

Council Agenda

24 February 2021

ALL INFORMATION AVAILABLE IN VARIOUS FORMATS ON REQUEST

city@busselton.wa.gov.au

CITY OF BUSSELTON

MEETING NOTICE AND AGENDA – 24 FEBRUARY 2021

TO: THE MAYOR AND COUNCILLORS

NOTICE is given that a meeting of the Council will be held in the Council Chambers, Administration Building, Southern Drive, Busselton on Wednesday, 24 February 2021, commencing at 5.30pm.

Your attendance is respectfully requested.

DISCLAIMER

Statements or decisions made at Council meetings or briefings should not be relied on (or acted upon) by an applicant or any other person or entity until subsequent written notification has been given by or received from the City of Busselton. Without derogating from the generality of the above, approval of planning applications and building permits and acceptance of tenders and quotations will only become effective once written notice to that effect has been given to relevant parties. The City of Busselton expressly disclaims any liability for any loss arising from any person or body relying on any statement or decision made during a Council meeting or briefing.

MIKE ARCHER

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CHIEF EXECUTIVE OFFICER

12 February 2021

CITY OF BUSSELTON

AGENDA FOR THE COUNCIL MEETING TO BE HELD ON 24 FEBRUARY 2021

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1. <u>DECLARATION OF OPENING, ACKNOWLEDGEMENT OF COUNTRY AND ANNOUNCEMENT OF VISITORS</u>

2. <u>ATTENDANCE</u>

Apologies

Approved Leave of Absence

Nil

3. PRAYER

4. APPLICATION FOR LEAVE OF ABSENCE

An application for Leave of Absence for the Ordinary Council Meeting on 10 March 2021 has been received from Cr Kate Cox.

An application for Leave of Absence for the Ordinary Council Meeting on 9 June 2021 has been received from Cr Sue Riccelli.

5. **DISCLOSURE OF INTERESTS**

6. ANNOUNCEMENTS WITHOUT DISCUSSION

Announcements by the Presiding Member

7. QUESTION TIME FOR PUBLIC

Response to Previous Questions Taken on Notice

Public Question Time For Public

8. CONFIRMATION AND RECEIPT OF MINUTES

Previous Council Meetings

8.1 <u>Minutes of the Council Meeting held 10 February 2021</u>

RECOMMENDATION

That the Minutes of the Council Meeting held 10 February 2021 be confirmed as a true and correct record.

Committee Meetings

8.2 <u>Minutes of the Airport Advisory Committee Meeting held 3 February 2021</u>

RECOMMENDATION

That the Minutes of the Airport Advisory Committee Meeting held 3 February 2021 be noted.

8.3 <u>Minutes of the Finance Committee Meeting held 10 February 2021</u>

RECOMMENDATION

That the Minutes of the Finance Committee Meeting held 10 February 2021 be noted.

9. RECEIVING OF PETITIONS, PRESENTATIONS AND DEPUTATIONS

Petitions

Presentations

Deputations

- 10. QUESTIONS BY MEMBERS OF WHICH DUE NOTICE HAS BEEN GIVEN (WITHOUT DISCUSSION)
- 11. ITEMS BROUGHT FORWARD FOR THE CONVENIENCE OF THOSE IN THE PUBLIC GALLERY

12. REPORTS OF COMMITTEE

12.1 Finance Committee - 10/2/2021 - LIST OF PAYMENTS MADE - DECEMBER 2020

STRATEGIC GOAL 6. LEADERSHIP Visionary, collaborative, accountable

STRATEGIC OBJECTIVE 6.1 Governance systems, process and practices are responsible,

ethical and transparent.

SUBJECT INDEX Financial Operations **BUSINESS UNIT** Financial Services

REPORTING OFFICER Manager Financial Services - Paul Sheridan

AUTHORISING OFFICER Director Finance and Corporate Services - Tony Nottle

NATURE OF DECISION Noting: The item is simply for information purposes and noting

VOTING REQUIREMENT Simple Majority

ATTACHMENTS Attachment A List of Payments December 2020 4

This item was considered by the Finance Committee at its meeting on 10/2/2021, the recommendations from which have been included in this report.

COMMITTEE RECOMMENDATION AND OFFICER RECOMMENDATION

That the Council notes payment of voucher numbers M118429 – M118512, EF076011 – EF076678, T7538 – T7540, DD004349 – DD004366, together totalling \$8,476,900.45.

EXECUTIVE SUMMARY

This report provides details of payments made from the City's bank accounts for the month of December 2020, for noting by the Council and recording in the Council Minutes.

BACKGROUND

The Local Government (Financial Management) Regulations 1996 (the Regulations) requires that, when the Council has delegated authority to the Chief Executive Officer to make payments from the City's bank accounts, a list of payments made is prepared each month for presentation to, and noting by, the Council.

OFFICER COMMENT

In accordance with regular custom, the list of payments made for the month of December 2020 is presented for information.

Statutory Environment

Section 6.10 of the *Local Government Act 1995* and more specifically Regulation 13 of the Regulations refer to the requirement for a listing of payments made each month to be presented to the Council.

Relevant Plans and Policies

There are no relevant plans or policies to consider in relation to this matter.

Financial Implications

There are no financial implications associated with the officer recommendation.

Stakeholder Consultation

No external stakeholder consultation was required or undertaken in relation to this matter.

Risk Assessment

An assessment of the potential implications of implementing the officer recommendation has been undertaken using the City's risk management framework, with risks assessed taking into account any controls already in place. No risks of a medium or greater level have been identified.

Options

Not applicable.

CONCLUSION

The list of payments made for the month of December 2020 is presented for information.

TIMELINE FOR IMPLEMENTATION OF OFFICER RECOMMENDATION

Not applicable.

12.1



MUNICIPAL ACCOUNT	CHEQUE # 118429 - 118512	\$	108,967.55
ELECTRONIC TRANSFER PAYMENTS	EF076011 - EF076677	\$	5,805,179.64
TRUST ACCOUNT	TRUST ACCOUNT # 7538 - 7540	\$	50,936.96
INTERNAL PAYMENT VOUCHERS	DD4349 - 4367	\$	97,345.24
PAYROLL PAYMENTS	01.12.20 - 31.12.20	\$	2,414,471.06
		c	8 476 900 45

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1012/2002 13800 36801	AMOUNT				
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1312/2002 13360 13600	300.00				
11/17/2002 11-1864 METT CARRE METT C	750.00				
11/12/2002 11/12/20 11/12/2	750.00				
1917/2002 13497	201.80				
1912/1909 131644 C4 PIETER/RODO	750.00				
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19/27/2003 138470	235.70				
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1912/2009 13840 GENORIO JAMES & MATA ROCKES REFLIXO OF RATIO CONTRIVATION 5 1	129.30				
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1312/2002 1316/7 GRAMM STEWART & YOUNG CLEAL REPUND OF RATE OVERSWARDT \$	300.00 750.00				
1912/2002 114449 GREGORY LEWIS CONSCIONED STREAM OF STREAM	750.00 750.00				
1912/2002 13164.0 HINR & CAMMERTE GALD CORP.					
1912/2002 118488 MAR & RAFRENNISTON	443.50				
1112/12/2002 131444 JUN PRACES CONSISTENT SATERATION SEPLING OF PART	733.39				
1912/2002 11849	813.47				
11/12/2002 118475 JAMES MACKENDE	256.00				
11/12/2002 118457 JANNE BROWN	795.76				
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\$11/1/2/200	124.98				
1311/12/2020 138466	415.45				
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131/27/2020 138409	750.00				
11/12/2020	174.70				
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11/12/2020	167.90				
412/2020 118499 5T MARY MACKULOP COLLEGE DONATION - ASSIST GRADUATION & AWARDS 5 14/12/2020 118501 ST MARY SCOMMUNITY CARE DONATION - ASSIST GRADUATION & AWARDS 5 14/12/2020 118501 ST MARY SCOMMUNITY CARE DONATION - ASSIST CHRISTMAS DAY LIDICH 5 14/12/2020 118451 ST LUART WILLS REFUND OF PART OVERFAMMENT 5 14/12/2020 118455 TILSTRA CORPORATION COMMUNICATION SERVICES 5 14/12/2020 118495 VERA & LONGHURST REFUND OF PART OVERFAMMENT 5 14/12/2020 118495 WAS TRATA MANAGEMENT STRATA LEVY PES & WATER CONSUMPTION 5 14/12/2020 118509 WAS STRATA MANAGEMENT STRATA LEVY PES & WATER CONSUMPTION 5 14/12/2020 118509 WAS TRATA MANAGEMENT STRATA LEVY PES & WATER CONSUMPTION 5 14/12/2020 118509 WATER COMPORATION WATER SERVICES S 14/12/2020 118509 WATER COMPORATION WATER SERVICES 5 14/12/2020 118509 WATER COMPORATION WATER SERVICES 5 15 WATER COMPORATION WATER SERVICES 5 15 WATER SERVICES S 16 WATER SERVICES S 16 WATER SERVICES S 17 WATER SERVICES S 17 WATER SERVICES S 17 WATER SERVICES S 18 WATER S	793.89				
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8/12/2020 118436 WATER CORPORATION WATER SERVICES \$ 24/12/2020 118506 WATER CORPORATION WATER SERVICES \$	407.07 867.75				
24/12/2020 118506 WATER CORPORATION WATER SERVICES \$					
	61.20				
11/12/2020 118438 WOODTURNERS ASSOCIATION OF WA REFUND OF HALL & KEY DEPOSITS \$	7,517.28				
	200.00				
\$	108,967.55				

	EFT PAYMENTS DECEMBER 2020						
DATE	REF#	NAME	DESCRIPTION		AMOUNT		
23/12/2020	76462	3E CONSULTING ENGINEERS PTY LTD	CONSULTANCY SERVICES	\$	880.00		
12/12/2020	76083	A1 BOBCATS BUSSELTON	EARTHWORK SERVICES	\$	1,644.50		
12/12/2020	76147	AAA WELDING AND FABRICATION SERVICES	WELDING AND FABRICATION SERVICES	\$	495.00		
17/12/2020	76340	AAA WELDING AND FABRICATION SERVICES	WELDING AND FABRICATION SERVICES	\$	913.00		
23/12/2020	76468	ABBEY TILING SERVICE	TILING SERVICES	5	4,988.50		

