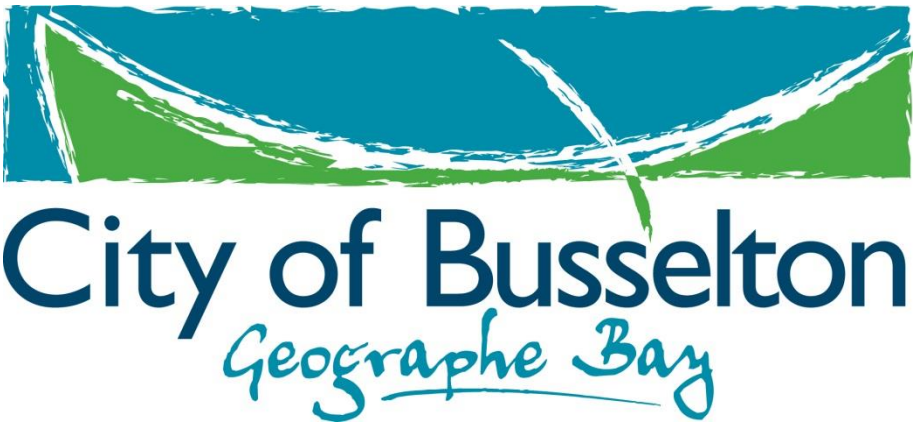

Meelup Regional Park Management Committee Agenda

31 October 2016

ALL INFORMATION AVAILABLE IN VARIOUS FORMATS ON REQUEST

CITY OF BUSSELTON

MEETING NOTICE AND AGENDA – 31 OCTOBER 2016

TO: **THE MAYOR AND COUNCILLORS**

NOTICE is given that a meeting of the Meelup Regional Park Management Committeewill be held in the Dunsborough and Districts Country Club, 40 Gifford Road, Dunsborough on Monday, 31 October 2016, commencing at 10.00am.

The attendance of Committee Members is respectfully requested.

MIKE ARCHER

CHIEF EXECUTIVE OFFICER

26 October 2016

CITY OF BUSSELTON

AGENDA FOR THE MEELUP REGIONAL PARK MANAGEMENT COMMITTEE MEETING TO BE HELD ON 31 OCTOBER 2016

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2. ATTENDANCE

Apologies

Cr John McCallum

Approved Leave of Absence

Nil

3. PUBLIC QUESTION TIME

4. DISCLOSURE OF INTERESTS

5. CONFIRMATION OF MINUTES

5.1 Minutes of the Meelup Regional Park Management Committee Meeting held 26 July 2016

RECOMMENDATION

That the Minutes of the Meelup Regional Park Management Committee Meeting held 26 July 2016 be confirmed as a true and correct record.

6. REPORTS

6.1 MOUNTAIN BIKE NETWORK/FACILITY DEVELOPMENT - IMPLEMENTATION

SUBJECT INDEX:	Meelup Regional Park: Mountain Bike / Bicycle Planning
STRATEGIC OBJECTIVE:	Our natural environment is cared for and enhanced for the enjoyment of the community and visitors.
BUSINESS UNIT:	Environmental Services
ACTIVITY UNIT:	Environmental Management
REPORTING OFFICER:	Manager, Environmental Services - Greg Simpson
AUTHORISING OFFICER:	Director, Planning and Development Services - Paul Needham
VOTING REQUIREMENT:	Simple Majority
ATTACHMENTS:	Attachment A Water Corporation Lot 272 and Mountain Bike Trail Alignments⇩ Attachment B Mountain Bike Trail Works Report and Trail Audit⇩ Attachment C Proposed Meelup Regional Park Bike Trails⇩

PRÉCIS

Following an earlier (January 2014) Council decision to support in-principle the development of a mountain bike trail network/facility in Meelup Regional Park and the progression of the more detailed work required by that resolution, the Council is now asked to support the actual commencement of development and subsequent use of that network/facility, in the following specific ways –

1. Authorising the CEO to enter into an agreement with Cape Mountain Bikers Incorporated (CMB) that would allow CMB to develop the network/facility, subject to their appointment of an appropriate trail builder and CMB commitment to the ongoing maintenance of the network;
2. Foreshadowing consideration of a 'determination', pursuant to the City's *Property Local Law*, to allow the riding of bicycles on trails developed and marked for that purpose, in Meelup Regional Park – note that, as per the notice requirements of the Local Law, the CEO will commence the process of advertising the proposed determination so that, when this matter is considered by the Council, the Council can formally consider the determination; and
3. Authorising the CEO to enter into an agreement with the Water Corporation to allow for the development and maintenance of portions of the network that will be located on/across a narrow Water Corporation reserve that is effectively within Meelup Regional Park.

Council is also asked to recognise the achievements of the Working Group (formed as a requirement of the earlier Council resolution) and confirm the ongoing need for that Group, with a view that the Group has a continuing role in developing and managing the network/facility. That would, however, continue to be assessed on an ongoing basis, and it is recommended that the CEO be allowed to make that decision as and when necessary – noting that if any members are of a different kind to the CEO, there are a variety of means by which further Council consideration of that matter could occur.

Council is also advised that necessary environmental approvals have now been obtained for the network/facility, and that planning associated with management of the contaminated site that overlaps with and/or is adjacent to the proposed network/facility is now largely complete, ready for on-ground works, utilising funds allocated for the purpose in the 2016/17 budget, to commence in the first half of 2017, and allowing for further development of the network/facility in that area in future.

BACKGROUND

In January 2014, the Council resolved (resolution C1401/013) to support in principle the establishment of a mountain bike trail network/facility within Meelup Regional Park (within the area that the Park Management Plan identifies as 'Management Zone 6', or simply 'Zone 6') with the approach to development and management of the network being generally as follows (as set out in the Council resolution) –

a) The first stage in developing the network is to consist of the physical formalisation, and realignment and rehabilitation as necessary, of the 'Brown Street Trail' and/or such other part or parts of trails identified in the Meelup Regional Park Mountain Bike Facility Trails Master Plan as the Working Group identified as being appropriate; as well as the development (or physical formalisation or similar as appropriate) of linking trails providing access from outside the park;

b) That a 'Meelup Mountain Bike Trails Working Group' be formed to develop, subject to the provisions of the Meelup Regional Park Management Plan, the network, with the Working Group to consist of – the Meelup Regional Park Environment Officer, a City Officer and a nominee of the Meelup Regional Park Management Committee all representing the City of Busselton, two representatives from Cape Mountain Bikers Incorporated, plus one representative from the Dunsborough and Districts Country Club Inc, and others as the CEO determines to be appropriate;

c) The Working Group to complete detailed design, implementation plans and costings for the development of the first stage described in b) above, including the ongoing maintenance and management of the network, identify an secure funding, secure necessary environmental approvals, and brief, inform or consult the Committee and Council regarding the outcomes of that work before the commencement of on ground works; and

d) Once City officers have formed a view that the Working Group has or is likely to be in a position to commence on ground works, the CEO shall commence the process of making a determination, including advertising for community consultation, to allow bicycle riding by the general public on the network once developed.

This report is now being presented to the Council because City officers are now formed a view that commencement of on-ground works is, subject to continued Council support, imminent.

The approvals component of the project has comprised the following -

a) Confirmation from the Department of Lands (DoL) that the pending establishment and use of Zone 6 for the purpose of a mountain bike facility is consistent with the purpose of the management order for the Park;

b) Assessment under the EPBC Act to determine if a formal environmental assessment of the proposed action (mountain bike facility) will be required;

c) Consultation with the Department of Parks and Wildlife (DPaW) relevant to the preparation of standards for construction of trails and for site remediation/rehabilitation, vegetation protection, dieback management and other relevant matters;

d) Application to the Department of Environmental Regulation (DER) for a permit to clear vegetation to enable construction of the mountain bike trail network;

e) Consultation with the Water Corporation on arrangements for proposed mountain bike trails to traverse Lot 272 within Zone 6 and which is vested with the Water Corporation for the purpose of water supply; and

f) Site investigations and development of an Asbestos Management to guide the future site treatment works and environmental monitoring, acceptable to the DER for securing the appropriate site classification under the *Contaminated Sites Act 2003*, and for the

establishment and use of a mountain bike trail facility on the former landfill areas within Zone 6.

During 2015, CMB completed mapping of the mountain bike trail alignment which formed part of the application to the DER for the vegetation clearing permit. In September 2016, CMB commissioned the preparation of a trails works report and trail audit to guide the procurement of a professional trail builder for the construction of the Brown Street trail component of the network/facility. The CMB have also been successful in securing $100,000 Lotterywest funding for the purpose of constructing portions of the network/facility.

In August 2015, site investigations were also carried out to assess potential contamination within Zone 6, resulting from former waste disposal landfill activities and to identify/recommend an approach to manage potential contamination and allow for the development of a network/facility within the impacted area. These investigations identified the presence of Asbestos Containing Materials (ACM) in Zone 6 as a result of the former waste disposal landfill activities.

In June 2016, an Asbestos Management Plan was prepared for the treatment of the affected area to provide additional protection to the health and safety of the public. In addition to providing an overarching framework for managing risk from asbestos, this plan also provides a proposed approach for the future construction of those mountain bike trails that intersect the former waste disposal area.

STATUTORY ENVIRONMENT

The City of Busselton *Property Local Law 2010*, allows Council to formalize the use of bicycles on land of which the City is the management body under the *Land Administration Act 1997* by way of a Council 'determination'.

The CMB have expressed an interest in being directly involved in the construction and ongoing maintenance of the proposed mountain bike trails in zone 6. Subject to Council supporting the CMB direct involvement in construction and management, access arrangement will need to be determined. The City *Property Local Law 2010*, clause 3.13 indicates a number of activities that would require a permit which includes making and excavation on City property. A management agreement which incorporates a permit with appropriate conditions could be issued to CMB for the purpose of constructing and maintaining mountain bike facility within Zone 6.

Contaminated Sites Act 2003 provides for the identification, recording, management and treatment of contaminated sites.

Health Act 1911 and the relevant guidelines developed thereunder, administered through the Department of Health (WA) provide guidance for the investigation, treatment and management of asbestos-contaminated sites, based on Australian and international best practise tailored to Western Australian conditions.

RELEVANT PLANS AND POLICIES

The *Meelup Regional Park Management Plan 2010* has been prepared in accordance with the *Land Administration Act 1997* guide the future management of the Meelup Regional Park for conservation and recreation.

The Meelup Regional Park Management Plan 2010 considers bicycle access within the Meelup Regional Park. Under visitor access section 25, this plan states that: *'Formalisation of cycle paths would need to be undertaken with due consideration of the requirements of this management plan.'*

The Meelup Regional Park Management Committee has developed a Trails Policy for Meelup Regional Park, which details the principles that apply to the planning, development and management of all trails within the Park. The Trails Policy for Meelup Regional Park is included in the Zone 6 Mountain Bike Management Plan.

A Mountain Bike Management Plan has also been developed by the Committee to outline the requirements for the design, construction and operation of the proposed mountain bike trails network in Zone 6 to minimise environmental and social impacts, and to provide a safe and sustainable mountain bike trails network for all skill levels.

In January 2014, Council resolved (resolution C1401/013) to note the Meelup Regional Park Mountain Bike Facility Trails Master Plan and Zone 6 Mountain Bike Management Plan prepared by the Cape Mountain Bikers Incorporated as a guiding and background documents for the development of a mountain bike trail network within Zone 6.

In December 2014, Council resolved (resolution C1412/316) to note the Meelup Regional Park Management Committee recommendation to endorse the Meelup Regional Park Trails Master Plan 2014, as a basis for future trail development within Meelup Regional Park. This Trails Master Plan identified those trails outside of zone 6, with some trails being identified as suitable for mountain bike riding.

FINANCIAL IMPLICATIONS

It is proposed that the development of the mountain bike trails in Zone 6 will be constructed in stages and as funds become available for the trail construction works. Stage 1 of mountain bike trails development will involve upgrade and enhancement of the existing trails in the western sector of zone 6, referred to as Brown Street. These initial works will involve:

- Surface upgrade of the existing Brown Street Trail
- Realignment of some sections of the Brown Street
- Construction of a new descending trail
- Construction of a new climbing trail
- Installation of trail markers

Stage 2 will involve the formalistion of the upper gravel pit trails in the eastern sector of Zone 6, with a final Stage 3 being the downhill trails that cross through the former waste disposal area that are intended to be constructed following treatment of the ACM affected area to the satisfaction of the Department of Health and DER.

