notwithstanding that the City of Busselton will not provide a rubbish collection service to this site (i.e. access for a privately contracted refuse collection and disposal service such as skip bins); and
- emergency vehicles including bushfire emergency vehicles.

A bushfire assessment report prepared by Envision Bushfire Protection identifies the internal access requirements for bushfire emergency vehicles, based on criteria stipulated in the DPLH Guidelines for Planning in Bushfire Prone Areas V1.4, that include:

- – requirements in Table 6, Column 4 of the guidelines, specifically;
    - minimum trafficable width (regardless of sealed or unsealed) to be 4.0m;

    - maximum longitudinal gradient = 1:10 (10%) if and where the driveway is unsealed, otherwise (steeper) maximum longitudinal gradient of 1:7 (14.3%) if sealed,
    - maximum average grade sealed road = 1:10 (10%), and
    - minimum 8.5m inner radius of curves;
- passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres); and
- turn-around area as shown in Figure 28 of the guide and within 30 metres of the habitable building.

The above requirements need to be applied to all internal sealed and unsealed roads that are required by the bushfire management plan to provide for emergency vehicle access or escape routes for guests and workers.

6.3.2 Driveway Gradients

The primary entrance driveway leading upslope from proposed crossover location A has been assessed against the bushfire vehicle criteria in section 6.3.1. The existing ground upslope from location A is almost exactly 1V: 7H for the first 160 metres, which dictates the sealed driveway slope there to also be 1V:7H, which is the maximum gradient permitted for bushfire fighting trucks access (on sealed roads) notwithstanding two other considerations below:

i. The additional bushfire guideline requirement for "maximum average grade sealed road = 1:10 (10%)" is an ambiguous requirement that is open to interpretation. It is understood that this 160m long driveway segment at 1:7 (i.e. 14.3%) gradient upslope of driveway crossover "A" is considered in Bushfire management report to be an acceptable "performance based solution" on the grounds that Austroads Guide to Road Design - Part 3 (2009) Table 8.2, identifies a slightly steeper 15% gradient as the maximum negotiable by a truck, therefore satisfactory on low volume roads.

ii. The driveway leading upslope from location A will also require a length of relatively flat graded segment at its first 10 metres from the edge of Wildwood Road bitumen to approximately the property boundary, to meet contemporary road design standards. This requirement coupled with Wildwood Road already being in cutting at location A will lead to a driveway level being of the order of 1.0 metre lower than the existing ground level where it crosses the front boundary. For a straight driveway, this would further require a segment steeper than 1V:7H gradient to return to the existing ground level, which is considered unacceptable (sub-standard) for driveways used by trucks or general public cars. A solution is to introduce a chicane at the start of the driveway generally as shown on Figure 6.1 and the plans in Appendix C. Preliminary design indicates that the chicane as shown should achieve a driveway no steeper than 1V:7H for the entire first 200 metres length to the top of the hill, including the flatter initial portion required within Wildwood Road verge. This will require some clearing of one small corner of the existing vineyard where impacted by the chicane earthworks as evident on Figure 6.1.



Figure 6.1: DPLH Guidelines for Planning in Bushfire Prone Areas V1.4 - Figure 28

Ascent Engineering understands that all other internal roadways where required for fire truck access can meet the maximum gradient requirements stipulated in the Bushfire Planning Guidelines - refer to Envision's Bushfire Management Plan for further details

6.3.3 Turnaround Provisions

Figure 28 in the bushfire planning guide (Figure 6.2 hereunder) provides the minimum requirements for bushfire emergency vehicle turnaround, by way of a circular turnaround or else tee-head turnaround. These turnaround geometry options in Figure 6.2 represent the appropriate minimum geometry that Ascent Engineering recommends be applied at all driveway terminations throughout the proposed development, except additional check should be made at detailed design stage to ensure that sufficient geometry is also provided suitable for a single unit truck to turn around at the vineyard sheds, by way of 26m circular turnaround, or else a loop road, or a tee-head turnaround arrangement specifically designed to suit for single unit truck maneuvers.

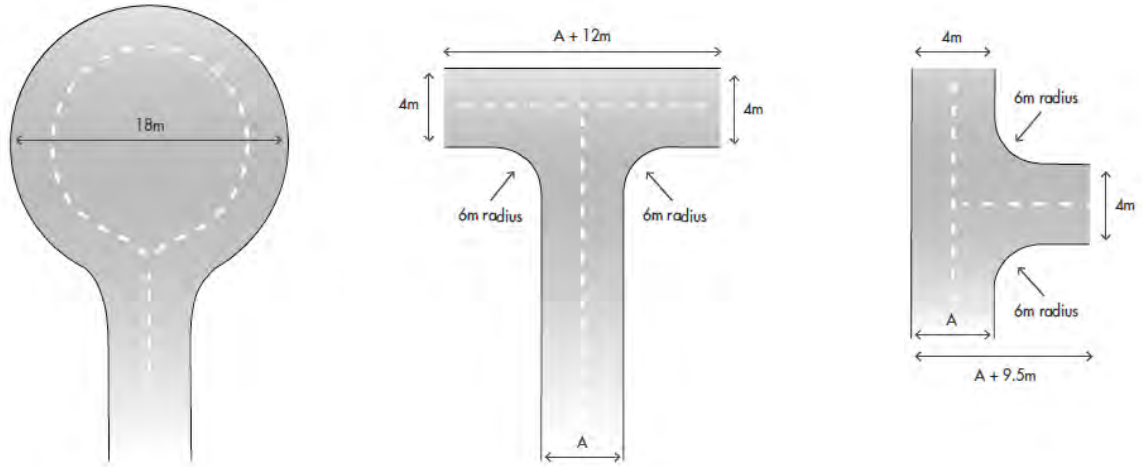

Figure 28: Design requirements for a turn-around area for a private driveway or battle-axe

Figure 6.2: DPLH Guidelines for Planning in Bushfire Prone Areas V1.4 - Figure 28

7 Other Considerations

7.1 Public Transport

TransWA operate a regional bus transport service along Caves Road with the nearest stops being at Yallingup hall (3.5km north of the site) and Gracetown turnoff (20km south of the site). There is no public bus service directly accessible to the site.

The proposed land uses within the development rely on private vehicle patronage and do not typically require public transport.

The Public Transport Authority school bus services operates along Caves Road and along Wildwood Road adjacent to the site, however the proposed land uses do not create a need or require any consideration of school bus stop provisions.

7.2 Pedestrian and Cycle Access

There is no pedestrian or cyclist infrastructure existing or proposed within Wildwood Road (or Caves Road) adjacent to the site.

The proposed land uses within the development rely on private vehicle patronage and should not typically generate any pedestrian or bicycle movements along the external Wildwood Road and Caves Road corridors.

Appendix A - Wildwood Road Summarised Traffic Counts and Estimates

Ascent Engineering initially in August 2022 obtained from the City of Busselton the nearest Wildwood Road traffic count data available at that time, that was recorded in 2019 and again later in 2021 3.3km east of the site, or 100m west of the Commonage Road intersection, listed in columns 1 & 2 of Table A.1 hereunder.

More recently in August 2023, traffic counters were placed and counts obtained on Wildwood Road at the exact location of proposed crossover location A, 600 metres east of Caves Road, summarised in column 3.

Table A.1: Wildwood Road Traffic data 100m west of Commonage Road intersection

		Column 1	**Column 2**	**Column 3**
Item	**Year**	**2019**	**2021**	**2023**
	Location on Wildwood Road	**3.3km east**	**3.3 km east**	**Crossover Location A**
	period counted	**19.02.19 - 6.03.19 (2.1 weeks)**	**30.06.21 - 21.07.21 (3.0 weeks)**	**7.08.23 - 15.08.23 (1.1 weeks)**
A	7-day Average daily traffic	1077 vpd	925 vpd	533 vpd
B	% Trucks	not supplied	8.9%	13.2%
C	Mon-Fri 5-day Average daily traffic	943 vpd	898 vpd	494 vpd
D	Sat-Sun 2-day Average daily traffic	1457 vpd	993 vpd	652 vpd
E	Peak traffic day	Sunday	Saturday	Saturday
F	Peak day traffic count	1513 vpd	1056 vpd	679 vpd
G	AM peak period (7-day count)	11:00am - 12:00 noon	11:00am - 12:00 noon	11:00am - 12:00 noon
H	AM peak hour count (7-day average)	96.9 vph	91.8 vph	52.9 vph
I	AM peak hour count (% of daily volume A)	9.0%	9.9%	9.9%
J	AM peak hour count - westbound (7-day average)	not supplied	51.5 vph	29.6 vph
K	AM peak hour count - westbound (7-day average as a % of 2-way volume F)	not supplied	56.1%	56.0%
L	AM peak hour count - eastbound (7-day average)	not supplied	40.3 vph	23.3 vph
M	AM peak hour count - eastbound (7-day average as a % of 2-way volume G)	not supplied	43.9%	44.0%
N	PM peak period (7-day count)	3:00pm - 4:00pm	12:00noon - 1:00pm	2:00pm - 3:00pm
O	PM peak hour count (7-day average)	118.7 vph	109.9 vph	56.0 vph
P	PM peak hour count (% of daily volume A)	11.0%	11.9%	10.5%
Q	PM peak hour count - westbound (7-day average)	not supplied	63.4 vph	29.5 vph
R	PM peak hour count - westbound (7-day average as a % of 2-way volume F)	not supplied	57.7%	52.7%
S	PM peak hour count - eastbound (7-day average)	not supplied	46.5 vph	26.5 vph
T	PM peak hour count - eastbound (7-day average as a % of 2-way volume F)	not supplied	42.3%	47.3%

The average daily traffic volumes at Location A are evidently somewhat less than the volumes 3.3km further east, as would be expected considering the type and directionality of the traffic generated by land uses adjoining or accessing the intermediate 3.3km section of Wildwood road.

For the purpose of further assessing auxiliary and turn lane warrants prescribed by Austroads Guide to Traffic management Part 6-2020 (AGTM06-20) the August 2023 counts are used, further adjusted for seasonal (tourist) traffic variation by assumption base on interpretation of the 2019/2021 counts, as outlined hereunder:

a) 7-day average count in Winter 2023, at Location A = 533 vpd (recorded)
b) Increase by 13% to convert from "winter" daily traffic to average annual daily traffic (AADT), based on seasonal tourism traffic variation estimates explained below); AADT = 533 x 1.13 = 602 vpd
c) adopt 15-year planning horizon (to year 2038, relative to the manual count taken in 2023) with assumed traffic growth rate of 4% (compounding); 602 vpd x 1.04^{15} = 1084 vpd
d) assume AM peak hour is 11:00am - 12:00 noon and is 10% of daily volume (= 108 vph);
e) assume PM peak hour is 2:00 pm - 3:00pm and is 11% of daily volume (= 119 vph)
f) assume AM peak hour traffic is 56% westbound, 44% eastbound;
g) assume PM peak hour traffic is 53% westbound, 47% eastbound

In regard to the seasonal traffic adjustment made at note b), the column 1 data recorded in February/March 2019 is a summer count (7-day average at row A = 1077 vpd). Inflating this count by 2-years at assumed 4% growth rate derives a year 2021 inferred summer 7-day average traffic volume of 1165 vpd, for direct comparison to the winter 2021 winter 7-day count of 925 vpd in column 2. On that basis the summer 7-day average traffic is inferred to be 26% greater than winter average; and the all-year road daily traffic is assumed to be midway between the two i.e., 13% greater than the winter count. This 13% increase is then applied to the August 2023 winter count at Location A to estimate the year 2023 average annual daily traffic (AADT) at Location A, with the 15-year tarffic growth estimate and the peak hour and directional percentages then applied (assumed the same as the August 2023 count) to yield the following year 2038 estimates.

- AADT (two-way) = 1084 vpd
- AM peak (10%) (11:00am-12:00 noon):
    - 2-way = 108 vph
    - eastbound (44%) = 48 vph
    - westbound (56%) = 60 vph
- PM peak (11%) (2:00pm-3:00pm):
    - 2-way = 119 vph
    - eastbound (47%): 56 vph
    - westbound (53%): 63 vph

Appendix B - Wildwood Road 2023 Traffic Count Data

MetroCount Traffic Executive
Speed Histogram

SpeedHist-87 -- English (ENA)

Datasets:

Site:	**[2023019] wildwood rd (600m east of caves rd)**
Attribute:	yallingup
Direction:	8 - East bound A>B, West bound B>A. **Lane:** 0
Survey Duration:	11:20 Monday, 7 August 2023 => 10:14 Tuesday, 15 August 2023,
Zone:	
File:	2023019.EC0 (Plus)
Identifier:	U208T87R MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v5.08)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**11:21 Monday, 7 August 2023 => 10:14 Tuesday, 15 August 2023 (7.95404)**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	East (bound), P = East, Lane = 0-16
Separation:	Headway > 4 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile:	Vehicles = 1995 / 4269 (46.73%)

Speed Statistics

Direction: EW
Vehicles = 1995
Posted speed limit = 80 km/h, Exceeding = 124 (6.216%), Mean Exceeding = 83.79 km/h
Maximum = 105.1 km/h, **Minimum** = 16.5 km/h, **Mean** = 67.5 km/h
85% Speed = 76.25 km/h, **95% Speed** = 80.82 km/h, **Median** = 67.86 km/h
20 km/h Pace = 58 - 78, **Number in Pace** = 1537 (77.04%)
Variance = 78.54, **Standard Deviation** = 8.86 km/h

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-85 -- English (ENA)

Datasets:

Site:	**[2023019] wildwood rd (600m east of caves rd)**
Attribute:	yallingup
Direction:	8 - East bound A>B, West bound B>A. **Lane:** 0
Survey Duration:	11:20 Monday, 7 August 2023 => 10:14 Tuesday, 15 August 2023,
Zone:	
File:	2023019.EC0 (Plus)
Identifier:	U208T87R MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v5.08)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**11:21 Monday, 7 August 2023 => 10:14 Tuesday, 15 August 2023 (7.95404)**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	East (bound), P = East, Lane = 0-16
Separation:	Headway > 0 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2096 / 4269 (49.10%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-85
Site: 2023019.0.1EW
Description: **wildwood rd (600m east of caves rd)**
Filter time: **11:21 Monday, 7 August 2023 => 10:14 Tuesday, 15 August 2023**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1-12) Dir(E) Sp(10,160) Headway(>0) Span(0 - 100) Lane(0-16)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
0000-0100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0100-0200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0200-0300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0300-0400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0400-0500	2.0	0.5	0.0	1.0	0.0	0.0	0.0	0.7	0.5
0500-0600	0.0	2.0	0.0	1.0	0.0	1.0	2.0	0.8	1.0
0600-0700	3.0	3.5	7.0	6.0	2.0	1.0	0.0	4.2	3.3
0700-0800	13.0	15.5	17.0	26.0	18.0	4.0	7.0	17.5	14.5
0800-0900	**22.0**	17.0	16.0	**27.0**	26.0	13.0	6.0	**20.8**	18.0
0900-1000	12.0	**25.0**	18.0	19.0	22.0	18.0	14.0	20.2	19.1
1000-1100	13.0	8.0	17.0	17.0	**26.0**	22.0	29.0	14.8	17.5
1100-1200	21.5	14.0	**18.0**	19.0	25.0	**38.0**	**29.0**	19.8	**23.3**
1200-1300	19.5	**22.0**	16.0	19.0	29.0	31.0	31.0	20.8	23.4
1300-1400	16.0	18.0	17.0	22.0	26.0	33.0	35.0	19.2	22.9
1400-1500	21.0	18.0	14.0	17.0	**37.0**	**37.0**	**47.0**	21.3	26.5
1500-1600	**24.5**	18.0	**28.0**	**38.0**	29.0	26.0	39.0	**27.0**	**28.4**
1600-1700	23.5	19.0	21.0	19.0	24.0	33.0	41.0	21.7	25.5
1700-1800	14.5	19.0	22.0	21.0	30.0	23.0	25.0	20.2	21.1
1800-1900	6.0	5.0	15.0	15.0	9.0	13.0	12.0	9.3	10.1
1900-2000	0.5	2.0	2.0	2.0	1.0	7.0	5.0	1.3	2.5
2000-2100	2.5	0.0	2.0	3.0	2.0	6.0	4.0	2.0	2.8
2100-2200	2.0	0.0	1.0	0.0	2.0	0.0	1.0	1.2	1.0
2200-2300	0.0	1.0	0.0	0.0	0.0	2.0	2.0	0.2	0.6
2300-2400	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.1
Totals									
0700-1900	206.5	198.5	219.0	259.0	301.0	291.0	315.0	232.7	250.3
0600-2200	214.5	204.0	231.0	270.0	308.0	305.0	325.0	241.3	259.8
0600-0000	214.5	205.0	231.0	270.0	308.0	308.0	327.0	241.5	260.5
0000-0000	216.5	207.5	231.0	272.0	308.0	309.0	329.0	243.0	262.0
AM Peak	0800	0900	1100	0800	1000	1100	1100		
	22.0	25.0	18.0	27.0	26.0	38.0	29.0		
PM Peak	1500	1200	1500	1500	1400	1400	1400		
	24.5	22.0	28.0	38.0	37.0	37.0	47.0		

*** - No data.**

MetroCount Traffic Executive
Speed Histogram

SpeedHist-86 -- English (ENA)

Datasets:

Site:	**[2023019] wildwood rd (600m east of caves rd)**
Attribute:	yallingup
Direction:	8 - East bound A>B, West bound B>A. **Lane:** 0
Survey Duration:	11:20 Monday, 7 August 2023 => 10:14 Tuesday, 15 August 2023,
Zone:	
File:	2023019.EC0 (Plus)
Identifier:	U208T87R MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v5.08)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**11:21 Monday, 7 August 2023 => 10:14 Tuesday, 15 August 2023 (7.95404)**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	West (bound), P = East, Lane = 0-16
Separation:	Headway > 4 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2011 / 4269 (47.11%)

Speed Statistics

Direction: EW
Vehicles = 2011
Posted speed limit = 80 km/h, Exceeding = 191 (9.498%), Mean Exceeding = 84.55 km/h
Maximum = 103.3 km/h, **Minimum** = 20.6 km/h, **Mean** = 68.0 km/h
85% Speed = 77.40 km/h, **95% Speed** = 83.05 km/h, **Median** = 68.22 km/h
20 km/h Pace = 58 - 78, **Number in Pace** = 1484 (73.79%)
Variance = 94.23, **Standard Deviation** = 9.71 km/h

MetroCount Traffic Executive
Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-84 -- English (ENA)

Datasets:

Site:	**[2023019] wildwood rd (600m east of caves rd)**
Attribute:	yallingup
Direction:	8 - East bound A>B, West bound B>A. **Lane:** 0
Survey Duration:	11:20 Monday, 7 August 2023 => 10:14 Tuesday, 15 August 2023,
Zone:	
File:	2023019.EC0 (Plus)
Identifier:	U208T87R MC56-L5 [MC55] (c)Microcom 19Oct04
Algorithm:	Factory default axle (v5.08)
Data type:	Axle sensors - Paired (Class/Speed/Count)

Profile:

Filter time:	**11:21 Monday, 7 August 2023 => 10:14 Tuesday, 15 August 2023 (7.95404)**
Included classes:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Speed range:	10 - 160 km/h.
Direction:	West (bound), P = East, Lane = 0-16
Separation:	Headway > 0 sec, Span 0 - 100 metre
Name:	Default Profile
Scheme:	Vehicle classification (AustRoads94)
Units:	Metric (metre, kilometre, m/s, km/h, kg, tonne)
In profile:	Vehicles = 2171 / 4269 (50.86%)

Weekly Vehicle Counts (Virtual Week)

VirtWeeklyVehicle-84
Site: 2023019.0.1EW
Description: **wildwood rd (600m east of caves rd)**
Filter time: **11:21 Monday, 7 August 2023 => 10:14 Tuesday, 15 August 2023**
Scheme: Vehicle classification (AustRoads94)
Filter: Cls(1-12) Dir(W) Sp(10,160) Headway(>0) Span(0 - 100) Lane(0-16)

	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Averages 1 - 5	Averages 1 - 7
Hour									
0000-0100	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.1
0100-0200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0200-0300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0300-0400	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0400-0500	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.2	0.1
0500-0600	0.0	0.0	1.0	2.0	2.0	1.0	0.0	0.8	0.8
0600-0700	1.0	2.5	6.0	6.0	5.0	6.0	7.0	3.8	4.5
0700-0800	13.0	15.5	15.0	10.0	16.0	17.0	11.0	14.2	14.1
0800-0900	**22.0**	**28.0**	18.0	**41.0**	**38.0**	18.0	18.0	**29.2**	26.4
0900-1000	20.0	16.5	16.0	25.0	22.0	37.0	20.0	19.3	21.6
1000-1100	21.0	10.5	16.0	17.0	34.0	31.0	24.0	18.2	20.5
1100-1200	17.5	22.0	**19.0**	27.0	34.0	**55.0**	**45.0**	22.8	**29.6**
1200-1300	20.0	10.0	19.0	27.0	34.0	34.0	26.0	21.7	23.8
1300-1400	16.5	16.0	14.0	22.0	19.0	**37.0**	**35.0**	17.3	22.0
1400-1500	**27.0**	20.0	**29.0**	**30.0**	**41.0**	29.0	33.0	**29.0**	**29.5**
1500-1600	19.5	**25.0**	27.0	27.0	39.0	30.0	26.0	26.2	26.6
1600-1700	12.5	18.0	20.0	27.0	31.0	31.0	24.0	20.2	22.0
1700-1800	10.0	10.0	22.0	12.0	21.0	13.0	11.0	14.2	13.6
1800-1900	5.5	7.0	8.0	6.0	11.0	16.0	9.0	7.2	8.5
1900-2000	4.0	1.0	3.0	4.0	6.0	7.0	3.0	3.7	4.0
2000-2100	0.5	2.0	1.0	1.0	4.0	0.0	3.0	1.5	1.5
2100-2200	1.5	2.0	0.0	3.0	1.0	3.0	0.0	1.5	1.5
2200-2300	0.0	0.0	0.0	0.0	1.0	2.0	0.0	0.2	0.4
2300-2400	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.3
Totals									
0700-1900	204.5	198.5	223.0	271.0	340.0	348.0	282.0	239.3	258.3
0600-2200	211.5	206.0	233.0	285.0	356.0	364.0	295.0	249.8	269.8
0600-0000	211.5	206.0	233.0	285.0	357.0	368.0	295.0	250.0	270.4
0000-0000	211.5	206.0	234.0	288.0	359.0	370.0	295.0	251.0	271.4
AM Peak	0800	0800	1100	0800	0800	1100	1100		
	22.0	28.0	19.0	41.0	38.0	55.0	45.0		
PM Peak	1400	1500	1400	1400	1400	1300	1300		
	27.0	25.0	29.0	30.0	41.0	37.0	35.0		

*** - No data.**

Appendix C - Brooking Design Architects Site Plans A0.2 and A0.3

APPENDIX C.1



1 PROPOSED SITE PLAN
A1 - 1:2000

NOTES.

DO NOT SCALE DRAWING - USE INDICATED DIMENSIONS ONLY. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND COMMUNICATE ANY DISCREPANCIES AND/OR OMISSIONS TO THE ARCHITECT FOR DIRECTION BEFORE COMMENCING THE WORKS.

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LEGEND

- NEW SEALED BITUMEN ROAD
- EXISTING AGRICULTURAL GRAVEL ACCESS ROAD
- NEW MANAGED LANDSCAPED AREA
- MODIFIED SOIL CUT/FILL
- STONE PITCH BANKING
- EXISTING VINEYARD
- EXISTING TREE LAND VEGETATION
- EXISTING WALKTRAILS
- EXISTING TREE LAND VEGETATION OUTLINE

REV.	DATE.	ITEM.	BY.
0	20/11/23	Issued for Development Application	VD

DEVELOPMENT APPLICATION

BROOKING DESIGN ARCHITECTS PTY. LTD.
14 edward street cottesloe wa 6011 western australia
po box > 1459 fremantle wa 6959 phone > +618 9336 3888
web > www.brookingdesign.com email > tom@brookingdesign.com
architects board of WA registration > 2431 acn > 079 710 982

PROJECT.
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING.
PROPOSED SITE PLAN

STATUS / CHECKED.					DRAWN BY.	SCALE.
DA	T	CD	BP	FC	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.2	0

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APPENDIX C.2



1 **PROPOSED GROUND FLOOR SITE PLAN**
A0 - 1:500

DEVELOPMENT DATA	QTY	GFA
GFA CALCULATION		
MAIN FACILITIES BUILDING	**1**	
INTERNAL AREAS		976.70 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PART WALL ENCLOSURES)		275.60 m²
EXTERNAL UNCOVERED AREAS		204.80m²
TOT. FACILITIES BUILDING GFA (INTERNAL + EXTERNAL COVERED AREAS)		**1252.30m²**

DEVELOPMENT DATA	QTY	GFA
GFA CALCULATION		
ROOMS TYPE A	**14**	
INTERNAL AREAS		2338.00 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PART WALL ENCLOSURES)		936.60 m²
TOT. ROOMS TYPE A GFA (INTERNAL + EXTERNAL COVERED AREAS)		**3274.60 m²**
ROOMS TYPE B	**14**	
INTERNAL AREAS		2179.80 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PART WALL ENCLOSURES)		889.00 m²
TOT. ROOMS TYPE B GFA (INTERNAL + EXTERNAL COVERED AREAS)		**3068.80 m²**
TOTAL ROOMS	**24**	
INTERNAL AREAS		4517.80 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PART WALL ENCLOSURES)		1825.60 m²
TOT. ROOMS GFA (INTERNAL + EXTERNAL COVERED AREAS)		**6343.40 m²**

DEVELOPMENT DATA	QTY	GFA
GFA CALCULATION		
CHALET TYPE A	**2**	
INTERNAL AREAS		569.60 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PART WALL ENCLOSURES)		314.00 m²
TOT. CHALET TYPE A GFA (INTERNAL + EXTERNAL COVERED AREAS)		**883.60m²**
UNCOVERED TERRACES		109.20m²
CHALET TYPE B	**2**	
INTERNAL AREAS		561.40 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PART WALL ENCLOSURES)		152.00 m²
TOT. CHALET TYPE B GFA (INTERNAL + EXTERNAL COVERED AREAS)		**713.40m²**
UNCOVERED TERRACES		105.00m²
TOTAL CHALETS	**4**	
INTERNAL AREAS		1131.00 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PART WALL ENCLOSURES)		466.00 m²
TOT. CHALET GFA (INTERNAL + EXTERNAL COVERED AREAS)		**1597.00m²**
UNCOVERED TERRACES		214.20m²

DEVELOPMENT DATA	QTY	GFA
GFA CALCULATION		
SECOND DWELLING HOUSE	**1**	
INTERNAL AREAS		419.80 m²
EXTERNAL COVERED AREAS (COVERED WALKWAYS, PART WALL ENCLOSURES)		197.20 m²
TOT. SECOND DWELLING HOUSE GFA (INTERNAL + EXTERNAL COVERED AREAS)		**617.00m²**
UNCOVERED TERRACES		120.00m²
FARMWORKERS/STAFF ACCOMODATION	**1**	
INTERNAL AREAS		149.70 m²
EXTERNAL COVERED AREAS		188.60 m²
TOT. FARMWORKERS/STAFF ACCOMODATION GFA (INTERNAL + EXTERNAL COVERED AREAS)		**388.30m²**

DEVELOPMENT DATA		
PARKING	**PARKING**	**ACCESSIBLE PARKING**
MAIN FACILITIES BUILDING + ROOMS	38	8
CHALETS A	12	1
CHALETS B	8	1
SECOND DWELLING HOUSE	3	
FARMWORKERS/STAFF ACCOMODATION	6	1
	67	**11**
TOT. PARKING	**78**	

LEGEND

- NEW SEALED BITUMEN ROAD
- EXISTING AGRICULTURAL GRAVEL ACCESS ROAD
- NEW MANAGED LANDSCAPED AREA
- MODIFIED SOIL CUT/FILL
- STONE PITCH BANKING
- EXISTING VINEYARD
- EXISTING TREE LAND VEGETATION
- EXISTING WALKTRAILS
- EXISTING TREE LAND VEGETATION OUTLINE
- ASSET PROTECTION ZONE
- **RWT:** 170.000L RAINWATER TANKS 10M DIAMETER, 2.18M HIGH
- NEW EFFLUENT DISPOSAL DRIP IRRIGATION FIELD
- R — ROOM
- C — CHALET
- S — STAFF ACCOMODATION
- ENTRANCE

REV.	DATE	ITEM	BY
0	20/11/23	**Issued for Development Application**	VD

DEVELOPMENT APPLICATION

BROOKING DESIGN ARCHITECTS PTY. LTD.
16 edward street cottesloe **wa 6011** western australia
po box > 1459 fremantle wa 6959 phone > **+618 9336 3888**
web > **www.brookingdesign.com** email > **tom@brookingdesign.com**
architects board of WA registration > **2431** acn > 079 710 982

PROJECT.
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING
PROPOSED GROUND FLOOR SITE PLAN

STATUS / CHECKED.					DRAWN BY:	SCALE:
DA	T	CD	BP	FC	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.3	0

Built WA Awards — Master Builders Association — Excellence in Architecture
Design Institute of Australia

SUMMARY OF SUBMISSIONS DAP/23/2617 (CITY REF DA23/0816)
PROPOSAL: Rural Holiday Resort
SUBMISSIONS CLOSE: 7 February 2024

No.	NAME	NATURE OF SUBMISSION
External Agencies		
1.	Department of Water and Environmental Regulation	Thank you for providing the above referenced proposal for the Department of Water and Environmental Regulation (Department) to consider. The Department has identified that the proposal has the potential for impact on environment and/or water resource values and/or management. Key issues and recommendations are provided below, and these matters should be addressed: 1. **Issue: Native vegetation.** Advice**:** Based on the information provided, a clearing permit maybe required, noting that exemptions do not apply for the clearing of the single tree to facilitate the line of sight at Wildwood Road. The following advice note regarding regulatory requirements should be applied: Advice note: Based on the information provided, a clearing permit may be required, noting that exemptions do not apply for the clearing of the single tree to facilitate the line of sight at Wildwood Road. The proponent may not clear native vegetation without an approved clearing permit, for which application forms are available from https://www.wa.gov.au/service/environment/environment-information-services/clearing-permit-forms. For further information the Department of Water and Environmental Regulation's Native Vegetation Regulation staff may be contacted (admin.nvp@dwer.wa.gov.au or 6364 7098). 2. **Issue: Water supply**. Advice: The site is not serviced by a reticulated potable water supply and the proponent is to prove they have considered all potable water demands and have a secure supply to the satisfaction of the City of Busselton. Advice**:** The following advice notes regarding regulatory requirements should be applied: Advice note: The existing licence to take surface water (SWL168155) was issued under the *Rights in Water and Irrigation Act 1914* and is authorised for the use of horticultural purposes only. If surface water is proposed to be used to support the land use outlined in this development application the licence will

<table>
<tr><th>No.</th><th>NAME</th><th>NATURE OF SUBMISSION</th></tr>
<tr><td></td><td></td><td>need to be amended and the proponent is recommended to contact the Department of Water and Environmental Regulation to initiate this process, at busselton.admin@dwer.wa.gov.au or 9781 0111.

More detail pertaining to the above issues are provided in the table below.

<table>
<tr><th>Item No.</th><th>Reviewer comment/advice</th></tr>
<tr><td>1</td><td>Issue: Native vegetation
Advice: Based on the information provided, a clearing permit maybe required, noting that exemptions do not apply for the clearing of the single tree to facilitate the line of sight at Wildwood Road. The following advice note regarding regulatory requirements should be applied:
Advice note:

Based on the information provided, a clearing permit may be required, noting that exemptions do not apply for the clearing of the single tree to facilitate the line of sight at Wildwood Road. The proponent may not clear native vegetation without an approved clearing permit, for which application forms are available fromhttps://www.wa.gov.au/service/environment/environment-information-services/clearing-permit-forms. For further information the Department of Water and Environmental Regulation’s Native Vegetation Regulation staff may be contacted (admin.nvp@dwer.wa.gov.au or 6364 7098).

Discussion:
Under section 51C of the Environmental Protection Act 1986 (EP Act), clearing of native vegetation is an offence unless:
• it is undertaken under the authority of a clearing permit
• it is done after the person has received notice under Section 51DA(5) that a clearing permit is not required
• the clearing is subject to an exemption</td></tr>
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				Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (the Clearing Regulations). Clearing of the single tree to facilitate the line of sight at Wildwood Road Exemptions do not apply for the clearing of the single tree to facilitate the line of sight at Wildwood Road. The Department has not received a clearing permit application for this proposal. Application forms are available from https://www.wa.gov.au/service/environment/environment-information-services/clearing-permit-forms Additional information on how to apply for a clearing permit is available from Clearing permit forms | Western Australian Government (www.wa.gov.au). Information regarding clearing permit fees can be found here: Clearing fees – frequently asked questions | Western Australian Government (www.wa.gov.au) Please note that a new referral system under the EP Act commenced on 22 October 2021. Under the **referral system**, the Department will determine whether very minor clearing proposals require a clearing permit. The decision on whether a clearing permit is required will be made against criteria specified in the EP Act and the *Guideline: Native vegetation referrals* available here: https://www.wa.gov.au/government/publications/guideline-native-vegetation-clearing-referrals	

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		It appears that the referrals process **may** be applicable to the clearing proposed. Applicants are encouraged to review the guideline to determine whether the proposed clearing satisfies <u>all</u> of the criteria specified under section 51DA of the EP Act. If the clearing does not satisfy all of the criteria under section 51DA of the EP Act, a clearing permit is required. <u>Clearing of building BPZ/APZ</u> In the event the clearing of native vegetation is proposed for the building BPZ/APZ, based on the information provided, should development approval be issued, the proposal is likely to be exempt from the requirement for a clearing permit under Regulation 5, Item 1 of the Clearing Regulations. This exemption does not apply **prior** to development approval being issued, and the clearing for a building/structure including the APZ, combined with other exempt clearing activities on the property, must not exceed five hectares in a financial year. However, if the proposed clearing for the [BPZ/APZ] is in accordance with the Shire's Firebreak and Fuel Hazard Reduction Notice, it is likely to be exempt under Schedule 6, Clause 10 (clearing in accordance with section 33 of the *Bush Fires Act 1954*, after the building has been erected. This exemption is not constrained by the maximum permitted clearing of five hectares in a financial year. Please note that the guide to exemptions does not reflect the correct schedule location for the above BF Act exemption, given the change was made recently as part of the EP Act amendments. Please refer to Schedule 6, Clause 10 of the EP Act for the details relating to this exemption. If further clarification is required, please contact the Department's Native Vegetation Regulation section by email (admin.nvp@dwer.wa.gov.au) or by telephone (6364 7098).