23/12/2020	76507 76183	ABEC ENVIRONMENTAL CONSULTING PTY LTD AC FORSTER & SON	ENVIRONMENTAL CONSULTING PLUMBING SERVICES	\$ 12,760.00 \$ 1,239.50
17/12/2020	76372	AC FORSTER & SON	PLUMBING SERVICES PLUMBING SERVICES	\$ 1,239.50 \$ 119.00
23/12/2020	76509	ACCENDO AUSTRALIA PTYLTD	ENVIRONMENTAL SERVICES	\$ 2,283.60
12/12/2020	76205 76391	ACTIV FOUNDATION INC ACTIV FOUNDATION INC	MAINTENANCE SERVICES MAINTENANCE SERVICES	\$ 2,719.20 \$ 25,747.43
23/12/2020		ACTIV FOUNDATION INC	MAINTENANCE SERVICES	\$ 254.01
23/12/2020	76469	ACURIX NETWORKS	INTERNET WIFI ACCESS	\$ 3,330.80
23/12/2020 12/12/2020	76539 76101	ADVAM PTY LTD ADVANCED SEALING TRUST	AIRPORT CARPARK CREDIT CARD TRANSACTIONS MAINTENANCE SERVICES	\$ 349.54 \$ 6,732.20
17/12/2020	76311	ADVANCED SEALING TRUST	MAINTENANCE SERVICES	\$ 4,237.31
12/12/2020	76111	ADVISIAN PTY LTD AERODROME MANAGEMENT SERVICES PTY LTD	ENGINEERING SERVICES AIR SERVICES	\$ 24,157.10 \$ 99.00
23/12/2020		ALASTAIR TAYLOR	ART SALES	\$ 99.00 \$ 21.00
12/12/2020	76082	ALINTA ENERGY	GAS/ELECTRICITY SUPPLY SERVICES	\$ 25.35
23/12/2020	76505 76630	ALINTA ENERGY ALISON BROWN	GAS/ELECTRICITY SUPPLY SERVICES ART SALES	\$ 73.00 \$ 29.40
23/12/2020		ALISON BURTON	ART SALES	\$ 42.00
24/12/2020	76653	ALLEN R COOPER	CONSULTANCY SERVICES	\$ 1,020.00
23/12/2020		ALLUVIUM CONSULTING PTY LTD ALPHA PEST ANIMAL SOLUTIONS	CONSULTING SERVICES FOX BAITING	\$ 4,705.80 \$ 15,402.20
12/12/2020	76110	ALPINE LAUNDRY PTY LTD	COMMERCIAL LAUNDRY	\$ 34.07
12/12/2020	76160	AMGROW AUSTRALIA PTY LTD	NURSERY SERVICES	\$ 522.50
17/12/2020	76289 76044	ANGELA GRIFFIN ANNA FOLEY	STAFF REIMBURSEMENT WELLNESS SERVICES	\$ 205.80 \$ 100.00
17/12/2020	76415	ANNIE PALMER	ANIMAL REGISTRATION REFUND	\$ 150.00
12/12/2020		ARBOR GUY	TREE MAINTENANCE SERVICES	\$ 33,163.61
23/12/2020	76268 76459	ARBOR GUY ARBOR GUY	TREE MAINTENANCE SERVICES TREE MAINTENANCE SERVICES	\$ 14,176.86 \$ 6,642.64
23/12/2020	76510	ARM SECURITY SYSTEMS	SECURITY SYSTEMS SUPPLY AND MONITERING	\$ 1,415.70
12/12/2020	76174 76253	ARROW BRONZE ASCENT ENGINEERING PTY LTD	MEMORIAL PLAQUES SUPPLIER ENGINEERING SERVICES	\$ 1,030.31 \$ 1,650.00
17/12/2020	76431	ASCENT ENGINEERING PTY LTD	ENGINEERING SERVICES	\$ 16,337.75
12/12/2020		ATLAS LINEN SERVICES	RENTAL LINEN	\$ 561.39
17/12/2020	76341 76332	ATLAS LINEN SERVICES AUSSIE BROADBAND PTY LTD	RENTAL LINEN NBN BROADBAND	\$ 26.62 \$ 2,345.30
23/12/2020	76636	AUSTRALIA DAY COUNCIL OF WESTERN AUSTRALIA	MEMBERSHIP	\$ 98.85
23/12/2020 3/12/2020		AUSTRALIAN LIBRARY AND INFORMATION ASSOCIATION AUSTRALIAN SERVICES UNION	LIBRARY RESOURCES UNION FEES	\$ 885.00 \$ 25.90
17/12/2020	76439	AUSTRALIAN SERVICES UNION	UNION FEES	\$ 25.90
31/12/2020		AUSTRALIAN SERVICES UNION	UNION FEES	\$ 25.90
3/12/2020 17/12/2020	76015 76438	AUSTRALIAN TAXATION OFFICE AUSTRALIAN TAXATION OFFICE	PAYG TAXATION PAYG TAXATION	\$ 235,956.00 \$ 226,174.00
31/12/2020	76672	AUSTRALIAN TAXATION OFFICE	PAYG TAXATION	\$ 226,006.00
12/12/2020		AUTO ONE AUTO ONE	PLANT PURCHASES / SERVICES / PARTS PLANT PURCHASES / SERVICES / PARTS	\$ 3,547.80 \$ 1,626.97
12/12/2020	76138	AV TRUCK SERVICES PTY LTD	VEHICLE PARTS & MAINTENANCE	\$ 3,882.18
12/12/2020	76227	AVIS SOUTHWEST RENTALS	VEHICLE RENTAL SERVICES	\$ 1,777.14
17/12/2020	76412 76054	AVIS SOUTHWEST RENTALS AZILITY	VEHICLE RENTAL SERVICES IT SOFTWARE	\$ 2,271.31 \$ 988.90
12/12/2020	76208	B & B STREET SWEEPING	STREET SWEEPING SERVICE	\$ 32,579.99
17/12/2020 23/12/2020		B & B STREET SWEEPING B & B STREET SWEEPING	STREET SWEEPING SERVICE STREET SWEEPING SERVICE	\$ 22,654.11 \$ 1,224.62
12/12/2020	76187	B & J CATALANO PTY LTD	GRAVEL CRUSHING	\$ 19,936.39
23/12/2020		BARBARA WEEKS	ART SALES	\$ 152.10
21/12/2020 12/12/2020	76279 76076	BARK ENVIRONMENTAL BARRY ALLEN ELECTRICAL SERVICES PTY LTD	PAYMENT CANCELLED ELECTRICAL SERVICES	\$ - \$ 4,599.54
17/12/2020	76298	BARRY ALLEN ELECTRICAL SERVICES PTY LTD	ELECTRICAL SERVICES	\$ 21,345.17
23/12/2020	76502	BARRY ALLEN ELECTRICAL SERVICES PTY LTD	ELECTRICAL SERVICES	\$ 4,083.75
12/12/2020	76081 76062	BATTERY WORLD BUNBURY BCP CIVIL & PLANT	BATTERIES EXCAVATOR & PLANT HIRE	\$ 374.00 \$ 17,939.86
17/12/2020		BEACHBOROUGH PTY LTD	ROAD BUILDING AGGREGATE	\$ 1,279.52
17/12/2020	76430 76106	BEACHSIDE BUILDING & MAINTENANCE BELLROCK CLEANING SERVICES PTY LTD	MAINTENANCE SERVICES CLEANING SERVICES	\$ 342.00 \$ 192.50
17/12/2020	76313	BELLROCK CLEANING SERVICES PTY LTD	CLEANING SERVICES	\$ 56,571.66
23/12/2020		BELLROCK CLEANING SERVICES PTY LTD	CLEANING SERVICES	\$ 1,782.00
17/12/2020	76345 76215	BEN KING BENARA NURSERY	SKATEPARK CONSULTATION NURSERY SUPPLIES	\$ 4,999.50 \$ 267.30
12/12/2020		BENT LOGIC	MEMBERSHIP CARDS	\$ 2,337.50
12/12/2020 23/12/2020	76025 76637	BEYOND SAFETY BG & E PTY LTD	PROTECTIVE CLOTHING SUPPLIER CONSULTANCY SERVICES	\$ 247.50 \$ 16,044.00
11/12/2020	76079	BIG BEN BUILDERS PTY LTD	PAYMENT CANCELLED	\$ -
17/12/2020		BIO SOIL SOLUTIONS	LIQUID SOIL SOLUTIONS	\$ 770.00
23/12/2020	76390 76504	BLUEWATER PRINT	FLEET CONSUMABLES & MAINTENANCE PARTS PRINTED MATERIALS	\$ 630.56 \$ 660.00
12/12/2020	76179	BOC GASES AUSTRALIA LTD	GAS SERVICES	\$ 376.99
17/12/2020 23/12/2020	76370 76590	BOC GASES AUSTRALIA LTD BOC GASES AUSTRALIA LTD	GAS SERVICES GAS SERVICES	\$ 176.00 \$ 746.24
17/12/2020	76346	BRETT TITTERTON ELECTRICAL AND AIR CONDITIONING	ELECTRICAL SERVICES	\$ 137.50
23/12/2020	76571	BRETT TITTERTON ELECTRICAL AND AIR CONDITIONING	ELECTRICAL SERVICES	\$ 428.40
12/12/2020 23/12/2020	76140 76553	BRIAN EDWARD INGRAM BRIAN EDWARD INGRAM	CARPENTRY SERVICES CARPENTRY SERVICES	\$ 2,279.87 \$ 1,400.00
12/12/2020	76041	BRIDGESTONE	TYRE SERVICES	\$ 80.30
7/12/2020		BRIDGESTONE BROADWATER BRICK PAVING	TYRE SERVICES PAVING SERVICES	\$ 1,296.90 \$ 45,000.00
23/12/2020	76644	BROADWATER BRICK PAVING	PAVING SERVICES PAVING SERVICES	\$ 6,678.00
12/12/2020	76061	BROADWATER MEDICAL CENTRE	MEDICAL SERVICES	\$ 549.50
23/12/2020	76286 76486	BROADWATER MEDICAL CENTRE BROADWATER MEDICAL CENTRE	MEDICAL SERVICES MEDICAL SERVICES	\$ 1,582.50 \$ 323.00
24/12/2020	76651	BROADWATER MEDICAL CENTRE	MEDICAL SERVICES	\$ 60.00
23/12/2020		BRUCE & HELEN ROCKLEY BSA ADVANCED PROPERTY SOLUTIONS	BJTP REFUND AIR CONDITIONING SERVICES	\$ 62.00 \$ 3,144.35
12/12/2020	76236 76421	BSA ADVANCED PROPERTY SOLUTIONS BSA ADVANCED PROPERTY SOLUTIONS	AIR CONDITIONING SERVICES AIR CONDITIONING SERVICES	\$ 3,144.35 \$ 1,886.50
23/12/2020	76633	BSA ADVANCED PROPERTY SOLUTIONS	AIR CONDITIONING SERVICES	\$ 942.26
12/12/2020	76212 76398	BSEWA BSEWA	ELECTRICAL SERVICES ELECTRICAL SERVICES	\$ 1,707.23 \$ 7,609.76
23/12/2020	76614	BSEWA	ELECTRICAL SERVICES	\$ 10,352.54
12/12/2020		BUCHER MUNICIPAL PTY LTD BLICHER MUNICIPAL PTY LTD	ENGINEERING - PLANT SPARES & SERVICING ENGINEERING - PLANT SPARES & SERVICING	\$ 512.41 \$ 814.90
12/12/2020	76225	BUNBURY HIAB AND TILTRAY (HOTMAC GOLD PTY LTD T/AS)	TILT TRAY SERVICES	\$ 863.50
12/12/2020	76214	BUNNINGS BUILDING SUPPLIES	HARDWARE SUPPLIES	\$ 2,907.79
23/12/2020	76400 76616	BUNNINGS BUILDING SUPPLIES BUNNINGS BUILDING SUPPLIES	HARDWARE SUPPLIES HARDWARE SUPPLIES	\$ 144.52 \$ 1,125.79
23/12/2020	76558	BURNT ENDS SMOKING CO	CATERING	\$ 6,000.00
12/12/2020		BUSSELTON AGRICULTURAL SERVICES (WA) PTY LTD BUSSELTON ALLSPORTS INC T/A BUSSELTON JETTY SWIM	RURAL SUPPLIES JETTY SWIM - SPONSORSHIP	\$ 2,347.60
23/12/2020	76463 76470	BUSSELTON ALLSPORTS INC T/A BUSSELTON JETTY SWIM BUSSELTON BEARING SERVICES	JETTY SWIM - SPONSORSHIP BEARING SUPPLIES	\$ 19,250.00 \$ 1,365.54
23/12/2020	76617	BUSSELTON BITUMEN SERVICE	EARTHMOVING SERVICES	\$ 605.00
17/12/2020 23/12/2020	76394 76645	BUSSELTON BUILDING PRODUCTS BUSSELTON CROQUET CLUB INC	BUILDING PRODUCT SUPPLIER COMMUNITY BID	\$ 344.45 \$ 10,000.00
17/12/2020	76335	BUSSELTON DUNSBOROUGH MAIL	ADVERTISING SERVICES	\$ 1,008.65
23/12/2020		BUSSELTON DUNSBOROUGH MAIL	ADVERTISING SERVICES	\$ 2,897.52
23/12/2020	76395 76624	BUSSELTON FLORIST BUSSELTON HISTORICAL SOCIETY	FLOWERS AND GIFTS BSN JETTY BOOK SUPPLIER	\$ 100.00 \$ 7,164.00
17/12/2020	76408	BUSSELTON HOCKEY ASSOCIATION INCORPORATED	COMMUNITY BIDS	\$ 875.00
12/12/2020		BUSSELTON KART CLUB BUSSELTON LOCKSMITH	MINOR GRANT SECURITY SUPPLIES	\$ 7,592.00 \$ 195.25
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23/12/2020	76583	BUSSELTON MASTERS SWIMMING CLUB INC	SPORTS GRANT	\$ 2,000.00