The trail construction works associated with Stage 1, are to be delivered as a single project and CMB have commissioned a detailed works report and trail audit for the purpose of progressing the development of the mountain bike trails to the quoting, procurement and construction process. The works report and trail audit are included with this report as **Attachment B**.

The Meelup Regional Park Mountain Bike Facility Trails Master Plan included a cost estimate for the construction of the Brown Street mountain bike trails in Zone 6. The cost of constructing Stage 1 which comprises the Brown Street trail was originally estimated at $60,000.

CMB have been successful in securing $100,000 Lotterywest funding for the purpose of trail construction and are seeking City approval to proceed to the procurement process and engage the services of a professional trail builder to work with the CMB members and guide the construction of the Brown Street trail. CMB propose to engage a professional trail builder on either a rates based or fixed price contract arrangement to guide the more technical components of the trail with the CMB

members constructing the more basic trail components. The indicative rate for this arrangement is $175/hour for trail design and project setup and $45/hour for trail construction.
The trails works report commissioned by CMB in September 2016, indicates that the proposed works for Brown Street will involve 716 meters of realigned trail; 191 meters of trail closure; and 2506 meters of new trail sections. The trails works report indicates construction time based on the completion of approximately 100 lineal meters per day for standard trail construction and 50 lineal meters per day for those sections of trail with extensive trail features.

Based on the initial trail construction rates it is estimated that the cost of constructing Brown Street trails will be consistent with the original estimate and could be reduced further with CMB members involved in the physical construction of the trails.

The Meelup Regional Park Mountain Bike Facility Trails Master Plan also provides an indication of annual maintenance costs for the trail network. While a well designed and constructed mountain bike trail facility should require only minimal ongoing maintenance, industry standards and discussions with the Pemberton mountain bike trail operators indicate the annual ongoing maintenance expenditure ranges from 3% - 5% of the total capital spend. Based on the original estimates of $300,000 included in the Meelup Regional Park Mountain Bike Facility Trails Master Plan for construction of zone 6 mountain bike trails, the ongoing maintenance costs of trails is expected to be in the vicinity of $9,000 to $15,000 per annum.

There is also an ongoing management and monitoring component of the trail network which involves regular routine inspections of the trails for reporting trail maintenance and to ensure public safety. The ongoing management and monitoring of the trails is expected to involve approximately 5 hours per month at an estimated cost of $7,000 to $10,000 per annum of staff time which, could be reduced further with CMB members involved in the ongoing management of the Zone 6 mountain bike trails.

The development of the trails will also require the formalisation of car parking and access points to the Zone 6 mountain bike trails. The entrance to Meelup Regional Park adjacent to the intersection of Endicott Loop and Cape Naturaliste Road has been identified as a suitable point for access to the mountain bike trails in zone 6.

The implementation of the Asbestos Management Plan to treat the former waste disposal area will require the importation of soils and the construction of a suitable truck access for this purpose. It is proposed that the Endicott Loop road access will be constructed as part of the former waste site treatment process. It is envisaged that works associated with site remediation would be met from the Waste Reserve (and $100,000 has been allocated in this year's budget). Once quotes are received to undertake the necessary works, it will be known whether that allocation is sufficient, or whether an additional allocation may be required (either as an amendment to this year's budget, or in next year's budget).

Long-term Financial Plan Implications

There are no significant Long Term Financial Implications of the recommendations of this report.

STRATEGIC COMMUNITY OBJECTIVES

This matter is considered relevant to Key Goal Area 5 - Cared for and Enhanced Environment and Community Objective 5.1 - Our natural environment is cared for and enhanced for the enjoyment of the community and visitors.

RISK ASSESSMENT

An assessment of the potential implication of not implementing the officer recommendation has been undertaken using the City's risk assessment framework. The assessment sought to identify 'downside' risks only rather than 'upside' risks and where the risk, following implementation of controls has been identified, is medium or greater. No such risks were identified.

CONSULTATION

The Meelup Regional Park Mountain Bike Trail Working Group formed in January 2014, met monthly in the initial stages during its first 16 months and as required thereafter, to progress the development of the mountain bike trail network in zone 6.

In July 2016, the proposed development of mountain bike trails network in the zone 6 Meelup regional Park was presented at a meeting of the South West Boojarah Working Party.

Westcycle is the peak body for cycling throughout Western Australia and work with government agencies, corporate partners and the general public to promote and develop cycling in Western Australia as a form of transport, recreation and sport and operate under the Department of Sport and Recreation commissioned. Westcycle have offered to assist the design and development of the trails and there is potential for the contribution of funds to the project for which Westcycle are seeking a stakeholder agreement with the City and CMB

Part of Zone 6 includes Lot 272, which is vested with the Water Corporation for the purpose of water supply. Lot 272 comprises two square parcels of land approximately 1.0 Ha in area, located approximately 600 metres apart for the purpose of water supply tanks and connected by a 5.0 metre wide easement for the future installation of a water supply line connection between the water tanks. Lot 272 runs east/west across zone 6 and which proposed mountain bike trails traverse. A plan of the location of Lot 272 and propose mountain bike trail alignments is included with this report as **Attachment A**.

The Working Group consider the realignment of the trails to avoid the Water Corporation reserve would significantly reduce the mountain bike experience in Zone 6, which has resulted in discussions with the Water Corporation to establish the terms of an agreement to enable the mountain bike trails to pass through the Water Corporation reserve. The Water Corporation have indicted their support for the proposed mountain bike trail alignment to access Water Corporation land and seek to formalize access arrangements by way of a license agreement. The Water Corporation has advised the cost of the License Agreement will be $1,350, with an annual fee of $500 per annum.

In parallel with Committee consideration of this report, a proposed determination to allow mountain biking on the proposed network/facility is being advertised. When this matter is presented to the Council for consideration, it is envisaged that an addendum and amended officer recommendation will be presented setting out the consultation outcomes and making a specific recommendation about the potential determination (rather than just foreshadowing that determination). Given the timeframe associated with advertising of the draft determination, it is likely this report, together with the Committee recommendation and addendum/amended officer recommendation, will be formally considered by the Council at its 14 December 2016 ordinary meeting. That timing would also allow for informal discussion of the draft determination, in light of any feedback received from the community, at the Meelup Committee informal meeting scheduled for 28 November 2016, and for any additional informal feedback from the Committee to be incorporated into the addendum. The timeframes would, however, be too tight to allow for formal Committee consideration of the matter prior to the Council's 14 December meeting.

OFFICER COMMENT

As part of the development of the mountain bike trail network within Zone 6, the Working Group have systematically worked through a number of key issues/steps, as follows -

- Identified and surveyed the preferred mountain bike trail alignment.
- Applied for and secured a $100,000 Lotterywest grant for the construction of trails.
- Received a DER permit to clear vegetation for construction of the mountain bike trails.
- Investigated access arrangements with the Water Corporation to enable the mountain bike trails to access through the Water Corporation managed reserve that traverses Zone 6.
- Engaged a professional trail designer to provide a detailed works report and trail audit to guide the procurement of a professional trail builder for the upgrade and formalization of the existing Brown Street trail.

The trail construction works associated with Stage 1, are to be delivered as a single project and CMB have commissioned a detailed works report and trail audit for the purpose of progressing the development of the mountain bike trails to the quoting, procurement and construction process.

The CMB through the Working Group, have expressed a desire for its members to be actively involved in both the initial construction of trails and the ongoing maintenance and management of the mountain bike trails in Zone 6.

This level of involvement in the mountain bike fraternity is not uncommon and there are Mountain Bike Trail Adoption agreements currently in place between mountain bike groups and the Department of Parks and Wildlife. These agreements establish the arrangements for communication and reporting, health and safety, standards of maintenance, funding and various other matters.

The training of CMB members in trail building and trail maintenance can be incorporated as a requirement of the procurement process should the Council support CMB involvement in the future management of the mountain bike trail network.

There are a number of advantages of having an established key user group involved in the management and maintenance of the trail network over the longer term as well as providing a base for the CMB club to grow and develop mountain biking in the district.

To facilitate CMB involvement in both construction and maintenance of the mountain bike trails, it will be necessary to formalize access arrangements and it is recommended that the mountain bike trail construction phases and the ongoing monitoring and maintenance of the mountain bike trails following construction be formalized with CMB by way of a management agreement.

This report recommends the formalization of arrangements between the City and Cape Mountain Bikers that allows for the initial construction and the longer term ongoing maintenance of the network/facility within Zone 6

The Water Corporation water supply access reserve that currently crosses through Zone 6 also traverses the former waste disposal site and the proposed mountain bike trail network. As ACM has been identified within the former waste disposal area, the treatment measures that need to be undertaken within this area as part of the Asbestos Management Plan may limit the Water Corporations future use of the reserve for the intended purpose, being water supply. Further discussion with the Water Corporation will determine if the water supply easement can be realigned further north of its current location to avoid the former waste landfill area. In the interim and as discussed early in this report, access arrangements with the Water Corporation are proposed to

enable the construction and use of those sections of the mountain bike trails in Stage 1 that traverse the Water Corporation land.

The *Property Local Law 2010* allows the Council to formalise the use of bicycles on land of which the City is the management body under the *Land Administration Act 1997* by way of a Council 'determination'. In accordance with Council's resolution in January 2014, and following the approach discussed in this report to formalise access arrangements with CMB to construct the mountain bike trails and for the ongoing management/ maintenance of the mountain bike trails, the process of making a determination has commenced, including the giving of public notice of Councils intent to make a determination, to allow bicycle riding by the general public on the network once developed. It is also propsoed that the determination will also incorporate those trails identified in the Meelup Regional Park Trails Master Plan 2014. A plan of the proposed mountain bike trail area in Zone 6 and designated mountain bike trails in other areas of Meelup regional Park in included with this report at **Attachment C**. As already noted, an addendum and amended officer recommendation are envisaged to be presented to the Council – that is because advertising had not been completed at the time of presenting this report to the Committee, but is expected to be completed prior to Council consideration of this report.

CONCLUSION

The City, together with the Committee and CMB, has now reached a point where development and management of a mountain bike trails network/facility in Zone 6 of Meelup Regional Park can proceed, and the officer recommendation, subject to submission of an addendum and amended officer recommendation once advertising of the proposed determination, 'paves the way' for that to occur.

OPTIONS

The Council may wish to seek further information before making a decision, or may wish to consider other options for the development and management of the network/facility, such as development and management by the City itself, rather than by CMB.

TIMELINE FOR IMPLEMENTATION OF OFFICER RECOMMENDATION

The aim is to complete implementation of the recommendation (other than actioning the foreshadowed determination, which would not occur until on-ground works are completed, or nearly completed) by no later than 15 February 2017. It is then anticipated that the first phase of construction would be complete by no later than 30 April 2017.