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			2	**Issue: Water supply.** **Advice:** The site is not serviced by a reticulated potable water supply and the proponent is to prove they have considered all potable water demands and have a secure supply to the satisfaction of the City of Busselton. **Advice:** The following advice notes regarding regulatory requirements should be applied: Advice note: The existing licence to take surface water (SWL168155) was issued under the *Rights in Water and Irrigation Act 1914* and is authorised for the use of horticultural purposes only. If surface water is proposed to be used to support the land use outlined in this development application the licence will need to be amended and the proponent is recommended to contact the Department of Water and Environmental Regulation to initiate this process, at busselton.admin@dwer.wa.gov.au or 9781 0111. **Discussion:** The site is not serviced by a reticulated potable water supply, and it is proposed to collect rainwater for the potable supply. There is however no discussion of the water demand for the central amenities, nor the spa and two pools that are proposed. Furthermore, the Site and Soil Evaluation Report also states that 'The dam on the site is recommended for non-potable water uses'. While the property has surface water license no. SWL168155, which has an annual entitlement of 42,500kL, the authorised use is for horticulture only. Therefore, the licence will need to be amended if this water will be used for other purposes. The subject property is located within the Busselton Coast, Gunyulgup Surface Water and Busselton-Capel, Cape to Cape North, Combined Leeuwin Surficial/Fractured Rock Groundwater Subareas, as proclaimed under the *Rights in Water and Irrigation Act 1914*.	

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				There is currently no further allocation available from the Busselton Coast, Gunyulgup Surface Water under the *Whicher area surface water allocation plan (DoW 2009)* and there is limited information for the Busselton-Capel, Cape to Cape North, Combined Leeuwin Surficial/Fractured Rock Groundwater Subareas under the *South West groundwater areas allocation plan (DoW 2009)*. Available water is allocated on a first-in first-served basis and as such, there is no guarantee that water will be available at the time of development. The availability of water resources can be viewed at the department's public water register at https://maps.water.wa.gov.au/#/webmap/register. It is therefore recommended that: • the City of Busselton ensures that the potable demand has considered all needs and can be adequately met, and • include an advice note on the development approval advising the applicant of the need to amend the surface water licence if water from the dam is proposed to be used for purposes that differ to that authorised.	
			3	**Issue: Acid sulfate Soils** **Advice:** Neither a model ASS related condition nor an advice note is considered necessary in this instance **Discussion:** Acid sulfate soils (ASS) risk mapping indicates that the site is located within an area identified as representing a moderate to low risk of ASS occurring within 3 metres of the natural soil surface. DWER advises that neither a model ASS related condition nor an advice note is considered necessary in this instance, as there is no indication in the proposal to suggest that dewatering or ground disturbance is proposed.	
			4	**Issue: Wastewater** **Discussion:** Based on the information provided, including the system type, size, and proposed land application area in relation to the waterway the Department has no comment.	
			5	**Issue: Waterways** **Discussion:**	

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<tr><td></td><td></td><td>
<table>
<tr><td></td><td>The plans indicate that the works will not interface with or cross the waterway, therefore the Department has no comment.</td></tr>
<tr><td>6</td><td>Issue: Noise report
Discussion:
The City had requested, through the Department’s Water Online system, that advice being sought from our noise branch. However, the planning report nor the submission referred included an acoustic report.</td></tr>
</table>

In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed.</td></tr>
<tr><td>2.</td><td>Department of Planning Lands and Heritage</td><td>Thank you for the referral and opportunity to provide comment on DA23/0816.
The planning report prepared by Halsall & Associates and the development plans refer to a closed road reserve (PIN 534836 – 2,632 m2) in the far northern portion of the site. This former road reserve UCL PIN 534836 is still identified as Crown Land.

The development plans note that it is intended to amalgamate the closed road reserve into the Lot 101 on D84031. Land Use Management requires the applicant be formally advised to submit an application to purchase UCL PIN 534836 for subsequent conveyance and amalgamation into adjoining freehold Lot 101 on D84031 pursuant to section 87 of the Land Administration Act 1997.</td></tr>
<tr><td>3.</td><td>Main Roads WA</td><td>I refer to the City’s request for comment regarding the above development and advise that Main Roads does not support the proposed Emergency Access Way to Caves Road.

It is noted that a gate exists on the southwestern frontage onto Caves Roads which appears to be used for agricultural purposes. Google Streetview imagery suggests that the gate has been in existence at least since 2008, however, no records exist for its approval from the Region. It is noted that the access has also been modified over time and a culvert pipe has now been installed without any headwall. The access in its current form does not comply with Main Roads requirements and also appears to impact drainage discharge from the south.

The traffic impact report submitted outlines that sightlines along Caves Road are substandard. The access is also close to the Whittle Road intersection and the adjacent Credaro winery access which creates potential for traffic conflicts to occur due to the close proximity of all the access locations. The proposed Emergency Access Way also appears to</td></tr>
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		exceed the 600 metre Guidelines requirement, which may render it unsuitable for use. Given that the site has two other accesses from Wildwood Road, it is considered appropriate for any necessary development access to be investigated and/or taken from this road which features significantly lower traffic volumes. It is recommended that the existing crossover/ access to Caves Road be removed, given the lack of appropriate sight lines and the property boundary re-fenced and the road reserve reinstated to the satisfaction of Main Roads. In regards to your specific query regarding the potential for the access on Caves Road to be used as the primary access for the development, Main Roads does not support this aspect in principle due to the prevailing sight lines and the fact that alternative access exists from Wildwood Road. Main Roads' primary objective is to maintain traffic efficiency and an acceptable standard of safety on Caves Road. The proposed primary access for the development is within a 60km/h speed zone, which is a low speed environment compared to Caves Road, and is considered acceptable to cater for the demands of the development. If the access is not considered appropriate, then it is recommended that the proponent investigate alternative access locations along Wildwood Road.
4.	Department of Health	Thank you for your email dated 8 January 2024 requesting comments from the Department of Health (DoH) on the above proposal. The DoH provides the following comment: 1. Wastewater management • All wastewater systems must comply with the Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974 (the Regulations). The size and location of sewage disposal areas are to be consistent with Government Sewerage Policy. Best practice is provided in AS/NZS 1547:2012 – On-site domestic wastewater management for the soil type. DoH is unable to support the report prepared by Environmental & Landscape Management 2023 as the wastewater hydraulic/design loading rate is not consistent with Regulation 29 of the Regulations. 2. Drinking water management • Potable water must be supplied to the quality of the Australian Drinking Water Guidelines 2011. 3. Chemical hazards • It is recommended that the impacts and health risks arising from the encroachment of incompatible land uses are considered prior to determining the suitability of the site for the proposed development

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		• The Environmental Protection Authority guideline "Separation Distances between Industrial and Sensitive Land Uses" (2005) recommends that a default separation/buffer distance of 500 metres be established around vineyards where they may be significant noise, dust and odour impacts and risks arising. Alternatively, the DoH Guidelines for separation of agricultural and residential land uses allow for the creation and use of a 40 metre wide vegetative buffer around sensitive land uses where spray drift is an issue and provides detailed guidance on the design and establishment of vegetative buffers for this purpose. 4. Medical entomology • It is the recommendation of the DoH that the proponents ensure proposed infrastructure and site works do not create additional mosquito breeding habitat as follows: o Changes to topography resulting from earthworks (e.g., the installation of pipelines, footpaths, roads and the like) must prevent run-off from creating surface ponding as it may become mosquito breeding habitat. o Constructed water bodies (drainage infrastructure, infiltration basins and swales, settling ponds, wetlands, and the like) must be located, designed, and maintained so they do not create or contribute to mosquito breeding. o Constructed water bodies (drainage infrastructure, infiltration basins and swales, settling ponds, wetlands, etc) may require regular monitoring and application of herbicides and/or removal of invasive vegetation to prevent the harbourage of mosquito larvae.
5.	Department of Biodiversity, Conservation and Attractions.	The following comments are provided pursuant to DBCA's responsibilities under the Biodiversity Conservation Act 2016 (BC Act). **Advice to Shire** The Accendo Australia Environmental Assessment Report – Lot 101 (1603) Wildwood Road Yallingup (Version 3, 20 November 2023) (Report) found that Lot 101 contains habitat suitable for western ringtail possums (WRP) and black cockatoos. WRP and black cockatoos are listed as threatened fauna under the Biodiversity Conservation Act 2016 (BC Act) and the Environment Protection and Biodiversity Conservation Act 1999. The Report also found other species of conservation significance likely to be within Lot 101, including quenda and south-western brush-tailed phascogales. Report Section 4.6.2 refers to maximising the retention of existing fauna habitat trees by locating development within existing cleared and disturbed areas where possible, however some tree clearing will be required. The proponent should seek advice from the Department of Water and Environmental Regulation in relation to clearing permit requirements. If a clearing permit is required, DBCA expects that environmental values that are likely

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		to be impacted by the proposed development will be adequately considered through the assessment of the clearing permit, through which DBCA may provide advice to DWER. DBCA suggests that if development approval is provided then the approval should be subject to a clearing permit being issued. The Report recommended that a black cockatoo habitat survey be undertaken to identify fauna habitat trees to be retained within bushfire Asset Protect Zones, and for retained trees to be clearly marked/tagged. DBCA supports a requirement for a black cockatoo habitat survey to be undertaken and recommends that the fauna habitat survey include the identification of tree hollows suitable for WRP habitat. DBCA notes the Report also indicated that a management plan may be required to be prepared and implemented. DBCA recommends that a map of trees to be retained is included within the bushfire management plan. The Report also recommended that a suitably qualified fauna spotter be on-site prior to and during vegetation clearing to manage and protect fauna species, which is supported by DBCA. The Halsall and Associates Development Application (Final, 23 November 2023) (Planning Report) Section 3.0 refers to the demolition of the existing dwelling located in the central west of the site. WRP can reside in the roof cavities of buildings and a fauna spotter should also be engaged when demolition works are undertaken to ensure the protection and management of WRP. The proponent should be aware of their obligations and approval requirements under section 40 of the BC Act, which requires Ministerial authorisation to take or disturb threatened species. DBCA recommends that if vegetation clearing is required, the proponent should seek advice from DBCA's Species and Communities branch at speciesandcommunities@dbca.wa.gov.au prior to clearing and/or demolition works, in relation of section 40 authorisation requirements. **Summary** DBCA recommends that a fauna habitat survey be undertaken, where vegetation clearing is required, to identify fauna habitat trees to be retained. Retained trees should be clearly marked/tagged. DBCA recommends that a map of trees identified to be retained, be included within the bushfire management plan. Advice - The proponent should seek advice from the Department of Water and Environmental Regulation in relation to clearing permit requirements and development approval to be subject to a clearing permit being issued, if one is required. Advice - The proponent should be aware of their obligations and approval requirements under section 40 of the BC Act, which requires Ministerial authorisation to take or disturb threatened species. DBCA recommends that if

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<tr><td>6.</td><td>Department of Fire and Emergency Services</td><td>I refer to your email dated 8 January 2024 regarding the submission of a Bushfire Management Plan (BMP) (Version V2), prepared by Envision and dated 17 November 2023, for the above development application. The BMP is accompanied by a report 'Development Application Rural Holiday Resort Lot 101 (No. 1603) Wildwood Rd, Yallingup WA' from the proponent dated 23 November 2023 for the above development application (DA).

This advice relates only to State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7) and the Guidelines for Planning in Bushfire Prone Areas (Guidelines). It is the responsibility of the proponent to ensure the proposal complies with relevant planning policies and building regulations where necessary. This advice does not exempt the applicant/proponent from obtaining approvals that apply to the proposal including planning, building, health or any other approvals required by a relevant authority under written laws.

<u>Assessment</u>
1. DFES acknowledges that dwellings are already on the subject site and the development application seeks approval for further development of the site including the change of use to short term accommodation.
2. The City have considered this to be a tourism activity and required planning approval.
3. The City have confirmed that the use is a vulnerable tourism land use land use.
4. Further clarification is required within the BMP of the requirements of SPP 3.7 and the supporting Guidelines as outlined in our assessment below.

1. Policy Measure 6.5 c) Compliance with the Bushfire Protection Criteria
<table>
<tr><th>Element</th><th>Assessment</th><th>Action</th></tr>
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			Vulnerable Tourism Land Uses – Siting and Design	**A5.7c – not demonstrated** A 33m APZ should be provided for Rooms block 6 and the farm workers/staff accommodation in relation to Vegetation Plot 5 (downslope 5-10 degrees). Figure Ex 1 (and other references) should be updated to show the correct APZ. If the vegetation has been incorrectly classified, then the plots should be updated for accuracy and a separate plan is required to show how the slopes of each plot have been assessed. It is also unclear if a 33m APZ is provided to all required areas of Chalet 3b, as a 21m APZ distance points towards an area of the 5-10 degree downslope Class A Forest.	Modification to the BMP is required.	

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Vulnerable Tourism Land Uses - Vehicular Access	**A5.8.1b – not demonstrated** Conflicting statements are provided in the BMP, with figure Ex1 stating that vehicle access will comply with Table 6 column 4 requirements, however page 45 confirms that the gradients of the main access are not compliant (DFES notes a 14m drop over 100m to the north of the second dwelling house present on page 3 of the development plans). The BMP has not clearly stated whether a Performance Principle Based Solution (PPBS) or other alternative approach is being applied to demonstrate compliance with the performance principle for vehicular access for other short-term accommodation or how the risk can be managed. The BMP should be updated to clearly state non-compliance with the acceptable solutions and set out that a PPBS or an alternative approach is being provided. DFES notes that the BMP should be updated to ensure that all grades are provided in percentages (as provided in table 6) rather than degrees, to avoid any confusion, as mixing the use of degrees and percentages is misleading (as degrees will provide a lower number than percentages).	Modification to the BMP is required. Please demonstrate compliance or provide substantiated evidence of a performance principle- based solution.

2. Policy Measure 6.6.1 Vulnerable land uses

Issue	Assessment	Action
Bushfire Emergency Evacuation Plan (BEEP)	The referral has included a *'Bushfire Emergency Evacuation Plan'* for the purposes of addressing the policy requirements. Consideration should be given to the Guidelines Section 5.5.4 'Developing a Bushfire Emergency Evacuation Plan'. This contains detail regarding what should be included in a BEEP and will ensure the appropriate content is detailed when finalising the BEEP to the satisfaction of the City.	Comment only.

Internal referral comments:

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		The application has been referred internally with the following comments received from the Built Environment Branch: As this proposal includes Class 2-9 buildings, plans for this project will need to be lodged with DFES Built Environment Branch as per Regulation 18B of the Building Regulations 2012 (as amended). Furthermore, as the total floor area of some of the proposed buildings appears to exceed 500m2, unless it can be demonstrated otherwise, fire hydrant coverage to these will be required in accordance with DFES Operational Requirements and Australian Standard AS2419. As this site is not served by a reticulated mains water supply, any required fire services will need to include a static fire water supply as well as firefighting pumps to achieve the required pressure and flow. Please note, any requirements for firefighting water supplies for bush fire response will need to be considered in addition to and not included as part of, any fire water supply required for an installed hydrant system. DFES Built Environment Branch will be able to provide more specific and detailed commentary in due course as part of the plan assessment process. **Recommendation – compliance with acceptable solutions not demonstrated – modifications required** It is critical the bushfire management measures within the BMP are refined to ensure they are accurate and can be implemented to reduce the vulnerability of the development to bushfire. The proposed development has not demonstrated compliance to the following: 1. Element 5: Vulnerable Tourism Land Uses. The above assessment of compliance with SPP 3.7 is provided to aid decision making.
Public Submissions – Objections/Concerns		
1.	J Lewis Perth	I trust this message finds you well. I am writing to seek clarification regarding the DA23/0816 proposal and its implications. It is currently unclear whether the venue is permitted to host various events, such as weddings or music events. Specifically, I would appreciate information on the following: • Can the venue be used for weddings or music events? • Is there a possibility that the venue may host weddings or music events in the future? • Could the venue be opened to the public at any point in the future? In the event of any of the above scenarios, I would like to inquire whether a noise assessment will be conducted. My primary concern is the potential impact of noise on 13 Wildbrook Place, a tranquil holiday home. It is crucial to ensure

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		that our guests are not adversely affected by loud music during the evenings and into the night. I look forward to receiving your response and appreciate your attention to these inquiries.
2.	M Zed Yallingup	We refer to the Traffic Impact Assessment prepared by Ascent Engineering (the TIS}. We oppose the proposed use of 'Location A' (as nominated in Appendix C.1 of the TIS) as the primary access for the Rural Tourist Accommodation on the following basis: 1. The TIS states that the proposed access does not comply with Safe Intersection Sight Distance requirements for 'intersections' and instead uses the 'absolute minimum requirements for property access' to justify the access location. The proposed development is anticipated to generate 136 vehicle movements per day and is thus more akin to an intersection rather than a standard property access. On this basis Location A is unsafe, which is consistent with our experience having driven frequently on Wildwood Road over the last +40 years. It is unclear whether other access locations have been considered that would facilitate compliance with the more appropriate 'intersection' road safety criteria. 2. Location A is proximate to our existing dwelling at 1664 Wildwood Road. In fact, it impacts directly on the only house along the frontage of the property (Lot 101). The access will result in a detrimental effect to the specific local rural character of our property as it will result in frequent vehicle headlight beams affecting three bedrooms in our home that front Wildwood Road, along with a general reduction in amenity arising from frequent vehicle access. We request that the primary access point be amended to a safer location and one that does not impact the passive enjoyment of our property. We believe that the existing Caves Road access (Location C in the TIS) would be more appropriate for a development of this scale. Failing that, Access B, which still impacts on Wildwood Road however is also preferred as it doesn't have a direct impact on any dwellings as is the case for Access A. We note also that the gradient of the existing land near Location A is substantial -it significantly steepens immediately west of the Wildwood Road pavement. Substantial earthworks and land reshaping would be required to achieve suitable access at this location. This would further exacerbate the destruction of the rural character of our property.
3.	F Dunwell Yallingup	We live in a beautiful rural community. There is not enough parking at supermarkets, beaches, there are thousands of new houses being built and the infrastructure is just not there to support all this development. Leave our rural land as it is.

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		As per the information above. We do not have the infrastructure to support more development and Marinup Drive is in a terrible state with potholes - we don't need more traffic on Caves Road or Marinup Drive.
4.	N Butler Yallingup	Increase traffic, detrimental affect on the environment, destruction of country side. Increase use of water in the area, detrimental affect on the wildlife in the area. People live, work and come to this area for the natural beauty and vineyards, not to have multiple tourism dwellings in it. Keep the accommodations in the towns not in the countryside.
5.	H Butler Yallingup	Increase traffic, detrimental affect on the environment, destruction of country side. Increase use of water in the area, detrimental affect on the wildlife in the area. People live, work and come to this area for the natural beauty and vineyards, not to have multiple tourism dwellings in it. Keep the accommodations in the towns not in the countryside.
6.	J Stevens Yallinup	Traffic. Caves Road intersection on corner of Wildwood Road is already accident waiting to happen. Increased traffic over recent years has seen many near misses and raises concerns for local residents of what could be the outcome for visitors who have limited knowledge of the area's risks. A major re alignment should be undertaken to varsity improve this intersection before any further development. Dropping speeds is not the answer, it interferes with traffic movement on Caves Road and effects emergency services personal trying to attend their required locations. It is noted that A question mark hangs over the application in respect of Telecommunications. Already the area is overloaded in tourist times and download speeds on local residents and businesses is seriously effected. Adding a guaranteed additional load to the system will only worsen the issue. Upgrade by Telstra or other providers is a must before any expansion of the area proceeds. Fire considerations. Local beach locations are all one road in and one road out. Again, already these pose an enormous risk to human life and the increase tourist traffic cannot be currently catered for now. Tourist season is at least 5 months of the year and covers the FULL fire season. It's impossible to get a parking spots now unless on top of the hill where no parking really exists except road verges, which in their` self poses issues of traffic movement. There are no controls on numbers and with the many cars with trailer it would create a possible jam. Who will take the responsibility if deaths occur, COB the State Government or somebody the buck is dumped on? Whilst the proposal is catering for small numbers, it's the total number of increased population everywhere created by new developments Dunsborough/Yallingup that creates the issue. A line needs to be drawn and the issues addressed before further expansion, particularly in the areas immediately effected. Please take control of infrastructure improvements firstly. After is too late.

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7.	O Ehrig Yallingup	Increased traffic near a school zone and a dangerous intersection at Caves rd and Wildwood rd, already under pressure at school drop off times. Unsuitable development for this quiet area.
8.	E Rusilas Yallingup	There're too many buildings proposed in the application. Too much impact on soil, nature, small business and us,- local community. I would recommend the City to improve the safety of the roads, intersections first. Caves road/ Wildwood road; Caves road/Canal rocks road. Including street lights and lower speed limits in place. Then bringing town water in and waste water taking out. Only after those improvements we would welcome new and only small scale developments. There should be new policy in place in regards the size and limits on new developments.
9.	M Nelson Yallinup	This development will impact our amenity greatly in the man due to noise and lights we hear swings and roundabouts due to the prevailing winds SW which is miles away from this development we ask the development be heavily conditional on control of noise and parties being allowed there the common use area looks like a reception centre to us which in its current submission there is no restriction on trying after they bag this approval to go for wedding reception approval. Removal of the common area facility all together will at least remove large gatherings of party goers, Music even bands playing there. The question is why do they need it at all unless this is the goal? There are already two houses on the property why allow more please explain why? the access to Wildwood road should be diverted to caves road please explain. why not the proposed road access from Wildwood road requires removal of a significant tree, we are very much opposed to removal of any trees on the road verge on wildwood road. the impact on the house opposite is significant where the road access is proposed, the car lights at all hours of the night will be a big issue for the amenity and kids sleeping in rooms opposite, this road entrance should be opposed by council and re directed to Caves road where it will cost more but will improve the amenity for the existing house opposite the external lighting on buildings we suggest needs to be heavily scrutinised and made a condition for any approval external lighting to be not able to be seen from either our house or lot 207 wildwood meaning nil spot lighting , no up lit trees , no night time lawns lit , no carpark pole lighting , no access road pole lights , this is hugely important to our amenity this proposal is very bad news for us it will impact our amenity greatly without a big effort by council to protect our amenity from the hungry eastern states conglomerates , we hope you can look after us not allow development which will have negative impact on people living close bye. Please reconsider the need for the common area building this is a potential party house which should be deleted by council as not in keeping with the area and proximity of existing houses.

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10.	G Banfield Dunsborough	It sets a precedent in regard to development of tourism within an area south of Wildwood Road, a zone rated and set aside for Agricultural/Viticulture. The danger then becomes that these industries become unviable because of increased prices of land (ROI) and rate pressure. This is not good for the long term appeal of the area to visitors or the industry affected.
11.	S Jones Yallingup	Traffic management. Visual impact high. Need Main roads impact study. Health risk with vineyard spray including Sulphur will effect guests as it does us the nearest neighbour with ongoing health problems need health impact study. Waste water recycle on our southern boundary will effect soil as well underground stream nearby used to be dam there. need soil expert to check suitability for this system in this sensitive area .need massive upgrade in infrastructure. Road works on caves Rd junction next to school plus additional parking and toilets on beach in smiths ,Yallingup, injidup to accommodate extra people. Noise pollution with guest's parties, bbqs and cars travelling through property. fire management with 1 fire hydrant between every 2 dwellings and available water supply with pressure. I don't support project until these items are resolved.
12.	M Nelson Yallingup	We ask that more time be given for the community to review and have their say given its in the height of holidays and many are away still, this fact alone should be enough for an extension to comment period it is a complicated submission and is not possible with time allowed to fully review and make constructive comment we propose at least another month extension of time to give holidaying locals time to have their say would you respond please asap regarding this request.
13.	J Leaver Yallingup	Overdevelopment not in keeping with the rural beauty. Too dense. Too many beds. Bad visual Impact taking over old woodland
14.	P Harrison Yallingup	1) The restaurant should be made accessible to the public or at least to the residents in the vicinity. 2) There should be accommodation for the other staff, ie. The restaurant and hotel, so as not to add to the already low availability of low cost accommodation 3) The extra traffic will definitely impact on Wildwood road, which unless widened considerably, can be hazardous during the peak months.
15.	K Bradley Yallingup	We are permanent residents at Nukklgup Loop Yallingup, with an outlook directly across the Gunyulgup Valley toward the site of the proposed development. For us, the development site is part of an expansive view of the Leeuwin-Naturaliste Ridge, an area of significant natural visual appeal (see Figures 1-2). Having considered the available

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		planning documentation, it is not apparent that the proposal has adequately considered the impact of the proposed development on the rural/residential area opposite to the site, focusing only on the impact from Wildwood Road, Caves Road and adjacent properties. As such, we are unable to support the proposal based on the information provided and outline our areas of concern with a request for further information. 1. Visual impact – height and density of development The visual context review fails to consider the visual impact of the development on the rural residential sites opposite the development site. It is apparent from our residence, that the height of the main building (9m), together with the expanse/density of buildings across the site (potential to sleep 100+ people, ~67 cars) will have a significant impact on the natural vista along the ridge with minimal natural screening vegetation currently visible from our elevation. The proposed development is situated within the Leeuwin-Naturaliste Ridge and zoned as Viticulture and Tourism. Established houses and farms across this area are currently single buildings, built discreetly within bushland across the ridge with minimal disturbance to the visual amenity. The rural residential land within this region is subject to various planning schemes, policies and developer caveats, designed to protect the natural amenity of the area for the benefit of all residents. 2. Potential visual impact – lighting Of most concern is the potential impact of lighting across the site including the extent and direction of external lighting. Any external lighting and spotlights shining out from buildings will have the effect of shining directly toward the rural/residential area. This has been our experience on occasion from existing properties. 3. Potential environmental impact – noise Events held at adjoining properties (eg Credaro Estate) impact on this side of the valley in particular weather (wind) conditions, as the Gunyulgup Valley forms a natural amphitheatre effect. Noise from music (bands/recorded) can be heard from our residence which has continued into unsociable hours in some instances. While acceptable on rare or infrequent occasions, this would be disruptive if regularly scheduled. The planning application is silent with regard to use of the property for events, weddings and celebrations. 4. Further Information/Questions: i. What form of visual screening is planned around buildings on the front aspect (facing Wildwood Road) of the development? ii. What are the plans for exterior/external lighting throughout the development (on decks / pools / outdoor / areas / pathways/ driveways / entrance)? What hours will they operate?

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		iii. Will lighting plans include the use of spotlights shining toward the vineyards or out from buildings and into the natural landscape? iv. Will the venue be approved/licenced to hold functions such as weddings and celebrations, serving alcohol, with external/invited guests (non-residents), with live or recorded music?
16.	N Trendos Yallingup	It was sold as a private estate and none of Mr Merrifelds proposed retail additions were not to proceed due to effected residents privacy due to drunken drivers hooning. This he agreed to without reservation. We want and demand it stays as he agreed.
17.	T Wilding Yallinup	I am seriously concerned about the noise level generated as well as the increased traffic flow to this already busy road. The area we live in is actually like an amphitheater so the noise is a real concern. We are permanent residents while most of the properties around us are not, I believe we are the closest permanent residents to this development and I hope my concerns are considered. I also believe there may be more development added to this site for example a Tavern or Function/Reception center that would further contribute to the noise and traffic in our area. I understand this is not submitted in the plans however I feel this will be added once this first stage has already started.
18.	C Smith Yallingup	We have a house at the top of Gunyulgup Valley and the development (DA 23/0816) at Credaro Winery is causing us all great concern. For my wife and I, we cannot understand why the Shire of Busselton would even consider a development of this scale; it far exceeds the size of similar developments and making it worse is the fact that it is proposed to be built on top of a hill facing us in Gunyulgup Valley. Of further concern is the noise that any music or entertaining would create. It is extraordinary how far noise travels up the valley with the aid of the daily south-westerly wind and wedding receptions and amplified music will really cause a problem. Last weekend Swings & Roundabouts Winery played music which was clearly audible at our house and they are miles away ... not a very satisfactory situation. Please can the Council reconsider what is by any measure an extraordinarily intrusive development?
19.	F de Vroet Yallingup	I am writing to formally submit my objections to the proposed development plan application Reference Number: DA23/0816 for the Rural Holiday Resort (28 Hotel Suites, 4 Chalets and Workers Accommodation) and Single House - Special Control Area - Lot 101 (No. 1603) Wildwood Road Yallingup project. I, along with other concerned property owners, have identified several issues that we believe warrant careful consideration and modification of the proposed plan. 1. Scale of Development: Our primary objection pertains to the scale of the proposed development. Upon careful review, it is evident that the scale far exceeds that of similar developments in the vicinity. The proposed development dwarfs comparable projects by a factor of four, which we believe is inconsistent and out of

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		proportion with the surrounding landscape. We strongly recommend that the scale of the development be adjusted to align with the norms established by similar projects in the region. 2. Location and Impact on Rural Views: The chosen location at the high point of the property, with a northeast orientation, poses a significant concern for many property owners whose rural views look west and southwest. This positioning has the potential to compromise the visual integrity of the landscape and negatively impact the aesthetic appeal of the area. We request a re-evaluation of the site location with due consideration for its impact on the existing rural views. 3. Light Pollution: We acknowledge the potential for light pollution as a genuine concern, particularly given the elevated position of the development. To address this, we strongly advocate for a scaled-down development that incorporates passive lighting strategies. This should include the exclusion of uplit trees, spotlights, and road lighting poles. It is imperative that the development adopts a stealth approach to both lighting pollution and built form to preserve the natural beauty of the surroundings. 4. Main Facilities Building: The proposed Main Facilities Building raises substantial concerns among the community. Its scale suggests a capacity suitable for large weddings, which poses potential noise and disturbance issues. We urge the planning authority to focus attention on this building and consider its removal from the development plan. Alternatively, we propose that it be limited to a small reception area for check-in purposes and a designated BBQ area, eliminating the potential for large gatherings and associated noise disturbances. 5. Noise Control Measures for Main Facilities Building: Should the Main Facilities Building be retained; we strongly recommend the implementation of stringent noise control measures. These include a prohibition on amplified music, a curfew of 6 PM, and a restriction on its use as a wedding venue. By adopting these measures, we aim to mitigate potential disruptions to the tranquillity of the area and ensure the harmonious coexistence of the proposed development with the existing community. In conclusion, we appreciate the opportunity to express our concerns and objections regarding the proposed development plan. We trust that our submissions will be given due consideration in the decision-making process. We are hopeful that, through collaboration, we can arrive at a balanced and mutually beneficial solution that preserves the unique character of our community.
20.	M Byfield Yallingup	This is obviously a planned wedding reception centre! I am not against the rooms and chalets however the reception centre needs to be removed or scaled back for guest use only. Amplified music and noise on most Friday, Saturday

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		and Sunday nights will reverberate through the entire valley ruining the peace, quiet and tranquility for all residents near and far. I am suggesting the public facilities only be open till 6pm like breweries locally. I also suggest not allowing the use of amplified music.
21.	I Harrison Yallingup	The Main Facilities Building is very problematic. It looks like a wedding reception building and its scale is such that it could cater for large gatherings. This will be a source for amplified noise which is not addressed anywhere in the proposal. This main Facilities Building is incompatible with the rural and scenic character of the locality which includes the peace and tranquillity of Gunyalgup Valley. IF there is to be a Facilities Building how will the inevitable amplified noise be managed? What are the hours of operation to be? Will there be a curfew on noise? Gunyalgup Valley is a natural amphitheatre and any noise will reverberate throughout the valley adversely affecting all residents within the Valley. I have built a house in Gunyalgup Valley relying on the Special Controls to protect the Landscape Value of the Area. I strongly objected to this building as it is presented in the proposal.
22.	J Lewis Perth	1. I object the scale of the development and should be in line with similar developments which this development dwarfs X 4 2. The location set on the high point of the property looking NE is problematic for many property owners rural view looking west and SW 3. Light pollution is a real issue , given high on the Hill a scaled down development will need to have passive lighting for roads and buildings so no uplit trees, no spot lights , no road lighting poles, this development must be stealth in both lighting pollution and with its built form 4. The Main facilities Building looks very problematic .It looks like a wedding reception building to me, its scale is such that it could cater for a large wedding. Please remove this from the development as will be a source for noise, parties etc. A small reception area for booking in people is ok. 5. Main facilities building should have NIL amplified music, a curfew of 6 PM and should not be a wedding venue.
23.	L Mumme Yallingup	I feel that the scale of the development is far too large. I would like to see it down scaled. Most concerning is the Main Facilities Building - I am concerned that it may cater for large events which would be far too noisy in this area. As such, I would like to see it removed from the development. Should this building somehow be approved, there should definitely be NO amplified music, a 6pm curfew for events, etc. Lighting at the development should not include street light poles. With so many rural residential properties around, the peaceful amenity of the area should be protected at all costs.

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24.	M Zed Claremont	We refer to the Traffic Impact Assessment prepared by Ascent Engineering (the TIS). We oppose the proposed use of 'Location A' (as nominated in Appendix C.1 of the TIS) as the primary access for the Rural Tourist Accommodation on the following basis: 1. The TIS states that the proposed access does not comply with Safe Intersection Sight Distance requirements for 'intersections' and instead uses the 'absolute minimum requirements for property access' to justify the access location. The proposed development is anticipated to generate 136 vehicle movements per day and is thus more akin to an intersection rather than a standard property access. On this basis Location A is highly unsafe, consistent with my personal experience having driven frequently on this section of Wildwood Road to enter and exit our parent's holiday property over the last 20 years. It is unclear whether other access locations have been considered that would facilitate compliance with the more appropriate 'intersection' road safety criteria. 2. Location A is proximate to our existing dwelling at 1664 Wildwood Road. In fact, it impacts directly on the only house along the frontage of the property (Lot 101). The access will result in a detrimental effect to the specific local rural character of our property as it will result in frequent vehicle headlight beams affecting three bedrooms in our home that front Wildwood Road, along with a general reduction in amenity arising from frequent vehicle access. We request that the primary access point be amended to a safer location and one that does not impact the passive enjoyment of our property. We believe that the existing Caves Road access (Location C in the TIS) would be more appropriate for a development of this scale. Failing that, Access B, which still impacts on Wildwood Road however, is also preferred as it doesn't have a direct impact on any dwellings as is the case for Access A. We note also that the gradient of the existing land near Location A is substantial – it significantly steepens immediately west of the Wildwood Road pavement. Substantial earthworks and land reshaping would be required to achieve suitable access at this location. This would further exacerbate the destruction of the rural character of our property.
25.	C Walker Yallingup	Apart from the materials on the 'your say' website which appropriately address access to and the features and environmental aspects within the development, I find that there is little on the site to provide assurances that the City of Busselton will maintain this area as safe for children in what is becoming a busy traffic area. As well, roads of the Millbrook Estate and the old House property developed by Mitchell have groomed edges and are quite commonly used by recreational walking groups. Cycling is also becoming quite popular.