17/12/2020	76314 76199	BUSSELTON MEDICAL PRACTICE BUSSELTON MOTORS (MITSUBISHI/MAZDA)	MEDICAL SERVICES VEHICLE PURCHASES / SERVICES / PARTS	\$ 1,741.30 \$ 865.00
17/12/2020		BUSSELTON MOTORS (MITSUBISHI/MAZDA)	VEHICLE PURCHASES / SERVICES / PARTS	\$ 438.61
23/12/2020	76610	BUSSELTON MULTI SERVICE	ENGRAVING SERVICES	\$ 22.00
12/12/2020		BUSSELTON PEST & WEED CONTROL	PEST CONTROL SERVICES	\$ 40,106.53
17/12/2020	76406 76216	BUSSELTON PRINT IT BUSSELTON REFRIGERATION & AIRCONDITIONING	PRINTING SERVICES REFRIGERATION/AIR CONDITIONING SERVICES	\$ 980.00 \$ 737.00
23/12/2020	76618	BUSSELTON REFRIGERATION & AIRCONDITIONING	REFRIGERATION/AIR CONDITIONING SERVICES	\$ 1,111.00
23/12/2020	76518	BUSSELTON REWINDS	PLANT PURCHASES/SERVICES / PARTS	\$ 750.75
23/12/2020		BUSSELTON TELEPHONES & TECHNOLOGY	COMMUNICATION SERVICES	\$ 129.00
12/12/2020	76177 76367	BUSSELTON TOYOTA BUSSELTON TOYOTA	VEHICLE PURCHASES / SERVICES / PARTS VEHICLE PURCHASES / SERVICES / PARTS	\$ 116,934.28 \$ 334.96
23/12/2020		BUSSELTON TROTTING CLUB INC	STABLE RE-BUILD FUNDING	\$ 11,000.00
12/12/2020	76204	BUSSELTON UPHOLSTERERS	UPHOLSTERY SERVICES	\$ 1,329.90
12/12/2020	76178	BUSSELTON WATER	WATER SERVICES	\$ 6,407.30
17/12/2020	76368 76223	BUSSELTON WATER BUSSELTON WELDING SERVICES	WATER SERVICES WELDING SERVICES	\$ 21,183.77 \$ 3,564.00
23/12/2020	76627	BUSSELTON WELDING SERVICES	WELDING SERVICES	\$ 5,307.50
17/12/2020		CAMPBELLS	GLC KIOSK PURCHASES	\$ 500.68
12/12/2020		CAPE CELLARS BUSSELTON	REFRESHMENTS REFRESHMENTS	\$ 830.80
17/12/2020	76336 76112	CAPE CELLARS BUSSELTON CAPE CONTAINERS	STORAGE AND EQUIPMENT HIRE	\$ 62.50 \$ 517.00
17/12/2020	76432	CAPE DRYCLEANERS	LINEN CLEANING SERVICES	\$ 119.70
12/12/2020	76245	CAPE RURAL CONTRACTING	FIRE CONTROL SERVICES	\$ 9,394.00
4/01/2021 17/12/2020	76646 76411	CARRONE BROS PTY LTD	PAYMENT CANCELLED LIMESTONE SUPPLIES / CARTAGE SERVICES	\$ 440.00
17/12/2020	70.22	CARDNO (WA) PTY LTD	CONSULTANCY SERVICES	\$ 8,547.00
17/12/2020	76359	CARIE ALTINTAS	BOND REFUND	\$ 100.00
23/12/2020	76566	CAROL MULHEARN	ART SALES	\$ 262.50
23/12/2020 12/12/2020	76519 76127	CAROLYN RYDER CB TRAFFIC SOLUTIONS PTY LTD	STAFF REIMBURSEMENT TRAFFIC MANAGEMENT SERVICES	\$ 84.30 \$ 10,790.68
17/12/2020	76327	CB TRAFFIC SOLUTIONS PTY LTD	TRAFFIC MANAGEMENT SERVICES	\$ 5,273.01
23/12/2020	76544	CB TRAFFIC SOLUTIONS PTY LTD	TRAFFIC MANAGEMENT SERVICES	\$ 7,434.50
24/12/2020 17/12/2020	76656 76358	CB TRAFFIC SOLUTIONS PTY LTD CHARLES MITCHELL	TRAFFIC MANAGEMENT SERVICES BJTP REFUND	\$ 13,130.05 \$ 170.00
17/12/2020	76358 76347	CHARLES MITCHELL CHEEKYBUNZ	MODERN CLOTH NAPPIES	\$ 1,019.50
23/12/2020	76548	CHLOE ABLA STUDIOS	ART SALES	\$ 246.46
23/12/2020	76570	CHRISTINE CRESSWELL	ART SALES	\$ 12.60
12/12/2020	76219 76403	CHUBB FIRE & SECURITY PTY LTD CHUBB FIRE & SECURITY PTY LTD	FIRE EQUIPMENT SERVICES - GLC WORK AS QUOTED FIRE FOLIPMENT SERVICES - GLC WORK AS QUOTED	\$ 61,677.86 \$ 334.40
12/12/2020	76240	CITY AND REGIONAL FUELS	FUEL SERVICES - GEC WORK AS QUOTED	\$ 3,213.64
3/12/2020	76013	CITY OF BUSSELTON CHRISTMAS CLUB	PAYROLL DEDUCTIONS	\$ 3,152.18
17/12/2020	76436	CITY OF BUSSELTON CHRISTMAS CLUB CITY OF BUSSELTON CHRISTMAS CLUB	PAYROLL DEDUCTIONS	\$ 3,002.18
31/12/2020		CITY OF BUSSELTON CHRISTMAS CLUB CITY OF BUSSELTON PAYROLL	PAYROLL DEDUCTIONS PAYROLL DEDUCTIONS REALLOCATION	\$ 3,057.18 \$ 5,081.73
17/12/2020	76441	CITY OF BUSSELTON PAYROLL	PAYROLL DEDUCTIONS REALLOCATION	\$ 4,720.66
31/12/2020		CITY OF BUSSELTON PAYROLL	PAYROLL DEDUCTIONS REALLOCATION	\$ 4,710.59
3/12/2020	76014 76437	CITY OF BUSSELTON STAFF LOTTO CITY OF BUSSELTON STAFF LOTTO	STAFF LOTTO STAFF LOTTO	\$ 266.00 \$ 260.00
31/12/2020	76671	CITY OF BUSSELTON STAFF LOTTO	STAFF LOTTO	\$ 254.00
3/12/2020	76020	CITY OF BUSSELTON-SOCIAL CLUB	SOCIAL CLUB REIMBURSEMENT	\$ 230.00
17/12/2020 31/12/2020	76443 76677	CITY OF BUSSELTON-SOCIAL CLUB CITY OF BUSSELTON-SOCIAL CLUB	SOCIAL CLUB REIMBURSEMENT SOCIAL CLUB REIMBURSEMENT	\$ 230.00 \$ 230.00
12/12/2020		CIVIQ PTY LTD	AQUIFIL FLEXISHOWER	\$ 6,933.30
12/12/2020		CID EQUIPMENT PTY LTD	PLANT PURCHASES / SERVICES / PARTS	\$ 613.82
23/12/2020	76529 76584	CLAYTON & NARELLE SUSAN LINDLEY	E-WASTE SERVICES BOND REFUND	\$ 3,339.38 \$ 5,181.00
12/12/2020		CLEANAWAY	WASTE MANAGEMENT SERVICES	\$ 74,535.33
17/12/2020	76413	CLEANAWAY	WASTE MANAGEMENT SERVICES	\$ 23,453.15
23/12/2020	76508 76452	CLEANAWAY CO PTY LTD CLEVERPATCH	CHEMICAL DISPOSAL SERVICES VACATION CARE SUPPLIES	\$ 5,507.54 \$ 626.73
12/12/2020		COCA COLA - AMATIL PTY LTD	GLC KIOSK PURCHASES	\$ 1,202.34
23/12/2020	76635	COCA COLA - AMATIL PTY LTD	GLC KIOSK PURCHASES	\$ 776.29
12/12/2020	76221 76405	COLES	COUNCIL & STAFF REFRESHMENTS COUNCIL & STAFF REFRESHMENTS	\$ 641.69 \$ 1,044.69
23/12/2020	76623	COLES	COUNCIL & STAFF REFRESHMENTS	\$ 350.53
24/12/2020	76666	COLES	COUNCIL & STAFF REFRESHMENTS	\$ 31.77
12/12/2020	76066 76290	COLES.COM.AU COLES.COM.AU	COUNCIL & STAFF REFRESHMENTS COUNCIL & STAFF REFRESHMENTS	\$ 758.99 \$ 111.12
23/12/2020	76447	COLIN CAMPBELL	ENGINEERING SERVICES	\$ 3,430.00
23/12/2020	76491	COUN WOODFORD CARPENTRY & FINE FURNITURE	CARPENTRY SERVICES	\$ 2,247.00
12/12/2020	76033 76165	COMBINED TEAM SERVICES COME. GRAZE. SOUTHWEST	TRAINING SERVICES CATERING FOOD SERVICES	\$ 1,980.00 \$ 159.00
12/12/2020	76181	COMMERCIAL CLEANING EQUIPMENT	CLEANING EQUIPMENT SUPPLIER	\$ 440.00
17/12/2020	76315	COMPUTER WEST	INFORMATION TECHNOLOGY SUPPLIER	\$ 871.75
23/12/2020 12/12/2020	76482 76028	CORNERSTONE CHURCH OF CHRIST INC CR. G HENLEY	EVENT SPONSORSHIP COUNCILLOR PAYMENTS	\$ 3,300.00 \$ 10,308.25
23/12/2020	76453	CR. G HENLEY	COUNCILLOR PAYMENTS COUNCILLOR PAYMENTS	\$ 10,308.25
12/12/2020	76139	CR. J BARRETT-LENNARD	COUNCILLOR PAYMENTS	\$ 2,746.03
12/12/2020		CR. K HICK	COUNCILLOR PAYMENTS	\$ 4,392.50
23/12/2020 12/12/2020	76526 76141	CR. K HICK CR. KATHERINE COX	COUNCILLOR PAYMENTS COUNCILLOR PAYMENTS	\$ 379.29 \$ 2,746.03
23/12/2020		CR. KATHERINE COX	COUNCILLOR PAYMENTS	\$ 1,070.05
12/12/2020		CR. L MILES	COUNCILLOR PAYMENTS	\$ 2,746.03
23/12/2020 12/12/2020		CR. L MILES CR. P CARTER	COUNCILLOR PAYMENTS COUNCILLOR PAYMENTS	\$ 320.06 \$ 2,746.03
12/12/2020	76143	CR. P CRONIN	COUNCILLOR PAYMENTS	\$ 2,746.03
12/12/2020	76073	CR. R PAINE	COUNCILLOR PAYMENTS	\$ 2,746.03
12/12/2020		CR. SUSAN RICCELLI CRANEFORD PLUMBING PTY LTD	COUNCILLOR PAYMENTS PLUMBING SERVICES	\$ 2,746.03 \$ 7,644.74
17/12/2020		CRANEFORD PLUMBING PTY LTD	PLUMBING SERVICES	\$ 9,602.89
23/12/2020	76474	CRANEFORD PLUMBING PTY LTD	PLUMBING SERVICES	\$ 11,535.51
12/12/2020 17/12/2020		CROSS SECURITY SERVICES CROSS SECURITY SERVICES	SECURITY SERVICES SECURITY SERVICES	\$ 6,160.00 \$ 537.90
23/12/2020		CROSS SECURITY SERVICES	SECURITY SERVICES	\$ 5,170.00
12/12/2020		CS LEGAL - CLOISTERS SQUARE	LEGAL RECOVERY ON RATING DEBTS	\$ 1,238.00
23/12/2020 12/12/2020		CYNTHIA DIX D MCKENZIE T/A LITORIA ECOSERVICES	ART SALES CONSULTANCY SERVICES	\$ 52.50 \$ 2,678.50
12/12/2020	76228	D W & S V ROBERTS	CONCRETE SERVICES	\$ 2,290.00
12/12/2020		DA CHRISTIE PTY LTD	PARK FURNITURE SUPPLIER	\$ 36,676.86
23/12/2020	76049 76476	DANIEL FRITCHLEY DANIEL FRITCHLEY	DRAFTING SERVICES DRAFTING SERVICES	\$ 3,696.00 \$ 4,889.50
17/12/2020	76262	DANIELL ABRAHAMSE	STAFF REIMBURSEMENT	\$ 250.00
12/12/2020		DATA 3	COMPUTER SOFTWARE SUPPLIER	5 196,163.21
17/12/2020	76371 76218	DAVID GRAY & CO DAVID MILDWATERS ELECTRICAL	GARBAGE BINS & PARTS SUPPLIER MAINTENANCE SERVICES	\$ 31,526.00 \$ 9,313.88
23/12/2020		DAVID MILDWATERS ELECTRICAL	MAINTENANCE SERVICES	\$ 3,643.52
17/12/2020		DAVID WILLS AND ASSOCIATES	CONSULTING ENGINEERING	\$ 231.00
23/12/2020 12/12/2020	76564 76040	DAVID WILLS AND ASSOCIATES DEB HOLDEN	CONSULTING ENGINEERING STAFF REIMBURSEMENT	\$ 1,760.00 \$ 364.80
12/12/2020		DELNORTH PTY LTD	STEEL GUIDE POST SUPPLIER	\$ 6,523.00
23/12/2020	76449	DENNIS HADDON	ART SALES	\$ 24.50
	mer: -			\$ 1,840.93
12/12/2020	76210 76283	DEPARTMENT OF FIRE AND EMERGENCY SERVICES DEPARTMENT OF HUMAN SERVICES	FIRE AND EMERGENCY SERVICES CHARGES FOR CENTREPAY FACILITY	
	76283 76271	DEPARTMENT OF FIRE AND EMERGENCY SERVICES DEPARTMENT OF HUMAN SERVICES DEPARTMENT OF TRANSPORT DEPARTMENT OF WATER AND ENVIRONMENTAL REGULATION	FIRE AND IMPROCEDED SHOULDS CHARGES FOR ENTIFERANT FACULTY VEHICLE OWNERSHIP PEARCHES FAVIRONMENTAL SERVICES	\$ 129.69 \$ 81.60 \$ 132.00