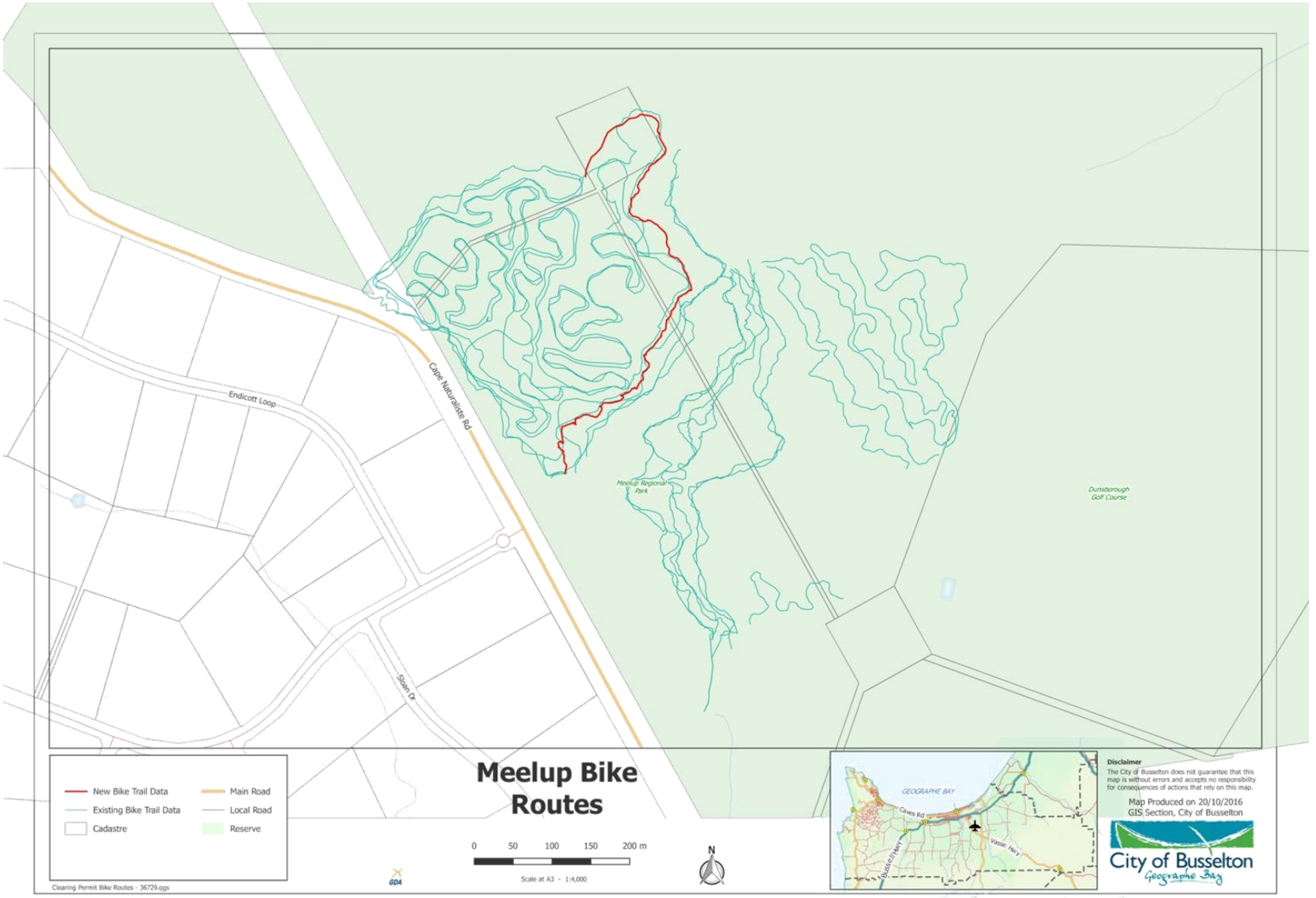
OFFICER RECOMMENDATION

That the Council, with respect to cycling in Meelup Regional Park, most particularly the development of a mountain bike trail network/facility in Management Zone 6 -

1. Authorise the CEO to enter into an agreement with Cape Mountain Bikers Incorporated (CMB) that would allow CMB to develop the network/facility, subject to their appointment of an appropriate trail builder and CMB commitment to the ongoing maintenance of the network;
2. Foreshadow consideration of a 'determination', pursuant to the City's *Property Local Law*, to allow the riding of bicycles on trails developed and marked for that purpose, in Meelup Regional Park, including on the network/facility referred to in point 1 above, and on key connecting trails, generally as indicated on Attachment C to the agenda report;
3. Authorise the CEO to enter into an agreement with the Water Corporation to allow for the development and maintenance of portions of the network/facility that will be

located on/across a narrow Water Corporation reserve that is effectively within Meelup Regional Park; and

4. Recognise the achievements of the 'Meelup Mountain Bike Trails Working Group' and the constituent members in advancing the project to this point, and confirm the continuing role of the Group in developing and managing the network/facility, until and unless the CEO forms a view that the Group is no longer required.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Cape Naturaliste Rd
Storm Dr
Meelup Regional Park
Dunsborough Golf Course
New Bike Trail Data
Existing Bike Trail Data
Cadastre
Main Road
Local Road
Reserve
Meelup Bike Routes
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Scale at A3 - 1:4,000
N
GEOGRAPHE BAY
Caves Rd
Bussell Hwy
Vasse Hwy
Disclaimer
The City of Busselton does not guarantee that this map is without errors and accepts no responsibility for consequences of actions that rely on this map.
Map Produced on 20/10/2016
GIS Section, City of Busselton
City of Busselton
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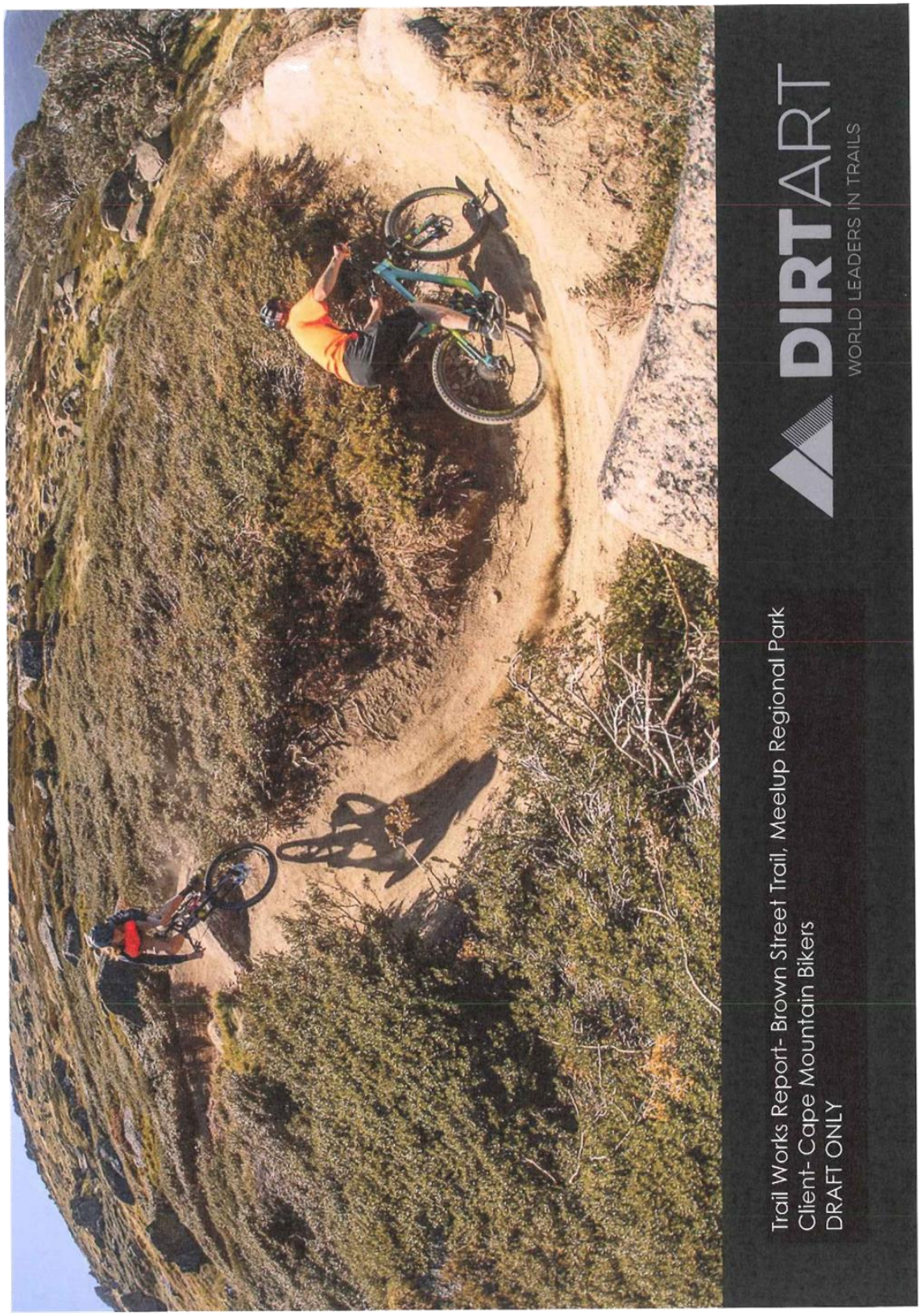

Trail Works Report- Brown Street Trail, Meelup Regional Park
Client- Cape Mountain Bikers
DRAFT ONLY
DIRTART
WORLD LEADERS IN TRAILS

Table of Contents

DIRTART
WORLD LEADERS IN TRAILS

1 Document Overview

1.1 Document summary

Document- Trail Audit Report
Client- *Cape Mountain Bikers/City of Busselton*
Report prepared by- Simon French and Luke Chiu (*Dirt Art*)

1.2 Document control

Version	Name	Date	Notes
Draft V1	Simon French	3rd September 2016	NA
FINAL	Simon French	6th September 2016	NA

1.3 Acknowledgements

Dirt Art wishes to acknowledge the assistance and support of the following agencies/groups into the preparation of this report; *Cape Mountain Bikers,* and the *City of Busselton.*

2 Introduction

The purpose of this document is to outline proposed works for the upgrade and enhancement of the Brown Street Mountain Bike Trail in Meelup Regional Park (MRP). This report has been developed based on the accompanying document, Trail Audit Report- Brown Street.

The works proposed in this report have been broken down into four components, works component 1A, 21B, 2A and 2B. A summary of each works component is as follows;

- Works Component 1A: Upgrade to the existing Brown Street Trail
- Works Component 1B: Realignments to the Brown Street Trail
- Works Component 2A: New descending trail next to Brown Street Trail
- Works Component 2B: New climbing trail next to Brown Street Trail

The proposed works include;

- 716m of realigned trail
- 191m of trail closures
- 2506m new trail sections

All works components are currently proposed to be delivered as a single project, though the project many potentially be staged as required.

This report is intended to provide a detailed works plan, suitable for progressing the project through any final approvals, quoting and procurement, and construction.

3 The current situation

The MRP mountain bike trails currently offer a diverse yet small network of user-built mountain bike trails, a short distance from the town of Dunsborough. The key trail in the network, Brown Street is the focus of the works proposed in this report. A comprehensive audit was conducted of the Brown Street Trail, available as a separate document, Trail Audit Report- Brown Street.

Brown Street currently offers a safe and sustainable mountain bike experience, though many areas of the trail would benefit from upgrade, realignment and enhancement.

Currently the Brown Street Trail offers limited longer descending opportunities, and does not form a complete loop for events. These two issues have been addressed through the proposed modifications to Brown Street and through the proposed addition of two new trails adjacent to Brown Street.

4 General construction recommendations

4.1 Environmental management

4.1.1 Overview

Dirt Art suggest that prior to construction commencing, a comprehensive environmental management plan (EMP) be developed to govern all aspects of proposed works. In most instances the development of an appropriate EMP would be the responsibility of the contractor selected to deliver the project.

The EMP should cover all aspects of the project, though should place a strong emphasis on management of die back (phytophthora cinnamomi).

4.1.2 Phytophthora Cinnamomi (die back) Management

The management of die back should at all times comply with relevant land manager and legislative regulations and best practice principles. The design for all trail has placed trails in areas already infected or at risk of die back, with all protectable areas avoided. *Dirt Art* suggest adopting the following general principles during construction;

- All machinery, tools and equipment to be thoroughly washed on entry/exit from the site
- No transport of machinery and/or vehicles through uninfected areas of the site
- All soil and related materials imported to the site to be approved by land managers
- Works to be restricted to approved construction corridors only

4.2 Contractor engagement

Dirt Art strongly suggest that all proposed works are constructed and/or construction-managed by a professional mountain bike trail company. In considering liability for the works, the contractor should have mountain bike trail design and construction specifically noted on their insurance certificates. The recommended cover limits are; $20m public liability, $5m professional indemnity.

4.3 Contract structure

There are two primary ways that the works contract may be constructed, either a fixed lump sum contract, or a schedule of rates. Both options have potential advantages and disadvantages, which will be summarised in detail below.