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		This area has a very busy corner of Caves and Wildwood Roads that the Steiner School remains active on, and parking of vehicles will continue to create some concerns from time to time. The Lot 101 development might be expected to attract a few buses that might find this corner a navigation issue when the considerable number of cars are parked there. An alternative route in for such a tourist-laden bus probably exists via Commonage Rd but your program of road verge marking seems to signal that widening and similar improvements might be not considered until a long way into the future. The Lot 101 development might at least have paths along its road frontages. There could be an opportunity for the City to prevail on the Lot 101 development to provide some parking and a walk-through to the school perhaps with collaboration with other local owners as a community service. Other walking destinations from the new hotel complex would include the brewery on Wildwood, the Cape Lavender tearooms, and the (currently renovating) Little Fish restaurant. Having over-indulged at these, the same tourists might seek to visit Bodhi, or the Women's wellness centre adjacent to the Steiner School. Given the popularity of the Cape to Cape walking trail, it seems quite plausible there would also be a stream of walkers from the local sections of this also progressing to and from the new development. There are many other tourist attractions within walking distances from the new development. Such visitors do occasionally seem somewhat undesirable, particularly when they are driving fast, but the role of the City of Busselton in facilitating their movement around and enjoyment of our region is clearly important to our economy. On the topic of a holiday resort, I write to approve the idea, but I question the City of Busselton in accepting their responsibility for save use of their asset Wildwood Rd in the future.
26.	D Gardner Yallingup	Too much development over last 10-20 years, overcrowding of what was once a pristine area
27.	S & S Simpson	1. We object the scale of the development and should be in line with similar developments which this development dwarfs X 4 2. The location set on the high point of the property looking NE is problematic for many property owners rural view looking west and SW 3. Light pollution is a real issue, given high on the Hill a scaled down development (we hope) we need to have passive lighting for roads and buildings meaning ….. no uplit trees , no spot lights , no road lighting poles , this development must be stealth in both lighting pollution and with its built form 4. The Main facilities Building is very problematic. It looks like a wedding reception building to us, its scale is such that it could cater for a large weddings I encourage you all to focus on this building and ask for it to be removed from the development, this is the main facility that will be a source for noise, parties etc., and may be a BBQ area

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		only? A small reception area for booking in people is fine. This main facilities Building is a worry and should be objected to. 5. Main facilities building we suggest should have NIL amplified music, should have a curfew of 6 PM , should not be a wedding venue.
28.	S Simpson Yallingup	The visual impact, light pollution and noise pollution will have a profound effect on my property. The site is easily viewed from my balcony and will negatively impact the quiet rural ambiance, being the main reason I purchased this property. It will also reduce the resale value when I sell as no one wants to see/hear parties/weddings when sitting quietly at home.
29.	N Zed Subiaco	We do not support the site entrance / crossover location "A" on Wildwood Road part of the proposal for two reasons; safety to all local traffic, and the negative impact it has on the existing dwelling directly opposite to this access area. We are writing to raise concerns about the suggested access points for the above resort. Knowingly this will change the atmosphere and experience of our family farm at 1664 Wildwood Road as a whole, and the largest concern we have is with the proposed site entrance / crossover location "A" on Wildwood Road. There are two reasons for this. Firstly, we know the access to our property is close to two sharp turning points. We know these roads and are aware of how to drive to make this tight access safe. In the case of a resort this will not be the case for these patrons (most travelling) and would make location "A" unsafe for a main access. The ideal access should be off Caves Road, where most properties of this nature's main access is and most drivers are prepared for people turning on this road. Secondly, having a main access directly opposite our current farmhouse will change the privacy of the current bedrooms and negatively disrupt these rooms especially at night if this is the main access to this resort. Furthermore, existing entrance crossover "B" does not effect any existing family homes directly and is the right option. It is also on a straight stretch of road. The exiting gate to this entrance also allows for cars to turn in directly off the road. As Wildwood Road is classified as a local distributor. Our concern, outside of the effect this entrance will have on the rural nature of our family home, is a safety one. As stated, a vehicles ability to stand clear at this location A is not considered, except if someone slows here to turn in with little visual of incoming traffic. It is also less than normal standard applicable to intersections, so we ask this not be considered due to its safety risk to all traffic in the area. Especially considering the tree obstruction to also made clear in the proposal.

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		We ask you to oppose the current site entrance "A" to ensure safety for the homeowners and local traffic on Wildwood Road, and sustain the rural nature of our family home that we love and enjoy the tranquillity of especially at night when our bedrooms would be most affected. As stated by our parents and in-laws, we request that the primary access point be amended to a safer location and one that does not impact the passive enjoyment of our property. We believe that the existing Caves Road access (Location C in the TIS) would be more appropriate for a development of this scale. Failing that, Access B, which still impacts on Wildwood Road however, is also preferred as it doesn't have a direct impact on any dwellings as is the case for Access A. We note also that the gradient of the existing land near Location A is substantial – it significantly steepens immediately west of the Wildwood Road pavement. Substantial earthworks and land reshaping would be required to achieve suitable access at this location. This would further exacerbate the destruction of the rural character of our property.
30.	A Jones Yallingup	The scale over the top health vineyard is hazmat site including chemicals storage plus spraying regime with herbicides, insecticides, sulfur plus copper. The sprays are constant especially Oct to Jan when sulfur + copper sprayed every week. Sulfur is a poison when sprayed as a gas it extends between vine rows for days and becomes volatile when contacts moisture which happens at night. Staff aren't allowed in vineyard for 4 days after spray. Also attacks moisture on human bodies includes Nose, throat, eyes, and lungs. Landscape rural values are severely compromised by extreme visual impact being on top of ridge with lighting and noise being major impact on surrounding community. Road management survey was unsatisfactory, done for a week over winter. Major impact on Caves Rd intersection and Steiner school, this intersection is a major black spot with many accidents. MAIN ROADS should do a study on this increase in traffic and maybe relocate the intersection further north to make it safer. Also major infrastructure needs upgrading on roads beaches including toilets parking. Fire impact study hasn't included water tanks next to dwellings, the use of arsenic impregnated posts that used in vineyard to stop white ants this is deadly poisonous when impacted by fire masks are recommended. LOCAL FIRES haven't been accurately recorded in fire survey including emergency level fire on Brash Rd next to Wildhop plus many other serious and minor fires close by. These incidents could have been worse if wind was unfavourable. The only good entry /exit is the current entrance their proposed new entry west of this is steep and dangerous and will hinder emergency vehicles .The scale is too big and could blend better if lower from top of ridge. the local community doesn't

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		need another party venue like swings and roundabout where the noise is constantly loud including a helicopter path above us used all summer.
31.	J Paull Yallingup	1. I object the scale of the development and should be in line with similar developments which this development dwarfs X 4 2. The location set on the high point of the property looking NE is problematic for many property owners rural view looking west and SW 3. Light pollution is a real issue , given high on the Hill a scaled down development will need to have passive lighting for roads and buildings so no uplit trees, no spot lights , no road lighting poles, this development must be stealth in both lighting pollution and with its built form 4. The Main facilities Building looks very problematic .It looks like a wedding reception building to me, its scale is such that it could cater for a large wedding. Please remove this from the development as will be a source for noise, parties etc. A small reception area for booking in people is ok. 5. Main facilities building should have NIL amplified music, a curfew of 6 PM and should not be a wedding venue. We object to the scale of the development, especially the main facilities building. We are also concerned about traffic volumes, traffic safety and noise and light pollution. We suggest that the main facilities building be much smaller, to accommodate reception and breakfast facilities. On the plan it is currently designed to hold large functions such as weddings. This should not be allowed and noise minimisation should be paramount - in respect of times and decibel levels. It's bad enough now when Credaro has functions/weddings, especially with a south-westerly wind. Lighting should also be kept to a minimum without uplighting of trees and lighting of dams. We disagree with the formula (and rationale) used to project vehicles per day based on an 8-day count at the very quietest time of the year. Rather than use a multiplier to determine an average volume, only traffic volumes at peak times of the year and day should be used as this is what affects residents such as us with Wildwood Road frontages. Many parts of Wildwood Road, from Caves Road to Vasse-Yallingup Siding Road, are not easy to drive on at the speed limit, especially for those (such as tourists) unused to it. Consequently, notwithstanding the Traffic Impact Statement prepared sympathetically for the applicant who paid for it, Wildwood Road traffic will be significantly impacted. Safety will be a huge issue, there will be 100s of extra vehicle trips per day when 32 units are fully booked. Trips by staff, resident guests to and from attractions, and friends of guests visiting resident guests -something not mentioned in the Traffic Impact Statement. And that's without there being a large function centre as part of the development.
32.	S Rowe Yallingup	They are using the 'tourism and viticulture' zoning, not to encourage tourism activities and development of winemaking but to build a development the likes of which are not even seen in the commercial and tourist developments in urban Busselton and Dunsborough townships. We have Four objections –

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		1. Size of the development in a Landscape Value Area is not upholding the "creative, vital and sustainable communities' in the Council mandate. It has no local value and is not within 5km of a significant tourism hub. 2. Viewshed map 8 - they focus on views from Caves Road, but the Viewshed map show significant impact on many properties around the Valley on the Wildwood size. The planners have tried to address the visual impact by lower level and dark coloured buildings, but no study has been presented as to LIGHT POLLUTION impact on the local area after dark. All these buildings, gardens, entertainment areas, driveways will be lit long into the night. Being situated on a ridge, this will be a visual impairment to all those in the Viewshed map 8 and beyond. 3. NOISE POLLUTION - no study has been performed relating to noise. Firstly long term construction. Secondly, and most importantly, the noise in the evenings reverberating all around the valleys from 85 people partying, playing music and large groups enjoying their outdoor terraces. Because of the topography, this will be a significant impact on many rural residential communities. 4. Traffic speed - 70km zone should be implemented from Commonage Road to the 60km school zone.
33.	A Zed Fremantle	I oppose the application for a Resort and the proposed access Location A due to: - Increased Noise pollution with close proximity to bedrooms - Cars and potential wedding venue or music from guests staying - Light pollution and close proximity to bedrooms - Headlights - Increased road hazard - Significant increase in vehicles on the road, increased U-turns out the front of 1664 Wildwood road at 80km zone. Attached I have stated in more detail reasons and concern: I am opposed to the development of the area as well as the proposed access. With this amount of accommodation, I cannot see how the resort will not become a wedding venue. This would completely ruin the rural ambiance and that of which has been unequivocally opposed by the entire valley due to the funnelling effect that occurs in the area. In reference to the Traffic Impact Assessment prepared by Ascent Engineering (the TIS). We oppose the proposed use of 'Location A' (as nominated in Appendix C.1 of the TIS) as the primary access for the Rural Tourist Accommodation on the following basis: 1. The TIS states that the proposed access does not comply with Safe Intersection Sight Distance requirements for 'intersections' and instead uses the 'absolute minimum requirements for property access' to justify the access location. The proposed development is anticipated to generate 136 vehicle movements per day and is thus more akin to an intersection rather than a standard property access. 2.Location A is proximate to our existing dwelling at 1664 Wildwood Road **(the closeness of the proximity is clearly seen in the arial shot for the proposed access point 'Location A')**. In fact, it impacts directly on

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		the only house along the frontage of the property (Lot 101). The access will result in a detrimental effect to the specific local rural character of our property as it will result in frequent **vehicle headlight beams and noise pollution** affecting three bedrooms in our home that front Wildwood Road, along with a general reduction in amenity arising from frequent vehicle access. 3.Location C is a well-known tourist access road for wineries and holiday destinations which would make sense to have access to a Holiday Resort that is to cater to 28 Suites, 4 Chalets and accommodation for Staff/Workers. 4.Due to location A's proximity to our front driveway Tourists unfamiliar with the area may attempt a U-Turn or 3-point turn using our driveway. This area is close to the blind bend that crosses the bridge where cars are travelling at 80km/hr heading towards Caves Road. This is a major concern as this already occurs quite regularly and with a significant increase in the proposed vehicle numbers on this small and winding rural road. We request that the primary access point be amended to a safer location and one that does not impact the passive enjoyment of our property. We believe that the existing Caves Road access (Location C in the TIS) would be more appropriate for a development of this scale. Failing that, Access B, which still impacts on Wildwood Road however, is also preferred as it doesn't have a direct impact on any dwellings as is the case for Access A. We note also that the gradient of the existing land near Location A is substantial – it significantly steepens immediately west of the Wildwood Road pavement. Substantial earthworks and land reshaping would be required to achieve suitable access at this location. This would further exacerbate the destruction of the rural character of our property.
34.	T & J Creasey Yallingup	We are very concerned about the use of the main facilities building as our home is in the direct line of fire from any noise emitting from this building. If it is used for weddings, parties or any other events where many people attend & music is played we will be severely impacted by that noise as we are already able to hear music from Caves House which is 5 kms away. This would seriously impact on our quality of life. It seems inconceivable that the facility won't be used in this way with so may rooms; chalets proposed for the property. It looks exactly like a wedding venue; I would think that lots of vehicles arriving at the same time will make that section of road dangerous.
35.	P Visser Yallingup	Once again we are faced with a development that does not suit the surrounding areas, in fact will degrade the quality and liveability of an area that is predominately residential rural. I am of the belief that the Council should defend those of us who have sought the refuge and peace of a country lifestyle and disallow a development that will have a huge impact because of its size and location. Already we know the impact made by the Swings and Roundabouts

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		venue that is much smaller and more removed. The landscape of the area with its hills and valleys create an area where sound travels easily and becomes extremely disruptive to all who live even kilometres away. Add to this the light pollution and we are being asked to consider a proposal that will destroy the area. Simply put it does not fit in this area and should not be allowed. We who have invested much into places that we thought would free from this kind of intrusion are asking that it be disallowed on the grounds that will an offense to all who live in this area, in fact heartbreaking. In any jurisdiction an industrial building much less a pub or night time venue would NOT be allowed in a residential area. Equally this venue should not be allowed in our residential area.
36.	B Lang Yallingup	It is way too big for the area. It will create noise pollution, light pollution in the evenings, increase traffic and destroy the amenity of the rural residential properties. The sewerage will destroy the Gunyulgup creek and pollute the waterways. I am concerned about the proposed Development Application "DA23/0816 – Rural Holiday Resort." I am also very concerned about the scale of this project. These concerns range from: 1. Loss of amenity. 2. Noise levels. 3. Proximity to residential housing. 4. Environmental impacts. 5. Traffic impacts on fauna. 6. Bushfire risks. 7. Light Pollution. 8. "Main Facilities Building". Gunyulgup Valley is a natural Amphitheatre and noise is amplified as it travels through the valley. This has not been acknowledged by any previous desktop studies. However, the experience of the residents in Gunyulgup Valley is that sounds levels are greatly amplified in this Valley. We can hear traffic on Caves Rd, functions at Caves House and often functions at the Swings and Roundabouts winery. Some uses are not consistent with the natural topology of the Valley and cannot realistically be remediated by any subsequent DA conditions. There are additional traffic impacts that should be considered. Major accidents near the intersection of Caves Rd and Wildwood Rd near the Steiner school have occurred in the past & this will only increase with this development. Under these proposals this intersection would experience a greater volume of traffic on the same corner as a school.

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		I am also concerned about potential environmental impacts. In particular the possible contamination of effluent seepage into Gunyulgup Creek which ultimately flows into Smiths beach. I believe that commercial development of this site that includes toilet facilities for 100 or more people may cause environmental damage to Gunyulgup Creek. DA23/0816 is inconsistent with the Leeuwin-Naturaliste Ridge Statement of Planning Policy (LNRSPP). I believe that current planning is out of balance with the intension of the Policy especially in regard to the overlap of uses. In general, this is overlooking Residential Rural zoned land, this development borders residential uses. I am also concerned about the Impact on Fauna in the Gunyulgup Valley. The "Western Ringtail Possum" is an endangered species. Federal Mapping indicates that the flora species for these animals are within this development site and of High Value Habitat. There is also cause for concern to the habitat for the Forest Red Tailed Black Cockatoo, Baudins Black Cockatoo and Carnaby Black Cockatoo. Issues such as setbacks and buffer zones are important to protect this habitat from commercial use. I am also "VERY" concerned about the impact of light pollution. Passive lighting should only be used in any development within the Lewin Naturalist Ridge. No Traffic pole or lights and lighting that only reflects downwards & does not pollute the views of residential residents in the evening. "Main Facilities Building" This is a major concern! The scale simply does not fit the proposed function. This is a very large building over 2000 M2, apparently for the guests only use? I do not believe this rubbish! I guarantee its future function is for weddings which I opposed totally. I ask that this building be reduced in scale by at least 75%. Its purpose is for residence only use. NOT FUNCTIONS! The main facilities we ask for conditions similar to other developments in the area to have a curfew of 6.00 pm such as Wild Hop etc., NO AMPLIFIED MUSIC, strictly "Residents only"!
37.	N Trendos Greenwood	It will attract alcohol induced behaviour which can result in unwarranted negative results. I had the same problem with my property and got the rest of owners to get the proposal stopped.
38.	I Sheperd Yallingup	We have received advice in respect to the Proposal to build a resort on Wildwood Road. Given our review we make the following objections:

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		1. We object to the **scale** of the development given it is a significant development that is not commensurate with other developments in the area. When we purchased and developed our lot, there was no mention that developments of this scale would be considered. 2. The scale impacts on visual amenity in the region, with highly possible noise and light pollution being the resultant outcome. There is no mention of how these impacts will be mitigated. The predominate SW wind will carry any amplified noise over the adjacent valley and impact many residences. 3. The location set on the high point of the property looking NE is problematic for many property owners, with a rural view looking west and SW. This location is very prominent and is impossible to blend into the landscape. Many residences to the east and north at higher elevations, will clearly see the entire complex which has an adverse impact on their amenity. The reviewers should visit properties and see for themselves how exposed this site is in relation to others. We note the artist impressions for screening are simply nothing like what it is going to look like. 4. Light pollution is a real issue given its elevation on the Hill. A scaled down development is preferable and there is a need to have passive lighting for roads and buildings. This includes: no uplit trees, no spot lights, no road lighting poles, walkway lights to be stealth low lit. 5. The Main facilities Building is very problematic. The scale simply does not fit the proposed function. This is a very large building at over 2000 M2, purportedly for the Guests use only. In reality, its potential future function is for weddings, which is very much opposed by us. We ask that this building be reduced in scale to do what they say it's function is to be "for residence only use". We suggest therefore that they are instructed to reduce the plan area by more than half , even better delete this building all together . 6. The main facilities we ask for conditions similar to other developments in the area to have a curfew of 6.00 pm such as Wild Hop etc , no Amplified music , strictly "Residents only" without exception , weddings not being allowed at all in any form at this venue . 7. The access road off Wildwood will have impact on adjacent houses with car lights shining directly into the house. With high speed through the **area, limited sight distances and with a high vehicle volume, the accident risk is increased markedly.** We trust the developed scale can be reduced and improvements introduced to mitigate the impact
39.	A Pinakis Yallingup	We object to the scale of this development. The number of buildings and their dense layout on the hillside will be visually detrimental to the surrounding properties, particularly those to the North/East. Although it may not be so visible from the roads, a more distant view should be considered. Further landscaping within the site would not screen or filter views of the development from neighboring properties. The size and location of this development, along with the inherent infrastructure of roads and lighting will have a visually negative impact on the rural character and landscape values of the area and hence impinging on "the protection of the rural and natural landscapes." The

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		objective to "avoid clutter over development and the appearance of a commercial development such to achieve a high level of rural amenity" has not been met by this proposal. I ask the Council to honour the statement that "The City will actively discourage development that: is of a development form that resembles urban based tourism such as motels, resorts, and the like." We object to the size of the Main Facilities Building. It seems larger than necessary to accommodate the stated uses. It should be revised to accommodate a small reception area and perhaps a lounge/wine tasting area to enhance the Winery aspect of the project. We would request confirmation that private events, weddings and such like are not permitted, and consideration be given to noise control. This development will cause an increase in traffic on Wildwood Road that is a safety concern particularly around the Steiner School and intersection of Wildwood and Caves Roads.
40.	S Wake Yallingup	The main facilities building within this development is our main concern. By its sheer size in relation to the guest accommodation it appears far larger than it should be if it is merely to provide in house food/services to residents. This leads us to believe that the ultimate goal of this development is to provide an event facility such as weddings. This facility will have a large impact on our local area - noise and light pollution being part of that. We believe the size of the main facility should be scaled down to reflect its use as an in house service area for just the 28 holiday units. That should also require a noise restriction from 6pm onwards.
41.	J Lang Yallingup	Noise Pollution. Light Pollution. It's too big. Needs to have time restrictions and ultimately they want to have weddings & functions there & we live in a Rural Residential setting right next to this monstrosity that should only be a vineyard! I am concerned about the proposed Development Application "DA23/0816 – Rural Holiday Resort." I am also very concerned about the scale of this project. These concerns range from 1. Loss of amenity. It needs to be considered that this is a rural residential area. The Residents Living here within the Gunyulgup Valley will be impacted by this development which has gone through a planning change from farming, viticulture to whatever those with the magic wand have decided it is now zoned! 2. Noise levels. Noise is amplified as it travels through the valley. We can hear traffic on Caves Rd, functions at Caves House and often functions at the Swings and Roundabouts winery. There must be a curfew & time limit on the facilities at this development!

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		3. Proximity to residential housing. This development is overlooking Residential Rural zoned land, this development borders residential uses. Keep this in mind! No Wedding Functions at this development! 4. Environmental impacts. I am also concerned about the Impact on Fauna in the Gunyulgup Valley. The "Western Ringtail Possum" is an endangered species. Federal Mapping indicates that the flora species for these animals are within this development site and of High Value Habitat. There is also cause for concern to the habitat for the Forest Red Tailed Black Cockatoo, Baudins Black Cockatoo and Carnaby Black Cockatoo. I am also concerned about potential environmental impacts. In particular the possible contamination of effluent seepage into Gunyulgup Creek which ultimately flows into Smiths beach. I believe that commercial development of this site that includes toilet facilities for 100 or more people may cause environmental damage to Gunyulgup Creek. Issues such as setbacks and buffer zones are important to protect this habitat from commercial use. 5. Traffic impacts on fauna & residents. Fauna in the area is at risk of increased traffic. Wildlife in this region is being pushed into even smaller pockets & the time will come when there are no kangaroos left. There are additional traffic impacts that should be considered. Major accidents near the intersection of Caves Rd and Wildwood Rd near the Steiner school have occurred in the past & this will only increase with this development. Under these proposals this intersection would experience a greater volume of traffic on the same corner as a school. 6. Bushfire risks. Extra people increase the risk of bush fire. 7. Light Pollution. I am also "VERY" concerned about the impact of light pollution. Passive lighting should only be used in any development within the Leewin Naturalist Ridge. No Traffic pole or lights and lighting that only reflects downwards & does not pollute the views of residential residents in the evening. 8. "Main Facilities Building". I believe this will be used as a function center & is too big. This is a very large building over 1000 M2, This will be used for weddings which I opposed totally. I believe that this building should be reduced in size by at least 50%. Its purpose is for residence only use. The main facilities should have conditions similar to other developments in

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		the area. It should have a curfew of 6.00 pm such as Wild Hop Brewery. NO AMPLIFIED MUSIC, strictly "Residents Only".
42.	A Rowe Yallingup	I have summarised below my thoughts and those of our neighbours along Wildbrook Place, Yallingup as follows: 1. The development and should be in line with similar developments not many times larger. A large development such as the one proposed impacts on visual amenity, noise and light pollution. Smaller development reduces these impacts. 2. The location set on the high point of the property looking NE is problematic for many property owners rural view looking west and SW , this location is very prominent and is impossible to blend into the landscape , please be aware many residences to the east at higher elevations will clearly see the entire complex which has an adverse impact on their amenity , we invite the panel to visit properties and see for themselves how exposed this site is to others . We note the artist impressions for screening are simply nothing like what is going to look like. 3. Light pollution is a real issue, given high on the Hill a scaled down development (we hope) we need to have passive lighting for roads and buildings...no up lit trees, no spotlights, no road lighting poles, walkway lights to be stealth low lit this development must be stealth in both lighting pollution and with its built form. 4. The Main facilities Building is very problematic. The scale simply does not fit the proposed function. This is a very large building over 2000 M2 for the Guests only use ??, we simply do not believe this, its future function is for weddings which is very much opposed by us. We had the same issues when Kevin Merrifield proposed a wedding and Reception function centre nearby on Mill Brook Road a few years ago. We ask that this building be reduced in scale to do what they say its function is to be "for residence only use "we suggest reducing plan area by more than half, even better delete this building all together. 5. The main facilities we ask for conditions similar to other developments in the area to have a curfew of 6.00 pm such as Wild Hop etc, no, strictly "Residents only" without exception, weddings not allowed at all in any form at this venue. 6. The access road off Wildwood will have impact on (Lot 207) Wildwood 1664 Wildwood Rd, with car lights shining directly into the house, the location needs to be reconsidered.
43.	M Nelson Yallingup	Please give consideration for the panel to look on site and drive around up the valley to see what impact this development will have for noise carry and visual pollution basically having a very big impact on amenity , the location

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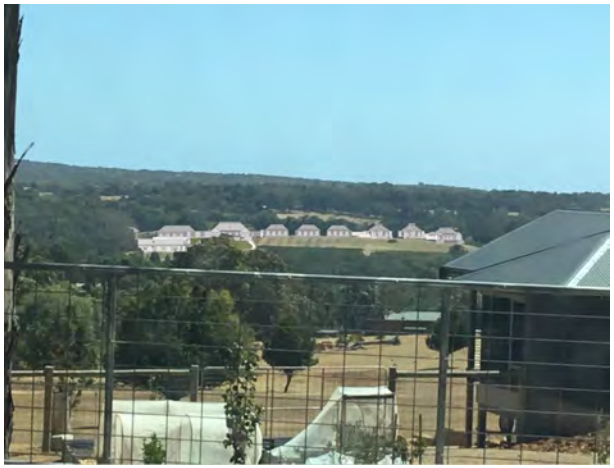
		and scale is such that is unprecedented in this rural area , roads such as Hazelbrook rise , Nukklgup loop , seascape rise all are direct firing line for noise and amenity loss due to this development , curfew on the amenities building is so large it's simply not plausible that a further application for weddings will not be coming so please remove this building if not reduce it dramatically for the purpose the developer has given , no amplified music ,lighting that is passive down it are all very important.
44.	M Nelson. Yallingup	please look at scale and visual impact for many residences up on higher land up the valley the attached shows the real scale and impact the amenities building is huge and has no relation to the developers stated claim that it's for residence only this building scale is 50% min too large and is surely a Trojan horse for later wedding venue application , so please protect local residences amenity and fully understand the impact by visiting the location and look at the location and visual impact on many locals see attached. 
45.	A Vearing Yallinup	We object the scale of the development and if to proceed should be in line with similar developments locally, which it is not. The scale impacts on visual landscape in the area and is not in keeping with other local properties and further is not why residents have chosen to live in this quiet rural setting. Significant concerns for noise and light pollution, smaller development reduces these impacts. * The location set on the high point of the property looking NE is not appropriate of considerate for many property owners including us with a rural views looking west and SW , this location is very prominent and is impossible to blend into the landscape, please be aware many residences to the east at higher elevations will clearly see the entire

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		complex which is not appropriate. We are very concerned the artist impressions for screening are simply nothing like what it is going to look like . * Light pollution is a serious concern, given high on the Hill. Even a scaled down development in keeping with the location would we need to have passive lighting for roads and buildings. No uplit trees, no spot lights, no road lighting poles, walkway lights should be low lit this development must blend in both with regards to lighting pollution and its buildings with the surround's. Which the proposal does not. * with regards to the main facilities Building we object to it's size and scale given it is meant for guest use, this building simply does not seem to fit the proposed function . This is a very large building over 2000 sqm for the Guests only use? This building appears more designed for future function's ie for weddings which we are very much opposed to in this local rural setting. We ask that this building be reduced in scale to do what they say it's function is to be "for residence only use". We would like the building removed as don't see the need if not holding functions. * Like other local residents with regards to the main facilities we ask for conditions similar to other developments in the area to have a curfew of 6.00 pm such as Wild Hop etc, no Amplified music, strictly "Residents only" without exception, weddings not allowed at all in any form at this venue. * The access road off Wildwood will have impact on (Lot 207) Wildwood 1664 Wildwood Rd, with car lights shining directly into the house, the location needs to be reconsidered. At our residence we already hear significant road noise from Caves road and noisy vehicles along Wildwood road in particular when the south westerly is blowing, which is fairly regularly. This gives further concern to the noise from any potential functions which could be held at the premise.
46.	P Hobbs Yallingup	We are extremely concerned by the bulk and scale of the project and the amount of activity it will generate. The planning report suggests a low key development, but the plans indicate a project that is specifically set up for large functions, weddings etc, with large parties of guests being accommodated on site. The location of the proposal, on the high side of the site, will maximise its visual and acoustic impact on the valley, especially at night time. Our experience is that sound travels long distances within the valley, especially in summer evenings. The design does nothing to mitigate sounds, with all buildings essentially spilling light and sound east towards existing residential areas. The proposed design should be amended to reduce its bulk and scale, and mature planting should be conditioned as part of any approval to reduce visual impact. Primary windows should be oriented north and west to reduce light and sound spill away from residents and towards Caves Road. Any design approval should impose function centre numbers, and curfews in terms of time operation as per previous approvals in the district (refer Millbrook Estate approvals- attached) which imposes a number of area and usage restrictions that the Minister of Planning considered maximum development of a similar property.

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47.	L Jury Yallingup	1. I object to the scale of the development as it is way out of line with similar developments. This development dwarfs X 4, the scale impacts on visual amenity, noise and light pollution. A smaller scale development reduces these impacts. 2. The location set on the high point of the property looking NE is problematic for many property owner's rural view looking west and SW, this location is very prominent and is impossible to blend into the landscape in this predominantly rural and vineyard region. I would like the panel to visit properties and see for themselves how exposed this site is to others. 3. Light pollution is a real issue, given high on the Hill a scaled down development may overcome this problem. In this rural area there is a need to have passive lighting for roads and buildings. Especially no up-lit trees, no spotlights, definitely no road lighting poles or walkway lights. 4. Main facilities Building in scale simply does not fit the proposed function. This is a very large building over 2000 M2 for the Guests only use? It is difficult to believe this is not a future function or weddings venue. I recommend that this building be reduced in scale to fit with the proposed use ("its function is to be for residence only use “) 5. The main facilities we ask for conditions similar to other developments in the area to have a curfew of 6.00 pm such as Wild Hop etc. no Amplified music, strictly “Residents only”. Weddings in any form to be prohibited under any approval. 6. Wildwood Road is a very picturesque country Road, and any large access road will not only spoil the ambiance but will be very dangerous in this stretch of the road. The access road off Wildwood will have impact on (Lot 207) Wildwood 1664 Wildwood Rd, with car lights shining directly into the house.
48.	D Visser Yalllingup	I am vehemently opposed to this development based upon several factors as detailed below: 1. Location and Orientation - the proposed development (Rural Holiday Resort - RHR) is set high upon a ridge line overlooking a valley currently populated by Rural Residential Properties as promoted and approved by the City of Busselton for the purpose of private residential dwellings in a sustained pristine environment. This RHR is no way respectful of its surrounding environment and will change the serenity of the region forever. The sheer enormity of the RHR presents a massive visual impact and concern over the building roof and cladding colours exacerbates this issue. Any screening proposed will take years to grow and will not compensate for the visual impact. This will be a further eyesore on a major tourist route. Our residential home is located less than 400m

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		in an East / North East direction and will have a full visual aspect on the RHR, raising concerns associated with visual, noise, light and traffic pollution. 2. The Scale of the Development - appears significantly disproportionate with any other development in the region and has the potential to support major events which will further compound the negative impact on the region. For example, the main facilities building is of a size and configuration that suggests events such as weddings, etc., which within a valley confine will make the noise pollution totally unacceptable for surrounding Rural Residential Properties. The general size of the complex, accommodating in access of 100 persons and 60+ vehicle bays is an indication in itself as to the potential adverse impact on the region. 3. Lighting - this is a massive concern when you consider the potential for street lighting, spotlights, vehicle lights etc., which have a direct visual impact on surrounding rural residential properties. 4. Traffic Hazard - the proximity to a major high risk traffic intersection being that of Caves and Wildwood Road. Please note, that I am not anti development or naive to the fact that there are properties in this region that are zoned for agriculture and tourism. However, any development should be of a scale and functionality that does not have a major impact on the serenity of the region. A substantially scaled down version of the RHR focusing on holiday accommodation only would be a much better consideration and in keeping with what this region is all about.
49.	S Halliday Yallingup	I absolutely oppose this development. My FOUR main areas of objection are: Visibility, Noise, Light Pollution and Proposed Purpose 1. Visibility of proposed development from our property. The proposed development is set high on a hill that we (and other neighbours) look directly toward and within approximately 400m from our property. You will see in the uploaded photos the view of the proposed development site from our street which we will see each time we arrive or leave our house, let alone the direct view from our property also. 2. Noise, as planners you will be aware how sound travels in a valley, which this property overlooks and due to the size of the proposed property is also part of the valley. Due to this we would like and hopefully expect (should this proposed development proceed) significant noise restrictions be placed on the property, ie no elevated noise ie though amplified apparatus after 6pm. 3. Light Pollution, this area is renowned for its peace and tranquillity, lighting is minimal with no street lighting or indeed any significant lighting. We request no street lighting, or tree uplighting to be allowed should this

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		development proceed. With the significant number of dwellings in this proposed development we will be confronted with lights directly in our view every night…….. is this fair! Light pollution will also be due to the fact a significant number of cars are expected as they have parking bays for 66 car and this does not take into account visitors arriving/departing via ride share or employees. This also makes me question the safety of cars transiting onto Caves Rd on a bend and likely often at night. 4. Proposed Purpose, this is a very large complex, particularly the main facilities building. It would appear the scale of this proposed facilities building is more of a functions centre or restaurant, or perhaps both. Either way this strongly suggests wedding venue which would be very noisy and busy. Once again I stress should this proceed we would like to propose significant noise restrictions. I would also like to see building scaled back to a more appropriate size. I note the size of accommodation (excluding porta cots and foldaway beds) is more likely 80 persons and this does not include staff, which for a proposed development this size would be considerable. Thank you for taking the time to consider my concerns. 