76619 DEPUTY CHILD SUPPORT REGISTRAR 766142 DEPUTY CHILD SUPPORT REGISTRAR 76676 DEPUTY CHILD SUPPORT REGISTRAR 76676 DEPUTY CHILD SUPPORT REGISTRAR 76676 DEPUTY CHILD SUPPORT REGISTRAR 76624 DORO RANDWARE SULUTIONS 76624 DORO RANDWARE SULUTIONS 76520 DORSOONA LIMITED 76527 DORSOONA LIMITED 76520 DOUTH CONTRACTING 76530 DOUTH CONTRACTING 76530 DUNIES ORDUGH BOEAT SERVICE 76536 DUNIES ORDUGH HOEAT SERVICE 76536 DUNIES ORDUGH CELLARS 76537 DUNIES ORDUGH CELLARS 76537 DUNIES ORDUGH CELLARS 76538 DUNIES ORDUGH CELLARS 76539 DYMOCKS BUSSELTON 76531 SALE BAY COMMUNITY HALL ASSOCIATION INC 76531 LARTH AND STONE WA 76535 TON SHEPPIRED 76536 TON SHEPPIRED 76536 TON SHEPPIRED 76537 SECON SHEPPIRED 76538 ED SON SHEPPIRED 76539 IS CONSTEMS SOLUTIONS 76531 SECON SHEPPIRED 765319 IS CONSTEMS SOLUTIONS 859.72 859.72 1,300.04 10.50 1,455.02 1,975.90 169.20 5,981.25 816.66 1,760.00 2,420.00 149.97 3,382.50 120.00 2,553.00 SALARY DEDUCTIONS HARDWARE SUPPLIES ART SALES ART SALES ICE CREAM AND SMALL GOODS ICE CREAM AND SMALL GOODS ICE CREAM AND SMALL GOODS PROPERTY & GARDEN MANNEAN PROPERTY & GARDEN MANNEAN PROPERTY & GARDEN MANNEAN EARTHMOVING - BOBCAT HIRE EARTHMOVING - BOBCAT HIRE EARTHMOVING - BOBCAT HIRE CONCRETE SUPPLIES MEETING ROOM HIRE COMMUNITY BID LIBRARY RESOURCES VENUE HIRE FOOTPATHS MAINTEMANCE DISPOSABLE NAPPLES COMMUNITY BID CONDUCTATION OF THE SECONDAL FOR THE SECONDAL FRANCES COMMUNITY BID CONDUCTATION OF THE SECONDAL FRANCES COMMUNITY BID CONDUCTATION OF THE SECONDAL FRANCES CONDUCTATION OF THE SECONDAL FRA DS COMMUNITY GROUP INC ELECTRICAL SERVICES ART SALES EIS CONTROL PTYLTD ELAMOORE NATURAL SOAPS & COSMETICS PTY LTD 1,583.49 TYRE RECYCLING CARPET CLEANING SERVICES ART SALES IRRIGATION 50.05 552.40 165.00 245.00 39.20 1,144.00 38,473.00 3,849.00 2,230.84 2,475.00 2,308.90 240.00 76537 LUZABETH BINT 76644 ELUZABETH BOYE 76261 ELUDTS IRRIGATION PIY LTD 76300 ELMIA HIVS 76467 ELUDTS IRRIGATION PIY LTD 76300 ELMIA HIVS 76472 ELUDTS IRRIGATION PIY LTD 76493 ENVISIONWARE PIY LTD 76493 ENVISIONWARE PIY LTD 76495 ESE ELECTRICS PIY LTD 76595 ESPLANADE HOTEL - BUSSELTON 76607 ESE ALUSTRALIU 76694 EVERET'S HOME AND YARD MAINTENANCE 76507 EST BRITTE PIY LTD 765184 ET RECHIBLOGIS PIY LTD 765197 FIRMSSY'S 76591 FENNESSY'S 76591 FIRMSSY'S 76596 FIRMSSY'S 76597 FITRSS SOLUTIONS WA 76597 FITRSS FITRS SOLUTIONS WA 76597 FITRSS FITRSS FITRSS SOLUTIONS WA 76597 FITRSS FITRSS FITRSS FITRSS SOLUTIONS WA 76597 FITRSS FITRSS FITRSS FITRSS FITRSS SOLUTIONS WA IRREGATION SERVICES STAFF REMAUNISCHENT POOL CHEMICALS FOR GIC LIBRARY RESOLUCION SOFTWARE SERVICES ACCOMMODITATION SOFTWARE SERVICES TELECORMODICATION SERVICES ACCOMMODITATION SOFTWARE SERVICES TELECORMODICATION SERVICES TELECORMODICATION SERVICES PROFESSORIES TELECORMODICATION SERVICES PROFESSORIES THE SOFTWARE PROFESSORIES THE SAFTY EQUIPMENT THISSS EQUIPMENT THISS EQUIPMENT THISSS E 23/12/2020 17/12/2020 52.75 122.65 VEHICLE CAMERAS PUBLIC TOILET CONTRIBUTION - SHELTER BREWING 76127 GEOGRAPHE BAY BREWING CO 76251 GEOGRAPHE GALLEY & PICTURE FRAMERS 76195 GEOGRAPHE PETROLEUM 76288 GEOGRAPHE SAVS AND MOWERS 76588 GEOGRAPHE SAVS AND MOWERS 765185 GEOGRAPHE SAVS AND MOWERS 76373 GEOGRAPHE TIMBER & HARDWARE 76373 GEOGRAPHE TIMBER & HARDWARE 76373 GEOGRAPHE TIMBER & HARDWARE POBLIC TOILET CONTRIBOTION - SPECIFIC PICTURE FRAMING SERVICES FUEL SERVICES FUEL SERVICES / SERVICES / PARTS PUENT FUELCHASES / SERVICES / PARTS HARDWARE SUPPLIES HARDWARE SUPPLIES 120.00 14,881.11 UNDERGROUND SERVICES SARDEN MAINTENANCE SERVICES STORAGE SERVICES PRICKET PITCH MANAGEMENT SERVICES SAFETY SUPPLIES RETE SERVICES CONCRETE SERVICES ART SALES SAND AND GRAVEL SUPPLIES SAND AND GRAVEL SUPPLIES SAND AND GRAVEL SUPPLIES SAND AND GRAVEL SUPPLIES ELECTRICAL APPLIANCE SERVICES 1,794.51 33,843.48 11,990.03 229.00 258.50 496.62 506.89 1,098.49 4,151.84 2,717.00 ELECTRICAL APPLIANCE SERVICES CATERING UNIFORNS & PROTECTIVE CLOTHING UNIFORNS & PROTECTIVE CLOTHING UNIFORNS & PROTECTIVE CLOTHING CONCRETE SERVICES ENGINEERING PROJECT MANAGEMENT PROTOGRAPHY SERVICES ENGINEERING PROJECT MANAGEMENT VICULAND LANDSCANING WORKS VICULAND LANDSCANING WORKS VICULAND LANDSCANING WORKS COUSTRUCTION SERVICES PRESENTATION CONSTRUCTION SERVICES FIRE, SAFETY, EMERGENCY EQUIPMENT FRANING SERVICES 500.00 116,911.92 TRAINING SERVICES WARKETING SERVICES SOND REFUND SPECIALIST LIBRARY RESOURCES SPECIALIST LIBRARY RESOURCES 76348 JAN FARRINGTON 76358 JANNE BALEY 76366 JANNE BALEY 76367 JAN SON GIGHMAKER 76000 JAN LINE CHAMBERS 76000 JAN LINE CHAMBERS 76109 JAN LINE CHAMBERS 76119 JAN LINE CHAMBERS 76101 JENNIFER BROWN 76102 JAN CHAN LINE CHAMBERS 76103 JAN CHAN LINE CHAMBERS 76104 JAN WON LINE CHAMBERS 76105 JAN WON LINE CHAMBERS 76106 JAN WON LINE CHAMBERS 76107 JAN WON LINE CHAMBERS 76108 JAN WON LINE CHAMBERS 76109 JAN WON LINE CHAMBERS 12/12/2020 23/12/2020 12/12/2020 23/12/2020 TAFF REIMBURSEMENT 163.54 73.20 968.00 3,219.50 84.00 3,050.00 748.80 17.47 1,320.00 5,949.39 3,552.50 11.55 77.00 HARDWARE SUPPLIES ART SALES DIVING MAINTENANCE SAFETY EQUIPMENT PRINTING SERVICES ART SALES ART SALES WELLNESS PROGRAM ART SALES MAINTENANCE SERVICES