4.3.1 Lump sum contract

A lump sum contract would essentially provide a fixed and final price for all proposed works, with some potential variation items. This is the type of contract typically utilised by government agencies as it provides certainty in final project costs and scope. Key advantages and disadvantages are;

4.3.1.1 Disadvantages

- Typically higher costs as contractor will inevitably build a margin into pricing to account for any unexpected or adverse conditions
- Limited contract/scope flexibility

4.3.1.2 Advantages

- Surety around project scope and cost

4.3.2 Schedule of rates

A schedule of rates contract is based around a 'cost-plus' arrangement, where a contractor provides a set of hourly rates and cost items for the project. The contractor will then deliver works as directed, billing out on an hourly rate basis. This contract type is more commonly used by not for profit groups and commercial clients who seek maximum value for money, and are often more flexible with project delivery.

Key advantages and disadvantages are;

4.3.2.1 *Disadvantages*

- Uncertainty around project costs and scope
- Potential for poor contractor performance

4.3.2.2 *Advantages*

- Typically notably lower project costs
- Flexibility with project scope and delivery

4.4 Seasonal considerations

Dirt Art suggests that the works could feasibly be delivered year round. The most optimal time for works scheduling would be during Spring or Autumn. Final seasonal consideration for the project would rest with relevant land management agencies.

4.5 Duration of works

The total project duration would be dependant on a range of factors, including; involvement of local volunteers, and the level of resourcing from the contractor. As a guide, each contractor team (one excavator operator and two staff) is likely to construct 100 lineal metres of standard trail per day. Trail with extensive trail features may progress at just half this rate (50 lineal metres per day).

Depending on the above factors the project construction is likely to occur over a 1-2 month period.

4.6 Local volunteer involvement

Across Australia and around the world, there are countless examples of positive outcomes where volunteers have added significant value to mountain bike trail construction projects. Volunteer involvement also builds stewardship and provides an outlet for local

users to become involved in sanctioned trail building. Volunteer involvement also provides an avenue for the contractor to transfer a range of valuable skills and expertise to the local community.

Dirt Art has suggested that local volunteers could feasibility manage the construction of works component 1 and and 2A, a climbing trail to the western side of the Brown Street Trail. During this process *Dirt Art* suggests that the trail contractor provide volunteer training and ongoing management of the volunteer construction process.

The 2A works component has been chosen as building conditions are the least intensive across all proposed works, and the works allow local users to develop a 'whole trail' experience rather than managing pieces of works throughout the broader project.

5 Works component 1A

5.1 Overview

Works component 1A relates solely to the upgrade and enhancement of the Brown Street Trail, on its existing alignment only. Works have been based on the report, Trail Audit Report- Brown Street.

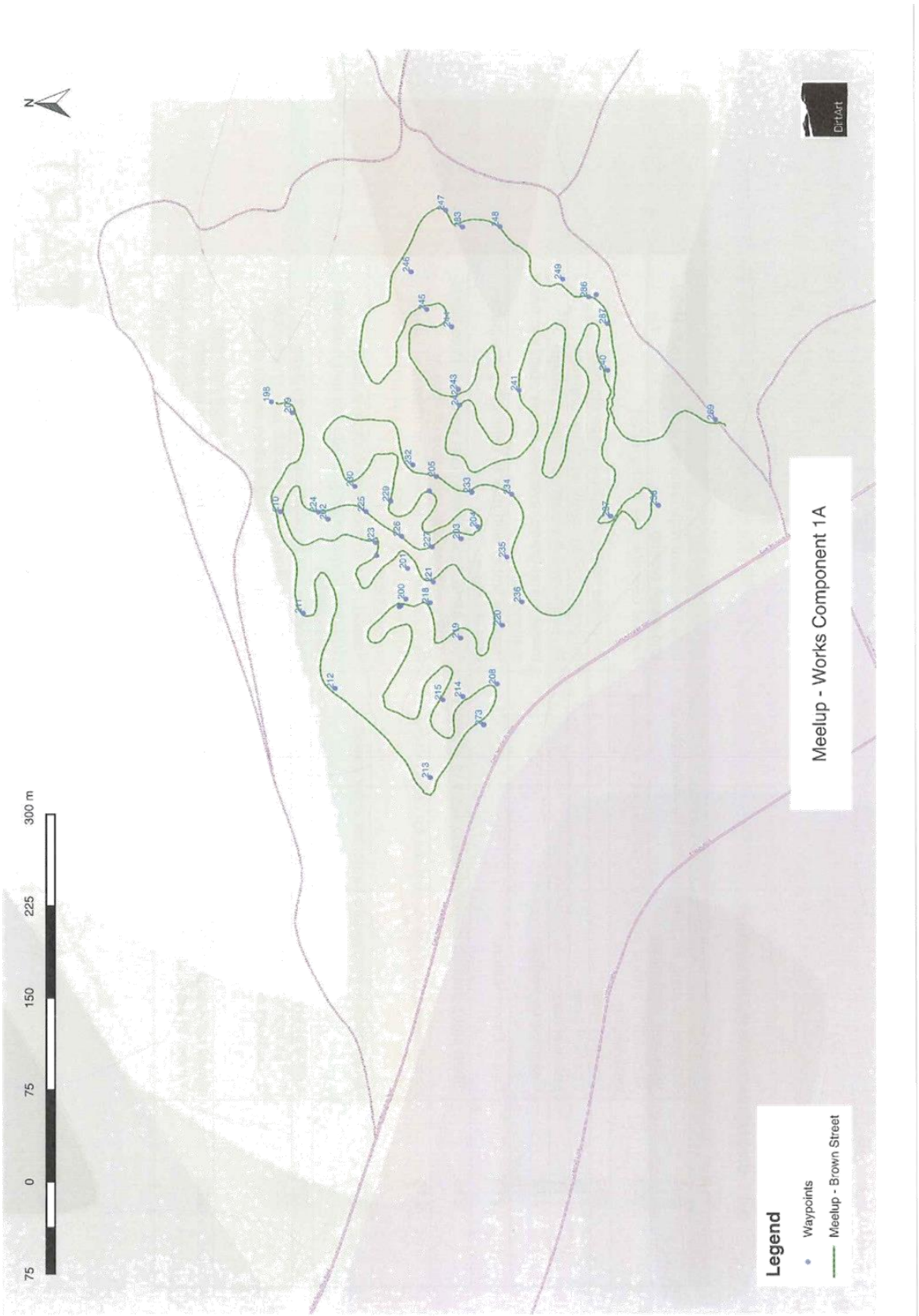
Works proposed include but are not limited to;

- Trail surface re-profiling
- Drainage works including the installation of rolling grade dips and grade reversals
- Rock armouring
- Installation of and/or remedial works to trail features

Works proposed have been targeted to improve trail sustainability, reduce maintenance, reduce environmental impacts and to improve rider experience.

5.2 Works delivery

Works in this component may be delivered by local volunteers, or by a professional contractor. Contractor-delivered works would allow for greater terrain modification through the use of machinery, which would deliver a higher quality trail product.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DirtArt
Meelup - Works Component 1A
Legend
Waypoints
Meelup - Brown Street
75
0
75
150
225
300 m

5.4 Breakdown of works by location

Waypoint	Issue	Suggested works	Severity
201	Steeper climbing section- potential for installation of a technical, rock climb	Install technical rock features including, rock stairs and rough paving	
203	Potential to extend descent to create more sustained descending	Extend descent- see works report	
209	Low/wet area	Re-profile trail to install out slope drainage	
210	Low/wet area	Re-profile trail to install out slope drainage	
211	Low/wet area	Re-profile trail to install out slope drainage	
212	Fall line trail section	Install rolling grade reversals and/or complete minor realignment	
213	Log roll over feature	Replace timber with rock to establish permanent, safe structure	
216	Short steep section of trail showing signs of erosions	Rock armour trail section (6m approx.). Potential to install small optional rock drop off feature	
218	Small berms (x 2) are inadequate for corner entry speed	Rebuild two berms to minimum 600mm in height (1000mm target height). In situ soil and materials are available	
219	Small berm is inadequate for corner entry speed	Rebuild berm to minimum 600mm in height (1000mm target height). In situ soil and materials are available	
220	Low/wet area	Re-profile trail to install out slope drainage	
221	1. Fall line trail section 2. Low/wet area	1. Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.) 2. Re-profile trail to install out slope drainage	
222	Small berm is inadequate for corner entry speed. Timber in berm structure	Rebuild berm to minimum 600mm in height (1000mm target height), removing timber from berm structure. In situ soil and materials are available	

Waypoint	Issue/s	Suggested works	Severity
223	Low/wet area	Re-profile trail to install out slope drainage	
224	Timber drop/jump	Replace timber drop/jump with rock	
225	1. Timber drop/jump 2. Fall line trail section	1. Replace timber drop/jump with rock 2. Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	
226	Low/wet area with fragile soils	Install 10m (approx.) of rock armouring	
227	Low/wet area- large	Re-profile trail to install out slope drainage. Install 8m (approx.) of rock armouring	
228	Very minimal separation between trail and adjacent trail section	Realign trail to the L (east) a minimum of 5m	
229	Low/wet area with fragile soils	Install 6m (approx.) of rock armouring	
230	Sandy/friable soils and issues with drainage	Install 30m (approx.) of lift and tilt style trail	
231	1. Moderately steep fall line section 2. Small berm is inadequate for corner entry speed	1. Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.) 2. Rebuild berm to minimum 600mm in height (1000mm target height). Insitu soil and materials are available	
232	1. Fall line section with surface damage and friable soils 2. Small drop off moderately eroded	1. Re-profile trails surface adding grade reversals. Rock armour 15m trail section (approx.) 2. Repair drop off by installing rock drop. Install 6m (approx.) of rock armouring	
234	Moderately steep fall line section	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	
235	Dip in trail requires rock armouring on entry and exit. Low has surface damage.	Rock armouring 10m (approx.) and re-profile low point.	
236	Fall line trail section with trail surface damage	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (8m approx.)	

Waypoint	Issue/s	Suggested works	Severity
237	Low/wet area	Re-profile trail to install out slope drainage	
238	Low/wet area	Re-profile trail to install out slope drainage	
239	Moderately steep fall line section	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	
240	1. Fall line trail section with trail surface damage 2. Small berm is inadequate for corner entry speed	1. Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (8m approx.) 2. Rebuild berm to minimum 600mm in height (1000mm target height). Insitu soil and materials are available	
241	Potential for installation of optional rock technical feature	Install two-line optional rock trail feature offering moderate and difficult difficulty levels	
242	Timber roll over feature	Replace timber roll over with rock	
243	Moderately steep fall line section	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	
244	1. Small berm is inadequate for corner entry speed 2. Drainage measures required at berm entry	1. Rebuild berm to minimum 600mm in height (1000mm target height). Insitu soil and materials are available 2. Install grade reversal with 3m rock armouring	
245	Moderately steep fall line section	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	
246	1. Moderately steep fall line section 2. Low lying wet area with friable soil	1. Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.) 2. Install 30m of lift and tilt trail with 8m (approx.) of rock armouring	