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50.	Anon Yallingup	Why would we want a developer to invest in the South West when they are part of a group headed up by to a convicted murder?
51.	N Smith Yallingup	We are writing to voice our concerns with the above application, and how the proposal relates to the planning scheme in particular the Special Control Area (Landscape Value - Local Planning Scheme No. 21), and The Leeuwin-Naturaliste Ridge Statement of Planning Policy (LNRSPP). Local Planning Scheme clause 3.2 references zone objectives that include “to provide for the maintenance and enhancement of specific local rural character”. The extensive commercial development proposed is in direct contravention to this objective. "The local government shall not grant development approval for the carrying out of development on land within the Landscape Value area or on land on or near any ridgelines where, in the opinion of the local government, that development is likely to substantially detract from the visual amenity of the area, having regard to, among other things, the cumulative visual effect of the development related to other development that may be anticipated in the locality and in the area generally." At this point we would like to reference the community response to a previous wedding/event development application in the valley which was successfully rejected; see brief summary below (petition signed by 840 people). The issues addressed by the Gunyulgup Valley Action Group remain relevant to the current application for event facilities in the valley, but more so as the development is close to the top of the ridge an will impact a much greater area. As local residents we are currently writing a report as part of the community consultation process, however, we believe it would be pertinent for all or some of you and the Director of Community Planning to visit the surrounding area to fully understand and appreciate the effect this development will have on the wider area of the valley. Refer to Attachment 10 – for submitter’s assessment.
52.	C Blair Yallingup	This is a massively expanded version of what Mr Kevin Merrifield proposed on Millbrook Road and was rejected by the Busselton Councillors around 2020. Specifically: 1. Visual Pollution - the current dwelling is clearly visible from my property. Hence 12 buildings will constitute an exponential increase in daytime loss of visual amenity and at night time will be equivalent to the Taj Mahal, especially the central building or "function centre" which at around 360m2 would comfortably accommodate wedding crowds of 120 to 200 people. The local wildlife are severely adversely impacted by light pollution. A

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		development of this scale will adversely impact bird and marsupial numbers and the ring tailed possums in the area. Similarly the Carnaby cockatoos. Based on the "Visual Assessment Report" Pages 26,37 and 40, my property will see all 12 proposed buildings, hence this is a significant scar on the landscape. As the crow flies the development is approximately 1.4 km from my home, which is like looking from the South Perth Foreshore into Langley Park but from an elevated viewpoint, with NO intervening trees. 2. Noise pollution - We are in Wildwood Valley and the noise travels like in an amphitheatre. Hence the risk of evening parties and music disrupting the rural ambience is significant. We can hear the surf hitting Smith's Beach at night time. I cannot identify a noise survey in the plans. 3. Traffic - I note from the Traffic plan that there are on average 200 to 300 cars per day using the road. Accommodation for 96 people, assuming one car per two people and then a minimum of one visitor gives an extra 100 cars per day, making a 50% increase in vehicle incursions, which are clearly audible from Wildwood and Caves road already. Add the associated delivery vehicles, rubbish trucks, caterers, wait staff, with heavy diesel engines will give you another 10 or 20% increase in numbers of vehicle movements, totalling a 70% or possibly doubling of traffic numbers. There has already been a number of deaths on this section of road. It is directly adjacent to a school. It is a prominent cycling route and the developers should have to pay for the construction of a dedicated cycling lane from Busselton Highway to Caves Road. 4. Scale The Main Facilities building is huge. At 2,000m2, this is almost as big as the Camfield Hotel site in Perth which can cater from "600 to 2,500" people. There is NO way that this sits in a rural setting and should be located in a town. If approved then there must be strict regulations that the site is for Residents Only, No amplified music and under NO circumstances should it be a function centre.
53.	C Zed Yallingup	I refer to the Traffic Impact Assessment prepared by Ascent Engineering (the TIS), Bushfire Management Plan prepared by Envision (BMP), Visual Assessment Report prepared by Ecoscape and Planning Report Development Application prepared by Halsall & Associates. Below I have listed my main points of concern with the Rural Holiday Resort Proposed Development: 1. I oppose the proposed use of 'Location A' (as nominated in Appendix C.1 of the TIS) as the primary access for the Rural Tourist Accommodation. Location A is proximate to our existing dwelling at 1664 Wildwood Road. Having first hand experience entering and exiting approximately opposite to Location A, it can be dangerous with oncoming traffic from either direction. The proposed development and the introduction of a competing property entrance in close proximity is of concern to the safety of our existing dwellings entry and exit. To support this

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No.	NAME	NATURE OF SUBMISSION
		please refer to the applications for council bin / waste removal from the Directors of Dougs Farm Pty Ltd which have been rejected by the City of Busselton for the councils reasoning that it is unsafe to provide waste removal in this location. It is evident that this proposed Location A is not a safe location and would impact the safety of the existing entry and exit of the existing 1664 dwelling. I request that the primary access point be amended to a safer location and one that does not impact the safety of the existing access location of our 1664 dwelling. I believe that the existing Caves Road access (Location C in the TIS) would be more appropriate for a development of this scale. The only reference to the Caves Rd access point is that is suitable for emergency services and that further intensification is restricted due to Main Roads WA Policy in the (BMP). This is hard to understand given the commercial nature of Caves Road being an access point to some of the largest hospitality establishments of the region. 2. Figure 3 & Figure 9 of the Visual Assessment Report (Visual Context Review), show our existing dwelling 1664 Wildwood Rd being clearly visible in these photos. The privacy of our dwelling will be compromised, as the potential capacity of the development of around 100 guests at any one time is of concern. Additional native screening would be appreciated for consideration as a development of this scale will greatly impact the privacy of our existing dwelling. 3. Section 3 – The Proposal of the Planning Report Development Application states "The central building will provide dining, bar and other related amenities for guests only". Is this venue restricted from hosting weddings and or parties creating excess noise pollution? The bar reference and potential capacity of guests being around 100 is concerning for the potential of noise pollution during the evenings to our existing dwelling which is in close proximity to the development. I request that the service times dining and bar area be considered to be limited 10pm, with a restriction on weddings / parties with excess music being held at the development. It would be appreciated if my above concerns could be considered in this proposed development application. As these issues will greatly impact the rural character of our existing property which is the original dwelling of our family farm which has been part of our family for 4 generations now.
54.	J Kendrick Yallingup	I had tried to submit a comment for the above-mentioned development approval and failed. Please see blow my comments on the DA. We own Lot 205 Hazelbrook Rise and we will look directly at this proposed property. 1. The proposed scale of the development is significantly larger than similar projects in the area, exceeding them by a factor of four. This overdevelopment is out of proportion with the surrounding community and threatens to disrupt the character of the area.

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No.	NAME	NATURE OF SUBMISSION
		2. Placing the development on the high point of the property, particularly with its north-eastern orientation, poses a significant problem for many nearby property owners who value their rural views looking west and southwest. The location choice disregards the visual impact on the surrounding landscape and fails to consider the concerns of existing residents. 3. The issue of light pollution cannot be overlooked, especially given the elevated position of the development. To mitigate this, any lighting design must prioritize passive lighting techniques, avoiding uplit trees, spotlights, and road lighting poles. The development must be designed to minimize light pollution both in terms of its structures and outdoor lighting to preserve the natural darkness of the area. 4. The design of the Main Facilities Building raises valid concerns. Its appearance resembling a wedding reception venue suggests a potential for large gatherings and noise disturbances. Considering the impact on the surrounding community, it would be prudent to reconsider the necessity of such a large facility. Instead, a more modest structure with limited amenities, perhaps focusing solely on a BBQ area and a small reception area for administrative purposes, would be more appropriate. 5. It's imperative to establish strict regulations for the Main Facilities Building to prevent noise disturbances and maintain the peaceful atmosphere of the area. This includes prohibiting amplified music, implementing a curfew of 6 PM, and ensuring that the building is not utilized as a wedding venue. These measures are essential to safeguard the tranquillity of the surrounding environment and respect the needs of nearby residents.
1.	A Jarvis Perth	I am supportive of this proposal for the following reasons: - excellently located to Both Dunsborough and Margaret River town centres and the various beaches - easily accessible via Caves Road for visitors - it's a unique and clever proposal that diversifies the tourism offerings in the area and support the regions tourism industry and local employment -sensitively designed to maximise amenity for users whilst having no impact on the established amenity of the area through careful siting of buildings - high quality built form and design treatments proposed. This is a well thought out proposal that I believe warrants support of both the Council and JDAP. Many people I have spoken to in Perth think this is a great idea which demonstrates there is demand for this type of tourism offering which overall would be a great benefit for the region.
2.	B Chute Yallingup	I am the owner of Millbrook Road north - north east of the proposed development. I am not opposed to the proposed development and it appears substantively comply with viticulture and tourism zoning. I am however keen to ensure the proposed development does not negatively impact the quiet enjoyment of our property. Specific concerns are:

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No.	NAME	NATURE OF SUBMISSION
		1. Noise impact; sound travels across the valley and there should be a requirement to restrict sound to acceptable levels. Specifically love music or amplified music should be restricted to no later than 6pm, 365 days a year. 2. Light impact: light spill from the proposed development will affect our property in the evening and measures should be taken to prevent this ie no spotlights should be permitted and parking area and street lights should be minimised, or eliminated and designed to shine down rather than throw. 3. Function/reception area should not be permitted: a large restaurant is shown on the plans (for use of guests only. It is conceivable that the entire resort could be rented for a wedding with amplified music late in to the night. The use a function or reception event should be prohibited and amplified music and event lighting not be permitted 4. Landscape: the proposed development should be designed to minimise impact on the existing landscape particularly the vista for properties to the north of the valley. This should be for soft and hard landscaping.

SUMMARY OF SUBMISSIONS DAP/23/2617 (CITY REF DA23/0816)
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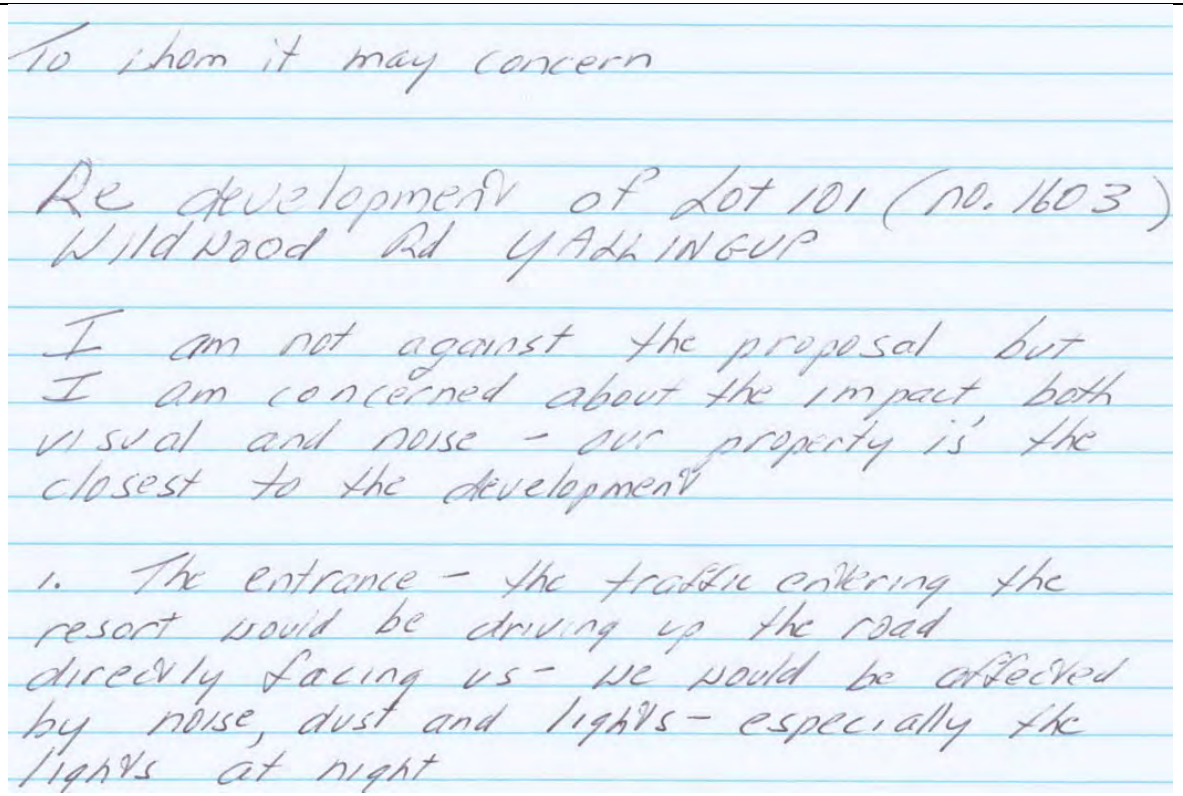
No.	NAME	NATURE OF SUBMISSION
3.	S Jones Yallingup	

To whom it may concern

Re development of Lot 101 (no. 1603) Wildwood Rd YALLINGUP

I am not against the proposal but I am concerned about the impact both visual and noise - our property is the closest to the development

1. The entrance - the traffic entering the resort would be driving up the road directly facing us - we would be affected by noise, dust and lights - especially the lights at night

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		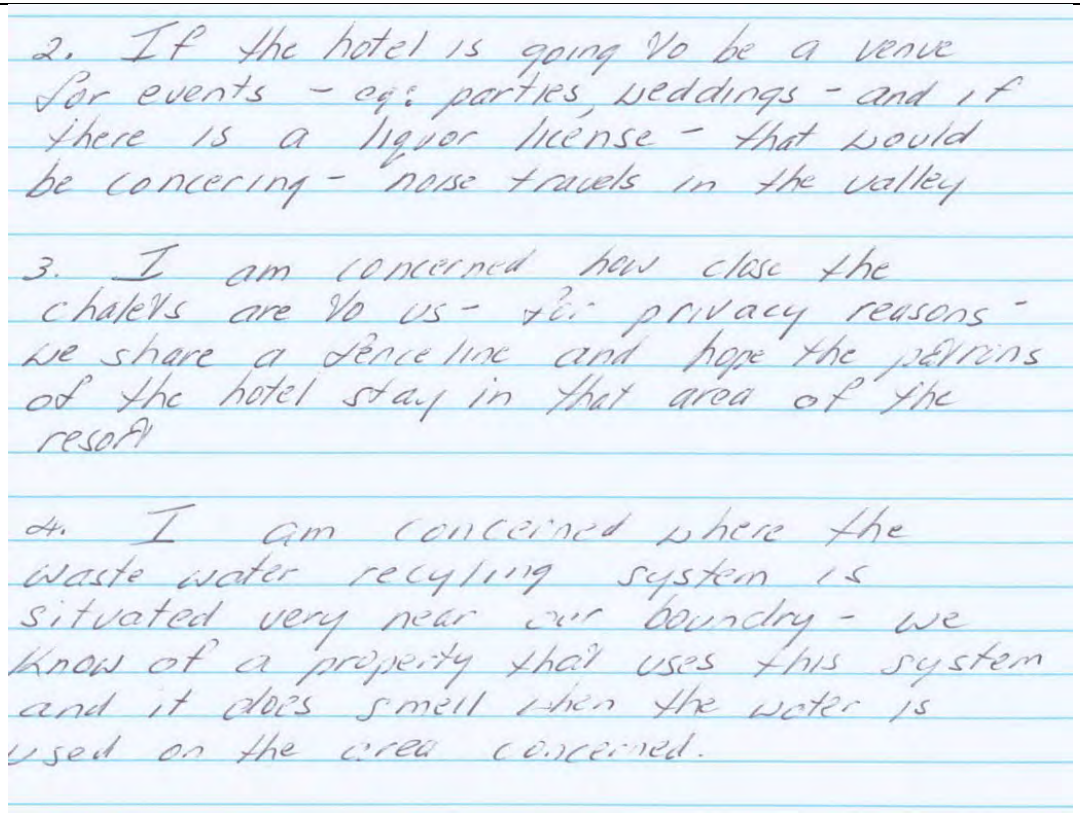

2. If the hotel is going to be a venue for events - eg: parties, weddings - and if there is a liquor license - that would be concering - noise travels in the valley

3. I am concerned how close the chalets are to us - for privacy reasons - we share a fence line and hope the patrons of the hotel stay in that area of the resort

4. I am concerned where the waste water recycling system is situated very near our boundry - we know of a property that uses this system and it does smell when the water is used on the area concerned.

SUMMARY OF SUBMISSIONS DAP/23/2617 (CITY REF DA23/0816)
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No.	NAME	NATURE OF SUBMISSION
		5. I do hope the development does not expand and the buildings are kept to single story - we have resided here since 1980 and have enjoyed the views, solitude and beauty 6. I hope the wildlife will be cared for and not be put under pressure 7. All landholders will be impacted - by the development - visual, traffic, noise, human movement, impact upon the environment Hopefully all concerns will be taken into account and landholders will be communicated ~~with~~ fully throughout the process 8. Helicopters seem to everywhere in the S.W. Hopefully there are no plans for helicopter pads in the resort - residents have voiced their objections to flyovers by these machines - the noise and privacy are a prime concern

23 February 2024

Adam Prestage
Planning Officer
City of Busselton

Adam.Prestage@busselton.wa.gov.au

Dear Mr Prestage

RE: VULNERABLE LAND USE – GUNYULGUP WILDWOOD RESORT 1603 (LOT 101) WILDWOOD ROAD YALLINGUP

I refer to your comments forwarded on 30 March 2023, regarding the above development subdivision.

Please be aware that the Guideline provide:

> "DFES officers are not required to be accredited under the Western Australian Bushfire Accreditation Framework as outlined in section 6.12 of these Guidelines to provide advice, technical evidence or representation."

As a BPAD practitioner Level three. Section 6.12, I have to have a tested knowledge and expertise to have my accreditation. I have been audited (December2022) to apply correct interpretation of AS3959 and the Guidelines v1.4.

Assessment	Action
Vulnerable Tourism Land Uses – Siting and Design A5.7c – not demonstrated - Modification to BMP required. A 33m APZ should be provided for Rooms block 6 and the farm workers/staff accommodation in relation to Vegetation Plot 5 (downslope 5-10 degrees). Figure Ex 1 (and other references) should be updated to show the correct APZ. If the vegetation has been incorrectly classified, then the plots should be updated for accuracy and a separate plan is required to show how the slopes of each plot have been assessed. It is also unclear if a 33m APZ is provided to all required areas of Chalet 3b, as a 21m APZ distance points towards an area of the 5-10 degree downslope Class A Forest	The BMP and the indicated APZ are correct. The APZ distance follows Table 2.5 AS3959. The correct procedure is the slope aspect which is taken perpendicular to the face of the building. It is incorrect to provide the highest/worst slope to all sides of the building instead of addressing each aspect. The APZ shown for both the farmworkers accommodation and chalet 3b is progressive meaning it is smoothly following the aspects around the building ranging from 21 m though to the changing slope up t0 5-10^0. An examination of Figure 2 topography, and Landgate contours shows the APZ has been drawn correctly to the slope facing each elevation of farmworkers accommodation and chalet 3b.

Vulnerable Tourism Land Uses - Vehicular Access A5.8.1b – not demonstrated – Modification to BMP required Conflicting statements are provided in the BMP, with figure Ex1 stating that vehicle access will comply with Table 6 column 4 requirements, however page 45 confirms that the gradients of the main access are not compliant (DFES notes a 14m drop over 100m to the north of the second dwelling house present on page 3 of the development plans). The BMP has not clearly stated whether a Performance Principle Based Solution (PPBS) or other alternative approach is being applied to demonstrate compliance with the performance principle for vehicular access for other short-term accommodation or how the risk can be managed. The BMP should be updated to clearly state non-compliance with the acceptable solutions and set out that a PPBS or an alternative approach is being provided. DFES notes that the BMP should be updated to ensure that all grades are provided in percentages (as provided in table 6) rather than degrees, to avoid any confusion, as mixing the use of degrees and percentages is misleading (as degrees will provide a lower number than percentages).	Page 45 describes the predevelopment gradient and the existing agriculture access. The same section speaks (quoted below) of the proposed access alignment to achieve an average gradient across the access of 6^0 "The primary resort access has utilised the chicane to step from Wildwood Road and has been aligned cross gradient sufficient to achieve an average gradient of 6.0^0 (10%) and avoid any sections up to 8.0^0 (14.3%) longer than 50 m." "The southern extent of the gradient for the resort has utilised a cross gradient sweep at the top and through a shallow gully to achieve an average gradient of 6.0^0 (10%) and avoid any sections up to 8.0^0(14.3%) longer than 50 m). The emergency access enters the site from Caves Road at a similar elevation to the resort building and the facilities building. It can be used by emergency services to avoid the haulage of a heavy load uphill. The bushfire water tanks have also been sited at the hilltop to enable replenishment without the need for haulage uphill." Figure EX1 is correct and reflect the alignment gradient determined by the fire engineer following specific route gradient survey. The BMP the cover sheet, summary and compliance with the Bushfire Protection Criteria, in section 5 has demonstrated compliance at completion with the Acceptable solutions. AS3959 uses degrees, past comments have required degrees also be used for consistency with vehicle gradient. I am happy to adopt but please be consistent in your request. Please note that percentages were used at page 45; see above quotes. For your information 6.0^0 is 1:10 or 10% (average grade and unsealed) 8.0^0 is 1:7 or 14.3% (maximum sealed grade)
Bushfire Emergency Evacuation Plan (BEEP) Comment only. The referral has included a 'Bushfire Emergency Evacuation Plan' for the purposes of addressing the policy	This is a standard comment from DFES which ignores the content of the BMP. The BMP includes a checklist demonstrating compliance with each item in Section 5.5.4.

requirements. Consideration should be given to the Guidelines Section 5.5.4 'Developing a Bushfire Emergency Evacuation Plan'. This contains detail regarding what should be included in a BEEP and will ensure the appropriate content is detailed when finalising the BEEP to the satisfaction of the City.	The BEEP has also followed the WAPC *A Guide to developing a BUSHFIRE EMERGENCY EVACUATION PLAN*. The DFES comment is not applicable to the BMP and should be dismissed.
The application has been referred internally with the following comments received from the Built Environment Branch As this proposal includes Class 2-9 buildings, plans for this project will need to be lodged with DFES Built Environment Branch as per Regulation 18B of the Building Regulations 2012 (as amended). ……	These are structural fire considerations that will be addressed at building permit. DFES should confine its comments relevant the matter at hand and the appropriate legislation for which authorisation is sought.

Should you have any queries, please contact me on 0428 066 147, or alternatively by email: admin@envisionbp.com.au

Yours sincerely



Anthony Rowe BPAD L3

Principal

Attached Revised: BMP

Public Comment as invited by City of Busselton in response to the following DA proposal:

DA23/0816 - Rural Holiday Resort (28 Hotel Suites, 4 Chalets and Workers Accommodation) and Single House - Special Control Area - Lot 101 (No. 1603) Wildwood Road Yallingup

4 February 2024

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- Rural Tourist Accommodation Policy
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- The Leeuwin-Naturaliste Ridge Policy
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- Landscape

Conclusion

Appendix (separate attachment)

- 8 no. annotated plans and images

Introduction

This public comment responds to the proposal to use and/or develop land at 1603 Wildwood Road for a "Rural Holiday Resort (28 Hotel Suites, 4 Chalets and Workers Accommodation) and Single House" in a Special Control Area. Extracts of the submission – all publicly available documents - have been included where they aid comprehension or illustrate issues under critique.

The aim of this submission is:
- to provide an initial public response to the application,
- to comment on important issues arising from the proposals as documented,
- to highlight deficiencies and/or omissions in the proposal reports, and
- to outline further issues for consideration.

Overview

Taken together, the eight reference items in the proposal 'document library', seek to build a case for introducing a large-scale commercial complex to an otherwise undeveloped rural valley in the Gunyulgup area of Yallingup.

Broadly, these documents suggest that the proposal is sited appropriately and designed to optimise the "under-utilised" portion of a 42.5439 ha rural/agricultural site while meeting the basic planning requirements. Business News announced the purchase of the site, "a tucked away Gunyulgup vineyard" (4/1/23), stating it was "earmarked for a $17.5million resort" (10/1/24) this seems to indicate from the outset **the intention is for a large-scale commercial operation** rather than to simply utilise "land left over" from vineyard operations for a low key "rural viticultural tourism experience" as stated in the proposals.

After reviewing these documents, and in discussion with locals - both residents and businesses - it is evident the proposal in its current form is both **inappropriate** for the site, and **inadequate** in its analysis of the likely impacts on the surrounding areas. The report wrongly suggests "the location of development is not visually significant", when in fact the location within the lot boundary and location in relation to the surrounding land areas, is fundamental to understanding why **this site cannot accommodate a Rural Holiday Resort** as proposed.

The proposal **selectively** focuses on minimising the impacts to the Caves Road corridor to the west and a section of Wildwood Road to the northern boundary of the site, even though the Caves Road corridor is precisely the location of other similar large scale commercial ventures. The proposal instead **introduces a highly intrusive development** to the exposed eastern side of a ridge facing a large rural residential zone; the scale, massing, and operational nature of which, sets **a precedent wholly detrimental** to the otherwise undeveloped valley area.

Several critical issues are only discussed within the context of **limited data** collection, for example (a) site access options and traffic projections were based on counts taken only in the winter month of August, and (b) the visual context review methodology confirms the area to the north-east of Wildwood Road, i.e. the valley, was **omitted from the study**. There is **insufficient detail on critical issues** relating to the built form and use of the development, including controls over the operational hours, type of use, holding of events and erection of temporary structures, etc.

The proposal **underplays the scale of the development**, describing it as low profile, low impact and rural in character, and **fails to address** issues created by a major commercial development, sited as it is at a dominant position towards the top of a ridgeline. These issues include seasonal tourism

pressure to the local infrastructure and workforce, operational disruption on adjacent subdivisions, visual disharmony in the valued landscape zone, and the introduction of **significant noise and light pollution** to the valley.

In summary, there has been **selective representation** of critical characteristics given the site aspect is dominated by Gunyulgup Valley which, when later discussed in relation to the various policies and planning objectives, is **problematic**. The area of the site most similar in proximity to the Caves Road corridor as other vineyard-with-tourism ventures, **has been disregarded** by the proposal.

Executive Summary

Key points identified in the submission documents as problematic are summarised below and detailed further throughout this report in the context of planning policies and best practice guidelines. These include, but are not limited to, the following:

1. The limitations of zoning in assessing this proposal.
2. Disregard/omission of key issues in the Leeuwin Naturaliste Ridge Policy.
3. Disregard/omission of key issues in the Rural Tourism Policy.
4. The problematic interpretation of 'viticultural tourism experience'.
5. Inappropriately scaled and sited tourism venture for this area.
6. Disregard for unique valley landscape context.
7. Disruption to surrounding rural residential character.
8. Potential for irreversible visual intrusion to rural valley and popular tourist routes
9. Potential for noise pollution due to amphitheatre topography of Gunyulgup Valley and prevailing winds.
10. Potential for introducing light pollution to the valley area.
11. Potential for environmental damage (hydraulic, flora, fauna)
12. Increased bushfire risk.
13. Disregard of established patterns of settlement and local tourism ventures in scale and situation
14. Introduction of damaging precedent to rural valley landscape
15. Inappropriate planning layout for the site given Special Control Area Landscape Area designation.
16. Inappropriate density of buildings within the layout area, incompatible with surrounding density and building patterns; development allowed for 42ha (optimum for flat land) squeezed into 21ha land (on the side of a ridge).
17. Insensitive massing of building heights and spacing in context of area.
18. Inappropriate linear/ribbon development along an elevated exposed contour line.
19. A building or venue capable of holding events located this valley location is particularly problematic and has been successfully rejected before.
20. Large areas of roof due to steep pitched profile (angle) and multiple rooves in very close proximity creating significant line of highly reflective surface area.
21. The development is *not* sensitively situated on the site as stated in the visual report.
22. The development negatively impacts views from the nearby tourist routes of Wildwood Road and routes in the Gunyulgup Valley.
23. Setbacks and screening as proposed are not effective on a sloping site and do not reduce the impact on neighbouring properties.
24. To ensure uninterrupted views to the valley, the development does not utilise existing mature vegetation as screening, nor does it propose effective landscape screening.

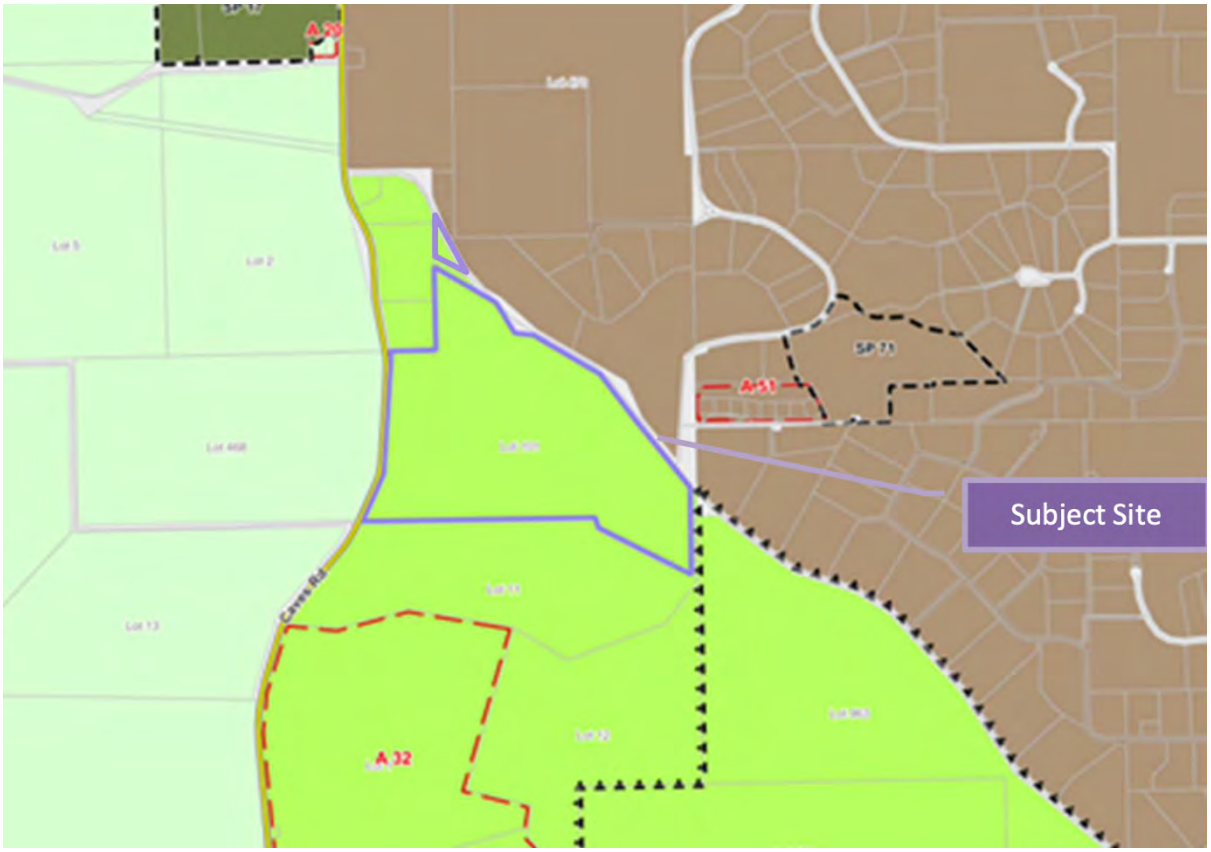
25. The proposed architectural design and materiality of the built form indicates the development will *not* be in keeping with the existing rural and scenic character of the locality.
26. The proposal does *not* recognise important key environmental and landscape attributes as stated.
27. The development does *not* conform to the 'Councils preferred development' guidelines: "low profile, both physically and in setting, and … designed in harmony with existing buildings."

PLANNING FRAMEWORK

Zoning – Viticulture + Tourism

Zoning is a two-dimensional demarcation of land-use, and the unique physical and contextual qualities of each site should be carefully considered.

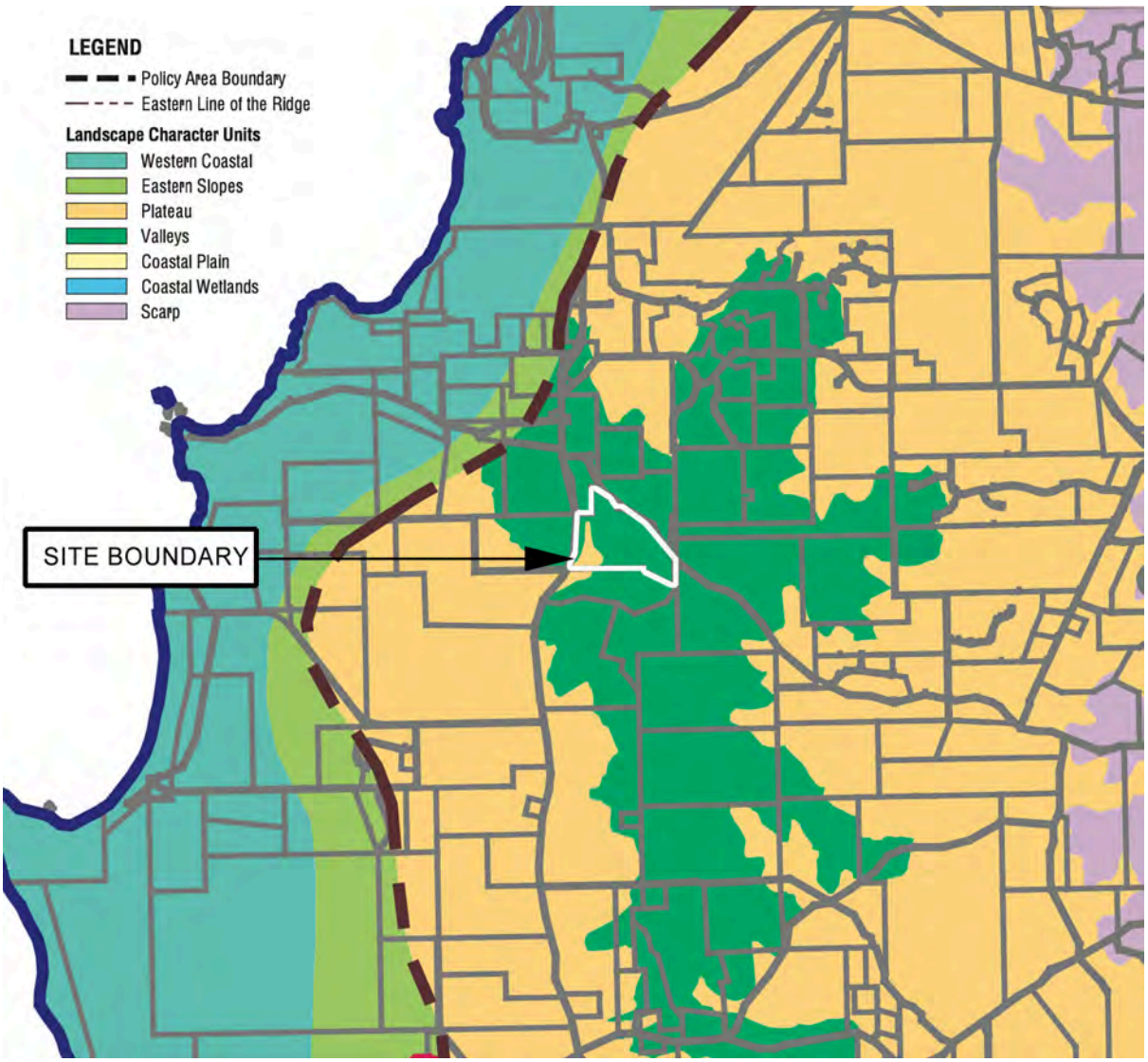
Under the City of Busselton's Local Planning Scheme No. 21, the site is zoned Viticulture and Tourism (lime green) and is also situated within a special control area (Landscape Value), see extract of the Scheme Map below.