MR LICENCE TRAINING MOADSDE LITTER BAGS ELECTROME SERVICES ARCHITE CUMAL SERVICES WATER CAMBOS BEINDESEMENT CATERING CATERING CATERING CATERING CATERING CATERING CAS SERVICES GAS SERVICES BETAL HOME WARES BETAL HOME WARES BETAL HOME WARES SETAL HOME WARES TAFF ERIBINGSAME SAME SERVICES LAND VALUATIONS SERVICE SERVICES SERVICE SERVICES SER 76656 KEEP'S TRUCK DAIVER TRAINING 76593 KEEP'A SUSTRALIA BEAUTIFUL 76695 KELLY'S AUDIO VISUAL SERVICES 76595 KELLY'S AUDIO VISUAL SERVICES 76595 KELLY'S AUDIO VISUAL SERVICES 76590 KITCHEN TAKEOVERS 76590 KITCHEN TAKEOVERS 76592 KITCHEN TAKEOVERS 76595 KIERNEN AUDIO VISUAL 76596 KIERNEN AUDIO VISUAL 76597 KIERNEN AUDIO VISUAL 76596 KIERNEN AUDIO VISUAL 76596 KIERNEN AUDIO VISUAL 76596 KIERNEN AUDIO VISUAL 76597 KIERNEN AUDIO VISUAL 76596 KIERNEN AUDIO VISUAL 76596 KIERNEN AUDIO VISUAL 76597 KIERNEN AUDIO VISUAL 76597 KIERNEN AUDIO VISUAL 76597 KIERNEN AUDIO VISUAL 76597 KIERNEN AUDIO VISUAL 76598 KIERNEN AUDIO VISUAL 76597 KIERNEN AUDIO VISUAL 76597 KIERNEN AUDIO VISUAL 76598 KIERNEN AU 392.00 1,586.00 68.00 308.57 902.11 584.00 106.00 211.88 4,950.00 95.00 5,061.12 5,317.97 LANDSCAPING SERVICE LANDSCAPING SERVICES RATE REFUND LANDSCAPING SERVICES LANDSCAPING SERVICES LANDSCAPING SERVICES LANDSCAPING SERVICES SECURITY PRODUCTS HIRE ECOLUPMENT SERVICES HIRE ECOLUPMENT 200.00 1,124.90 1,485.00 UNION REES SECURITY SERVICES SECURITY SERVICES SECURITY SERVICE LEASING PAYMENTS LEASING PAYMENTS LEASING PAYMENTS ROAD HOTMEY, PAYMING SERVICES ROAD HOTMEY, PAYMING SERVICES ROAD HOTMEY, PAYMING SERVICES ART SALES MANTENANCE SERVICES MANTENANCE MANTENANCE SERVICES MANTENANCE MANT 338.26 1,371.00 1,573.00 615.44 111,572.69 520.97 53,851.20 53,851.20 12,408.00 110,884.40 77.00 1,501.50 2,500.00 1,215.50 9,966.00 29,012.50 ### WOODS #### W ADVERTISING SERVICES RISK CONSULTING SERVICES STAFF REIMBURSEMENT BOND REFUND STAFF REIMBURSEMENT MANAGEMENT BUSSELTON JETTY TOURIST PARK DVD AND CD SUPPLY TO LIBRARY AIRCOMDITIONING & REFRIEGRATION SERVICES DEFIBRILLATOR MAINTENANCE PERFORMER 3D SCANNING BOND REFUND MICROCHIPS AND RFID SCANNERS 1,000.00 5,500.00 100.00 315.30 3,074.94 4,777.96 6,350.30 541.20 273.13 14,520.00 49.50 MICROCHIPS AND RFID SCANNERS LEGAL SERVICES DRAINAGE SUPPLIES DRAINAGE SUPPLIES DUBAINAGE SUPPLIES LIBRARY RESOURCES HOSPITALITY AND CATERING CONSULTING ABST SALFS. HOSPITALITY AND CATERING (ART SALES PAYMENT CANCELLED STAFF REIMBURSEMENT STAFF REIMBURSEMENT ART SALES PAYMENT CANCELLED PAYMENT CANCELLED GLASS REPAIRS AND MANUFACTURE TURR MAINTENANCE SERVICES GPS TELEMATICS WATER REFILL SERVICE - DUNS WASTE FACIL WATER REFILL SERVICE - DUNS WASTE FACIL LANDSCAPE MAINTENANCE 66.40 21,134.58 921.80 217.15 101.60 8,214.80 PLANT PURCHASES / SERVICES / PARTS PLANT PURCHASES / SERVICES / PARTS MJUSIC AND VIDEO SUBSCRIPTION SERVICES CONSULTANCY AND TRAINING BYCHOLOGICAL STRAINS STANDARD TRAINING 652.65 127.09 413.92 1,049.95 LUMBULTANCY AND TRAINING PSYCHOLOGICAL SERVICES CLEANING SERVICES CLEANING SERVICES CLEANING SERVICES CLEANING SERVICES AUDITION SERVICES AUDITION SERVICES 17/12/2020 76320 ONSITE REVITAL GROUP PY LTD 12/12/2020 76556 OPTUS BILLING SERVICES PY LTD 12/12/2020 76656 OPTUS BILLING SERVICES PY LTD 13/12/2020 76641 OPTUS BILLING SERVICES PY LTD 13/12/2020 76641 OTS ELEVATOR COMPANY PY LTD 13/12/2020 76641 OWEN G SBEL 12/12/2020 76642 OWEN G SBEL 12/12/2020 76648 OWEN G SBEL 12/12/2020 76648 OWEN G SBEL 12/12/2020 76649 PASKOROR BUSINESIN RESIN 12/12/2020 76694 PASKOROR AUTOMOTIVE 13/11/2/2020 76381 PENDREY AGENCIS P/L DRY HIRE PSYCHOMETRIC ASSESSMENT SERVICES FIXED INTERNET ACCESS FIXED INTERNET ACCESS ELEVATOR SERVICES ENVIRONMENTAL CONSULTANT ENVIRONMENTAL CONSULTANT ART SALES BITP REFUND ART SALES VEHICLE MAINTENANCE SERVICES CHEMICAL/RURAL SUPPLIES