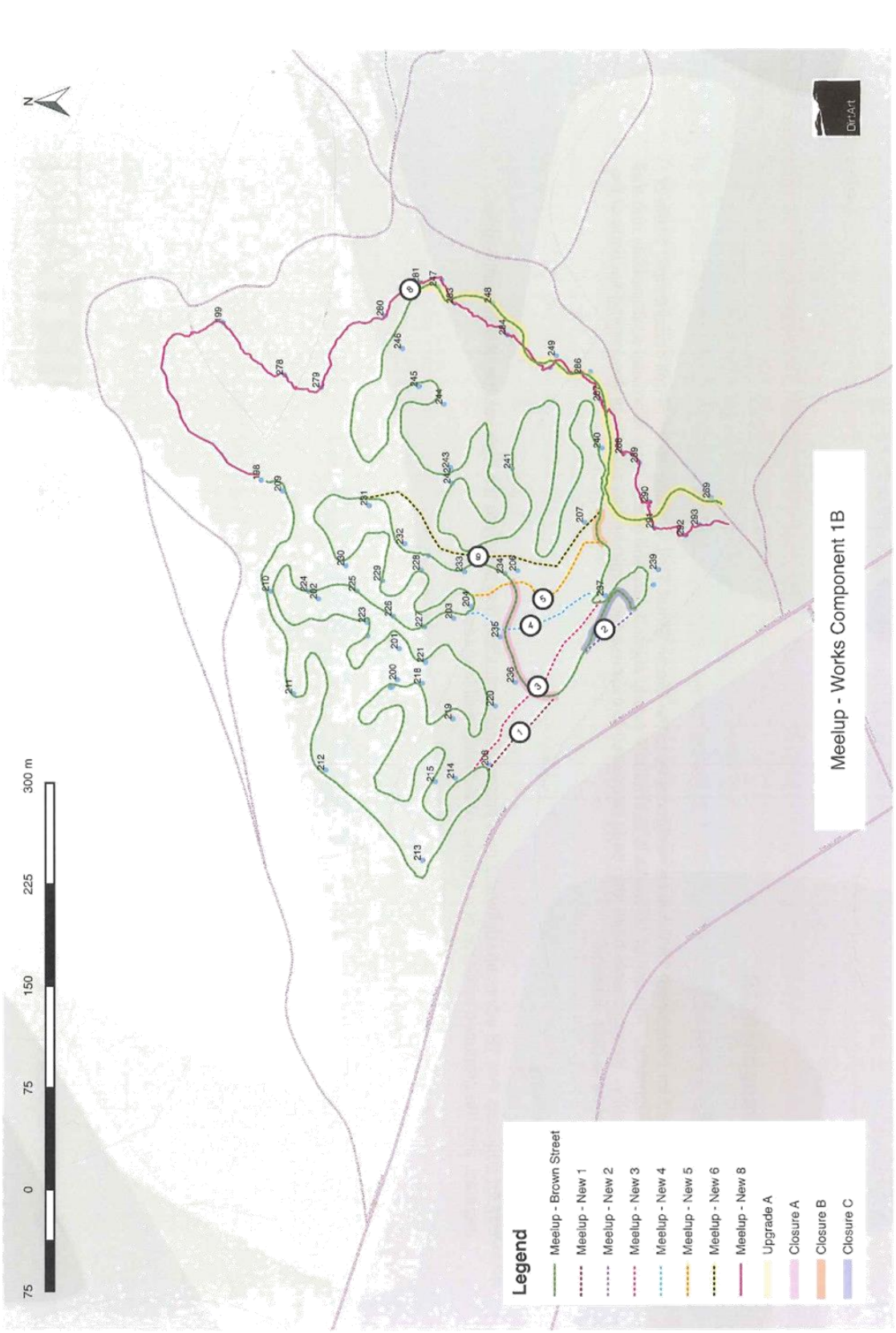
6 Works Component 1B

6.1 Overview

Works proposed for component 1B focus on realignments to the Brown Street Trail, totalling 191m of trail closures and 716m of new trail developments. The aim of 1B works is to eliminate poorly aligned sections of trail, thus improving sustainability and trail experience quality. Realignments have also been structured to increase the length and availability of descending sections of the trail, in a response to user-demand.

6.2 Works delivery

Dirt Art suggests that 1B works are delivered by a professional contractor, due largely to the high volume of bulk earth works required, and the proposed inclusion of a number of technical trail features.


Meelup - Works Component 1B
Legend
Meelup - Brown Street
Meelup - New 1
Meelup - New 2
Meelup - New 3
Meelup - New 4
Meelup - New 5
Meelup - New 6
Meelup - New 8
Upgrade A
Closure A
Closure B
Closure C
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6.4 Realignment works

6.4.1 Realignment 1

Length	70m
Difficulty	Intermediate
Tread width (nominal)	1000mm
Trail features	Nil notable
Summary	
Realignment one features a short, contouring alignment, with no defining features.	

6.4.2 Realignment 2

Length	45m
Difficulty	Intermediate
Tread width (nominal)	1000mm
Trail features	Nil notable
Summary	
Realignment two features a short, contouring alignment, with no defining features.	

6.4.3 Realignment 3

Length	155m
Difficulty	Intermediate
Tread width (nominal)	1000mm
Trail features	Nil notable
Summary	
Realignment three features a longer contouring alignment, designed to feature a rolling contour style of trail. The trail section includes no notable trail features.	

6.4.4 Realignment 4

Length	104m
Difficulty	Intermediate
Tread width (nominal)	1000mm
Trail features	Nil notable
Summary	
Realignment four features a descending section of trail, designed to create a longer, sustained descent in the network. The trail features a number of more technical, rocky sections, and scope for a large scale rock garden.	

6.4.5 Realignment 5

Length	124m
Difficulty	Intermediate
Tread width (nominal)	1000mm
Trail features	Nil notable
Summary	
Realignment five creates a climbing link to return riders from the lower point of the descent created with realignment four. The gently climbing section of trail includes some basic rock trail features.	

6.4.6 Realignment 6

Length	218m
Difficulty	Intermediate
Tread width (nominal)	1000mm
Trail features	Nil notable
Summary	
Realignment six features a descending section of trail, designed to create a longer, sustained descent in the network. The trail features a number of more technical, rocky sections.	

6.5 Trail closures

6.5.1 Overview

A total of 190 metres of trail closures have been proposed. These closures would improve the network flow, whilst removing unsustainable trails from the formalised network.

6.5.2 Trail closure 1

Length	102m
Summary	
This short section of trail would be closed utilising a mini excavator to scour the trail surface, and to drag organic matter across the trail tread.	

6.5.3 Trail closure 2

Length	23m
Summary	
This short section of trail would be closed utilising a mini excavator to scour the trail surface, and to drag organic matter across the trail tread.	

6.5.4 Trail closure 3

Length	66m
Summary	
This short section of trail would be closed utilising a mini excavator to scour the trail surface, and to drag organic matter across the trail tread.	

6.6 Outer descent upgrade and new trail construction

6.6.1 Overview

This component of works involves the upgrade and extension of the main descending trail section to the eastern extremity of the Brown Street Trail. The works focus on essentially rebuilding the existing descent, while extending the descent to the highest elevation point available. Works will also lengthen the trail to create an upper trail head for the facility, while offering the maximum available vertical descent.

A number of trail features on the trail have been proposed, including, jumps, rock features, rollers and berms. These features and the style of trail proposed, aim to create a faster, more challenging trail experience.

6.6.2 Summary of proposed trail

Trail Name	Brown Descent Upgrade
Trail length	941m
Proposed difficulty rating	Blue Square
Proposed development corridor	10m (5m either side of mapped line)
Trail tread width	1000-1200mm
Vegetation clearance corridor	1500mm width, 2500mm height
Construction methodology	1.7 tonne excavator
Imported materials	Capping/surfacing required to final 100m of trail due to land fill site.

6.6.3 Works delivery

Dirt Art suggests that 1B works are delivered by a professional contractor, due largely to the high volume of bulk earth works required, and the proposed inclusion of a number of technical trail features.

6.6.5 Waypoint data summary

Waypoint	Summary of works
278	Install rock roll over feature
279	Lift and tilt raised trail section, with construction of left berm into right berm
280	Left hand berm leading into tabletop jump
281	Large dirt rollers
282	1000mm high rock drop with rock armoured entry and exit sections
283	Step down jump
284	Large rock roll overs x 2
285	Left berm leading into right berm
286	Large dirt rollers
287	Rock roll over feature
288	Steeper rock garden/paved section
289	Large right hand berm feature
290	Tabletop jump
291	Small rock garden
292	Rock garden/paved feature
293	Tabletop jump feature

7 Works component 2A

7.1 Overview

Works proposed for component 2A focus on developing a new descending trail to the east of Brown Street. Responding to user demand, this trail would offer a descent that maximises available elevation, while providing a range of challenging yet safe trail features. The trail is proposed as a black diamond trail, with a range of trail features in keeping with this difficulty grading.

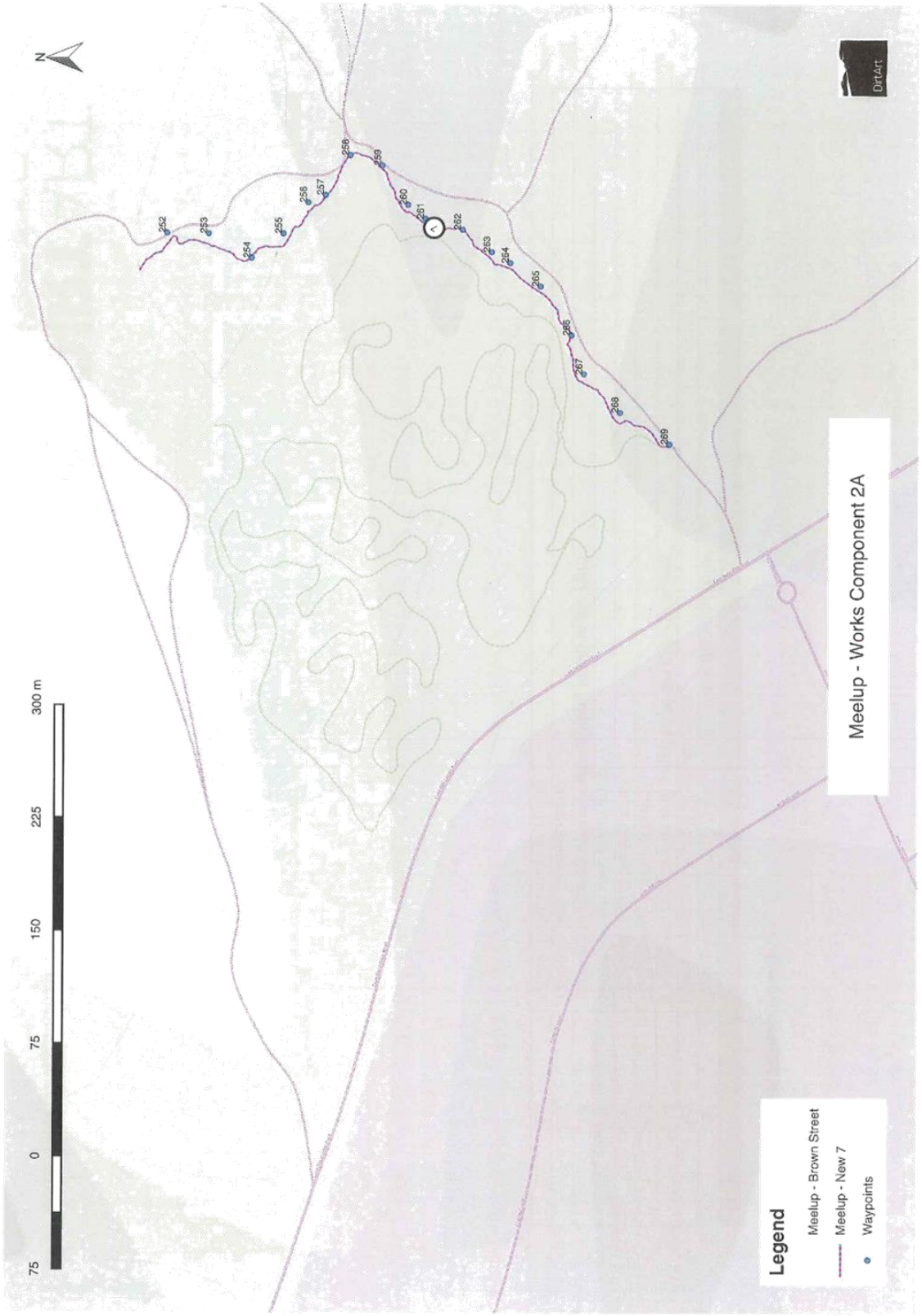
The alignment and detail of proposed trail features can be found over the page.

7.2 Summary of proposed trail

Trail Name	Brown Street Outer Descent
Trail length	628m
Proposed difficulty rating	Black Diamond
Proposed development corridor	10m (5m either side of mapped line)
Trail tread width	1000-1200mm
Vegetation clearance corridor	1500mm width, 2500mm height
Construction methodology	1.7 tonne excavator
Imported materials	Capping/surfacing required to final 100m of trail due to land fill site.