Extract: Local Planning Scheme No. 21 Scheme Map

The predominant land use for all areas to the east/north-east of the site is rural residential (brown). The simple delineation of zoning fails to take into account the influence of the distinctive topography of this area on land use, and fails to communicate the dominance of the rural residential area character beyond areas defined by zoning.

The site, while one land-use zone, effectively comprises two parts each with different types of landscape character, refer Leewin-Naturaliste Ridge Policy Character Units Map (extract below) with site boundary identified.



Above: Extract from Leewin-Naturaliste Ridge Policy Character Units Map

The western part, an area of **plateau** landscape (pale orange), is edged with vegetation and bordering the Caves Road corridor; a tourist drive catering to the very many vineyards with cellar doors and restaurants, with grand entrance statements and large mass commercial buildings visible from the road. The plateau area continues all along the Caves Road corridor both north to Dunsborough and south towards Margaret River, it is an area of commercial and road verge landscape.

The eastern part is a **valley** landscape (dark green), it is largely dominated by low vineyard planting and a cleared land with a few scattered small buildings (refer photos 1 and 2 below). This part is elevated and slopes down from a ridgeline, so is highly visible from surrounding fields; it is both facing and borrowing rural residential landscape characteristics from the extensive Gunyulgup Valley to the east.

The flatter (western) portion of the site appears to be more suitable for tourism development, adding to precedents already located along Caves Road corridor such as cellar doors/wine sales. This area of the site **has been ignored** in favour of the eastern portion where the introduction of a commercial facility will disrupt the rural open landscape character.



Photo 1: Aerial photograph (source: proposal documents) showing existing character both on and off site as open field areas, clusters of vegetation and individual isolated small buildings

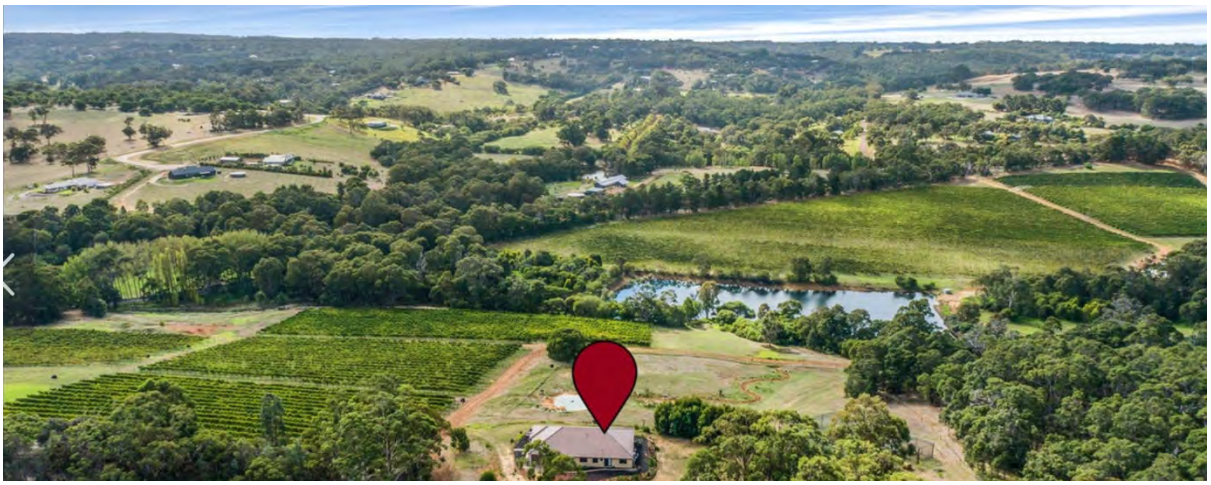


Photo 2: View from existing site dwelling looking to the east across Gunyulgup Valley. image published with property listing in 2021 until sold in 2022 for $6.5million (source: realestate.com.au)

The proposal as it is presented, fails to meet several **Zone objectives**:

- *To provide for the maintenance or enhancement of specific local rural character.*

To **maintain** the rural character would be to maintain the site as predominantly cleared land dominated by vineyards, stands of trees/vegetation, dams and one or two small single domestic scale dwelling units with access driveway/tracks, mirroring the land zoned rural residential to the esast of the site. To **enhance** the specific rural character would be to increase the visual and environmental quality of the site through improving underutilised areas of the site with complimentary natural elements common to the surrounding land, such as increasing the tree cover, adding more vines, adding screen planting around existing buildings, adding vegetation around the dams to improve wildlife habitat.

- *To provide for development and expansion of the viticultural, winemaking and associated industries, in addition to general rural pursuits, in a manner that does not cause adverse environmental impact.*

Expansion of the vineyard or small farming activities would meet this objective, however, removal of vines and existing dwelling and replacing with a significant scale of built forms, water tanks and roadway infrastructure would **permanently change** both the environmental and physical aspects of the land, thus causing **negative environmental impact**.

- *To facilitate the development of tourist facilities of a scale and nature appropriate in rural settings without prejudice to the scenic quality of the land within this zone and without creating or increasing ribbon development on any road.*

The scale and nature of this development exceeds that of any development within the surrounding area that is visually connected and thus it is **not 'appropriate' in a rural setting**, and it significantly impacts the 'scenic quality of the land' within zone further to the south and within the valley context. The proposed development footprint is linear and with buildings sited along one main access roadway **creates a new ribbon development along the side of a ridge line**.

There are precedents of appropriate tourist facilities that are sensitively scaled, designed and sited. Best practice for adding tourist accommodation to an existing viticulture enterprise, of '*a scale and nature appropriate in rural settings',* is exemplified at Barn Hives, only 1km further north - five discreet self-sustainable luxury pods located within a vineyard setting.

- *To provide for the operation and development of existing, future and potential rural land uses by limiting the introduction of sensitive land uses.*

A hotel is a commercial operation and at this scale it would fall outside what would be deemed a 'rural land use'. Taken together with the other objectives, a large commercial operation on this site is **beyond what is acceptable** in an area of rural character.

- *To provide for a range of non-rural land uses where they have demonstrated benefit and are compatible with surrounding rural uses.*

Without demonstrated benefit and compatibility, the introduction of a substantial hotel with multiple closely spaced units and large central facility capable of holding events on this site as distinct from any other non-rural land use in the valley landscape unit are **strongly conflicts** with this objective.

- *To maintain and enhance the environmental qualities of the landscape, vegetation, soils and waterways.*

As previously noted, the construction of a new development of this scale **will without doubt disrupt** not 'maintain or enhance' the environmental qualities of the site, will introduce increased visitor and service traffic (exhaust pollution), will include new roads (increased runoff, contaminated runoff gravity feeds to Gunyulgup Brook), new water tanks (earthworks), new construction (disrupted land/earthworks, cleared vegetation, changed hydrology, habitat damage), and generate collective human activity issues (litter/refuse/smoke blowing across the valley on prevailing winds, bushfire risk, environmental damage, light pollution, noise pollution, trespassing, etc.).

Rural Tourist Accommodation Policy

The proposal identifies the development as a 'Rural Holiday Resort', defined as "*any form of rural tourist accommodation, except Caravan Parks and Camping grounds, comprising more than 10 accommodation units, whether they be rooms, suites or chalets".*

The word 'rural' is misleading in this context. The accommodation offering is more than three times the minimum size to be classified as a rural holiday resort (28 rooms plus 4 chalets), it is a mass block of buildings grouped closely together **plus** a central facility building with catering/bar facilities and capable of hosting private events/weddings. This holiday resort profile can hardly be considered truly 'rural' in character or intent. Indeed, in discussion with experienced local hospitality professionals, it is **unlikely** that a central facility as described in the proposal would be viable without hosting events such as weddings.

The proposal also states that this boutique resort accommodation will include **value adding enterprises**, however, these are unspecified and can represent the **biggest risk** of all in relation to the future of the Gunyulgup Valley.

Revisited with this in mind, the development is clearly less a place for individual visitor groups (couples/family) to holiday in a quiet rural setting amid vineyards as implied, and more an organised commercial business with a licenced central facility (including accommodation with mini bars) with the capacity for entering the lucrative event hosting market.

Described as "a self-contained tourist development", the requirement for hotel alcohol licencing, the private use of central facilities (for on-site guests only), accommodation that includes rooms and family accommodation grouped closely together, limited staffing accommodation, road capacity allowing for coaches and service vehicles, and parking for approximately 80 cars, taken together also indicate this is **intended as private event venue**.

The surge of visitors to site to attend events at a licenced venue entering via Wildwood Road could have a **devastating impact** on the neighbouring Yallingup Steiner School (on the site of the original State Primary School) at drop-off and collection times, as well as noise disruption to any outdoor playtime, weekend or after-hours sports or fundraising activities. Also **negatively impacted** by increased traffic (service vehicles, coaches, cars) and human activity (large groups tend to be more noisy) close by is the pre-existing neighbouring yoga retreat of Premalaya, the focus of which is to 'tread lightly' on the land of the Noongar people and value the immediate surroundings and natural attributes of the area.

The proposal states there is a "*lack of supply of rural viticultural tourism experiences with accommodation of such standard in the area*", when in fact the situation is quite the reverse – the area is **saturated with wine tourism** (enotourism) opportunities (i.e. tasting, consumption or purchase of wine). Other than wine tasting at a cellar door, the term "rural viticultural tourism experience" can also loosely describe events set in a winery, popularly - weddings. With no shortage of wineries in the area that already host weddings, and an area already well supplied with many quality accommodation options (see note 1), the **'lack of supply' statement is invalid.**

Note 1: Wineries known for hosting weddings in the locality include: Rustico/Hay Shed Hill, Xanadu, Amelia Park, Happs Winery, Swings & Roundabouts, Aravina Estate, Voyager Estate, Rivendell Winery, Mongrel Creek Vineyard, and many more. There are also a considerable number of bespoke wedding venues such as The Secret Garden, The Tiller Farm, Dalmore Farm, Taunton Farm, Chambre Estate, Forest Rise, Riverglen Chalets, Eight Willows Retreat, Margaret River Retreat, Tanah Marah, Olio Bello amongst others.

The introduction of a "centralised facilities building", in other words, a venue-sized building with catering/bar facilities capable of entertaining large groups and holding events, to this valley location is particularly problematic and has been **successfully rejected before**. In 2020 the **Gunyulgup Valley Action Group** (GVAG) strongly petitioned against an event venue (gathering 840 signatures) on the basis that "Gunyulgup Valley is a **natural amphitheatre** and sounds are amplified and carry **a significant distance inland** due to its unique natural shape and prevailing winds.

The GVAG tested the extent to which the **valley amplified sound and funnelled sound waves** and established that many residents of Gunyulgup Valley can hear cars travelling along Caves Road and events from as far away as Caves House and Swings & Roundabouts". The petition highlighted the inconsistencies of introducing an event venue to the valley within The Leeuwin Naturaliste Ridge Policy, and further noted an event facility in the valley **"**will adversely affect the residents' property values, amenity, lifestyle, introduce conflicting land uses, environmental impacts on residents, flora, fauna and the natural beauty of the Gunyulgup Valley".

Local Planning Policy no.2.4: Rural Tourist Accommodation, City of Busselton 2010 is further referenced in the proposal documents, noting relevant parts include the statement of intent as follows:

- *The intent in preparing and adopting these provisions is to pursue the principle that commercial tourist development should generally occur within the urban areas of Busselton City and that opportunities should be provided for small scale and low impact tourist accommodation and related activities in rural areas.*

The proposed rural holiday resort is commercial in scale and according to the above, wholly inappropriate for a rural area. This development is **high impact, large scale** and should be sited within the urban areas of Busselton City as advised.

With reference to minimum site requirements for rural tourist accommodation, the following policy appears to have been disregarded in terms of planning the layout of the development. Again, the proposal is of a scale and mass that gives it the **appearance of a commercial development**, and as such should be sited in an urban area.

4.3 Minimum site area requirements OBJECTIVES
a) To provide a rural ambience and setting for Rural Tourist Accommodation;

b) To allow sufficient scope for the siting of buildings in sympathy with landscape features and distant from neighbouring properties and important roads;
c) To avoid clutter, over-development and the appearance of commercial development;

Further indications that this development should be **deemed inappropriate** for the site, and that this proposed resort is **in contradiction** to several policies outlining preferred tourism development for rural areas, including to be low profile and designed in harmony with existing character (refer extract Section 4.10 below).

Council prefers development that:

a) *"Is a conjunctive use of land currently utilised for a viable agricultural / viticultural / horticultural enterprise.*
b) *Provides some on-site activity or feature of interest to tourists.*
c) *Is low profile, both physically and in setting, and is designed in harmony with existing buildings and character, being especially Bed and Breakfast Establishments and Guesthouse developments.*

Above: Extract from Section 4.10 Preferred development – preferences

Specifically, it is clear from the policies guiding rural tourist accommodation (above and following extract Section 4.3), that the proposal appears to conflict with planning intent, where:

- The design layout and building massing appear commercial and over-developed
- The buildings are not located in a sympathy with the landscape features
- The development is not designed in harmony with existing buildings and character, i.e. isolated domestic scale buildings broadly spaced within surrounding landscape.
- The development is next to a school and yoga retreat, sufficiently close to be intrusive
- The development is visible from major and minor tourism drives and valley roads
- The rural ambience is disrupted where the settlement pattern of the area is not continued
- The development is on a high elevation, in an open area close to the top of a ridgeline.
- The development is sited in a visually significant location, that of Gunyulgup Valley

The City will actively discourage development that:

a) *Is situated in visually significant locations, such as on ridges or along unscreened sections of regional or tourist roads.*
b) *Involves major disturbance of remnant bushland or natural areas.*
c) *Is not in reasonable proximity (i.e., 5kms) of a township, major tourist node, beaches, or other recognised areas of tourist activity. Caravan Park and Camping Grounds should be within 3km of an urban area on the coast.*
d) *Is located on land of no particular topographical or landscape interest or value.*
e) *Is of a development form that resembles urban based tourism such as motels, resorts, and the like.*

Above: Extract from Section 4.10 Preferred development - discouraged

Special Control Area

The site is situated within a Special Control Area (Landscape Value) Local Planning Scheme No. 21. Much of the land in the valley, north of Wildwood Road, is zoned rural residential – low density housing populated by both permanent residents and visitors (Photo 1).

The documents advise the relevant parts of the planning scheme are included in the following extract '5.4 Landscape Value Area' (below).

5.4 LANDSCAPE VALUE AREA

5.4.1 Development within the Landscape Value Area requires the prior development approval of the local government.

5.4.2 The local government shall not grant development approval for the clearing or development of any land identified within a Landscape Value area on the Scheme map, unless it has considered –

a) whether the development will be compatible with the maintenance and enhancement, as far as is practicable, of the existing rural and scenic character of the locality;
c) disturbance to the natural environment, including -
i. visual effects of clearing for development;
ii. maintenance of rural character; and
iii. habitat disturbance.

5.4.3 The local government shall not grant development approval for the carrying out of development on land within the Landscape Value area or on land on or near any ridgelines where, in the opinion of the local government, that development is likely to substantially detract from the visual amenity of the area, having regard to, among other things, the cumulative visual effect of the development related to other development that may be anticipated in the locality and in the area generally.

5.4.4 Before granting development approval for the erection of a building on land within the Landscape Value area, the local government shall make an assessment as to whether it should impose conditions relating to –

a) the siting of the proposed building;
b) the use of prescribed materials on the external surfaces of the building; and
c) the number, type and location of existing trees and shrubs which are to be retained and the extent of landscaping to be carried out on the site.

Above: Extract from policy 5.4 Landscape Value Area (LPS No. 21)

According to the City of Busselton, Landscape Value Areas have "a high level of natural and visual amenity" and therefore additional provisions under Clause 5.4 of the Scheme apply to ensure proposed development "does not compromise the amenity or scenic character of the area". Any development is supposed to be compatible with the rural and scenic character of the locality, however, given the design, layout, built form, infrastructure, environmental and bushfire restrictions, and proposed use of the development, it is **not possible for this development to integrate with the surrounding area**.

Introducing a tourism resort "near a ridgeline" in an open valley will most definitely "**substantially detract from the visual amenity of the area**" (5.4.3). One of the key issues highlighted as problematic in 5.4.4 is the siting of the proposed building, which, in this proposal **conflicts with the policy guidelines** outlined in 5.4.2, 5.4.3 and 5.4.4.

The proposal documents reference Clause 3.2 of the scheme – the applicable zone objectives:

a) To provide for the maintenance and enhancement of specific local rural character.

The imposition of a commercial tourism development on this scale new to the area without proper amelioration and operational controls will not meet this objective. The plans for development presented in these documents will by contrast reduce and detract from the specific local rural character – that of borrowed landscape in a shared valley.

With regard to maintaining the rural character of the area, it is unclear how a commercial development could be considered anything but an intrusion and a disruption to the rural character.

There is no other significant tourism development of this scale in the Yallingup hills. It is one of the few areas left in the council area where low key, low density single house tourism accommodation and permanent residential homes are nestled discretely in the landscape, often totally screened from view. While there are vineyards in the Yallingup area inland of Caves Road, they are small enterprises most often with domestic scale buildings close to the road. There are no hotel-like developments, and there are no 9-12m buildings located in the middle of open fields on the highly visible side of the valley system.

In order to *maintain* the Landscape Value Area character, it is necessary to *maintain* the patchwork of paddocks and woodland, to *maintain* the low density, domestic scale-built forms nestled discreetly in the landscape, to *maintain* the complete lack of light pollution, the lack of noise from commercial facilities.

b) *To provide for development and expansion of the viticultural, winemaking and associated industries, in addition to general rural pursuits, in a manner that does not cause adverse environmental impact.*

The proposal is vague in detailing any further expansion of viticultural industry, such as increasing the vineyard area and introducing unspecified pursuits. Chemical over-spray and runoff with slope are all issues to be considered in combining industrial and tourism uses on one site.

c) *To facilitate the development of tourist facilities of a scale and nature appropriate in rural settings without prejudice to the scenic quality of the land within this zone and without creating or increasing ribbon development on any road.*

As already noted in the planning report itself, this scale of development is new to the area and thus certainly is **not of a scale in keeping with the tourist accommodation provision in the area**. The valley beyond the site is zoned rural residential and as such tourism accommodation provision is limited to existing houses in the valley, thus totally indistinguishable from permanent rural residential housing.

The imposing 9m high building of the central facility and unbroken linear mass of multiple smaller buildings are of a scale and form not currently present anywhere in the valley and as such conflict with the scenic quality of the land within the special control area. The development as proposed thus do not meet this objective.

d) *To provide for the operation and development of existing, future and potential rural land uses by limiting the introduction of sensitive land uses.*

The proposal does not identify or propose mitigation of sensitive land use.

e) *To provide for a range of non-rural land uses where they have demonstrated benefit and are compatible with surrounding land uses.*

Non rural land use, such as a commercial scale resort, is not compatible. Likely generate and introduce multiple sources of light and noise, visual intrusion, reflective surfaces in a rural residential valley. The valley, as outlined previously, is a special situation due to the shared outlook and notion of 'borrowed landscape' views and topography creating an amphitheatre.

f) *To maintain and enhance the environmental qualities of the landscape, vegetation, soils and waterways.*

The proposal **does not maintain and enhance any of these important elements**, it introduces a significant development on the side of sloping land, requiring earthworks to create building platforms and sites/routes for infrastructure, thus changing landscape and soils and subsequently the hydrology of the site, significant here are the site is in the direct catchment area for Gunyulgup Brook.

The proposal cites but does not effectively respond to issues highlighted in local authority planning: "The local planning strategy indicates that **low key tourism** can be considered, agricultural activity should be primary and alternate uses should be **complimentary** or incidental to agricultural production, **visual impact** is an important concern and **bushfire matters** should be considered." As discussed later, this development cannot be described as low key in form or intended operational capacity or complimentary to the existing vineyard operation as it is designed as a self-sufficient entity.

The Yallingup hills have been traditionally peppered with farms, some of which have sold off parcels of land as subdivisions; this is the primary pattern of development in association with agricultural land that is no longer required for production. Were the proposal to provide an adequate number domestic scale residential dwellings for farm workers, this would logically be 'complimentary' to the vineyard activities. The justification that tourism accommodation is compatible with agricultural production is not forthcoming, especially when the tourists are not actively involved in the growing of vines or production of wine. In effect the development as described has little to do with the agricultural production, rather, utilises the 'leftover land' for tourism as a diversification of business.

A further note here is that a potential conflict between tourism and agricultural uses relevant to the site has been identified in the Rural Planning Strategy in 2006 (Rural Strategy) and Local Planning Strategy 2019, the Rural Strategy:

- *The subject site falls within Precinct 4-Western Rural and major issues to be addressed include:*

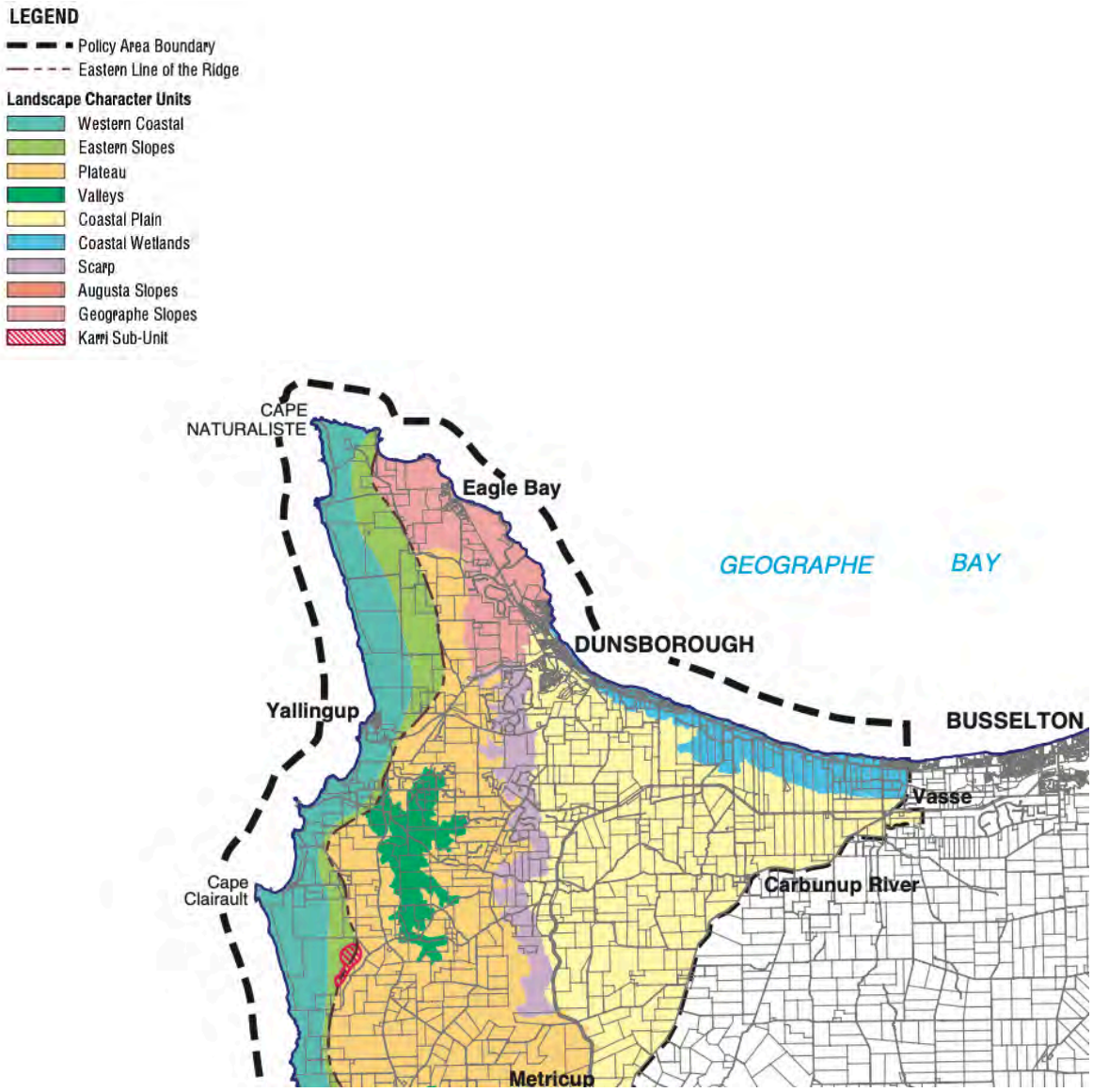
- *- "land use competition and conflict between agricultural uses (particularly viticulture and extractive industry) and tourist based uses. Achieving a sustainable balance between the rural and tourist uses.*
- *- Loss of environmental values due to clearing of remanent vegetation and impact of surface and ground water quality and availability.*
- *- Long term sustainability expansion of the viticultural industry in view of limited water resources.*
- *- Incremental impact of ongoing development on the character and landscape values of the area and particularly Caves Rd.*
- *- Ability of road infrastructure to accommodate increase in traffic volumes*

The Leeuwin-Naturaliste Ridge Policy

The importance of the Gunyulgup Valley as a topographic feature, unique context and special character area within the region, as well as for the local area, should not be underestimated.

The Leewin-Naturaliste Ridge Policy Character Units Map (refer below) identifies landscape character units as "areas of homogenous (similar) patterns of visual characteristics such as landform, vegetation, water form and land use as well as individual features" (Visual Landscape Planning in Western Australia a manual for evaluation, assessment, siting and design WAPC, Nov 2007). The map shows only **one area designated as 'valleys'** compared to all other landscape character types and identifies it as the only valley network in the City of Busselton District. It is therefore **important and unique topographic feature**.

The homogenous nature of this unique valley landscape character area will be **permanently disrupted** if the proposed commercial development across the eastern slope goes ahead.



Above: Extract from Leewin-Naturaliste Ridge Policy Character Units Map

The proposal confirms, "the site is located in an area of Rural Landscape Significance and is classified **predominantly as the 'valley' landscape character** unit, with a small area of 'Plateau' landscape character unit". As indicated previously, the **plateau** landscape character unit area of the site comprises a relatively flat area (contours 50 and 55) under vineyard (vineyard 5 and some of vineyard 6) plus approx. 495m frontage to Caves Road, where there are already "numerous wineries and other tourism related activities". There is already established vegetation along the edge of the road which helps screen the western portion of the site from road users.

The **valley** landscape character unit dominates the majority of this heavily cleared broadly triangular valley-side site. Sloping down from west to east, the flatter zone bordering Caves Road drops down to the eastern corner along Wildwood Road (contour 25), a drop of 25 metres. The sloping aspect, together with the lack of natural vegetation across the site means that the current buildings, tracks, vineyards, and on-site activities (e.g. vehicles moving around) are **highly visible** from many properties and roads/scenic drives to the east, north-east and south.

The Leeuwin-Naturaliste Ridge Policy (LNRP), WAPC 1998, acknowledges **the importance of key landscape features of the policy area**, including the "**exposed slopes and incised valleys** of the Leeuwin- Naturaliste Ridge [that] provide a spectacular backdrop for those who live in or visit this south-western corner of Western Australia". The Policy 's overall objectives include to "*conserve and enhance the special benefits arising from landscape elements that form the fabric of the region".*

It should be noted also that all other nearby commercial buildings of the proposed size and commercial enterprises, including cellar doors and restaurants, are located in the areas defined as **plateau landscape character unit** and predominantly accessed directly off Caves Road: Swings & Roundabouts, Windows Estate, Cape Naturaliste Vineyard, Vines and Stars, Gabriels Chocolate, Della Fay Wines and Yallingup Maze, to name a few in the vicinity of the site.

While the proposal documents include reference to sections of the Leeuwin-Naturaliste Ridge Policy or LNRP (refer LNRP extract below '4.3 Landscape'), the development is of a scale and nature that **conflicts with policy guidance** to "utilise sites of **least impact**", "**maintain the natural character**", "**protect the rural character** of the land", "**avoid ridge lines, escarpments or visually exposed sites**", and to **retain "agriculture (including viticulture**) [as] the predominant economic land use, within the constraints of **protecting remnant vegetation and landscape values**".

Policies 3.2, 3.3 and 3.8 addressing landscape matters were highlighted in the submission as relevant, yet the proposal appears to be in **contradiction** to all three policies. Also relevant but not included in the documents, policy PS 3.6: "In areas of Rural Landscape Significance", "development or change of use **should protect the rural character of the land**" and policy PS 3.8: such development will - "**avoid the steeper and higher slopes**".

4.3 Landscape

Statement of Intent

This is an extraordinary landscape which is part of the nation's heritage. Its unique values will be conserved by land use strategies and development assessment processes, having particular regard for—

• protection of the natural character of the Leeuwin-Naturaliste Ridge, including the coastal and marine interfaces and areas of remnant vegetation;

• maintenance of the mosaic of land uses evident in existing agricultural areas, while providing for change in agricultural land uses; and

• recognition of the role and importance of human activity and its contribution to cultural landscape.

Policies

PS 3.1 The Landscape Classes map (Figure 3) and the Landscape Character Units map (Figure 4) form part of this LNRSPP.

PS 3.2 Development must be responsive to local values, and be compatible with the natural characteristics and traditional settlement patterns of the area.

PS 3.3 Development will have due regard for the landscape integrity and value of Ridge backdrops when viewed from the coastline, bays or Travel Route Corridors.

PS 3.4 In areas of Natural Landscape Significance, including where they are in Travel Route Corridors, the significant natural characteristics will be protected and provide adequate development setbacks. In these areas development will be screened from Travel Route Corridors except public recreation or safety facilities which may be seen in the foreground.

PS 3.5 The environmental integrity and natural landscape values of the Western Coastal and Eastern Slopes of the Leeuwin-Naturaliste Ridge as identified in Figure 4 and near-shore waters will be given high priority in land use decisions.

PS 3.6 In areas of Rural Landscape Significance, as identified in Figure 3, development or change of use should protect the rural character of the land.

PS 3.7 In areas of General Character, as identified in Figure 3, development or change of use should protect the rural character and conform with policies and guidelines for Travel Route Corridors.

PS 3.8 Where the LNRSPP identifies development opportunities on the Ridge, such development will—

- maintain the natural character where this exists;
- utilise sites of least visual impact;
- conform with a sustainable bushfire plan;
- maintain the values of adjacent conservation reserves;
- avoid the steeper and higher slopes; and
- avoid impacts on significant flora and fauna communities.

Above: Section 4.3 Landscape. Extract from The Leeuwin-Naturaliste Ridge Policy (LNRP), Statement of Planning Policy No6.1, WAPC 1998

The "Leeuwin-Naturaliste Ridge Policy Landscape Classes" Map identifies the site as having Rural Landscape Significance, as does the wider valley area to the east. Further, the site is bounded by Travel Route Corridors also with Rural Landscape Significance (Caves Road and Wildwood Road).

While policy PS 3.3 has identified the value of ridge backdrops from Travel Route Corridors, "determined as corridors (300m either side) along a primary transport network", it is relevant to emphasise that the entire Valley area comprises a network of scenic tourist routes along which visitors to the area, residents and tourists, drive at a slower speed than along main networks. Therefore, the scenic valley drives are more likely to **experience disruption** in 'landscape integrity' caused by a visually intrusive development. Photo 3 (below), for example, is taken from just one of the roads in the area used to access numerus permanent residential homes as well as properties rented to tourists on a short stay basis. Photo 4 (below), shows the same location with an indicative

representation of the development, this important visual contextual information not provided in the reports.



Photo 3: View from Seascape Rise – site dominates the eastern side of the valley system.



Photo 4: View with sketch of development superimposed to ascertain the likely visual impact viewed from the east, taken from residential roads in the Gunyulgup area - impact omitted from the proposal.

Even though the planning report acknowledges the “valley system dominates the central and eastern parts of the site”, the parts that will be under development, instead the analysis focuses on the impact and **treatment of a relatively limited boundary** along Caves Road and northern corner.

‘Caves Road Visual Management Policy’ locates the site area within the context of Caves Road corridor. The character of Caves Road is currently one that encompasses views into directly to commercial (non-domestic) properties and grand entrances to wineries and hotels. Even with a short distance from the site, a significant number of winery buildings, winery entrances, hotel entrances exist in this corridor.

Accommodation Type

The importance of this development in adding to the "rural accommodation offering" is overstated, and **relevance is questionable**. Visitors to the area already have a vast array of rural accommodation options and vineyard experiences open to them. The nature of the large-scale hotel development as proposed is commercial, not rural, and the siting of the development is a disruption to the scenic valley it boasts about being part of. Further, it will **disrupt and detract** from the multiple existing rural accommodation offerings located discreetly in Gunyulgup Valley area, already made popular by the captivating rural views and peaceful location.

The entire area west of Caves Road is already a high quality 'nature-based experience' for very many residents and tourists who travel through the undulating landscape on tourist drives and stay in local accommodation during the year. This proposal does not present anything that could be considered a new or different nature-based experience, especially as the site offering appears to be closed to the public.

The dominant character of the Gunyulgup Valley area is undeveloped rural residential with domestic scale tourism accommodation (free-standing houses, farm homesteads, guest rooms in houses) and the addition of a hotel development is inconsistent with this land-use and an **intrusive and ill-fitting** addition to the accommodation offerings. With reference to policy PS 5.4 below, the proposed development cannot be considered "low-impact" as it will "**adversely affect the character of the surrounding area**", it does not comprise small scale buildings that are "unobtrusive".