1,00000 1,0000 1,00000 1,000000 1,000000 1,000000 1,000000 1,0000000 1,0000000000					
1,000	24/12/2020 17/12/2020	76664 76355	PENDREY AGENCIES P/L PETER & MARIORIE HETHERINGTON	CHEMICAL/RURAL SUPPLIES BJTP REFUND	\$ 1,189.76 \$ 638.00
10.0000 10.0000	23/12/2020	76578	PETER EVANS	ART SALES	\$ 126.00
1,000000 100000000000000000000000000					
1,000000 1,0000000000000000000000000			PHOENIX FOUNDRY PTY LTD		\$ 660.55
1,000000000000000000000000000000000000					\$ 379.50
1,000000000000000000000000000000000000					
1,000000000000000000000000000000000000					
19.0000 19.000			PRESTIGE PRODUCTS		
1000000000000000000000000000000000000					\$ 8,462.72
1,000000 1,0000000000000000000000000			PRESTIGE PRODUCTS	HOSPITALITY EQUIPMENT SUPPLIER	\$ 2,692.20
1922/000 1922 192					
1,000000000000000000000000000000000000	23/12/2020				
1,000000 1,0000000000000000000000000					
1920 1920	12/12/2020	76159	QED ENVIRONMENTAL SERVICES	SURFACE TESTING	\$ 5,544.00
19.2000 19.600					
1922/000 1922 192	12/12/2020	76046	RAIN BIRD AUSTRALIA	IRRIGATION SERVICES	\$ 2,970.00
1922-2019 1922 19					
19.00000 19.	17/12/2020	76429	REPEAT PLASTICS (WA)	PLASTIC PRODUCT SUPPLIER	\$ 1,703.03
1979/2006 1971 1979 19					
19,000 1					
19,0000 19,000					
1972/2006 1970 19	12/12/2020	76239	SAFE & SURE SECURITY PTY LTD	SECURITY SERVICES - ALARM OCCURANCE	\$ 1,144.00
10.07200 10.12 20.000 ACCUSATION 10.000 ACCUSATION 10.00					
13.172500 18-07	12/12/2020	76152	SANTA ROBERTS	BJTP REFUND	\$ 492.00
17.17.000 NOV. 12.00.000 (NOV. 17.00.0000 17.00.0000 17.00.000 17.00.000 17.00.0000 17.00.0000 17.00.0000 17.00.0000					
10.12500 10.125					\$ 13,007.50 \$ 173.30
19.71/2002 70.07 20.00	17/12/2020	76276		SECURITY BARRIERS	\$ 1,258.29
13.17.17.000 N.100					
1972/2006 2007 20	12/12/2020	76246	SHARON WILLIAMS	STAFF REIMBURSEMENT	\$ 193.75
31/3/2009 3842 SMITCH					
2017/2009 TABLE CONTROL OF STATE AND PRITTS MARINE ASST MARTENACE (STY SOFT) (TO)					\$ 18,568.00
2017/2006 TABLE SOUTH CONTROLLED TO STANDARD STORY					
1922/2007 TOTAL	23/12/2020	76622	SIGMA COMPANIES GROUP PTY LTD	CHEMICAL SUPPLIER	\$ 99.55
PAIR					
1927/2008 7822 OLLAN TOSE OLUN TOSE OLU	17/12/2020	76435	SMARTSALARY PTY LTD	SALARY PACKAGING SERVICE	\$ 18,393.11
\$2,000 \$40.00 \$					
1017/2019 R22-0 SOUTH WAS TOURNELLING S. 1,240.00 T. 1,240.00					
\$2,000 \$2,000 \$2,000 \$3,000 \$					
PART PRINCINGS S003 SOUTH WEST GROUP PART PRINCINGS SERVICES PARTS \$ \$ \$ \$ \$ \$ \$ \$ \$					
2012/2019 1966 SOUTH WEST BUILD PLANT PRICEMENT 5 153.14					
\$12,129.00 PASS SOUTH WEST OFFICE MATCHAIN. STATIONER'S GOVER LINEARIZED. \$ 9.05.55. \$1,00.0000 \$1,00.0000 \$1,00.0000 \$1,00.0000 \$1,00.0000 \$1,00.0000 \$1,00.0000					
\$12122000 793.06 OUTH WEST FORCE MATORIAL STATONER'S OFFICE FLANTITIES \$ 5.93.85					
2012/2010 756-83 SQUITH WIST FORCE MATORIAL STATOMER'S OFFICE FLANTINE \$ 1,500.00					
1971/2002 78978 COUNT MEST STEEL PRODUCTS STEEL PRODUCTS SUPPLIER \$ 1,864,25 1971/2002 78091 COUNTERN COUS AUSTREED \$ 2,864,05 1971/2003 78090 COUNTERN COURS AUSTREED \$ 2,864,05 1971/2003 78091 COUNTERN COURS AUSTREED \$ 2,864,05 1971/2003 78	23/12/2020	76543	SOUTH WEST OFFICE NATIONAL	STATIONERY & OFFICE FURNITURE	\$ 1,019.05
2012/2002 75998 COUNT MET STEEL PRODUCTS STEEL PRODUCTS SUPPLIER \$ 286.02					
1973/2002 7690	23/12/2020		SOUTH WEST STEEL PRODUCTS	STEEL PRODUCTS SUPPLIER	\$ 286.92
1973/29020 798/74 SOUTHERN FORCE & SCURITY SOUTHERN FORCE & SOUTHERN REMORKED & \$ 6.05.05 1973/29020 798/800 SOUTHERN STANKINGE REMORKANCE REMO					
3131/27920 740/20 500/THANSES (LYENT MIRE MIRE COUPMENT SERVICES 5 137-00 1271/27920 740/74 500/THANSES (LYENT MIRE MIRE COUPMENT SERVICES 5 137-00 1271/27920 740/74 500/THANSES (LYENT MIRE MIRE COUPMENT SERVICES 7 137-00 7 137-100 7 137-	17/12/2020	76374	SOUTHERN LOCK & SECURITY	SECURITY SERVICES	\$ 426.01
2312/2020 79999 SOUTHWEST CYVENT MIRE					
\$131/12/020	23/12/2020	76599	SOUTHWEST EVENT HIRE	HIRE EQUIPMENT SERVICES	\$ 175.00
1212/12/2020 76:217 100					
\$41372000 \$6619 \$0017WEST TWE STRYLE STRYLES \$427.55 \$42	12/12/2020	76217	SOUTHWEST TYRE SERVICE	PLANT TYRE SUPPLIER / REPAIRER	\$ 2,255.50
\$487.55 \$487.55 \$121.29002 \$121.2900					
\$213727000 76317 \$PORTSPOWER	23/12/2020	76496	SPORTFIRST BUSSELTON	SPORTING PRODUCTS	\$ 487.55
17/17/2070	12/12/2020				\$ 174.00 \$ 160.02
17/12/2020	17/12/2020	76418	SPORTSWORLD OF WA	SPORT EQUIPMENT SUPPLIER	\$ 2,142.80
12/17/2002 76/077 5PRAYMOW SERVICES					
\$4,815.51 \$1,000.000 \$7,689 \$7,000.000 \$7,000 \$7,000.000 \$7,0	12/12/2020	76077	SPRAYMOW SERVICES	BUSH FIRE INSPECTION WORKS/WEED CONTROL	\$ 893.20
\$21/17/2002 76/069 \$7 STONK AMSULANCE					
23/12/2020	12/12/2020				
\$2217270200 76475 \$TEVART & HAZDIN CLOTHING CO PTY LTD					
321/17/2020 76/89 STEWART & HARTON LOTHING COPTY LTD PROTECTIVE COPTHING SUPPLIER \$ 61.435 31/17/2020 76/81 STOCKER PRISTON RENT - A NOTTLE \$ 860.00 31/17/2020 76/86 STOCKER PRISTON RENT - A NOTTLE \$ 860.00 31/17/2020 76/86 STOCKER PRISTON RENT - A NOTTLE \$ 860.00 31/17/2020 76/86 STOCKER PRISTON RENT - A NOTTLE \$ 860.00 31/17/2020 76/86 STOCKER PRISTON RENT - A NOTTLE \$ 9.00.00 31/17/2020 76/21 STRATAGREEN \$ 9.00.00 31/17/2020 76/21 STRATAGREEN \$ 9.00.00 31/17/2020 76/21 SUMMERS CONSULTING MOSQUITO BREEDING MONITORING \$ 9.00.10 31/17/2020 76/21 SUPPLE COLUMN STRATAGREEN \$ 9.00.00 31/17/2020 76/21 SUPPLE COLUMN STRATAGREEN \$ 9.00.00 31/17/2020 76/21 SUPPLE COLUMN STRATAGREEN \$ 165.31.31 31/17/2020 76/21 SUPPLE COLUMN STRATAGREEN \$ 165.30.00 31/17/2020 76/21 SUPPLE COLUMN STRATAGREEN \$ 165.00.00 31/17/2020 76/21 SUPPLE COLUMN STRATAGREEN \$ 9.00.00 31/17/20	12/12/2020		STEWART & HEATON CLOTHING CO PTY LTD	PROTECTIVE CLOTHING SUPPLIER	
\$1712/2020		76589	STEWART & HEATON CLOTHING CO PTY LTD	PROTECTIVE CLOTHING SUPPLIER	\$ 614.35
\$11/12/2020 76668 \$TOCKER PRESTON \$ NOTTE \$ 860.00 \$12/12/2020 76214 \$TRATABREN \$ 18/12/2020 \$ 2.094.3 \$12/12/2020 76214 \$TRATABREN \$ 9.00.00 \$12/12/2020 76214 \$TRATABREN \$ 9.00.00 \$12/12/2020 76215 \$URZ RECYCLING RECOVERY PTV LTD WASTE MANAGEMENT SERVICES \$ 99.00 \$12/12/2020 76051 \$URRATE CONSULTING MOSQUITO BONDON (\$ 5 923.11 \$12/12/2020 76051 \$URRATE CONSULTING MOSQUITO BONDON (\$ 5 923.11 \$12/12/2020 76051 \$URRATE CONSULTING \$ 9.00.00 \$12/12/2020 76051 \$URRATE CONSULTING \$ 9.00.00 \$12/12/2020 \$1.00.00 \$ 9.00.00 \$12/12/2020 76051 \$URRATE CONSULTING \$ 9.00.00					\$ 860.00 \$ 860.00
12/12/2020	31/12/2020				
\$ \$23.12 \$ \$ \$ \$ \$ \$ \$ \$ \$					
\$11/17/20700 70021 \$UPRECHOICE \$UPPERANNATION \$ 165,191.88 \$17/17/20700 76678 \$UPRECHOICE \$UPPERANNATION \$ 165,921.88 \$17/17/20700 76678 \$UPRECHOICE \$UPPERANNATION \$ 163,920.80 \$21/17/20700 76691 \$UPRECHOICE \$UPPERANNATION \$ 163,920.80 \$21/17/20700 76691 \$UPRECHOICE \$UPPERANNATION \$ 171.00 \$17/17/20700 76691 \$UPRECHOICE \$UPPERANNATION \$ 711.00 \$17/17/20700 76692 \$UPRECHOICE \$UPPERANNATION \$ 711.00 \$17/17/20700 76692 \$UPRECHOICE \$UPPERANNATION \$ 771.00 \$17/17/20700 76692 \$UPPERANNATION \$ 170.00 \$17/17/20700 76693 \$UPPERANNATION \$ 170.00 \$17/17/20700 76695 \$UPPERANNATION \$ 160.00 \$17/17/20700 76695 \$UPPERANNATION \$ 160.00 \$17/17/20700 76695 \$UPPERANNATION \$ 160.00 \$17/17/20700 76696 \$UPPERANNATION \$ 160.00 \$17/17/20700 76695 \$UPPERANNATION \$ 160.00 \$17/17/2	12/12/2020	76051		MOSQUITO BREEDING MONITORING	\$ 923.12
17/12/2020 76444 SJPERCHOKE SJPERCHOKE SJPERCHOKE SJPERCHOKE SJPERCHOKE SJPERCHOKE SJPERCHOKE SJPERCHOKE S 154,200 S171/2020 76478 SJPERCHOKE SJ					
23/12/2020 78551 SURVEYNIG SOUTH SURVEYNIG SERVICES \$ 22.500	17/12/2020	76444	SUPERCHOICE	SUPERANNUATION	\$ 164,952.15
\$\frac{11,00200}{2,00200} \frac{70,0000}{2,00200} \frac{10,0000}{2,00200} \frac{10,00000}{2,00200} \frac{10,00000}{2,00200} \frac{10,00000}{2,00200} \frac{10,00000}{2,00200			00121101010		* 100/020100
23/13/2070 76532 SWET & UNQUE (MA) PTY LTD T/AS LUY A LOLLY CONFCONERY 5 77.00 23/13/2070 76549 SWET & UNQUE (MA) PTY LTD T/AS LUY A LOLLY CANCERO 5 5.95.15 23/13/2070 76559 SWED	23/12/2020	76604	SW PRECISION PRINT	PRINTING SERVICES	\$ 711.00
12/12/2020 76:329 SYNERGY ELECTRICITY SUPPLIES \$ 4.951.56 23/12/2020 76:546 SYNERGY ELECTRICITY SUPPLIES \$ 5.28.59 24/12/2020 76:551 SYNERGY ELECTRICITY SUPPLIES \$ 5.86.64.28 24/12/2020 76:551 TANIA CHUFE STAFF REMBUSSHENT \$ 5.86.64.28 23/12/2020 76:051 TANIA CHUFE STAFF REMBUSSHENT \$ 5.18.04.70 23/12/2020 76:051 TECHNICOGY ON LUMITED EMORECIBNO SERVICES \$ 1.644.70 23/12/2020 76:051 TECHNICOGY ON LUMITED SOFTWARE SERVICES \$ 5.65.00 23/12/2020 76:051 TECHNICOGY ON LUMITED SOFTWARE SERVICES \$ 1.65.00 23/12/2020 76:051 TENDERLINECOM TENDER ADVERTISING \$ 6.05.00 23/12/2020 76:051 TENDERLINECOM TENDER ADVERTISING \$ 26:00.00 23/12/2020 76:151 TENDERLINECOM \$ 20:00.00 23/12/2020 76:00 76:					
24/12/2020 76657 SNYERGY ELECTROT'SUPPLIES \$ 98,644.23 17/12/2020 76051 7.6288 TARNA CULVER \$ 1.519.00 12/12/2020 76031 TARNA PTY LTD ENGINEERING \$ 8.07.00 12/12/2020 76031 TECHNOLOGY ONE LIMITED \$ 1.609.00 12/12/2020 76036 TECHNOLOGY ONE LIMITED \$ 5.07.00 17/12/2020 76036 THONE LIMITED \$ 1.609.00 17/12/2020 76038 TECHNOLOGY ONE LIMITED \$ 1.609.00 17/12/2020 76038 TECHNOLOGY ON	12/12/2020	76129	SYNERGY	ELECTRICITY SUPPLIES	\$ 4,951.56
17/12/2020 76.288 TANIA OLIVER					\$ 1,828.94 \$ 98.664.23
12/12/2020 76031 TARVIA FPY LTD	17/12/2020	76288	TANIA OLIVER	STAFF REIMBURSEMENT	\$ 1,190.00
12/12/2020 76096 TRODERINK.COM TROBE ADVERTISING 5 165.00 17/12/2020 7638 TRODERINK.COM TROBE ADVERTISING 5 165.00 12/12/2020 7611 THOOR LINK.COM TROBE ADVERTISING 5 265.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 5 200.00 12/12/2020 7611 THE GOOD EGG CAFE VENUE HIRE AND CATERING 7 200.00 7 20	12/12/2020				
17/12/7020			TENDERLINK.COM		
\$23,77,700 703.3 THE UNDUE USG CAPE VENUE HIRE AND CATERING \$ 200.00 \$23,77,700 75.51 THE GOOD EGG CAPE VENUE HIRE AND CATERING \$ 95.00 \$4,77,700 75.51 75.5	17/12/2020		TENDERLINK.COM		\$ 165.00
	23/12/2020				