7.3 Works delivery

Dirt Art suggests that 1B works are delivered by a professional contractor, due largely to the high volume of bulk earth works required, and the proposed inclusion of a number of technical trail features.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268
269
Meelup - Works Component 2A
Legend
Meelup - Brown Street
Meelup - New 7
Waypoints
75
0
75
150
225
300 m

7.5 Way point data summary

Waypoint	Summary of works
252	Rock garden with rock roll to act as a black diamond 'filter'
253	50m (approx.) of lift and tilt construction
254	2 x 500mm high berms with small table top jump between
255	750mm high left hand berm
256	1200mm high table top jump
257	1200mm high step down jump
258	1200mm high step up jump with landing to hip to the right
259	1200mm high table top jump
260	1200mm high table top jump

8 Works component 2B

8.1 Overview

Works in this works component focus on the development of an outer climbing trail to the west of the Brown Street Trail. Installation of this trail fulfils a number of strategic objectives, including the facilitation of a range of event course options.

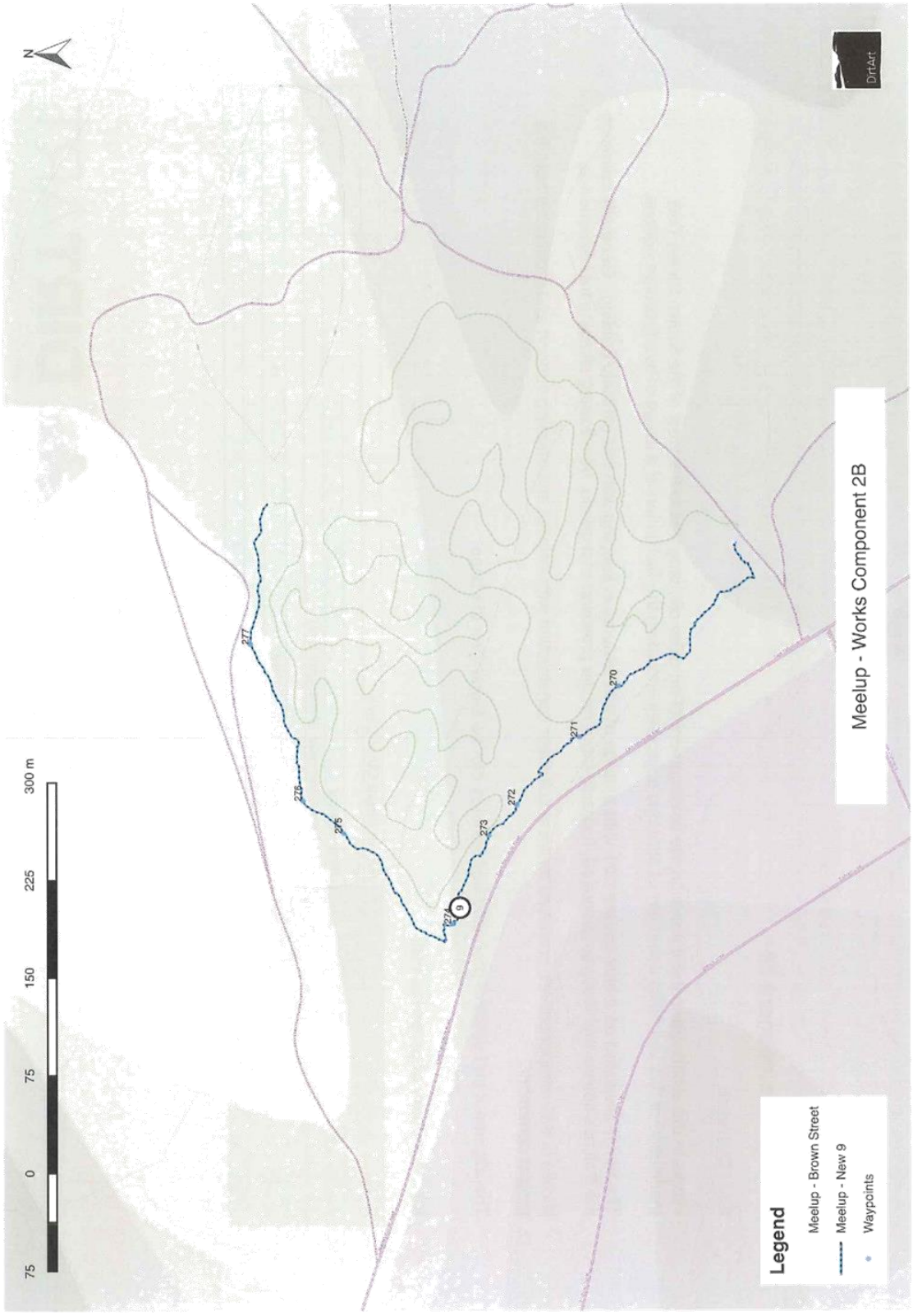
The trail is proposed as a blue square trail, with a range of trail features in keeping with this difficulty grading. Generally speaking the trail has limited trail features proposed, focusing more on the provision of a gentle, free-flowing climbing trail experience.

Works in this component are proposed for local volunteer construction with training and ongoing support and monitoring from the project contractor.

The alignment and detail of proposed trail features can be found over the page.

8.2 Summary of proposed trail

Trail Name	Brown Street Outer Climb
Trail length	937m
Proposed difficulty rating	Blue Square
Proposed development corridor	10m (5m either side of mapped line)
Trail tread width	1000mm
Vegetation clearance corridor	1500mm width, 2500mm height
Construction methodology	1.7 tonne excavator
Imported materials	NA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Meelup - Works Component 2B
277
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275
274
273
272
271
270
9
Legend
Meelup - Brown Street
Meelup - New 9
Waypoints
75
0
75
150
225
300 m

8.4 Waypoint summary data

Waypoint	Summary of works
270	Rock garden/rock roll over
271	Rolling grade dips plus 15m rock armouring to avoid drip line of large tree
272	Rock armour approximately 6m
273	Install large rolling grade dips
274	Rock garden/rock roll over
275	Insloped/bermed right hand turn

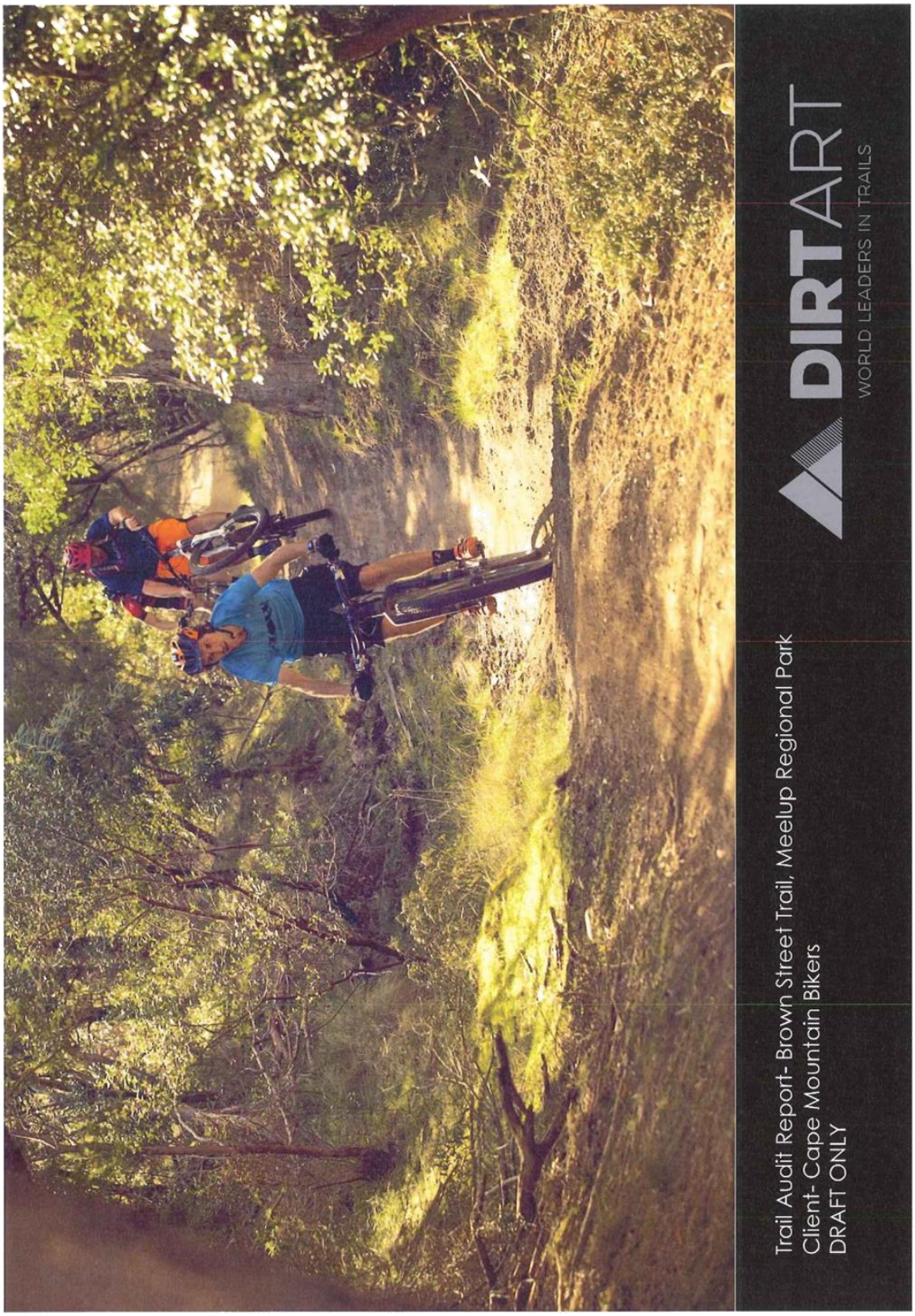
9 Conclusion

The proposed works provide a clear pathway towards upgrading and enhancing the Brown Street trail, making significant improvements in the trails ride quality and sustainability. The focus of all works components has been to consolidate and improve the experience and quality of the existing trail, while broadening the appeal of the trail to a larger market of riders.

The proposed realignments and new trail sections have focussed on increasing the availability and duration of descending trails, which will cater for a key demand for this type of riding experience. New trail sections have also provided a significant improvement in the trails capacity to cater for a broad range of event types, including cross country Olympic, stage racing, and gravity enduro event types.

All works have been designed to have the most minimal environmental impact, and in many cases have proposed methodologies that will have a net benefit to the environmental values of the site, such as by capping exposed land fill areas.

The works proposed offer a significant opportunity to greatly improve the quality and sustainability of the Brown Street Trail, making the trail a significant regional mountain bike asset.


Trail Audit Report- Brown Street Trail, Meelup Regional Park
Client- Cape Mountain Bikers
DRAFT ONLY
DIRTART
WORLD LEADERS IN TRAILS

1 Document overview

1.1 Summary

Document- Trail Audit Report
Client- *Cape Mountain Bikers/City of Busselton*
Report prepared by- Simon French and Luke Chiu (*Dirt Art*)

1.2 Document control

Version	Name	Date	Notes
Draft V1	Simon French	3rd September 2016	NA
FINAL	Simon French	6th September 2016	NA

1.3 Acknowledgements

Dirt Art wishes to acknowledge the assistance and support of the following agencies/groups into the preparation of this report; *Cape Mountain Bikers,* and the *City of Busselton.*

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DIRTART
WORLD LEADERS IN TRAILS

2 Executive summary

Dirt Art were engaged by the *Cape Mountain Bikers (CMB)* and the *City of Busselton (COB)* to conduct a trail audit and assessment, and develop a detailed works plan for the Meelup Regional Park (MRP), Western Australia. The MRP site houses an extensive trail network, which has been developed by local volunteers over a number of years. The existing trail network provides a fun and engaging range of trail experiences, which is predominantly sustainably designed and constructed. Following many years of informal development and use, the CMB have recently attained formal permission to utilise and manage the trail network for mountain bike use. The purpose of this report is to provide a detailed audit and works plan to assist in the upgrade and formalisation of the existing Brown Street Trail, and to develop detailed plans for a number of new trail links and realignments both within and adjacent to the Brown Street Trail.

The MRP site is located behind the township of Dunsborough, South West Western Australia. The main entry point for the network is located within easy riding distance from the Dunsborough CBD, with evidence of users both riding and driving to the trail network.