Policies
PS 5.1 Appropriate nature-based and cultural tourism and recreation proposals will be encouraged.
PS 5.2 Coastal Tourist Nodes will provide for a range of tourist accommodation options, including campsites, hostels/backpacker accommodation, chalets, lodges and other low-impact tourist development.
PS 5.3 Tourist development which is inappropriate in rural locations, will focus on or be adjacent to existing Principal Centres. Where tourist development is proposed in other areas, the proposal will comply with the Settlement Hierarchy, Policy Statements for the area and the use category under the Land Use Strategy.
PS 5.4 Low-impact tourist development will be considered in rural locations where the development—
• will not adversely affect the character of the surrounding area;
• comprises only buildings or structures which are small in scale and unobtrusive;
• is consistent with the transport and environmental policies of the LNRSPP; and
• in the case of an agricultural area, is incidental or complementary to the agricultural use.
PS 5.5 Infrastructure planning will consider the social and regional impacts of visitor use of local recreation and social facilities.
PS 5.6 Tourism developments adjacent to the National Park or within the National Park Influence Area (refer to Land Use Strategy) will be assessed for their direct and indirect impact on the natural environmental values and management of the park.
PS 5.7 Tourist developments will be required to provide for recreation demands resulting from the impact of the proposal, including the promotion of integrated tourism facilities, and visitor and resident interaction, and an appropriate contribution towards monitoring and addressing coastal and other off-site impacts of such development by independent agencies.

Section 4.5 Tourism. Extract from The Leeuwin-Naturaliste Ridge Policy (LNRP), Statement of Planning Policy No6.1, WAPC 1998

The proposal states there are "limited examples" of the type of accommodation proposed in the area. On the contrary, there are **many examples** of larger-scale hotel developments away from the

coast, and the vast majority – appropriately - are closer to/in the main population centres, for example Empire Spa Retreat and Club Wyndham close to Dunsborough. Reference should be made here to the LUS 1.4 Additional short-stay accommodation and tourist facilities will integrate with and enhance the existing character of Dunsborough (Statement of Planning Policy – 61).

There are additionally numerous examples of tourism accommodation offerings in conjunction with vineyards, also hotels/multiple unit accommodation facilities accessed from the Caves Road corridor, including Cape Lodge (22 rooms, 4-bed residence, restaurant, vineyard, mature garden surround), Caves House and Apartments (hotel, restaurants, gardens, multiple apartments and rooms), Barn Hives (6 eco-luxury pods, restaurant, vineyard setting), Swings & Roundabouts (5 chalets, restaurant, cellar door, vineyard), Cullen Homestead (accommodation for 12, cellar door, winery), Cherabino (cellar door, winery, restaurant, 3 guest houses, gardens), to name a few.

Precedents for sensitive tourism accommodation within winery setting include very close Barnyard, 6 small chalets located in winery on flat land similar elevation to surrounding area thus easily screened and only generate need for modest infrastructure.

The City of Busselton adopted a new Local Planning Strategy in 2019, providing guidance for future planning, supporting “low key, small scale tourist accommodation in rural areas”. The definition of low key and small scale may be open to interpretation, however, when taken in combination with the maintenance and enhancement of a Landscape Value Area character that is predominantly rural residential, single domestic dwellings, low density, individual holiday rental properties – then a hotel with a capacity for 34 families is **contrary to the aim and intent** of the Strategy.

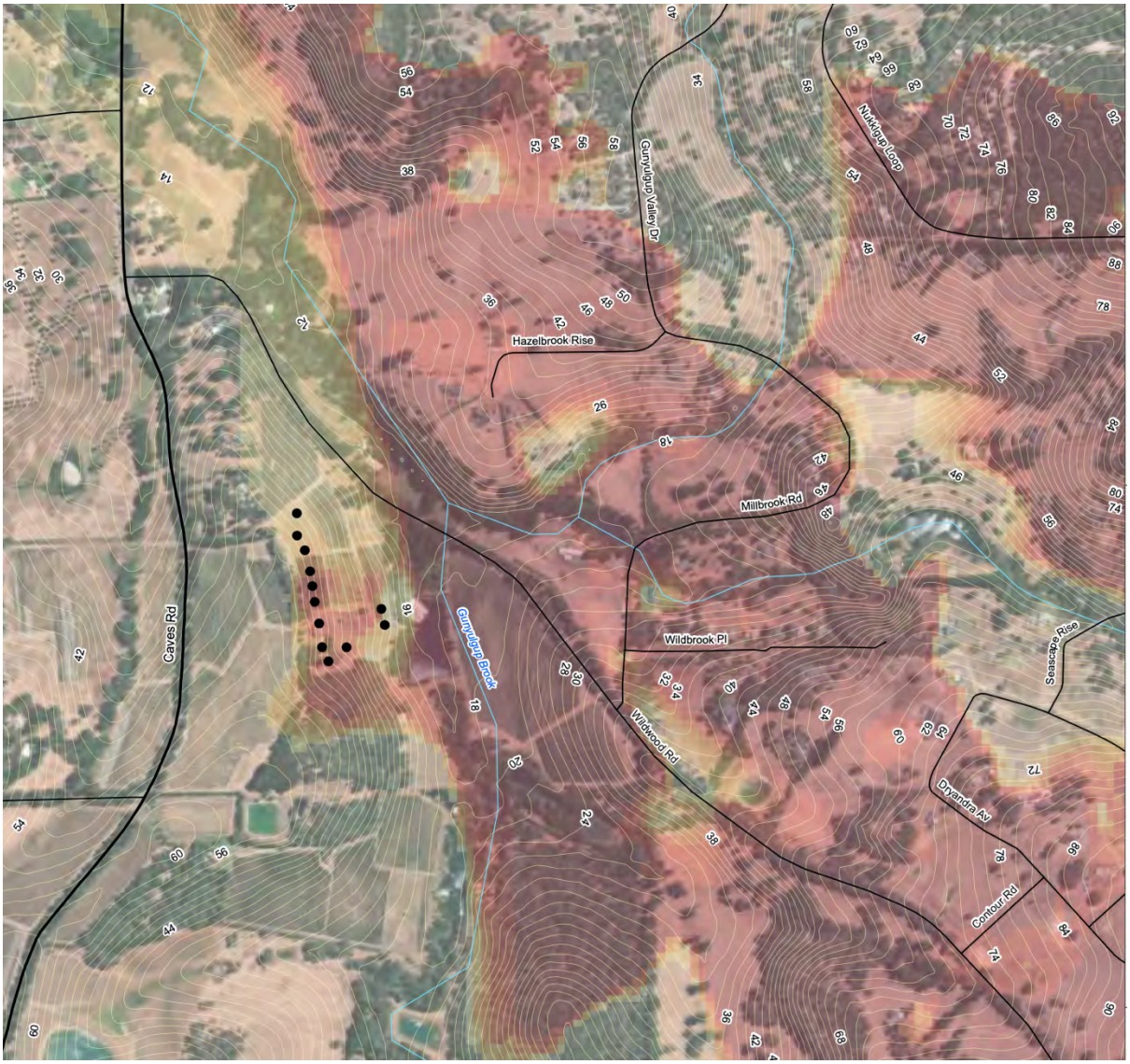
B: PROPOSED DEVELOPMENT

Valley Context

Of the 42.5 ha (approx.) land area, currently almost half (18 ha approx.) is vineyard, 2.114 ha is water (dams), there are 2 existing residential buildings plus sheds and tracks, and additionally 0.2632ha of closed road reserve. Most of the site (approx. 90%) is cleared of natural tree cover, with the most significant pocket of trees comprising only approximately 4ha.

At present the valley system - of which the site dominates the western elevation - is rural residential in character: A patchwork of fields and woodlands, individual domestic scale homes with gardens, residential roads and driveways and, significantly, there are **no sources of light or noise pollution**. The elevation of the site, topography of the valley system, and prevailing winds from the west, mean that any noise generated by on-site activities will be carried right across the valley and some considerable distance inland.

Further, as the land is located on the side of an extensive valley system, not only is the site **fully exposed both visually and audibly**, but it also contributes to the notion of ‘**borrowed landscape**’. Just as the site enjoys views down and across areas of rural and natural landscape significance, likewise the residents of and visitors to the valley system enjoy views back across the network of fields and vegetation looking west towards the ridge, the site, and indeed, the sunset (refer Photo 2).



Above: Viewshed Analysis Map

The Viewshed Analysis Map (above) included with the visual report clearly illustrates the significant extent of shared landscape character and thus shared views impacted by the development buildings. The land area **visually impacted by the site is vast** as shown in yellow, orange and red (number of proposed buildings visible). It should be noted that the full impact (all proposed buildings visible) **extends beyond** the window of the Viewshed Analysis Map, thus **disregarding areas both to the east and south**, including sections of, for example, Dryandra Avenue, Dress Circle, and Seascape Rise (photos 3 and 4) and Nukklegup Loop (photo 5).

The documents use the View Shed Analysis, traffic studies and visual impact assessments to build a case that "demonstrates the built form will not be visible from the portion of Caves Road adjacent to Lot 101", both entirely **ignoring the valley system** and demonstrating the focus is on **protecting only the Caves Road** corridor from adverse impacts. Rather than look at the relative merits of siting development on the flatter, easier to effectively screen, western portion of the site, the proposal instead places a large group of new built forms on the slope near the top of a ridge in a cleared area that will impact a considerable area of surrounding natural and rural landscape significance.



Photo 5: View with sketch of development superimposed to ascertain the likely visual impact viewed from the east, taken from Nukklegup Loop - impact omitted from the proposal as area beyond Viewshed Analysis Map.

The submission has not demonstrated due consideration of the visual, noise and light impacts on the valley system.

Regardless of whether the viewshed takes into account the screen planting to be included with the proposal or not, the proposed planting is insufficient to screen development and will not change the mapping. Given clearances for bushfire, potential screen planting of any substance must be located away from buildings. On a sloping site, this renders the **proposed screen planting ineffectual**, whereas on a flat site screening can be located away from buildings but take effect quickly. Diagram shows development **is located in the worst possible location for visual exposure** to residential roads and homes in the Gunyulgup Valley area.

Density

The Planning Report claims that the subject site is used extensively for agricultural purposes, and the proposed tourism use is "primarily to utilise parts of the site that are not currently used for intensive agricultural", claiming also that the accommodation is "complementary to the agricultural production". There is nothing in the proposal to substantiate this, further, the area of land 'not currently utilised' should be used to calculate the density as the remainder of the area is established vineyard as productive agricultural land.

The proposal states: "Section 4.3 of the City of Busselton Local Planning Policy 2.4 – Rural Tourist Accommodation refers to minimum site area requirements and it is noted that Rural Holiday Resorts should not be permitted on allotments comprising less than 30 hectares. Given the subject site is excess of 42 hectares it clearly meets the requirements to accommodate a Rural Holiday Resort…

Given the site is 42 hectares in area, the 28 rooms and 4 chalets are appropriate as this would require a site of 40 hectares in area which is achieved."

While the entirety of the site is approximately 42ha, half of that land is **not available** for development (building or infrastructure), for example under permanent agricultural production as vineyard (18ha) thus maintain the zoning for viticulture, or waterbodies/dams (2.1ha). Based on land *available* for development, approximately 21ha, this site **fails the minimum site area requirement.** Further, it demonstrates the difference between the policy's implied intentions for siting a **rural** holiday accommodation such that it utilises a substantial area of land thus allowing for adequate spacing between buildings, ample screening, and low-density development, in keeping with **rural** character. Squeezing a large accommodation offering on a 21ha site has led to the **undesirable compression** of buildings and infrastructure in the layout, creating the appearance a highly commercial not rural development.

In addition to the compression of development into a site **half the size** intended, the site is sloping not flat, thus compressing the overall building footprint even further to follow contour lines that provide a flatter construction pad. The constraints of earthworks and drainage further limiting optimal building placement.

The buildings grouped as tightly as they are create a dense block and **void the objectives** of Section 4.3 of the Policy in relation to the minimum site area requirements , which include "recognising the rural ambiance of the area, **ensuring buildings are in sympathy** with landscape features and distant from neighbouring properties and important roads and to avoid clutter over development and the **appearance of a commercial development** such to achieve a high level of rural amenity".

The proposal confirms: "The City have developed a Rural Tourism Policy which provides very firm guidance on density of development relative to the size of the lot. This indicates density that would be appropriate and this is adhered with." The mass of built form as shown can hardly be interpreted as low density sited when it is compressed into a relatively restricted area around a feeder loop road. For density to be calculated on the available land area that is not already under vineyard, this is a **very intensely planned and dense development**. It is hard to understand how the "City Planners … confirmed the format of development proposed **was in compliance with density** requirements in the Policy and as such would be supported" when the small area of 'underutilized land' that is the location for the buildings and road, does not deliver the density required in the Policy.

Buildings/Building Layout

The stated aim of the proposal is to "establish a high-quality tourist development", with a central facility and accommodation to showcase the "high scenic quality of the site". As previously indicated, the buildings in the development are located on a high elevation to view over low vineyard planting that itself slopes down and away from the development and utilise the view. As such this is a valley side development, and, given their size, density and exposure, the built forms are **not "appropriately scaled"** as stated in the proposal.

5.4.3 The local government shall not grant development approval for the carrying out of development on land within the Landscape Value area or on land on or near any ridgelines where, in the opinion of the local government, that development is likely to substantially detract from the visual amenity of the area, having regard to, among other things, the cumulative visual effect of the development related to other development that may be anticipated in the locality and in the area generally.

5.4.4 Before granting development approval for the erection of a building on land within the Landscape Value area, the local government shall make an assessment as to whether it should impose conditions relating to –

1. *a) the siting of the proposed building;*
2. *b) the use of prescribed materials on the external surfaces of the building; and*
3. *c) the number, type and location of existing trees and shrubs which are to be retained and the extent of landscaping to be carried out on the site.*

5.4.5 In clause 5.4.4 -

"external surfaces" means the external walls and cladding (if any), external doors, external door and window frames, columns, roofs, fences and any surface of a building or work visible from the exterior of a building or work; an "prescribed materials" means materials with dark tones or dark colouring and of low reflective quality or materials which are painted or similarly treated with dark toned or dark coloured paint or pigment of low reflective quality."

Above: Extract from City of Busselton Local Planning Scheme No. 21 cited in proposal documents

With reference to the Local Planning Scheme the placement of multiple buildings within a Landscape Value area near a ridgeline is **in direct conflict with policy 5.4.3** (above), as this report details, it is highly likely to **substantially distract from the visual amenity of the area**.

Further, the siting and materials of the buildings and the extent of landscape as referenced in clause 5.4.4 of the Planning Scheme should be subject to detailed scrutiny given many of the details provided in the proposal are **insubstantial, general in nature and conflicting with policy** for development in Landscape Value areas.

Section 5.4 of the Local Planning Scheme stipulates 'external surfaces' being of dark colours and "low reflective quality". Contrary to this, the proposed roof material is specified as 'standing seam Colourbond', which is a is **highly reflective** metal roof material regardless of colour. The building materials, form, location and layout will create a series of tightly spaced substantial buildings with steeply pitched roof profiles, that in effect place a **row of very large mirrors in a high elevation** facing the valley (photo 6).



Photo 6: Example of dark colour yet highly reflective Colourbond roof similar to that proposed for development built form.

Not only is the roof surface area of each building substantial with the effect of placing a line of highly reflective surfaces in a very exposed location, but additional reflective surfaces will also include glazing/windows, solar panels and water tanks, and the windscreens of up to 60 cars. There is nothing in the proposal that mitigates potential glare from reflective surfaces: There is a lack of existing mature vegetation on the site in the vicinity of the buildings, the topographical profile (elevated sloping site) increases the apparent mass of built forms, and the lack of proposed landscape treatment (low growing vines, bushfire restrictions, lack of space between and around buildings) in order maintain the valley views **from** the buildings.

The proposal advises that the development is "low profile with buildings generally single storey and set into the landscape below the ridge line and back drops with vegetation and suitable setbacks from boundaries. Materials are typically stone and wood and therefore reflective of the local environment". The buildings are set in **front of a ridgeline** when considered **from** the Gunyulup Valley, not behind, so vegetation used as a backdrop is of **no benefit in reducing the visual intrusion** of these buildings on the valley. The buildings, although single storey, are up to 9ms high, which **cannot realistically be considered low profile**.

The buildings are set in a line close together following an elevated contour line (approx.. contour 42ms). Not only are they in close proximity **along the contour**, they are also effectively stacked **down the contours,** which results in the appearance of a bigger mass – a 'stacked' development. As previously indicated with reference to reflective materials, there is insufficient room for landscape to make any appreciable impact on the bulk of buildings to the dominant elevation given locations of infrastructure, water tanks and bushfire planting limitations.

The central facilities building, with "dining, bar and other related amenities" – **importantly these other related amenities are unspecified** - is proposed on the site of the existing dwelling thus occupying the very visible portion of the site at the top of the hillside. The current dwelling is

residential in scale and seen clearly amid the patchwork of low growing vineyards from quite some distance across the valley (photo 2).

The scale of the development, a tourist resort "similar to a hotel" in many respects, with 28 "rooms" and four family sized chalets, two residential buildings indicate activity of a scale that will impact the landowners beyond the site boundaries. Issues potentially arising from the proposals include:

- On-site road use; both street lighting and car headlights will be seen across a valley where there is currently no ambient light pollution.
- On-site building use; especially break-out areas, with music and lighting from functions or regular evening entertaining (restaurant, bar), again impacting a valley where there is currently no noise or light pollution, but where sound will travel on the predominant winds coming in from the west and south-west.
- On-site delivery and service vehicles; headlights, these typically generate noise, as for above.
- Watercourse contamination.
- Construction noise, disruption, access.

Landscape

Located in a bushfire prone area, "tourist development is generally noted as being a vulnerable land use and therefore requires greater attention". The proposal locates several buildings in close proximity to one another (6-15.4m), with areas of screen planting indicated between them. Vegetation of this height and density contravenes the requirements of Schedule 1: Standards for Asset Protection Zones (Guidelines for Planning in Bushfire Areas V1.4 Dec 2021). There is **no attempt to adequately space buildings apart** so that it is not possible to include substantial planting to break down the visual block of built form within bushfire guidelines. Significantly, there is **no suitable landscape screening** to the east side of the buildings to assist with screening the views from the valley. Further, there are rainwater tanks located between buildings limiting suitable areas for vegetation and contributing to the linear, overdeveloped character of the proposed built area.

The report is **misleading in its suggestion there is sufficient screening**: "The setback areas are to contain sufficient vegetation to screen and/or provide filtered views only of new developments".

Screening and landscaping as described for driveway and "about the proposed development", is **generalised, totally inadequate and non-specific**, seeking only to "provide an attractive amenity" to the visitors of the site. The report is weak on specifics about how the site is to be used beyond the buildings, with vague notions of "recreation options", and the provision of "walk trails throughout the site including through the bush".

The proposed increase in the area developed for viticultural enterprises", as well as "a series of water tanks" (above ground?), and the infrastructure required to provide access for service and emergency vehicles, means less land remaining as natural ground. The concern is here that the few remaining stands of **trees will be lost to the development of ancillary areas**, either through construction works or through the installation of necessary infrastructure (power, water, etc).

Conclusion

The site, while zoned Viticulture and Tourism under the City of Busselton's Local Planning Scheme is not appropriate for the scale, form and nature of the proposed development. The key objectives - to provide for development and expansion of viticultural enterprise and development of tourist facilities of a scale and nature appropriate to the rural setting – are not met.

The proposal has disregarded the most overwhelming aspects of the site's unique location within the Gunyulgup Valley and special landscape character designation, and has failed to demonstrate suitability, sensitivity, best practice, avoiding adherence to the best intentions of the planning guidelines centred on maintaining and enhancing specific local character. The proposal has identified a "very scenic location" and seeks to exploit it, imposing a densely massed ribbon development on the side of a ridgeline in the most visually dominant cleared site in the valley.

Critical details, such as the use and operation of the expansive centralised facilities building, and 'value adding enterprises', have been omitted and without full disclosure this building is the one of the most problematic aspects of the development. Light pollution and excessive noise levels/times are heavily implicated if this development hosts events such as weddings. Previous attempts at siting an event venue in Gunyulgup Valley have been successfully rejected, so this generalised facility with the capacity to act as a venue is particularly alarming sited on the side of a natural amphitheatre with prevailing winds coming from the west.

The area around the site is saturated with tourist accommodation of many different types and viticultural experiences, it is dominated by rural views and interspersed with tourist drives, residential homes, and farmland. The region is troubled by severe labour shortages in hospitality and tourism. There is no demonstrated shortfall of accommodation that this proposal satisfies, no precedent for imposing a commercial scale hotel in a compressed and exposed prime valley-side site, and every indication that this will increase pressure on: the local environment, infrastructure and resources, wider flora and fauna protection, local bushfire services, and supply/retention of hospitality workers.

Rejection of the application is respectfully requested.

Appendix (please refer to separate attachment)

- 8 no. annotated plans and images providing graphic illustration of issues referenced in comments above, including:

  Significant views are annotated to clarify finished floor levels (FFL), top of roof levels, and with the proposal superimposed as realistically as possible given the information provided.

  The 3D site plan provides in the proposal has been annotated to highlight issues relating to the compressed spaces between buildings and misleading representation of landscape provision.

  Proposed site plan annotated to establish location and level datum for superimposed 3D.

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PROPOSED SITE PLAN
A1 - 1:2000

NOTES:

LEGEND:
- NEW SEALED BITUMEN ROAD
- EXISTING AGRICULTURAL GRAVEL ACCESS ROAD
- NEW MANAGED LANDSCAPED AREA
- MODIFIED SOIL CUT/FILL
- STONE PITCH DAMMING
- EXISTING VINEYARD
- EXISTING TREE LAND VEGETATION
- EXISTING WALKTRAILS
- EXISTING TREE LAND VEGETATION OUTLINE

REV	DATE	ITEM	BY
0	28/11/23	Issued for Development Application	VD

DEVELOPMENT APPLICATION

BROOKING DESIGN ARCHITECTS PTY. LTD.
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web = www.brookingdesign.com email = bwa@brookingdesign.com
architects board of WA registration = 2451 acn = 075 710 982

PROJECT
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603)
Wildwood Rd, Yallingup WA

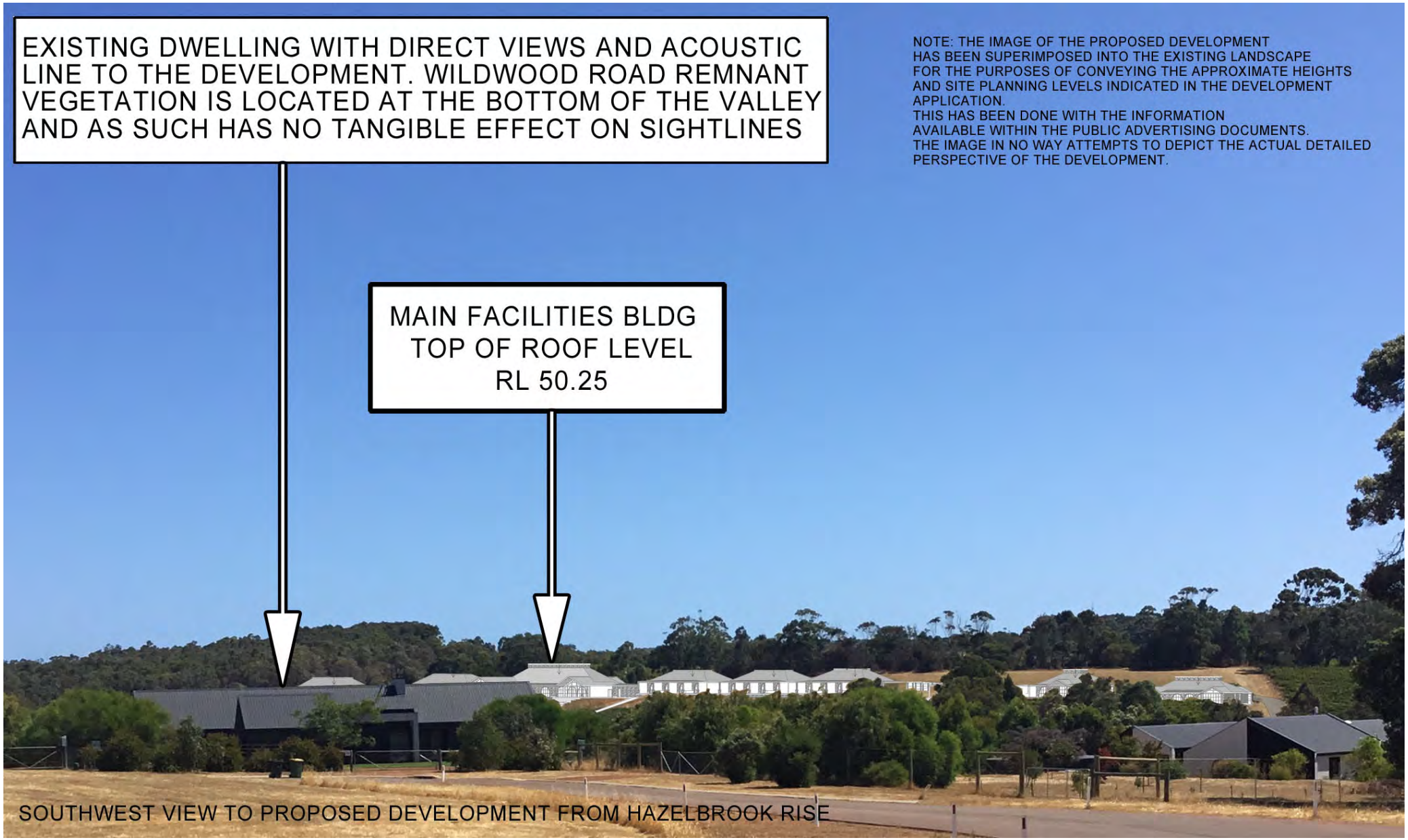
DRAWING
PROPOSED SITE PLAN

STATUS / CHECKED					DRAWN BY:	SCALE:
DA	T	CD	BP	FC	VD	AS NOTED

PROJECT NO:	DRAWING NO:	REV:
17109	A0.2	0

SOUTHWEST VIEW TO EXISTING
DEVELOPMENT SITE FROM HAZELBROOK RISE




EXISTING DWELLING WITH DIRECT VIEWS AND ACOUSTIC LINE TO THE DEVELOPMENT. WILDWOOD ROAD REMNANT VEGETATION IS LOCATED AT THE BOTTOM OF THE VALLEY AND AS SUCH HAS NO TANGIBLE EFFECT ON SIGHTLINES
MAIN FACILITIES BLDG
TOP OF ROOF LEVEL
RL 50.25
NOTE: THE IMAGE OF THE PROPOSED DEVELOPMENT HAS BEEN SUPERIMPOSED INTO THE EXISTING LANDSCAPE FOR THE PURPOSES OF CONVEYING THE APPROXIMATE HEIGHTS AND SITE PLANNING LEVELS INDICATED IN THE DEVELOPMENT APPLICATION.
THIS HAS BEEN DONE WITH THE INFORMATION AVAILABLE WITHIN THE PUBLIC ADVERTISING DOCUMENTS.
THE IMAGE IN NO WAY ATTEMPTS TO DEPICT THE ACTUAL DETAILED PERSPECTIVE OF THE DEVELOPMENT.
SOUTHWEST VIEW TO PROPOSED DEVELOPMENT FROM HAZELBROOK RISE


SOUTHWEST VIEW TO EXISTING
DEVELOPMENT SITE FROM NUKKLEGUP LOOP
EXISTING BRICK & TILE DWELLING
FFL: 43.03

SOUTHWEST VIEW TO PROPOSED DEVELOPMENT FROM NUKKLEGUP LOOP

NOTE: THE IMAGE OF THE PROPOSED DEVELOPMENT HAS BEEN SUPERIMPOSED INTO THE EXISTING LANDSCAPE FOR THE PURPOSES OF CONVEYING THE APPROXIMATE HEIGHTS AND SITE PLANNING LEVELS INDICATED IN THE DEVELOPMENT APPLICATION.
THIS HAS BEEN DONE WITH THE INFORMATION AVAILABLE WITHIN THE PUBLIC ADVERTISING DOCUMENTS.
THE IMAGE IN NO WAY ATTEMPTS TO DEPICT THE ACTUAL DETAILED PERSPECTIVE OF THE DEVELOPMENT.




WEST VIEW TO EXISTING DEVELOPMENT
SITE FROM SEASCAPE RISE DWELLING
EXISTING BRICK & TILE DWELLING
FFL: 43.03

WEST VIEW TO PROPOSED DEVELOPMENT FROM SEASCAPE RISE DWELLING

NOTE: THE IMAGE OF THE PROPOSED DEVELOPMENT HAS BEEN SUPERIMPOSED INTO THE EXISTING LANDSCAPE FOR THE PURPOSES OF CONVEYING THE APPROXIMATE HEIGHTS AND SITE PLANNING LEVELS INDICATED IN THE DEVELOPMENT APPLICATION.
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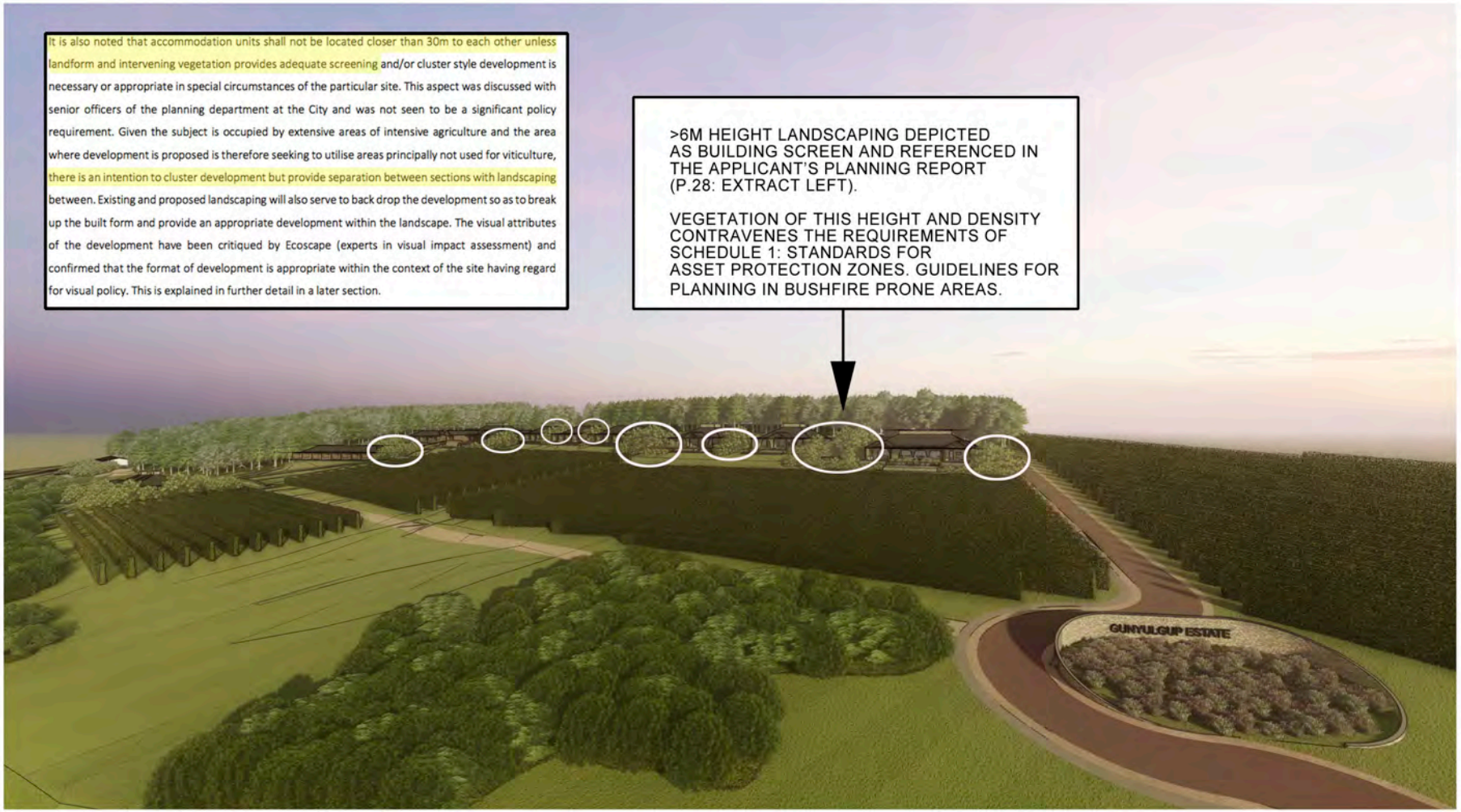
THE IMAGE IN NO WAY ATTEMPTS TO DEPICT THE ACTUAL DETAILED PERSPECTIVE OF THE DEVELOPMENT.

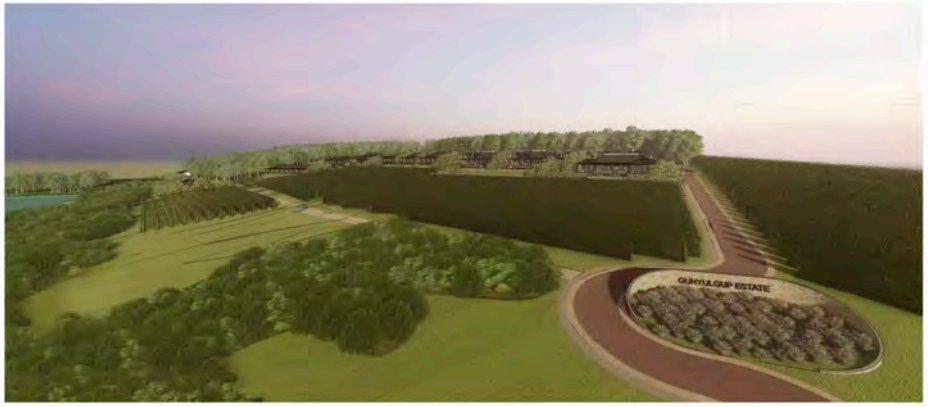


It is also noted that accommodation units shall not be located closer than 30m to each other unless landform and intervening vegetation provides adequate screening and/or cluster style development is necessary or appropriate in special circumstances of the particular site. This aspect was discussed with senior officers of the planning department at the City and was not seen to be a significant policy requirement. Given the subject is occupied by extensive areas of intensive agriculture and the area where development is proposed is therefore seeking to utilise areas principally not used for viticulture, there is an intention to cluster development but provide separation between sections with landscaping between. Existing and proposed landscaping will also serve to back drop the development so as to break up the built form and provide an appropriate development within the landscape. The visual attributes of the development have been critiqued by Ecoscape (experts in visual impact assessment) and confirmed that the format of development is appropriate within the context of the site having regard for visual policy. This is explained in further detail in a later section.