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24/12/2020		THE GOOD EGG CAFE	VENUE HIRE AND CATERING	\$	55.00
12/12/2020	76026	THE GOOD GUYS BUSSELTON	ELECTRICAL SUPPLIES	\$	500.00
12/12/2020	76069	THE URBAN COFFEE HOUSE	CATERING	\$	1,779.70
23/12/2020	76493	THE URBAN COFFEE HOUSE	CATERING	\$	347.00
17/12/2020	76351	THEAKER VON ZIARNO	AERIAL OPERA PERFORMANCE	\$	2,939.20
12/12/2020	76166	THERESA BATES	EDUCATIONAL TALKS	\$	150.00
12/12/2020	76136	THINK WATER DUNSBOROUGH	RETICULATION SERVICES	\$	4,395.60
24/12/2020	76661	THOMPSON SURVEYING CONSULTANTS	SURVEYING SERVICES	S	19,052.00
12/12/2020	76134	THOMSON GEER LAWYERS	LEGAL SERVICES	S	15,529.80
12/12/2020	76172	THYSM PTY LTD	BOND REFUND	5	200.00
12/12/2020	76243	TILTFORCE TRANSPORT	TILT TRAY SERVICES	Ś	231.00
23/12/2020	76547	TOLL TRANSPORT PTY LTD	COURIER SERVICES	s	11.16
24/12/2020	76658	TOLL TRANSPORT PTY LTD	COURIER SERVICES	Ś	39.27
	76530	TONY NOTTLE	STAFF RIMBURSEMENT	s	
23/12/2020					1,352.34
12/12/2020	76211	TOTAL EDEN PTY LTD	RETICULATION SUPPLIES	\$	1,650.00
17/12/2020	76397	TOTAL EDEN PTY LTD	RETICULATION SUPPLIES	5	8,977.10
12/12/2020	76034	TOTAL GREEN RECYCLING	RECYCLING E-WASTE SERVICES	\$	1,568.33
21/12/2020	76426	TOTAL HORTICULTURAL SERVICES	PAYMENT CANCELLED	\$	
23/12/2020	76640	TOTAL HORTICULTURAL SERVICES	LANDSCAPING SERVICES	\$	38,358.84
12/12/2020	76124	TOTAL TOOLS	VARIOUS TOOLS	\$	33.00
12/12/2020	76256	T-QUIP	MOWER PARTS & SERVICE	S	1,987.15
23/12/2020	76363	TRACEY J PLESTER	PAYMENT CANCELLED	S	-
24/12/2020	76660	TRACEY J PLESTER	ANIMAL REGISTRATION REFUND	s	150.00
23/12/2020	76457	TRACIE ANDERSON	ART SALES	Ś	117.00
	76427	TRACE ANDERSON	PLANT HIRE & EQUIPMENT SERVICES	s	6,595.52
17/12/2020 24/12/2020	76427 76667	TRADE HIRE	PLANT HIRE & EQUIPMENT SERVICES PLANT HIRE & EQUIPMENT SERVICES	\$	6,595.52 22.40
17/12/2020	76318	TRIBE PERTH	ACCOMMODATION	\$	144.00
23/12/2020	76497	TROPHIES ON TIME	NAME BADGE SUPPLIER	\$	66.00
12/12/2020	76093	TRUCK CENTRE (WA) PTY LTD	NEW VEHICLE PARTS & SERVICE	\$	93.95
17/12/2020	76305	TRUCK CENTRE (WA) PTY LTD	NEW VEHICLE PARTS & SERVICE	\$	204.06
23/12/2020	76515	TRUCK CENTRE (WA) PTY LTD	NEW VEHICLE PARTS & SERVICE	\$	203.23
12/12/2020	76146	TRUCKLINE	PLANT PURCHASES / SERVICES / PARTS	S	131.25
17/12/2020	76416	TYREPOWER BUSSELTON	PLANT TYRE SUPPLIER / REPAIRER	s	750.00
17/12/2020	76304	UNDALUP ASSOCIATION INC	CANVAS SIGNS	S	550.00
	76514	UNDALUP ASSOCIATION INC	CANVAS SIGNS	Ś	1,210.00
23/12/2020	76361	UNITING OUTREACH	COMMUNITY SERVICES	S	220.00
17/12/2020	76306	URBAQUA	ENVIRONMENTAL CONSULTING SERVICES	\$	5,104.00
12/12/2020	76173	VANESSA TOMLINSON	BOND REFUND	\$	200,00
12/12/2020	76125	VERAISON	LEADERSHIP COACHING	\$	1,320.00
23/12/2020	76628	VMS CONTRACTORS & MANAGEMENT	MAINTENANCE SERVICES	5	1,732.50
17/12/2020	76277	VORGEE PTY LTD	GYM GOODS	\$	1,683.00
23/12/2020	76585	W & S LA ROCCA	BJTP REFUND	\$	326.00
17/12/2020	76392	W.A. BOILER SPARES AND SERVICE	PLANT PURCHASES / SERVICES / PARTS	S	990.00
12/12/2020	76042	WA EXTERNAL SOLUTIONS	GUTTER MAINTENANCE	S	4,620.00
17/12/2020	76307	WA LIBRARY SUPPLIES	LIBRARY RESOURCES	Ś	4.620.00
17/12/2020	76419	WA RANGERS ASSOCIATION	MEMBERSHIP FEES	S	321.35
17/12/2020	76401	WA TREASURY CORPORATION	LOAN REPAYMENTS	S	734,563.71
23/12/2020	76556	WARRINGTONFIRE AUSTRALIA PTY LTD	FIRE TESTING SERVICES	\$	8,555.25
23/12/2020	76609	WEST OZ LINEMARKING	LINE MARKING SERVICES	s	539.00
17/12/2020	76330	WESTBOOKS	LIBRARY RESOURCES	\$	252.43
21/12/2020	76297	WESTERN IRRIGATION PTY LTD	PAYMENT CANCELLED	S	
23/12/2020	76501	WESTERN IRRIGATION PTY LTD	BORE AND IRRIGATION SERVICES	\$	1,485.00
12/12/2020	76193	WESTERN POWER CORPORATION	ELECTRICAL SERVICES	\$	1,320.00
12/12/2020	76207	WESTRAC EQUIPMENT P/L	PLANT PURCHASES / SERVICES / PARTS	\$	1,832.18
17/12/2020	76393	WESTRAC EQUIPMENT P/L	PLANT PURCHASES / SERVICES / PARTS	s	2,226.65
23/12/2020	76611	WESTRAC EQUIPMENT P/L	PLANT PURCHASES / SERVICES / PARTS	s	747.96
12/12/2020	76055	WESTSIDE TILT TRAY SERVICE	ABANDONED CAR REMOVAL	s	330.00
23/12/2020	76480	WESTSIDE TILT TRAY SERVICE	ABANDONED CAR REMOVAL	S	165.00
12/12/2020	76213	WHITELAND MILLING	TIMBER SUPPLIES	\$	2,338.88
17/12/2020	76329	WHO'S ON LOCATION LIMITED	ELECTRONIC VISITOR MANAGEMENT SYSTEM	\$	70.00
23/12/2020	76587	WILLIAM WEIR	BOND REFUND	\$	100.00
12/12/2020	76163	WILSON DESIGN	COMPUTER CONSULTANCY	\$	160.00
12/12/2020	76197	WINC AUSTRALIA PTY LTD	STATIONERY SUPPLIER	\$	513.81
17/12/2020	76382	WINC AUSTRALIA PTY LTD	STATIONERY SUPPLIER	\$	1,000.66
23/12/2020	76601	WINC AUSTRALIA PTY LTD	STATIONERY SUPPLIER	\$	54.07
17/12/2020	76275	WIZID PTY LTD	POOL ENTRY WRISTBANDS	s	129.80
17/12/2020	76422	WML CONSULTANTS PTY LTD	CONSULTANCY SERVICES	\$	528.00
23/12/2020	76471	WOODLANDS DISTRIBUTORS & AGENCIES PTY LTD	STREETSCAPE FURNITURE	Š	6.065.40
12/12/2020	76209	WORK CLOBBER	PROTECTIVE CLOTHING SUPPLIER	S	1,749.00
23/12/2020	76613	WORK CLOBBER	PROTECTIVE CLOTHING SUPPLIER	\$	59.00
12/12/2020	76065	WORK METRICS	HEALTH AND SAFETY SOFTWARE	\$	110.00
23/12/2020	76631	WREN OIL	WASTE OIL SERVICES	\$	77.00
12/12/2020	76078	YAHAVA KOFFEE WORKS WHOLESALE	CATERING	\$	409.30
11/12/2020	76086	YALAMBI FARM STUD	PAYMENT CANCELLED	\$	
17/12/2020	76274	YALLINGUP COFFEE ROASTING COMPANY	CATERING SERVICES	\$	120.00
12/12/2020	76027	YALLINGUP LANDSCAPES	LANDSCAPING SERVICES	S	121.00
12/12/2020	76142	YELVERTON LIQUID WASTE	LIQUID WASTE REMOVAL	Š	2,912.80
23/12/2020	76555	YELVERTON LIQUID WASTE	LIQUID WASTE REMOVAL	Ś	3,294.50
17/12/2020	76385	ZIPFORM	PRINTING SERVICES	s	3,738.34
11/12/2020	79383	EN - WHITE	- mention services		
				\$	5,805,179.64