The site consists predominantly of rolling hills, with gradual to moderate gradients (<40%). Areas of the site have seen intensive industrial activity in the past, including gravel extraction and refuse/land fill. The target area for this project has seen extensive surface disturbance, including stock piling of rock and topographical modification. The lower south-eastern corner of the target area has evidence of refuse/land fill activity, with shallow and in places non-existent surface capping. The site is typically composed of lateritic soil, with some clay and sandy/silt areas, and some imported soil associated with landfill capping. Local soils have demonstrated reasonable wear characteristics, and have excellent water dispersive properties.

The Trail Audit Report (TAR) process undertaken by *Dirt Art* has been based around the following strategic objectives;

- **Assist the CMB in formalising and enhancing the Brow Street Trail**
- **Provide a safe and sustainable trail network suitable for both recreation and events**
- **Provide a framework and recommendations to empower and facilitate the CMB to assist with ongoing management and development of the trail network**
- **Provide cost-effective, feasible trail concepts and designs, which offer conditions suitable for high-quality trail construction**
- **Develop a suite of trail experiences that offer a genuine point of difference, and an attraction to visiting trail users**
- **Formalise a trail network suitable for a wide variety of events**

In total 3.75 km of trail have been formally audited, which comprises entirely of the Brown Street Trail as it is typically ridden by local users.

In total 3.22 km of new trail sections have been proposed, as both realignments and additions to the current Brown Street Trail. These realignments and additions will be detailed in the accompany report, Construction Plan- Stage One Works, Meelup Mountain Bike Park.

The TAR has proposed a number of trail upgrades, realignments and new trails, along with a number of recommendations regarding future capital expenditure relating to supporting facilities and amenities. The new trails proposed have filled significant gaps in the trail network, while also capitalising on areas that offer conditions conducive to developing high quality trail experiences.

MRP is a good example of a community–developed and managed trail network, which provides an excellent recreational asset for a broad range of trail users. The existing trail network is generally safe and sustainable, though potential exists for a number of trail improvements.

With modest upgrades and a structured formalisation process, the MRP trail network will provide a safe, sustainable and enjoyable network of trails for a broad range of mountain bike riders.

3 Glossary of key terms

Term	Definition
All-mountain	A term describing rugged or adventurous cross country riding, often with a descending focus
Bench	The cut made into a side slope to provide a trail tread/surface
Berm	A banked corner, designed to make for faster and easier corner
Camber	Trail surface side slope angle. Positive camber refers to an in-sloping trail, negative camber refers to an out-sloping trail
CMB	Cape Mountain Bikers
COB	City of Busselton
Double jump	A jump with a defined gap between take off and landing
Drop off	A section of trail which forces or promotes riders to jump or launch off a flat or gradually inclined/declined ramp, which is often a log or rock
Fall line	A term used to describe a trail that is aligned directly down/up the contours of a hill, or on a sustained descent/ascent across the contour of a hill
Flow	A term used loosely to describe the free flowing nature of a trail. Typically flowing trails feature minimal braking and little need for intense pedalling
Flow trail	A trail with a smooth trail tread and a three-dimensional character, including bermed (banked) corners, roller and jumps. This style of trail is typically design to reduce of exclude braking through carefully considered speed prediction.
Grade reversal	A reversing of the gradient/slope of a trail. Grade reversals maintain trail flow while providing a permanent drainage solution
IMBA	The International Mountain Bicycling Association. The world body responsible for trail advocacy and for providing internationally recognised trail difficulty rating systems
MRP	Meelup Regional Park
MTBA	Mountain Bike Australia. Australia's peak governing mountain bike body
Rock garden	A typically uneven rock trail surface
Roller	A domed mound used to improve flow and/or drainage. May be used by riders to either increase or decrease speed
Singletrack	Narrow trail, typically offering a tread less than 900mm in width
TAR	Trail audit report
TDRS	The IMBA trail difficulty rating system for mountain biking
Table top jump	A jump with a flat/in-filled space between take-off and landing
Technical trail	A trail that typically features a rougher, more natural trail surface. Technical trails often have a narrow tread and may feature a number of technical features such as rocks, roots and drop-offs

3.1 Project Methodology

Dirt Art has employed the following methodology in developing this trail audit report;

3.2 Planning and design context

3.2.1 Overview

The development and/or formalisation of any mountain bike trail or facility must be undertaken with an approach that is sensitive and considerate to the natural environment. *Dirt Art* has carefully considered the natural environmental values of the Meelup site in developing this TAR, ensuring minimal disturbance to the natural environment and disruption to other current user groups.

Dirt Art undertakes a comprehensive background analysis during the formation of all trail plans. This background research ensures all relevant past planning and research documents are considered when formulating the final facility plan.

Dirt Art also place a strong emphasis on developing a plan that will target key demographics in both a local and tourist user context. The TAR provided has proposed trails and facilities that will cater for key local demands, and also provide significant points of difference to attract visiting riders. *Dirt Art* have developed the TAR to capitalise on the key attributes of the site, to ensure that the resulting trail developments will provide a wide range of sustainable, high-quality and in-demand mountain biking experiences.

3.2.2 Natural Environment, native flora and fauna

The Meelup site has seen extensive industrial activity in the past, and as such the site houses a mix of both introduced non-native species and pockets of remnant vegetation, which in same areas remains relatively undisturbed. Where possible, trails have been proposed in areas that will result in minimal environmental disturbance and with minimum required vegetation clearance/disturbance.

Any new trails proposed in this plan feature gentle, sustainable gradients, which minimises issues associated with erosion and sediment dispersion, resulting in a greatly reduced environmental impact.

3.2.3 Target demographics

Where possible, *Dirt Art* suggest developing mountain bike facilities to cater for the broadest demographic possible. Providing safe and accessible trails for beginner and lesser skilled riders is equally as important as ensuring that more experienced riders are provided with appropriate challenges and avenues for advanced skill development.

Dirt Art suggests that the MRP facility is best targeted to the full range of mountain bike rider abilities, with a focus on intermediate riders. The relatively generic topography and terrain across much of the site will be more conducive to beginner to intermediate riders, though rock forms in areas of the site and topographical modifications due to industrial activity do provide potential for a more advanced riding experience across sections of the trail.

3.3 Other considerations

The following design considerations have also been employed during the formation of this TAR and accompanying trail designs;

- **Soil type-** The predominant soil type throughout the MRP site is lateritic gravel. The soil has good water dispersive characteristics though can prove friable/fragile on steeper gradients and in areas with poor trail flow.
- **Safe skill progression-** This is achieved through the design of trails that allow riders to 'warm up' on easy trails, with the trails becoming more challenging further through the network. In the case of the Brown Street Trail, all trail features offer a 'ride around' option for less experienced riders.

4 The Meelup Site

4.1 Location

The MRP site is located approximately 1 km from the CBD of Dunsborough, in South West Western Australia. The MRP trail network is accessed via a network of arterial sealed roads and/or cycleways, a short commute from the Dunsborough CBD. The most predominant user group in the area appear to be mountain bike riders, with limited evidence of walkers using the trails audited in this report.

4.2 Quick facts

Site location	Meelup Regional Park, Dunsborough, Western Australia
Soil type/s	Predominantly lateritic gravel-based soils, with silt, sand and clay sections
Predominant geographical features	Rolling hills (20-40% grades). Some topographical modification due to previous industrial activities.
Elevation variation	25m (approx.)
Mean annual rainfall	811mm- Busselton (www.bom.gov.au)
Predominant vegetation types	Native and introduced species
Available amenities	Nil.

4.3 Geology and geomorphology

The geology of MRP site is dominated by lateritic-based soils, with limited bed rock, yet extensive stock piles of large (up to 1000mm+ diameter) laterite boulders. The project area is a fairly uniform landscape of rolling hills, offering small yet useable elevation range. Areas of the site have been extensively modified in the past due to industrial activities such as gravel and soil harvesting and refuse/land fill.

Limited bed-rock forms are available throughout the site, and have generally been utilised to good effect.

General conditions on site are very conducive to high-quality, cost effective trail construction.

5 The current situation

5.1 Overview- Existing Trail Networks

There is a significant network of existing trails in the MRP area, including a number of formal and informal trails. The current trail network has been developed by volunteers, with varying levels of formality/permission. The area also includes a large network of service roads, many of which are valuable to the mountain bike and cyclocross markets. The existing network of trails is generally in a condition that provides for safe, sustainable and enjoyable mountain bike use.

The quality of existing trails is varied, though the majority of trails featuring sound alignments and good trail flow, though some trails are poorly aligned and would benefit from realignment/renewal. Generally speaking, little is required to formalise the existing trails- detailed information regarding required works can be found in the audit summary document attached.

This report has focused on compiling a comprehensive audit of the Brown Street Trail, which is widely considered as the signature trail of the MRP trail network. Brown Street is the longest stand-alone trail in the network, and appear to receive the highest level of use of all mountain bike trails in the park.

A comprehensive overview of rationalisation, upgrade and closure can be found in the accompanying works report document.

5.2 Review of existing trail infrastructure

5.2.1 Overview

The following is an overview of key existing trail opportunities currently available in the study areas, including both formal and informal trails along with both singletrack trails and service roads/vehicle tracks. The following inventory is not an exhaustive list of all trails in the area, and has instead focused on perceived high-value trails, and trails that exhibit high levels of use by mountain bike riders.

Please note; the below provides a summary overview of all audited trails. Detailed audit data is available as digital files.

5.2.2 Methodology

All trails have been assessed in their entirety on foot, via 4WD vehicle and via mountain bike. Trail assessment occurred in May 2016, and was undertaken in dry, hot conditions.

All trails have been assessed against the *IMBA Trail Solutions* Guidelines provided in detail in the publication, *IMBA's Guide to Building Sweet Singletrack.* Quantitative assessment was performed against the *IMBA* guidelines using a range of measuring tools, including a Suunto inclinometer and Garmin Monterra GPS unit.

Trail dynamics and flow have been assessed anecdotally, against the assessors' extensive experience in designing, managing, assessing and constructing over 2,000km of mountain bike trails in Australia.

Trail difficulty grading (TDRS) has been assessed against the IMBA Trail Difficulty Rating System (TDRS) Australian edition (2014). A copy of this system can be found at **appendix 1.**

5.2.3 Overview of ratings system

Criteria	Overview
Value to network rating	Trails have been assigned a rating out of five to assess the trails value to the MRP trail network. A summary of values can be found below; **1. Very limited value to the current trail network**: Closure and rehabilitation is recommended. **2. Limited value to the current trail network**: Closure and rehabilitation may be warranted. **3. Moderate value to the current trail network:** Trail possesses some value to the current network, potential upgrade is worthy of exploration. **4. High value to the current trail network**: The trail is of significant value to the current network and should be retained and potentially upgraded. **5. Very high value to current trail network:** This trail is of the highest importance to the current trail network, providing a high-quality experience and/or a strategically important network connection that is essential to the greater Yackandandah trail network.
Sustainability rating	Trails have been assigned a rating out of five to assess overall trail sustainability. These ratings are assessing the trails as they were found at the time of assessment and may not reflect current trail conditions; **1. Very poor levels of sustainability:** This trail offers very poor sustainability even in the short term. Trail alignments are poor, as is trail construction technique. **2. Poor levels of sustainability:** This trails offers poor sustainability in the short-mid term. Trail alignments and/or construction techniques are not conducive to a sustainable trail. **3. Average levels of sustainability:** This trail offers sub-optimal levels of sustainability, but will offer reasonable levels of mid-longer term sustainability. Some sections are poorly aligned and/or poorly constructed. **4. Good levels of sustainability:** This trail offers good levels of long term sustainability. The trail will require minimal input in the long term. **5. Excellent levels of sustainability:** The trail is aligned and constructed to a best practice standard for the majority of its length. The trail will offer best-case levels of sustainability in the long term.