>6M HEIGHT LANDSCAPING DEPICTED AS BUILDING SCREEN AND REFERENCED IN THE APPLICANT'S PLANNING REPORT (P.28: EXTRACT LEFT).

VEGETATION OF THIS HEIGHT AND DENSITY CONTRAVENES THE REQUIREMENTS OF SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES. GUIDELINES FOR PLANNING IN BUSHFIRE PRONE AREAS.





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REV.	DATE.	ITEM.	BY.
0	28/11/23	Issued for Development Application	VD

DEVELOPMENT APPLICATION

BROOKING DESIGN ARCHITECTS PTY. LTD.
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PROJECT.
PROPOSED TOURIST DEVELOPMENT
Lot 101 (No. 1603) Wildwood Rd, Yallingup WA

DRAWING.
PROPOSED SITE 3D VEW

STATUS / CHECKED.					DRAWN BY.	SCALE.
DA	T	CD	BP	FC	VD	AS NOTED

PROJECT NO.	DRAWING NO.	REV.
17109	A0.10	0

PART D – SHIRE OF HARVEY

1. Declarations of Due Consideration

Any member who is not familiar with the substance of any report or other information provided for consideration at the DAP meeting must declare that fact before the meeting considers the matter.

2. Disclosure of Interests

Nil.

3. Form 1 DAP Applications

3.1 Lot 565 Paris Road, Australind – Convenience Store – DAP/23/02586

4. Form 2 DAP Applications

Nil.

5. Section 31 SAT Reconsiderations

Nil.

LOT 565 PARIS ROAD, AUSTRALIND – CONVENIENCE STORE

Form 1 – Responsible Authority Report
(Regulation 12)

At its meeting on 14 February 2024, the Regional JDAP resolved as follows:

"That the consideration of DAP Application DAP/23/02586 be deferred for up to 60 days, in accordance with section 5.10.1a of the DAP Standing Orders 2020, for the following reasons:

To enable the applicant and Shire to address the following matters:

- *How the land use is best classified when the defined meaning of Convenience Store in LPS1 states a land area maximum and the words "In a residential zone a convenience store shall be part of a dwelling which should be occupied by the owner or lessee of the store".*

- *How Scheme provisions relating to Area 7, Schedule 15, which stipulates permitted uses, are met by the application."*

This report is an Addendum to the original Responsible Authority Report considered by the Regional JDAP on 14 February 2024.

DAP Name:	Regional DAP	
Local Government Area:	Shire of Harvey	
Applicant:	Element on behalf of Paris Road Australind CT Pty Ltd and Fabray Pty Ltd	
Owner:	Paris Road Australind CT Pty Ltd and Fabray Pty Ltd	
Value of Development:	$2.1 million ☐ Mandatory (Regulation 5) ☒ Opt In (Regulation 6)	
Responsible Authority:	Shire of Harvey	
Authorising Officer:	Manager Planning Services	
LG Reference:	P320/23, A5606, C291/00264	
DAP File No:	DAP/23/02586	
Application Received Date:	7 November 2023	
Report Due Date:	3 April 2024	
Application Statutory Process Timeframe:	90 Days	
Attachment(s):	1. Plans Schedule and Development Plans 2. Regional JDAP Meeting of 14 February 2024 Agenda – Previous Responsible Authority Report 3. Applicant further justification for land use classification and permissibility	
	☒ Yes ☐ N/A	Complete Responsible Authority Recommendation section

Is the Responsible Authority Recommendation the same as the Officer Recommendation?		
	☐ No	Complete Responsible Authority and Officer Recommendation sections

Responsible Authority Recommendation

That the Regional JDAP resolves to:

1. **Accept** that the DAP Application reference DAP/23/02586 is appropriate for consideration as a 'Fuel Filling Station and Retail of 300m^2' land use that may be compatible with the objectives and purpose of the "Residential Development" zone in accordance with Clause 4.2.5(b) of the Shire of Harvey District Planning Scheme No. 1;

2. **Approve** DAP Application reference DAP/23/02586 and accompanying plans (contained within the Plans Schedule at ***Attachment 1***) as a 'Fuel Filling Station and Retail of 300m^2' in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of Clause 4.2.1 of the Shire of Harvey District Planning Scheme No. 1, subject to the following conditions:

Conditions

1. This decision constitutes planning approval only and is valid for a period of two years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.

2. The approved development shall be in accordance with the attached approved development plans and documentation which form part of this development approval, subject to modifications required as a consequence of any condition(s) of this approval.

3. Prior to a Building Permit being issued, a Groundwater Management Plan shall be prepared in accordance with the Department of Water and Environmental Regulation's Water Quality Protection Note 56 'Tanks for fuel and chemical storage near sensitive water resources', and shall be submitted to and approved by the Shire of Harvey, in consultation with the Department of Water and Environmental Regulation, and thereafter implemented to the satisfaction of the Shire of Harvey.

4. Prior to a Building Permit being issued, a Stormwater Management Plan shall be prepared in accordance with the Department of Water and Environmental Regulation's 'Stormwater Management Manual for Western Australia' and 'Decision process for stormwater management in WA', and shall be submitted to and approved by the Shire of Harvey, in consultation with the Department of Water and Environmental Regulation, and thereafter implemented to the satisfaction of the Shire of Harvey. The Stormwater Management Plan shall include detailed plans and specifications of all stormwater management measures.

5. Prior to a Building Permit being issued, an amended Landscape and Reticulation Plan shall be submitted to and approved by the Shire of Harvey. The amended Landscape and Reticulation Plan shall include all landscaped and reticulation areas within the development site and specify the following:

    a. Vegetation species utilising only local endemic species.
    b. Number, location and spacing of plants.
    c. Location and details of treatments for non-vegetated areas.
    d. Source of water for reticulation.
    e. Ongoing maintenance and weed control.

6. Prior to a Building Permit being issued, an Operational Waste Management Plan shall be submitted to and approved by the Shire of Harvey, and thereafter implemented to the satisfaction of the Shire of Harvey.

7. Prior to commencement of works associated with the approved development, a Construction Management Plan shall be submitted to and approved by the Shire of Harvey, and thereafter implemented to the satisfaction of the Shire of Harvey. The Construction Management Plan shall detail how the following matters will be managed during the construction phase:

    a. Delivery of materials and equipment to the site.
    b. Storage of materials and equipment on the site.
    c. Provision of parking for contractors and subcontractors on the site.
    d. Management of construction waste.
    e. Management of dust and noise emissions.
    f. Traffic management within and around the site.
    g. Complaints handling procedure.

8. Prior to the commencement of any works proposed within the future ‘Clayfield Road’ road reserve, detailed plans and specifications for such works shall be submitted to and approved by the Shire of Harvey.

9. Prior to occupation of the approved development, the approved plans for works within the future ‘Clayfield Road’ road reserve shall be implemented to the satisfaction of the Shire of Harvey.

10. Prior to occupation of the approved development, vehicle crossovers, car parking areas, access ways and pedestrian paths shall be constructed, sealed, drained, marked, appropriately signposted to the satisfaction of the Shire of Harvey, and thereafter implemented to the satisfaction of the Shire of Harvey.

11. Prior to occupation of the approved development, all car parking and pedestrian areas shall be illuminated in accordance with AS 428-1997 ‘Control of the Obtrusive Effects of Outdoor Lighting’ to the satisfaction of the Shire of Harvey, and thereafter maintained to the satisfaction of the Shire of Harvey.

12. Prior to occupation of the approved development, the approved development shall be connected to reticulated sewer.

13. Prior to occupation of the approved development, all landscaping and reticulation shown on the approved amended Landscaping and Reticulation Plan shall be installed to the satisfaction of the Shire of Harvey, and thereafter maintained to the satisfaction of the Shire of Harvey.

14. Goods shall not be stored, or left exposed, outside the building so as to be visible from any public road or thoroughfare to the satisfaction of the Shire of Harvey.

Advice Notes:

1. With respect to the amended Landscape and Reticulation Plan, the Shire of Harvey advises that the planting of *Corymbia calaphylla* adjacent to dual use paths and roads is not supported.

2. The proponent/landowner is reminded of their obligation to manage acid sulfate soils and should refer to the Department of Water and Environmental Regulation's guidelines for identifying and managing acid sulfate soils.

3. The proponent/landowner is reminded of their obligation to liaise with the Department of Water and Environmental Regulation with respect to any requirement for a dewatering licence.

4. The proponent/landowner is reminded that the installation of underground fuel storage tanks should be in accordance with Australian Standard 4897—2008 'The design, installation and operation of underground petroleum storage systems'.

5. The proponent/landowner is reminded of their obligation to liaise with the Department of Energy, Mines, Industry Regulation and Safety to obtain the necessary approvals, including a dangerous goods licence.

6. In accordance with the *Building Act 2011*, a Building Permit will be required.

7. The building and internal facilities are to be designed having particular regard to the accessibility and convenience of people with a disability in accordance with the Building Code of Australia, *Building Regulations 2012*, Disability (Access to Premises Building) Standards 2010 and AS 1428.1 Design for Access and Mobility.

8. The development is required to comply with the *Food Act 2008*, *Food Standards Code*, *Food Regulations* and *Health Act 1911*.

Reasons for Responsible Authority Recommendation

As discussed within this report.

Details: outline of development application

Region Scheme	Greater Bunbury Region Scheme
Region Scheme - Zone/Reserve	Urban
Local Planning Scheme	District Planning Scheme No. 1
Local Planning Scheme - Zone/Reserve	Residential Development
Structure Plan/Precinct Plan	Lot 561 Paris Road Local Structure Plan

Structure Plan/Precinct Plan - Land Use Designation	Shop
Use Class and permissibility:	Use Not Listed
Lot Size:	Entire Lot – 50.2ha Development Site – 5,400m^2
Existing Land Use:	Produce Market (Spud Shed), Residential Building (Workforce Accommodation) development under construction, remaining area vacant
State Heritage Register	No
Local Heritage	☒ N/A ☐ Heritage List ☐ Heritage Area
Design Review	☒ N/A ☐ Local Design Review Panel ☐ State Design Review Panel ☐ Other
Bushfire Prone Area	Yes
Swan River Trust Area	No

Proposal:

The application (refer to previous Responsible Authority Report at ***Attachment 2***) proposes to utilise a 5,400m^2 portion of Lot 565 Paris Road, Australind to develop a 'Convenience Store' to be operated as a 'Vibe' service station 24 hours per day, seven days per week.

Proposed Land Use	Convenience Store
Proposed Net Lettable Area	268m^2
Proposed No. Storeys	1
Proposed No. Dwellings	N/A

The proposed development incorporates:

- A convenience store with a gross floor area of 300m^2 (net lettable area of 268m^2), and associated service yard.
- Four car fuel bowsers and associated canopy, with a capacity to service up to eight vehicles.
- A truck fuel bowser and associated canopy, with a capacity to service two B-Double trucks.
- A total of 24 car parking bays and associated pedestrian pathways.
- Landscaping and signage.

The application has been submitted with the following technical reports (refer to previous Responsible Authority Report at ***Attachment 2***):

- Bushfire Attack Level (BAL) Assessment (Appendix C)

- Noise Report (Appendix D)
- Transport Impact Assessment (Appendix E)
- Draft Local Development Plan (LDP) (Appendix F).

In addition, amended plans were provided (refer to Attachment 3 of previous Responsible Authority Report at ***Attachment 2***) to address comments from Main Roads WA.

Background:

The Shire prepared a Responsible Authority Report (RAR) (refer ***Attachment 2***) to the Regional JDAP which considered the proposed development at its meeting on 14 February 2024. After consideration of the proposal, the following procedural motion was moved by the Regional JDAP:

"That the consideration of DAP Application DAP/23/02586 be deferred for up to 60 days, in accordance with section 5.10.1a of the DAP Standing Orders 2020, for the following reasons:

To enable the applicant and Shire to address the following matters:

- *How the land use is best classified when the defined meaning of Convenience Store in LPS1 states a land area maximum and the words "In a residential zone a convenience store shall be part of a dwelling which should be occupied by the owner or lessee of the store".*

- *How Scheme provisions relating to Area 7, Schedule 15, which stipulates permitted uses, are met by the application."*

As a consequence of the deferral, Officers have reviewed the land use classification and permissibility in the context of the matters raised by the JDAP and the Applicant has provided advice obtained from Lavan Legal (refer ***Attachment 3***). It is worth identifying at this point that the Applicant's response (via the advice from Lavan Legal) notes that the current Scheme provisions on land use classification and permissibility *"are unhelpfully complex and difficult to interpret"* and that the questions of land use classification and permissibility *"must instead be answered by addressing the unique text with the Scheme and determining its intended meaning."*

Response to Reasons for Deferral – Land Use Classification:

<u>Applicant Response</u>

With respect to the 'Convenience Store' use, the Applicant has detailed that the proposal could potentially be a 'Convenience Store' for the following reasons:

- The floor space limitation could be considered as a development standard and could therefore be varied under clause 4.1.1 of the Scheme.

- The increased floor space in Schedule 15 could be considered as a variation to the floor space limitation in the definition.

- The requirement to be part of a dwelling does not apply to the "Residential Development" zone, however if it does, could be considered as a development standard and could therefore be varied under clause 4.1.1 of the Scheme.

Despite the above, the Applicant concludes that the *"correct position"* is that the proposal is not a 'Convenience Store' and is therefore a Use Not Listed.

Responsible Authority Response

The JDAP questioned the proposal's classification as a 'Convenience Store' given the Scheme definition includes the requirement for a convenience store in a residential zone to be part of a dwelling as the JDAP considered that the 'Residential Development' zone is a "residential zone" for the purpose of this definition by virtue of clause 4.1.1 of the Scheme that lists the following as "Residential Zones":

- Special Residential
- Residential
- Residential Development.

Part V of the Scheme provides *"additional development requirements in residential zones"* and contains clauses specifically relating to *"Residential development requirements"*, *"Special Residential development requirements"*, *"Special Rural development requirements"*, and *"Residential Development Zone"* and it is noted that the 'Special Rural' zone is listed under the "Non Urban Zones" heading of clause 4.1.1. Despite Officers' consideration that the reference in the convenience store definition to 'residential zone' is not applicable in the context of this proposal, the JDAP has determined that it is relevant and therefore the proposal is not consistent with the definition of 'Convenience Store' under the Scheme.

As detailed in the previous RAR, the proposal is also not considered to be consistent with the 'Service Station' use definition. The proposal is however consistent with the 'Convenience Store' definition under the draft new Local Planning Scheme No. 2, which is a *"seriously entertained planning proposal"* that should be given significant weight given it has been approved by the Minister and is now awaiting gazettal.

The JDAP has previously determined other similar proposals within the Shire of Harvey as follows:

- DAP/21/01963 – approved as a Use Not Listed as "retail sales beyond normal trading hours of motor vehicle fuels and convenience goods in a building with a gross leasable floor area greater than 200m^2"

- DAP/21/02149 – approved as a Use Not Listed as "fuel, recharge and convenience stop including associated earthworks, landscaping and signage".

Summary

Considering the above responses, and to avoid any doubt, it is considered appropriate that the proposal is classified as a Use Not Listed and Officers suggest: "Fuel Filling Station and Retail of 300m^2".

Response to Reasons for Deferral – Permissibility under Schedule 15, Area 7:

Applicant Response

It is the Applicant's opinion that *"when Schedule 15 lists a number of land uses in the bullet points, it is not purporting to assign land use permissibility, but is instead imposing floor space caps on particular categories of land uses."* Land use permissibility is dealt with exclusively under clause 4.2.1, 4.2.3 and 4.2.5 of the Scheme.

The effect of Schedule 15 on the proposal is that any convenience store uses proposed are limited to a maximum floor space of 350m^2.

Responsible Authority Response

As explained in the previous RAR, the provisions within Schedule 15, Area 7 for the subject land provides floor area restrictions for a range of uses that are permitted in the area designated as "Shop" zone under the Local Structure Plan, rather than providing the use permissibility. As provided in clause 3.3.1 (Part Two – Explanatory Section and Technical Appendices) of the Local Structure Plan, the provisions of Schedule 15, Area 7 are to limit the extent of convenience retailing within the structure plan area.

If the list of land uses in Area 7 were intended to provide the permissibility of the land use, rather than only a floor space restriction, the list would have included the permissibility symbol as is stipulated within Area 3. Area 3 provides the following:

"(c) All uses specified in Tables, 4, 5 and 6 (Residential Development Zone) of District Planning Scheme No. 1 are Not Permitted with the exception of:

Dwelling with Reticulated Sewer – P
Home Occupation – IP
Outbuilding – P"

Area 7 does not list the land uses in this manner further confirming that the purpose of Area 7 is to restrict the floor space area of the specified uses.

Summary

Considering the above responses, Officers maintain the view that the provisions of Schedule 15, Area 7 relate specifically to floor space restrictions and do not prescribe the permissibility of the listed land uses.

Conclusion:

Subsequent to a review of the land use classification and permissibility, it is considered that the proposal is a Use Not Listed that is consistent with the floor space restriction specified by Schedule 15, Area 7 and it is therefore recommended that the application be approved, subject to conditions.

Alternatives

Officers consider there is no justification for the application to be refused.

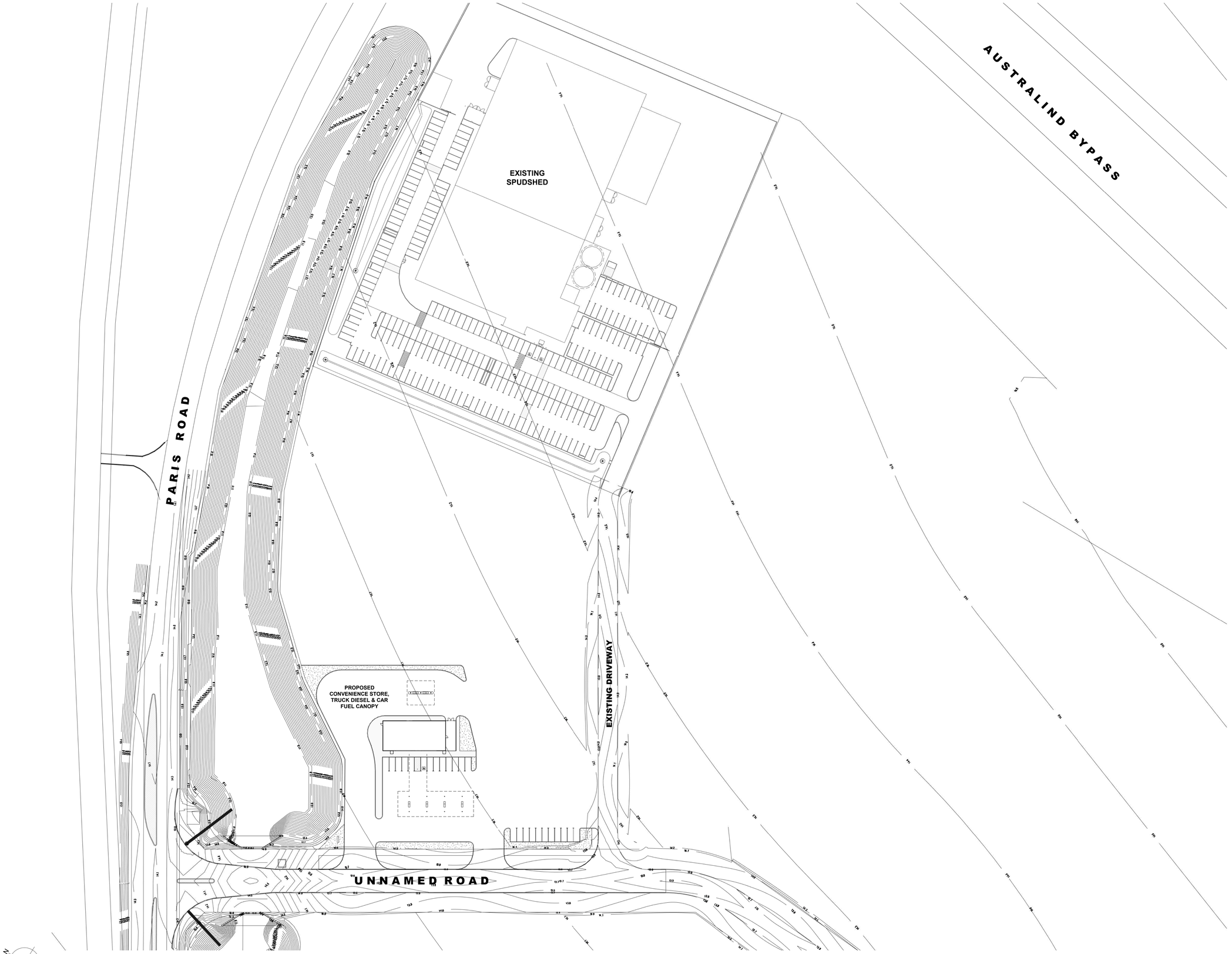
Government of **Western Australia**
Development Assessment Panels

Plans Schedule

DAP Application DAP/23/02586

Development Plans

Plan/Doc Title	Plan/Doc No.	Plan/Doc Date Rec. Date	Rev.
Existing Site Survey	Sheet 2	Sep 2023	14
Proposed Development Plan	Sheet 3	Jan 2024	15
Master Site Plan	Sheet 4	Jan 2024	15
Site Plan	Sheet 5	Jan 2024	15
Ground Floor Plan	Sheet 6	Jan 2024	15
Elevations	Sheet 7	Sep 2023	14
Elevations	Sheet 8	Sep 2023	14



N

EXISTING SITE SURVEY

SCALE:1 : 600

PROPOSED CONVENIENCE STORE & FUEL STATION DEVELOPMENT

LOCATION : LOT 565 PARIS ROAD, AUSTRALIND WA

FOR : ASCOT CAPITAL

meyer shircore architects

DATE: SEP 2023

REVISION: 14

SHEET: 2

SCALE: 1 : 600 @B1

PROJECT NUMBER **8192**

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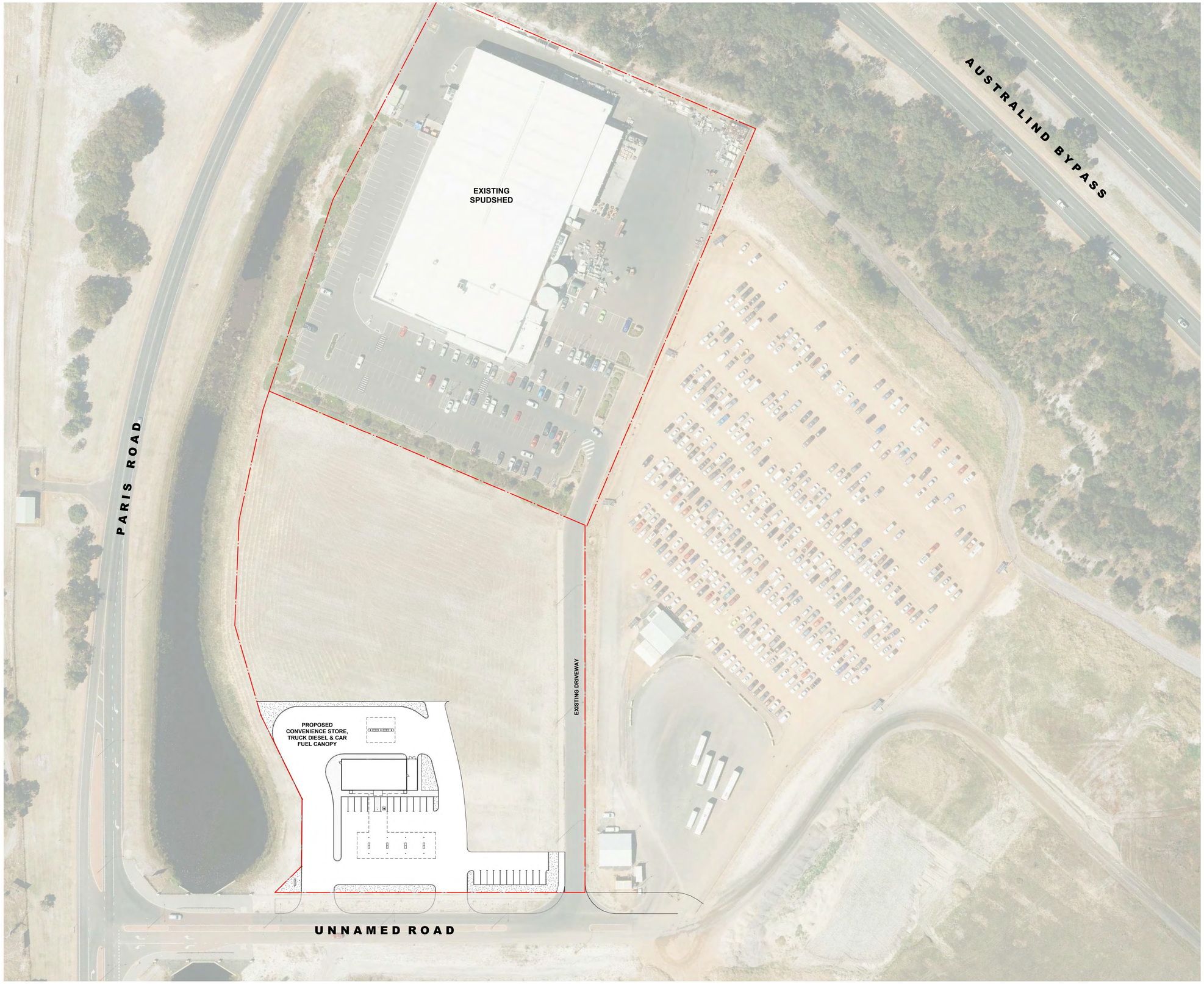

PROPOSED DEVELOPMENT PLAN

SCALE: 1 : 600

PROPOSED CONVENIENCE STORE & FUEL STATION DEVELOPMENT

LOCATION : LOT 565 PARIS ROAD, AUSTRALIND WA

FOR : ASCOT CAPITAL

DATE: JAN 2024

REVISION: 15

SHEET: 3

SCALE: 1 : 600 @B1

PROJECT NUMBER **8192**

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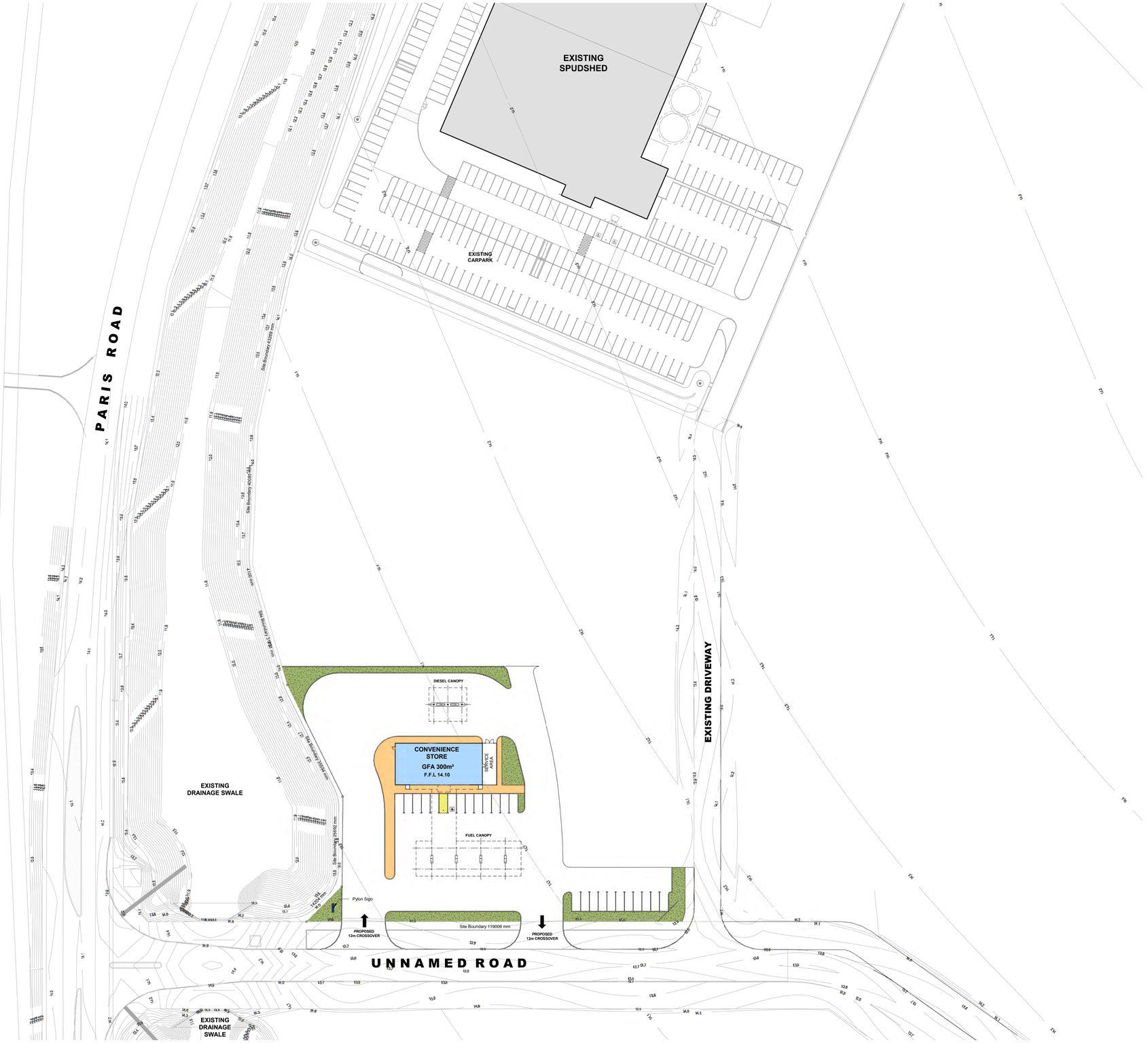

N

MASTER SITE PLAN

SCALE: 1 : 500

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PROPOSED CONVENIENCE STORE & FUEL STATION DEVELOPMENT

LOCATION : LOT 565 PARIS ROAD, AUSTRALIND WA

FOR : ASCOT CAPITAL

DATE: JAN 2024

REVISION: 15

SHEET: 4

SCALE: 1 : 500 @B1

PROJECT NUMBER **8192**

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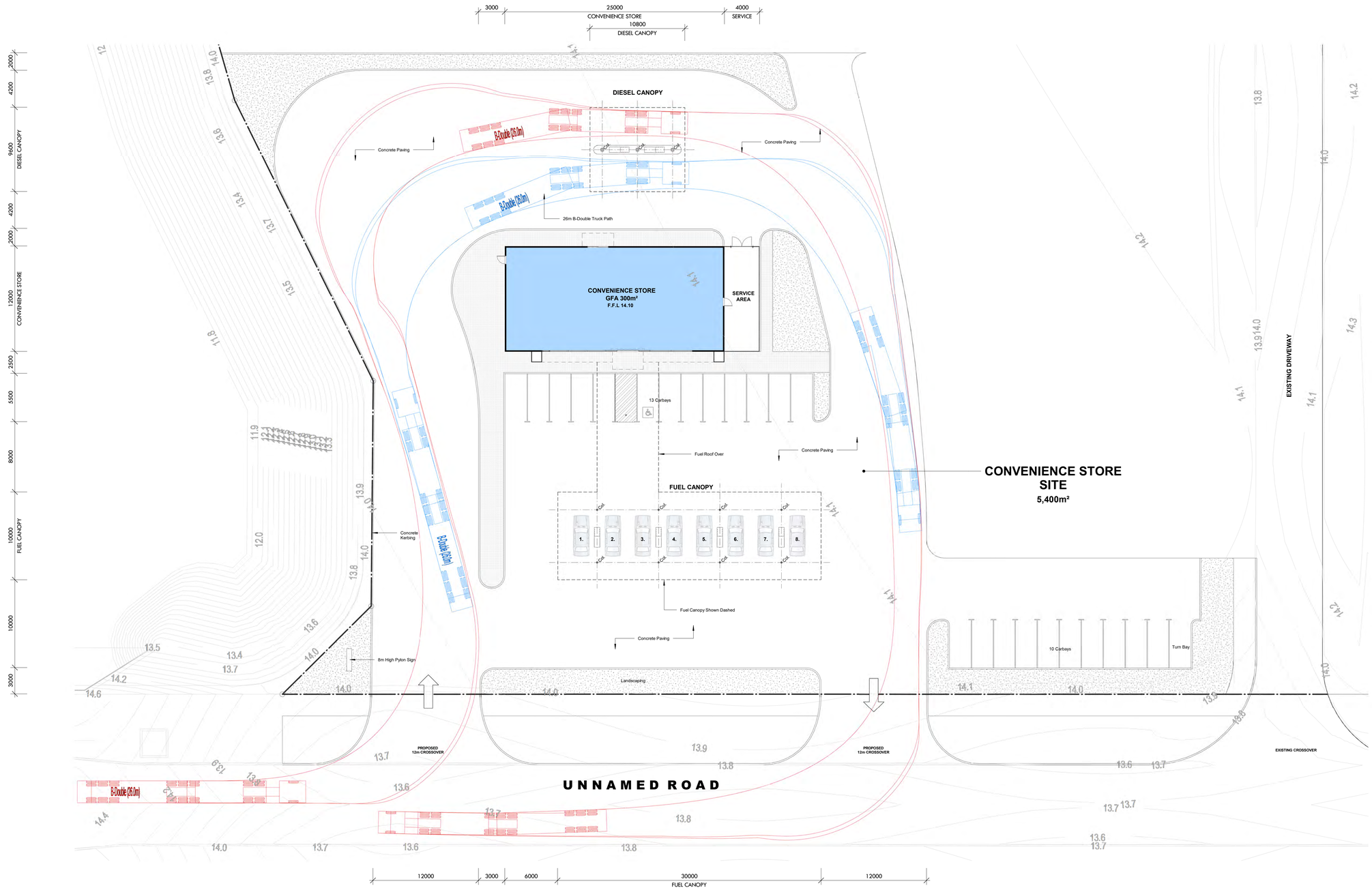