Criteria	Overview
Ride quality rating	Trails have been assigned a rating out of five to assess the trails ride quality. The below ratings assess general trail experience and trail flow. A summary of values can be found below; **1. Very poor ride quality**: Trail flow/dynamics are very poor as is ride quality and experience. This trail offers a generally very low quality riding experience. **2. Poor ride quality**: Trail flow/dynamics are generally poor, as is ride quality and experience. This trail offers a generally low quality riding experience. **3. Average ride quality:** Trail flow/dynamics are reasonable for the majority of the trail, thus offering an average ride quality. This trail offers some quality riding experiences, but is generally not of a particularly high standard. **4. Good ride quality**: Trail flow/dynamics are generally good, thus offering a predominantly quality riding experience. Some areas offer potential for improvement. **5. Very good ride quality:** Trail flow/dynamics are optimised along the entire trail alignment. This trail offers a very high quality riding experience.
TDRS Grading	Trails have been assessed against the IMBA Australia Trail Difficulty Rating System. A summary of this system can be found at appendix one

5.2.4 Issue severity scale

Priority	Overview
Priority one	Issue should be rectified immediately to ensure rider safety. Trail/s should be closed until issue is addressed. Failure to address the issue may result in a severe risk to user safety and/or sustainability.
Priority two	Issue should be addressed within one month, or prior to an official trail opening. Failure to address the issue poses a moderate safety and/or sustainability risk.
Priority three	Issue is noted as a recommendation only, and should be addressed in due course to ensure optimal trail quality, rider safety and sustainability. Failure to address the issue will not have significant effects on safety or sustainability.

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5.2.5 Map- All Trails

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Trail Audit Report – Meelup Regional Park

5.2.6 Audit data- target area trails overview

5.2.6.1 Trail One- Brown Street

Trail Number	Trail name	Value to network	Sustainability score	Ride quality score	TDRS grading	Distance (km)
1	Brown Street	5	3.5	3.5	Blue Square	3.75

Notes
Brown Street is the key cross-country mountain bike loop in the target area. 3.75km trail weaves through a relatively small area, and features numerous undulating trail sections. The current trail does not feature sustained climbs and descents, which is a key focus of proposed enhancements to the trail. Generally speaking the trail features a sustainable alignment and quality construction methodology. The trail does feature some fall line sections, and a number of low/wet areas across traversing sections. The trail has excellent upgrade potential, and will form a valuable component of the formalised mountain bike trail network in the Meelup Mountain Bike Park.

Waypoint	Issue	Suggested works	Severity
201	Steeper climbing section- potential for installation of a technical, rock climb	Install technical rock features including, rock stairs and rough paving	
203	Potential to extend descent to create more sustained descending	Extend descent- see works report	
209	Low/wet area	Re-profile trail to install out slope drainage	
210	Low/wet area	Re-profile trail to install out slope drainage	
211	Low/wet area	Re-profile trail to install out slope drainage	
212	Fall line trail section	Install rolling grade reversals and/or complete minor realignment	
213	Log roll over feature	Replace timber with rock to establish permanent, safe structure	
216	Short steep section of trail showing signs of erosions	Rock armour trail section (6m approx.). Potential to install small optional rock drop off feature	
218	Small berms (x 2) are inadequate for corner entry speed	Rebuild two berms to minimum 600mm in height (1000mm target height). In situ soil and materials are available	

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Waypoint	Issue/s	Suggested works	Severity
219	Small berm is inadequate for corner entry speed	Rebuild berm to minimum 600mm in height (1000mm target height). In situ soil and materials are available	
220	Low/wet area	Re-profile trail to install out slope drainage	
221	1. Fall line trail section 2. Low/wet area	1. Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.) 2. Re-profile trail to install out slope drainage	
222	Small berm is inadequate for corner entry speed. Timber in berm structure	Rebuild berm to minimum 600mm in height (1000mm target height), removing timber from berm structure. In situ soil and materials are available	
223	Low/wet area	Re-profile trail to install out slope drainage	
224	Timber drop/jump	Replace timber drop/jump with rock	
225	1. Timber drop/jump 2. Fall line trail section	1. Replace timber drop/jump with rock 2. Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	
226	Low/wet area with fragile soils	Install 10m (approx.) of rock armouring	
227	Low/wet area- large	Re-profile trail to install out slope drainage. Install 8m (approx.) of rock armouring	
228	Very minimal separation between trail and adjacent trail section	Realign trail to the L (east) a minimum of 5m	
229	Low/wet area with fragile soils	Install 6m (approx.) of rock armouring	
230	Sandy/friable soils and issues with drainage	Install 30m (approx.) of lift and tilt style trail	
231	1. Moderately steep fall line section 2. Small berm is inadequate for corner entry speed	1. Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.) 2. Rebuild berm to minimum 600mm in height (1000mm target height). In situ soil and materials are available	
232	1. Fall line section with surface damage and friable soils 2. Small drop off moderately eroded	1. Re-profile trails surface adding grade reversals. Rock armour 15m trail section (approx.) 2. Repair drop off by installing rock drop. Install 6m (approx.) of rock armouring	

Waypoint	Issue/s	Suggested works	Severity
234	Moderately steep fall line section	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	
235	Dip in trail requires rock armouring on entry and exit. Low has surface damage.	Rock armouring 10m (approx.) and re-profile low point.	
236	Fall line trail section with trail surface damage	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (8m approx.)	
237	Low/wet area	Re-profile trail to install out slope drainage	
238	Low/wet area	Re-profile trail to install out slope drainage	
239	Moderately steep fall line section	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	
240	1. Fall line trail section with trail surface damage 2. Small berm is inadequate for corner entry speed	1. Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (8m approx.) 2. Rebuild berm to minimum 600mm in height (1000mm target height). Insitu soil and materials are available	
241	Potential for installation of optional rock technical feature	Install two-line optional rock trail feature offering moderate and difficult difficulty levels	
242	Timber roll over feature	Replace timber roll over with rock	
243	Moderately steep fall line section	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	
244	1. Small berm is inadequate for corner entry speed 2. Drainage measures required at berm entry	1. Rebuild berm to minimum 600mm in height (1000mm target height). Insitu soil and materials are available 2. Install grade reversal with 3m rock armouring	
245	Moderately steep fall line section	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	
246	1. Moderately steep fall line section 2. Low lying wet area with friable soil	1. Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.) 2. Install 30m of lift and tilt trail with 8m (approx.) of rock armouring	

Waypoint	Issue/s	Suggested Works	Severity
247	1. Steep up slope with noted erosion at entry and up slope 2. Timber roll down feature- potential to retain noting longevity concerns	1. Install 4m rock armouring 2. Potential to retain feature and stabilise, or replace with rock	
248	Moderately steep fall line section	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	
249	Small berms are inadequate for corner entry speed	Rebuild berm to minimum 600mm in height (1000mm target height). In situ soil and materials are available	
250	Moderately steep fall line section	Install rolling grade reversals and/or complete minor realignment. Install short section of rock armouring (6m approx.)	

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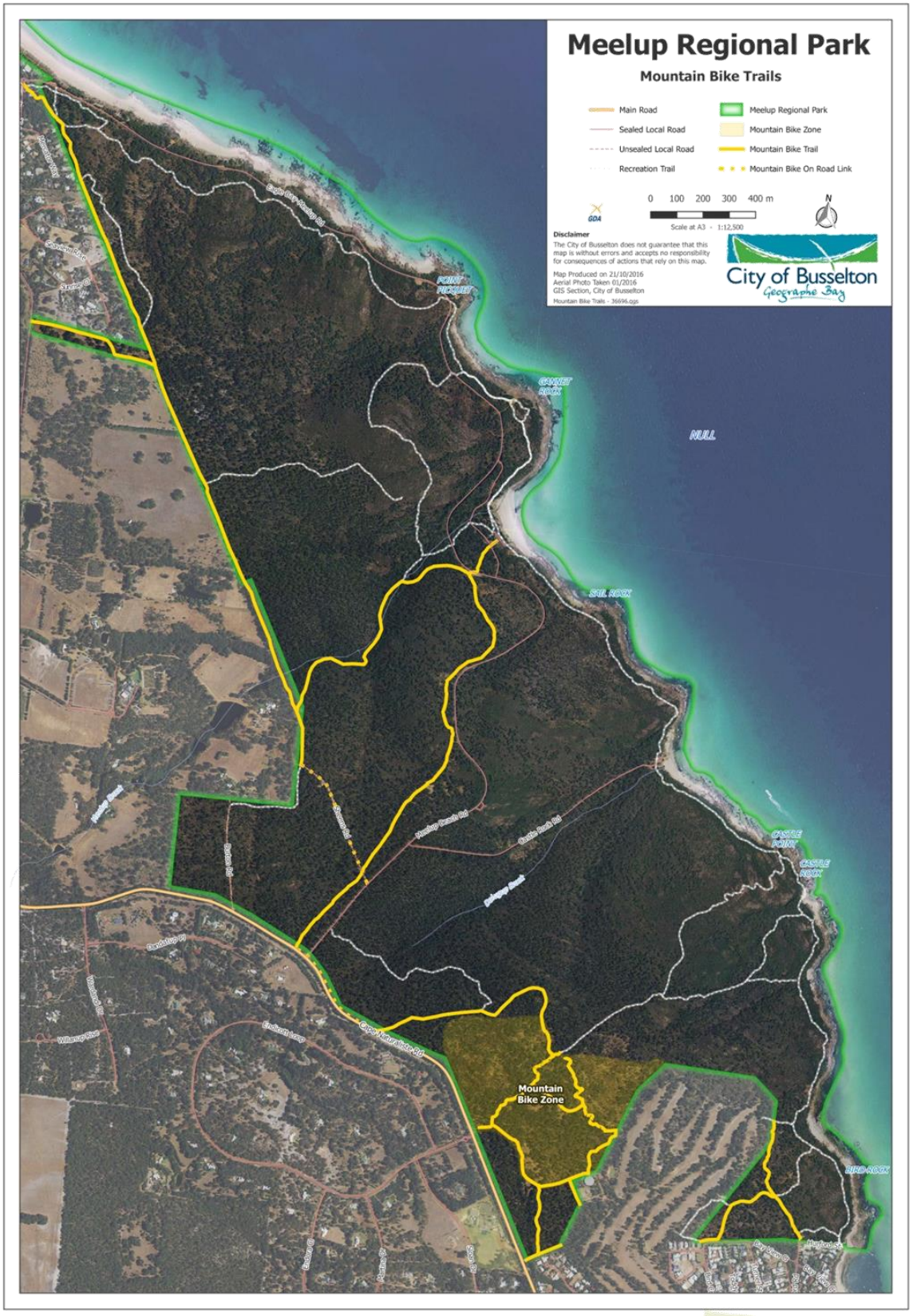
6 Conclusion

The Brown Street Trail is a highly popular trail, which has evolved over several years through the efforts of local volunteers. The trail currently provides a good quality riding experience through mostly sustainable trail alignments. Significant potential existing to markedly improve the ride quality and sustainability of the trail, through the completion of generally minor on trail works and realignments. The focus of this auditing process has been to address current issues of ride dynamics and sustainability on the existing Brown Street Trail, as well as proposing a number of realignments to improve the trails functionality. These realignments have been detailed in the separate Works Plan for the project.

This document provides a clear pathway to make significant improvements to the Brown Street Trail, improving the trails functionality, ride dynamics and sustainability. The net result will be a vastly improved riding experience for a broader market of riders, as well as significant improvements to the trails sustainability.


Meelup Regional Park
Mountain Bike Trails
Main Road
Sealed Local Road
Unsealed Local Road
Recreation Trail
Meelup Regional Park
Mountain Bike Zone
Mountain Bike Trail
Mountain Bike On Road Link
0 100 200 300 400 m
Scale at A3 - 1:12,500
GDA
N
Disclaimer
The City of Busselton does not guarantee that this map is without errors and accepts no responsibility for consequences of actions that rely on this map.
Map Produced on 21/10/2016
Aerial Photo Taken 01/2016
GIS Section, City of Busselton
Mountain Bike Trails - 36696.qgs
City of Busselton
Geographe Bay
POINT PICKLET
CANNET ROCK
HULL
SAIL ROCK
CASTLE POINT
CASTLE ROCK
BIRD ROCK
Mountain Bike Zone

7. GENERAL DISCUSSION ITEMS

8. NEXT MEETING DATE

To be advised.

9. CLOSURE