SITE PLAN

SCALE: 1 : 200

PROPOSED CONVENIENCE STORE & FUEL STATION DEVELOPMENT

LOCATION : LOT 565 PARIS ROAD, AUSTRALIND WA

FOR : ASCOT CAPITAL

meyer shircore architects

DATE: JAN 2024

REVISION: 15

SHEET: 5

SCALE: 1 : 200 @B1

PROJECT NUMBER **8192**

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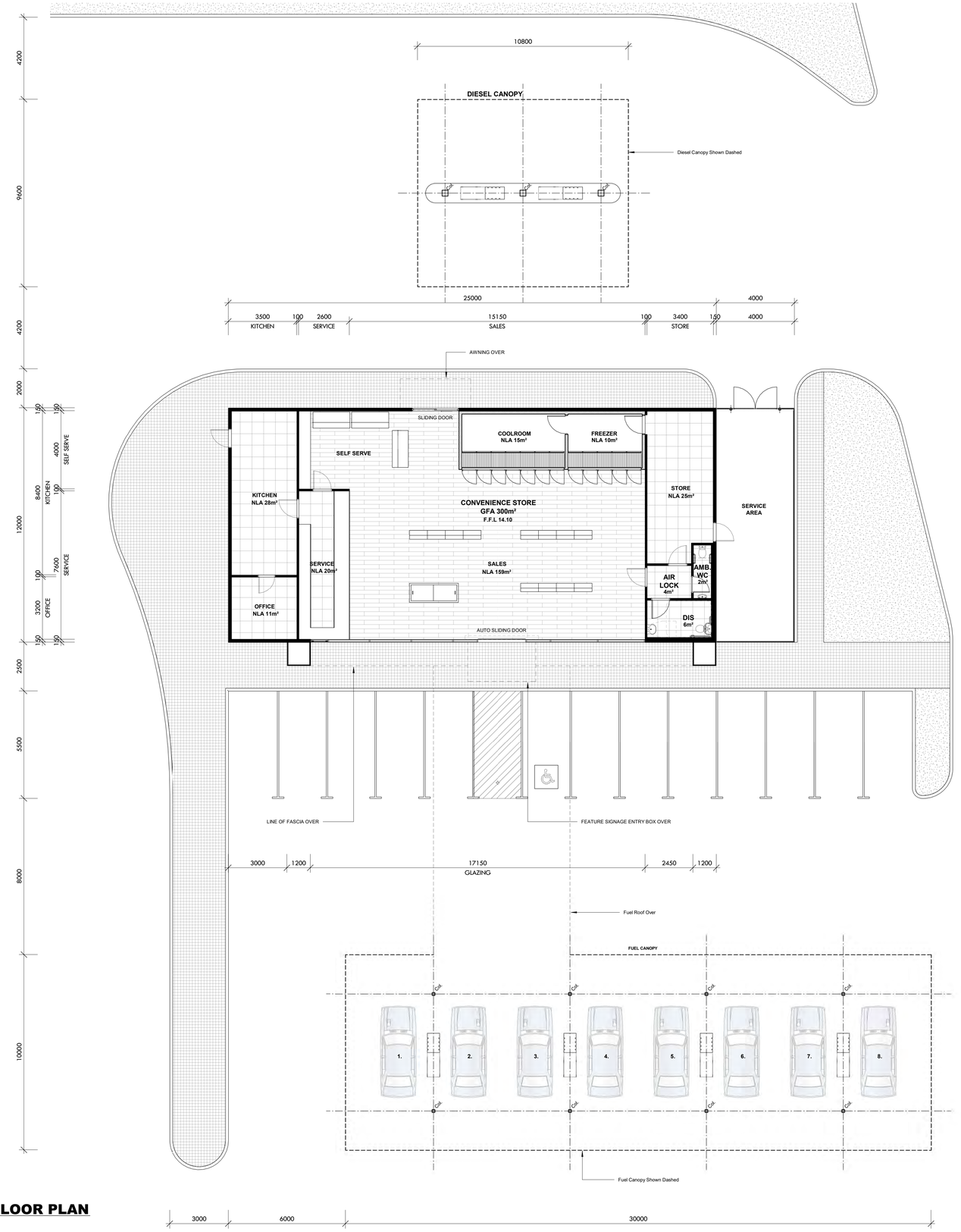

N

GROUND FLOOR PLAN

SCALE: 1 : 100

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PROPOSED CONVENIENCE STORE & FUEL STATION DEVELOPMENT

LOCATION : LOT 565 PARIS ROAD, AUSTRALIND WA

FOR : ASCOT CAPITAL

DATE: JAN 2024

REVISION: 15

SHEET: 6

SCALE: 1 : 100 @B1

PROJECT NUMBER **8192**

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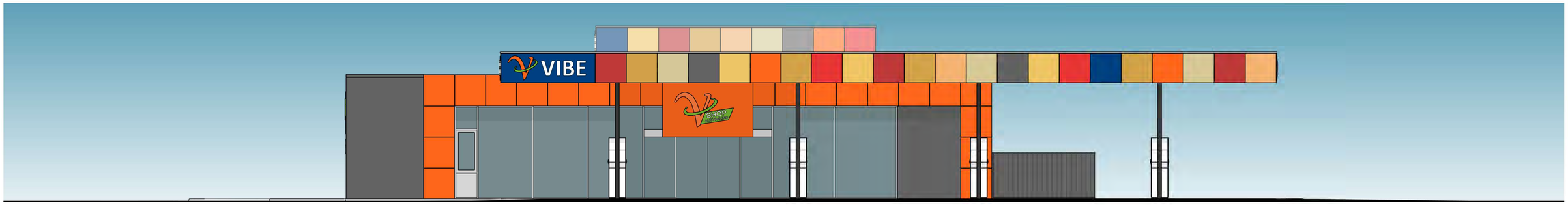
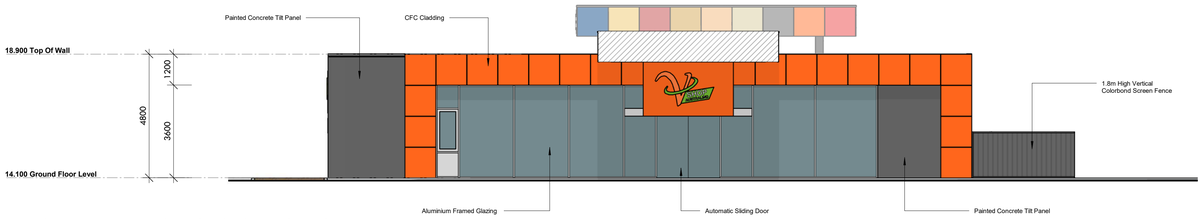
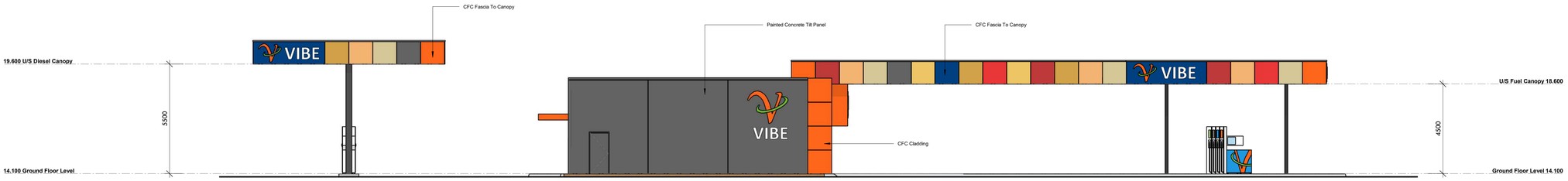


STREET ELEVATION



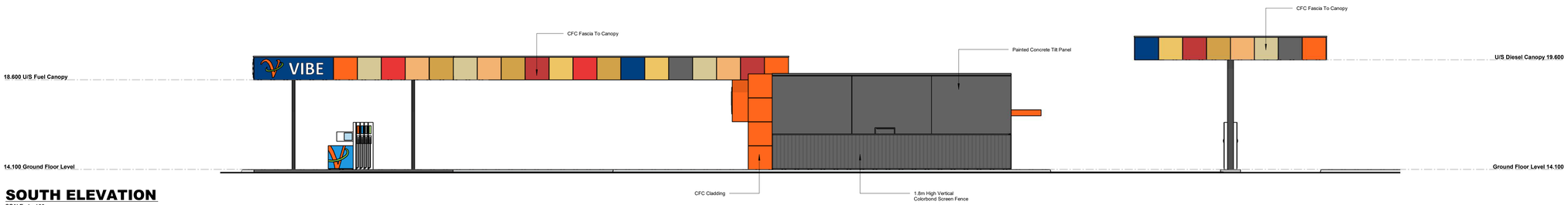
WEST ELEVATION (NO CANOPY)

SCALE: 1 : 100



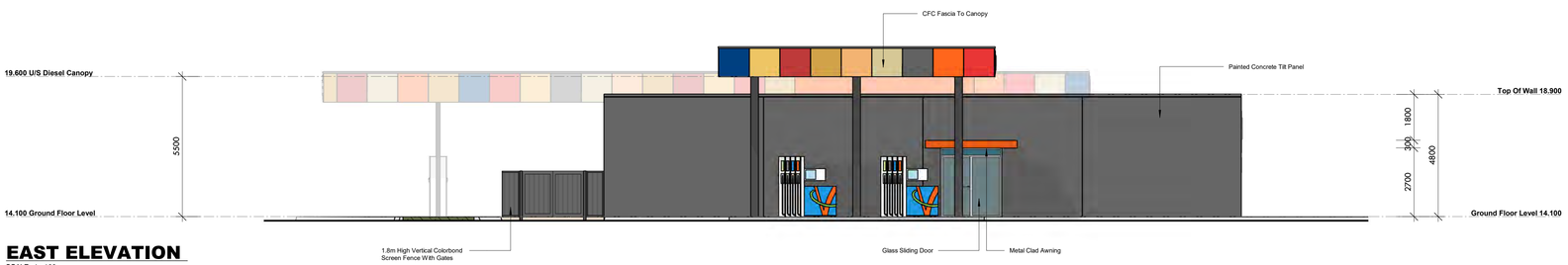
NORTH ELEVATION (PARIS ROAD)

SCALE: 1 : 100



SOUTH ELEVATION

SCALE: 1 : 100



EAST ELEVATION

SCALE: 1 : 100



PYLON SIGN

SCALE: 1 : 50

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PROPOSED CONVENIENCE STORE & FUEL STATION DEVELOPMENT

LOCATION : LOT 565 PARIS ROAD, AUSTRALIND WA

FOR : ASCOT CAPITAL

DATE: SEP 2023
REVISION: 14
SHEET: 7
SCALE: As indicated @B1

PROJECT NUMBER
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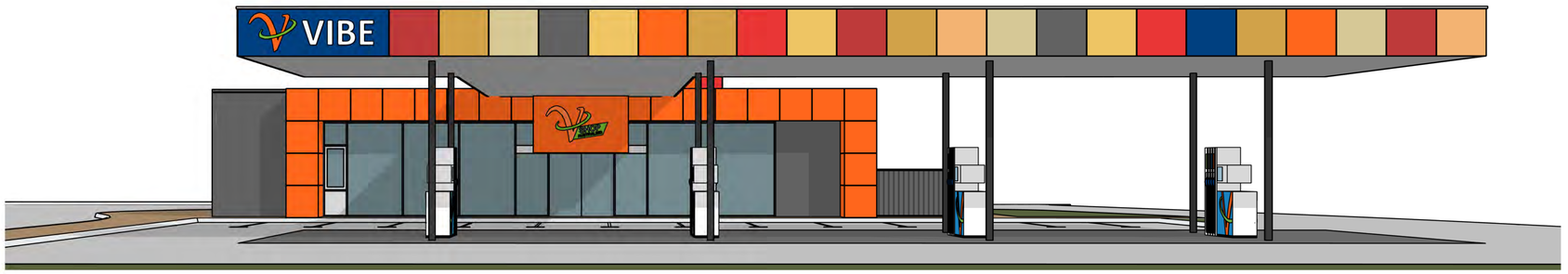

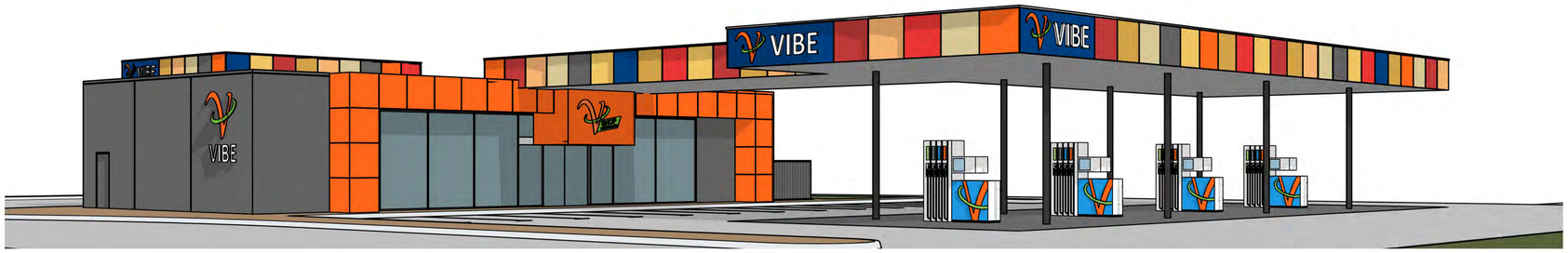



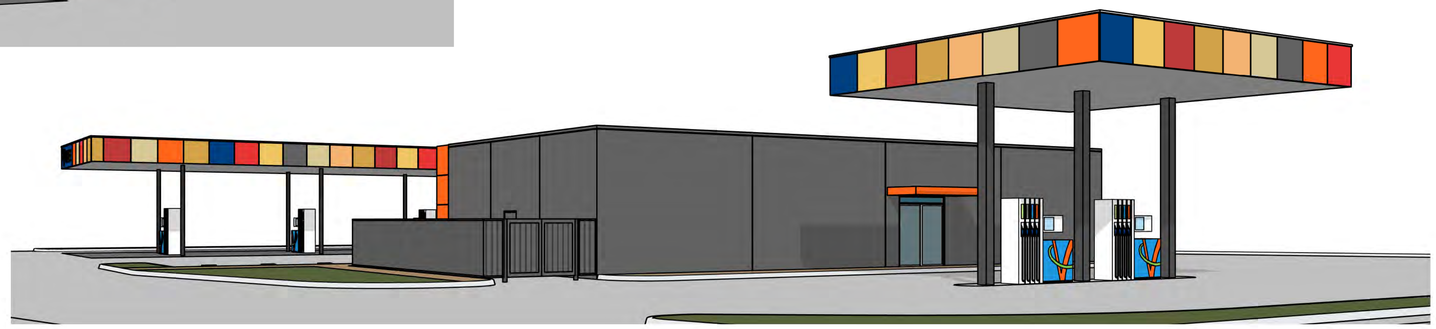

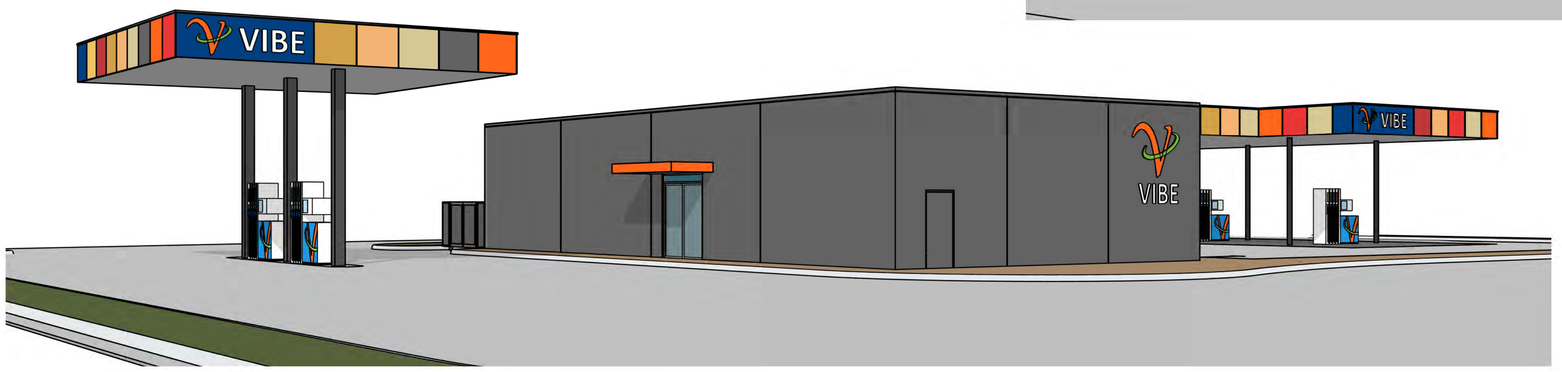

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PROPOSED CONVENIENCE STORE & FUEL STATION DEVELOPMENT

LOCATION : LOT 565 PARIS ROAD, AUSTRALIND WA

FOR : ASCOT CAPITAL

DATE: SEP 2023

REVISION: 14

SHEET: 8

SCALE: @B1

PROJECT NUMBER **8192**

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25 March 2024

Mr Simon Hall
Director Sustainable Development
Shire of Harvey
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HARVEY WA 6220
By Email: simonh@harvey.wa.gov.au

cc:
Mr Tony Paduano
By Email: Tony.paduano@element.com.au

Mr Leigh Caddy
By Email: leigh.caddy@element.com.au

Dear Mr Hall

Lot 565 Paris Road, Australind: Convenience Store proposal – land use permissibility issue

Background

1 Lavan act for Paris Road Australind Ct Pty Ltd & Fabray Pty Ltd who are the owners of the land on Paris Road, Australind known as Lot 566 on Deposited Plan 425644 (formerly known as Lot 565 on Deposited Plan 425612) (**Property**).

2 As you are aware, Element (for and on behalf of my clients) has submitted a development application for what I will describe loosely as a petrol filling station (in order to avoid any confusion with the defined land use categories as discussed below) at the Property (**Development Application**).

3 The proposal the subject of the Development Application involves fuel filling areas and an associated retail store with a gross floor area of 300 square metres.

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Our Values:

Excellence
Courage
Collaboration
Fulfilment
Integrity

Lavan respectfully acknowledges the traditional owners of the land on which we live and work.

4 The Property is zoned "residential development" under the *Shire of Harvey District Planning Scheme No 1* (**Scheme**).

5 The Property is also subject to a structure plan known as the Lot 561 Paris Road Structure Plan (**Structure Plan**).

6 At its meeting on 14 February 2024, the Regional Development Assessment Panel (as the relevant panel is now called) (**DAP**) resolved to defer its determination of the Development Application to enable my clients and the Shire of Harvey (being the responsible authority) to address the following matters:

- *How the land use is best classified when the defined meaning of Convenience Store in LPS1 states a land area maximum and the words "In a residential zone a convenience store shall be part of a dwelling which shall be occupied by the owner or lessee of the store".*
- *How Scheme provisions relating to Area 7, Schedule 15, which stipulates permitted uses, are met by the application.*

7 My clients have accordingly instructed me to provide a legal opinion on this issue to the Shire of Harvey for inclusion in its next responsible authority report to the DAP.

Interpreting the Scheme

8 It should be observed from the outset that the Scheme departs significantly from the model local planning scheme provisions (in Schedule 1 of the *Planning and Development (Local Planning Schemes) Regulations 2015* (WA)) and as a consequence, the usual approach to land use classification and land use permissibility does not apply under the Scheme.

9 The questions of land use classification and land use permissibility must instead be answered by addressing the unique text within the Scheme and determining its intended meaning.

Scheme provisions on land use permissibility

10 Clause 4.2.1 of the Scheme provides:

> *The Zoning and Development Tables indicate, subject to the provisions of the Scheme, the uses permitted in the various zones and the development standards that apply to various uses specified in the Table for each Zone.*

11 Clause 4.2.3 of the Scheme provides:

> *The symbols used in the cross reference in the Zoning Table have the following meanings:-*
>
> > *"P" means that the use is permitted provided it complies with the relevant standards and requirements laid down in the Scheme and conditions (if any) imposed by the local government in granting development approval.*

"AA" means that the local government may, at its discretion, permit the use.

"SA" means that the local government may, at its discretion, permit the use after notice of application has been given in accordance with Clause 64 of the Deemed Provisions.

"IP" means a use that the local government may permit if it is incidental to the predominant use of the land, provided also that the predominant use is in accordance with the provisions of this Scheme.

12 It can be observed from clause 4.2.3 of the Scheme that the "Zoning Table" (which appears to be intended as a reference to the "Zoning and Development Tables" mentioned in clause 4.2.1 of the Scheme) does not set out any prohibited land uses and instead only deals with what is required in order to obtain development approval for the stated contemplated land uses for a particular zone.

13 In relation to land uses that are not specifically mentioned within a "Zoning Table" (again, this appears to be intended as a reference to the "Zoning and Development Tables" mentioned in clause 4.2.1 of the Scheme), clause 4.2.5 of the Scheme provides:

> *If the use of land for a particular purpose is not specifically mentioned in the Zoning Table and cannot reasonably be determined as falling within the interpretation of one of the land use categories the local government may:-*
>
> *(a) determine that the use is not consistent with the objectives and purposes of the particular zone and is therefore not permitted; or*
>
> *(b) determine by absolute majority that the proposed use may be consistent with the objectives and purpose of the zone and thereafter follow the advertising procedures of Clause 64 of the Deemed Provisions in considering an application consent. In approving such an application the local government may apply any conditions or development standards it deems necessary.*

14 Clause 4.2.5 of the Scheme contemplates that land uses that are not specifically mentioned in the "Zoning Table" may receive development approval, if the land use is consistent with the objectives and purpose of the relevant zone.

15 By reference to clauses 4.2.1, 4.2.3 and 4.2.5 of the Scheme, the position is that there are no prohibited land uses identified in the "Zoning Table" under the Scheme and any land use can potentially receive development approval for any zone under the Scheme, subject to consistency with the zone objectives being demonstrated and subject to any other relevant provisions of the Scheme.

16 Table 4 of the Scheme (beginning at page 45 of the Scheme text) has the heading "Zoning and Development Standards" and appears to include the "Zoning Table" that relates to the "residential development" zone under the Scheme, which lists various expressly contemplated land use categories for the "residential development" zone.

17 Given that the Property is within the "residential development" zone, clause 5.6 of the Scheme also applies.

18 Clause 5.6.1 of the Scheme reads:

> *It is intended that land in this zone be progressively developed for residential purposes, and for commercial and other uses normally associated with residential development.*

19 It can be observed that clause 5.6.1 of the Scheme contemplates commercial development within the "residential development" zone.

20 Clause 5.6.2 of the Scheme reads:

> *Prior to any subdivision or development in the 'Residential Development' zone, a Structure Plan is required to be prepared and approved in accordance with Part 4 of the Deemed Provisions.*

21 As stated in paragraph 5 above, the Structure Plan is in place with respect to the Property, which satisfies the requirement of clause 5.6.2 of the Scheme.

22 Clause 5.6.3 of the Scheme reads:

> *The additional requirements or modifications to the provisions of the Zoning and Development Table specified in Schedule 16 apply to areas zoned Residential Development described in that Schedule.*

23 The reference to "Schedule 16" in clause 5.6.3 of the Scheme appears to be intended as a reference to "Schedule 15" of the Scheme, as there is no Schedule 16 in the Scheme.

24 In relation to the area that includes the Property, Schedule 15 of the Scheme provides as follows:

> *Subdivision and development of the land shall be in accordance with the endorsed Structure Plan for the site.*
>
> *A total retail floorspace of 1,200m2 applies to the area designated as 'Shop' under the Structure Plan, with this floorspace to be apportioned across a range of retail uses which are permitted within the Shop zone, subject to the following limitations-*
>
> - *Fast Food Outlets- up to 750m2*
> - *Liquor Store- Small-up to 200m2*
> - *Pharmacy- up to 250m2*
> - *Service Station (retail component) – up to 70m2*
> - *Hair of Beauty Salon – up to 70m2*
> - *Small Convenience Store – up to 350m2*

25 In my opinion, when Schedule 15 of the Scheme lists a number of land uses in the bullet points, it is not purporting to assign land use permissibility, but is instead imposing floor space caps on particular categories of land uses.

26 That being the case, Schedule 15 of the Scheme does not touch upon the question of land use permissibility and the permissibility of land uses at the Property is instead dealt with exclusively under clauses 4.2.1, 4.2.3 and 4.2.5 of the Scheme, which as explained above, do not prohibit any land uses within the "residential development" zone.

27 At face value, there may appear to be some inconsistency in the Scheme, in the sense that Table 4 of the Scheme does not include "convenience store" as an expressly contemplated land use within the "residential development" zone, whereas Schedule 15 of the Scheme sets out a floorspace limitation for what is described as "small convenience store".

28 It is however the case that a "convenience store" can receive development approval in the "residential development" zone, pursuant to clause 4.2.5 of the Scheme.

29 It is also the case that clause 5.6.3 of the Scheme refers to Schedule 15 of the Scheme being able to modify the provisions of a "Zoning and Development Table".

30 It is my opinion that the effect of Schedule 15 of the Scheme is therefore that any "convenience store" uses proposed for the Property (and approved under clause 4.2.5 of the Scheme) must not have a total floor space exceeding 350 square metres.

Land use classification

31 The expressly contemplated land uses for the "residential development" zone under Table 4 of the Scheme include "shop" and "service station".

32 The term "shop" is defined in the Scheme as follows:

> *"Shop" means a building wherein goods are kept, exposed or offered for sale by retail, but does not include a bank, fuel depot, market, service station, milk depot, marine collector's yard, timber yard or land and buildings used for sale of vehicles or for any purpose falling within the definition of industry.*

33 In my opinion, the proposed development is not a "shop" as defined by the Scheme, because whilst it includes a retail component, the primary feature of the proposed development is fuel filling and the retail component is intended as an incidental or subservient component of the overall development.

34 Even if the retail component of the proposed development was a standalone "shop" land use for the purposes of the Scheme, the balance of the proposed development elsewhere on the Property would, in my opinion, be something other than a "shop" land use, as the fuel filling areas would not comprise a building wherein goods are kept.

35 The term "service station" is defined in the Scheme as follows:

"Service Station" means land and buildings used for the supply of petroleum products and motor vehicle accessories and for carrying out greasing, tyre repairs and minor mechanical repairs and may include a cafeteria, restaurant or shop incidental to the primary use; but does not include transport depot, panel beating, spray painting, major repairs or wrecking.

36 The proposed development is clearly not a "service station" as defined in the Scheme, as it does not involve any repair component.

37 There is no other expressly contemplated land uses for the "residential development" zone under Table 4 of the Scheme that would potentially describe the proposed development, so with that in mind, the proposed development must be assessed and determined pursuant to clause 4.2.5 of the Scheme.

38 The Scheme defines the land use of "convenience store" as follows:

"Convenience Store" means land and buildings used for the retail sale of convenience goods being those goods commonly sold in supermarkets, delicatessens and newsagents but including the sale of petrol and operated during hours which include but which may extend beyond normal trading hours and providing associated parking. The buildings associated with a convenience store shall not exceed 200m2 gross leasable area. In a residential zone a convenience store shall be part of a dwelling which shall be occupied by the owner or lessee of the store.

39 The proposed development is consistent with the first sentence in the above definition, but not with the second two sentences (which, at face value, read like development requirements, despite being included within a land use definition).

40 There is an interpretation question as to whether the second and third sentences in the definition of "convenience store" in the Scheme are intended to be:

40.1 key components on what constitutes a "convenience store" land use for the purposes of the Scheme; or

40.2 separate development requirements that are intended to regulate any "convenience store" proposal and are not intended to describe the land use (despite being included within a land use definition).

41 In my opinion, the better argument is that the proposed development does not constitute a "convenience store" as defined in the Scheme, because it proposes a gross leasable area exceeding 200 square metres, so falls beyond the parameters of the particular land use definition.

42 This approach would be consistent with the decision of the State Administrative Tribunal in *Callaway and City of Swan* [2024] WASAT 5, where it was held that a reference to maximum employee numbers in a land use definition of "home business" was an integral component of the land use description, rather than being a development standard applying to the use.

43 If the proposed development is not a "convenience store" for the purposes of the Scheme, then no issue arises as a consequence of the fact that the proposed

development contemplates a floorspace exceeding 200 square metres gross leasable area.

44 Even if the proposed development is a "convenience store" as defined by the Scheme (based upon the first sentence of the definition) and the second sentence of the definition is taken as being a development standard that applies to any "convenience store" proposal, then the development standard would, in our opinion, be capable of variation, pursuant to clause 4.4.1 of the Scheme.

45 Clause 4.4.1 of the Scheme reads:

> *If a development, other than a residential development the subject of an application for development approval, does not comply with a standard or requirement prescribed by the Scheme with respect to landscaping, carparking, setbacks, site coverage, minimum effective frontage and related matters, the local government may, notwithstanding that non-compliance, approve the application unconditionally or subject to such conditions as local government see fit. The power conferred by this Clause may only be exercised if the local government is satisfied that:-*
>
> > *(a) approval of the proposed development would be consistent with the orderly and proper planning of the locality and the preservation of the amenities of the locality;*
> >
> > *(b) the non-compliance will not have any adverse effect upon the occupiers or users of the development or the inhabitants of the locality or upon the likely future development of the locality; and*
> >
> > *(c) the spirit and purpose of the requirements or standard will not be unreasonably departed from thereby.*

46 In my opinion, it is arguable that the term "related matters" in clause 4.4.1 of the Scheme should be interpreted broadly and that the topic of floorspace would be a related matter to the topic of site coverage (which is specifically mentioned) and therefore capable of variation.

47 Alternatively, it could reasonably be argued that the reference in Schedule 15 of the Scheme to there being up to 350 square metres of "convenience store" use at this location constitutes authorisation under the Scheme for a "convenience store" at this location to have a greater floorspace than the default position as outlined in the land use definition.

48 The final sentence in the Scheme definition of "convenience store" suggests that any such land use in "a residential zone" must be attached to an occupied dwelling, which is something that would not happen with the proposed development.

49 If my opinion that the proposed development is not a "convenience store" as defined in the Scheme (because of the proposed floorspace) is accepted, then there would be no need to separately consider the third sentence within the definition.

50 If however the proposed development is a “convenience store” as defined in the Scheme and the third sentence in the definition is a development requirement that applies, then the point needs to be more closely considered.

51 It is unclear whether the words “a residential zone” in the third sentence of the “convenience store” definition in the Scheme are referring to:

51.1 a part of the “residential” zone under the Scheme; or

51.2 any of the zones under the Scheme that are generally residential in nature, which may include the “residential development” zone.

52 In my opinion, the better argument would be that the third sentence of the “convenience store” definition in the Scheme only applies to the “residential” zone under the Scheme and does not separately apply to the “residential development” zone under the Scheme, considering that:

52.1 the “residential development” zone contemplates a broader range of non-residential development, so it would perhaps be unusual for the Scheme to require any “convenience store” use in that zone to be attached to an occupied dwelling; and

52.2 the reference in Schedule 15 of the Scheme to there being up to 350 square metres of “convenience store” floorspace, in an area designated for commercial purposes under the Structure Plan, would suggest that any such “convenience store” will be a standalone land use and will not be attached to an occupied dwelling.

53 Even if the proposed development is a “convenience store” as defined in the Scheme and the third sentence of the definition applies to the “residential development” zone, then the requirement to be attached to an occupied dwelling would arguably be, in my opinion, a development requirement that is capable of being varied under clause 4.4.1 of the Scheme.

GBRS

54 My understanding is that the proposed development does not require a separate development approval under the *Greater Bunbury Region Scheme*.

LPS2

55 I understand that the new *Shire of Harvey Local Planning Scheme No 2* (**LPS2**) is likely to be gazetted in the near future.

56 The final content of LPS2 will not be confirmed until such time as gazettal has occurred, but the publicly advertised version of LPS2 is available online.

57 Under this version of LPS2, it is clear, in my opinion, that:

57.1 the proposed development would be a “convenience store” as defined in LPS2 (which is a different definition to that which is currently in the Scheme); and

57.2 there would be discretion under LPS2 to grant development approval for a "convenience store" land use at the Property.

Conclusion

58 The Scheme provisions on land use permissibility and land use classification are unhelpfully complex and difficult to interpret.

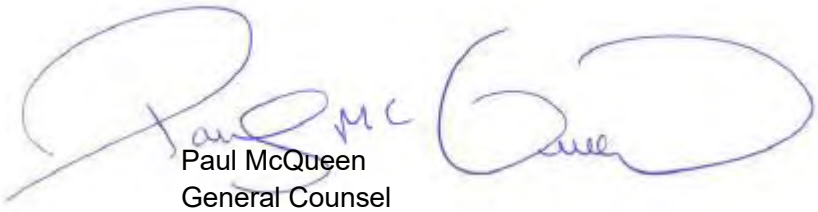
59 Having said that, in my opinion, the correct position is that the proposed development of the Property is a use that is not listed in Table 4 of the Scheme and can therefore receive development approval pursuant to clause 4.2.5 of the Scheme.

60 For the reasons outlined above, in my opinion, the proposed development is not a "convenience store" as defined in the Scheme and there is accordingly no need to agonise over the handful of Scheme provisions that purport to control "convenience store" uses.

61 Would you please confirm receipt of this letter at your earliest convenience and let us have your comments as to the opinion expressed (in terms of agreement or disagreement).

62 Please contact me or Isabella Mosole if you would like to discuss the above further.

Yours sincerely



Paul McQueen
General Counsel
Partner

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PART E – OTHER BUSINESS

1. State Administrative Tribunal Applications and Supreme Court Appeals

The DAP notes the status of the following State Administrative Tribunal Applications and Supreme Court Appeals:

Current SAT Applications				
File No. & SAT DR No.	**LG Name**	**Property Location**	**Application Description**	**Date Lodged**
DP/14/00039 DR65/2020	Shire of York	Lots 4869 (2256), 5931, 9926 (2948) and 26934 Great Southern Highway, St Ronans	Construction and Use of Allawuna Farm for the purposes of a Class II Landfill	28 July 2020
DAP/21/02063 DR241/2021	Shire of Dardanup	Lot 2 Banksia Road, Crooked Brook	Cleanaway Dardanup Landfill Facility	5 November 2021
DAP/23/02479 DR146/2023	Shire of Capel	Lot 148 (No.168) Skippings Road, Boyanup	Extractive Industry Development Proposal	30 August 2023
DAP/23/02506 DR199/2023	Shire of Augusta-Margaret River	Lot 11 & 12 Fearn Avenue, Margaret River	Proposed Hotel and Restaurant	22 December 2023
DAP/23/02549 DR197/2023	City of Greater Geraldton	Lots 150 - 151 (205 and 181-195) Marine Terrace, Lot 152 (15) Fitzgerald Street and Lot 153 (222-228) Lester Avenue, Geraldton	Proposed Mixed Use Development	3 January 2024
DAP/23/02591 DR26/2024	City of Kalgoorlie-Boulder	Lot 9003, 9004 and 9005 Hart Kerspien Drive, Broadwood	Key workers lifestyle village – 394 grouped dwellings, communal open space, caretaker, office & communal facilities	22 February 2024

2. General Business

3. Meeting Closure

In accordance with Section 7.3 of the DAP Standing Orders 2024 a DAP member must not publicly comment on any action or determination of a DAP.