	TRUST PAYMENTS DECEMBER 2020							
DATE	DATE REF # NAME DESCRIPTION							
14/12/2020	7539	CITY OF BUSSELTON	BSL & CTF COMMISSION	\$	952.75			
14/12/2020	7540	CONSTRUCTION TRAINING FUND	BCITF LEVY	\$	4,481.08			
14/12/2020	7538	DEPARTMENT OF MINES, INDUSTRY REGULATION & SAFETY	BUILDING SERVICES LEVY	\$	45,503.13			
				\$	50,936.96			

	DIRECT DEBIT PAYMENTS DECEMBER 2020						
DATE	REF #	NAME	DESCRIPTION	AMOUNT			
1/12/2020	4350	AD & EM EMBRY	REFUND OF RATE OVERPAYMENT	\$ 1,239.87			
30/11/2020	4349	AMPOL AUSTRALIA PETROLEUM PTY LTD	FUEL SERVICES	\$ 59,965.13			
1/12/2020	4357	ANZ BANK	BANK FEES	\$ 5,054.13			
4/12/2020	4358	ANZ BANK	BANK FEES	\$ 4,796.22			
4/12/2020	4359	ANZ BANK	BANK FEES	\$ 594.74			
4/12/2020	4360	ANZ BANK	BANK FEES	\$ 263.93			
4/12/2020	4361	ANZ BANK	BANK FEES	\$ 292.38			
1/12/2020	4363	ANZ BANK	BANK FEES	\$ 15.00			
9/12/2020	4366	ANZ BANK	CREDIT CARD PAYMENT	\$ 14,955.41			
	4366	DWER - WATER PERTH	CLEARING PERMIT - BEACH ROAD FOOTPATH	\$ 2,400.00			
	4366	WESTERN POWER PERTH	UNDERGROUND POWER CONNECTION 889 GEOGRAPHE BAY RD BARNARD EAST	\$ 497.92			
	4366	WESTERN POWER PERTH	UNDERGROUND POWER CONNECTION 889 GEOGRAPHE BAY RD BARNARD EAST	\$ 497.92			
	4366	APPLE.COM/BILL SYDNEY	ICLOUD STORAGE	\$ 4.49			
	4366	COLES 4836 BUSSELTON	MORNING TEA- PORT GEO TECHNICAL WORKING GROUP	\$ 20.80			
	4366	HOWARD PARK WINES SUBIACO	REFRESHMENTS FOR CIVIC RECEPTION AREA FROM HOSPICE FUNDRAISER	\$ 240.00			
	4366	SECURE PARKING - 164-1 WEST LEEDERVI	PARKING FEE - LG CHRMAP FORUM-2020 WINTER STORMS	\$ 13.33			
	4366	RAINE SQUARE PERTH	PARKING FEE - DEPT PLANNING LAND AND HERITAGE MEETING	\$ 20.25			
	4366	FACEBK VDCJIX6WV2 FB.ME/ADS	FACEBOOK MARKETING YOUTH SERVICES	\$ 28.33			
	4366	SENDGRID 1-877-969-8647 877-9698647	PROVIDE EMAIL CAPABILITY TO CUSTOMERS	\$ 21.92			
	4366	WWW.OURXPLOR.COM MELBOURNE	VACATION CARE SOFTWARE SUBSCRIPTION- GLC	\$ 165.00			
	4366	WWW.OURXPLOR.COM MELBOURNE	VACATION CARE SOFTWARE SUBSCRIPTION- NCC	\$ 165.00			
	4366	FACEBK 72EXGWEAD2 FB.ME/ADS	FACEBOOK MARKETING	\$ 7.93			
	4366	FACEBK 72EXGWEAD2 FB.ME/ADS	FACEBOOK MARKETING GLC	\$ 92.70			
	4366	AIR SERVICES AUST CANBERRA	12 MONTH ERSA SUBSCRIPTION	\$ 134.00			
	4366	CAMERAHOUSE ONLINE 0289788700	CARD READER FOR YOUTH SERVICES	\$ 69.95			
	4366	MESSAGEMEDIA MELBOURNE	CUSTOMER RETENTION AND CONTACT SYSTEM	\$ 94.07			
	4366	SPOTIFY P122754162 SYDNEY	MUSIC FOR YOUTH EVENTS	\$ 17.99			

4866 FACERK ISGVYWNADD FR. ME/ADS 4866 ART SERIES THE ADMAT PERTH 4866 TISCH PERTH 4866 TISCH PERTH 4866 TISCH PERTH 4866 TISCH PERTH 4866 WINDON PARKING AUSTRAL PERTH 4866 SARE FIRST TRAINING WA AUSTRALIND 4866 CALDARATHY SUMMER URR (64) 423-000 4866 MRBTA MARGARET RIVE 4866 AVATON IO AUSTRALIA MERIMBULA 4866 WWW FACEBOOK COM ADSMA GUNGADN 4866 SARE FIRST TRAINING WA DF AUSTRALIND 4866 WWW. OURKPLOR COM MERDURNE 4866 WAND OURKPLOR COM MERDURNE 4866 MAILCHIND* WONTH HAUCHIND COM 4866 MAILCHIND* WONTH WAILCHIMP COM 4866 LOCAL GOVERNMENT MAILCHIMP COM 4866 LOCAL GOVERNMENT MAILCHIMP COM 4866 LOCAL GOVERNMENT MANAE AST FERTH 4866 LOCAL GOVERN ENDERN MANAE AST FERTH 4866 LOCAL GOVERN ENDERN MANAE AST FERTH 4866 LOCAL GOVERN ENDERN MANAE AST FERTH 4866 MINES GOVER DEPERTING BURSWOOD 4866 PE WILLIAMS 1918 WILLIAMS 4866 PER MASSE BRADBRAND PTY L MORWILLI FACEBOOK MARKETING YOUTH SERVICES ACCOM PERTH MEETINGS PERTH-MEAL PARKING PERTH SIA ON UNE COURSE- 10 PARTICIPANTS COLLABORATIVE SUMMER LIBRARY PROGRAM TICKETS FOR DECEMBER MEMBER MINISLE -PETA TUCK & JAYLENE CHAMBERS AGAC CARD 33,99 171.11 17.00 71.89 343.00 85.08 50.00 257.00 0.06 25.00 441.00 165.00 TICKETS FOR DECEMBER MEMBER MINISCE-PETA TUCK & JAYLENE C ASIC CARD FACEBOOK CHARGE FACEBOOK CHARGE RSA ON LINE COURSE- 10 PARTICIPANTS LOCATION CARE SOFTWARE SUBSCRIPTION- NCC NTAA ANNUAL MEMBER SUBSCRIPTION- NCC NTAA ANNUAL MEMBER SUBSCRIPTION- NCC ATERIAN FROM HIT STATE COMMUNITY PLAN REVIEW THARK YOU GIFT VOUCHERS-STATEGIC COMMUNITY PLAN REVIEW THARK YOU GIFT VOUCHERS-STATEGIC COMMUNITY PLAN REVIEW COUNCIL REFRESHMENTS FUEL DECS VEHICLE COUNCIL REFRESHMENTS FUEL DECS VEHICLE COUNCIL DINNER COSE FOR EMBRICKE 148.67 65.00 4.49 279.12 716.62 6.99 29.57 4966 AUSES BROADBAND PTY I MORWELL 4966 AUSES BROADBAND PTY I MORWELL 4966 APPLE COM/MILL SYDNEY 4966 APPLE COM/MILL SYDNEY 4966 PAYPLA** SYNYLE SERVS AGD9357733 4966 DAYPLA** SYNYLE SERVS AGD9357733 4966 200M US 888-799-9666 WWW ZOOM. US 4966 COLES EXPRESS 2012 DUMSBORDUGH 4966 COLES EXPRESS 2012 DUMSBORDUGH 4966 DNN** T MSBULL IND 4966 MSYS** T MSBULL IND 4966 FAR ASSOCIATION FOR PA SYDNEY 4966 GAOPEN LAWYERS SRISBAN BRISBANE 4966 FAR ASSOCIATION FOR PA SYDNEY 4966 GAOPEN LAWYERS SRISBAN BRISBANE 4966 FAR ASSOCIATION FOR PA SYDNEY 4966 FAR ASSOCIATION FOR ASSOCIATIO MIKE ARCHER ICLOUD 8 SAMSUNG GALANY TAB A KEYBOARD LEATHER STAND CASE COVERINGS 200M PRO LICENCE REFUNDS ACCIDENTAL KINDLE PURCHASE 180.84 124.62 BANK FEES REFUND OF HALL & KEY DEPOSITS REFUND APPLICATION FEE REFUND OF RATE OVERPAYMENT CONTRACT FEES CONTRACT FEES REFUND OF RATE OVERPAYMENT REFUND OF PATE OVERPAYMENT REFUND OF PATE OVERPAYMENT 4962 COMMONWEALTH BANK 4351 D. E.W.R. 4352 FIRST NATIONAL REAL ESTATE 4364 IM. KING 4354 LES MILLS ASIA PACIFIC 4355 LES MILLS ASIA PACIFIC 4357 UTIL'E PEACH EXPRESSO 4353 LOOP DESIGNS 4365 T OLIVER DIRECT DEBIT PAYMENTS DECEMBER 2020 DATE REF # 1/12/2020 PAYROLL CITY OF BUSSELTON PAYROLL 15/12/2020 PAYROLL CITY OF BUSSELTON PAYROLL 29/12/2020 PAYROLL CITY OF BUSSELTON PAYROLL DESCRIPTION 822,269.38 797,966.87 PAYROLL & SALARIES 1.12.20

12.2 <u>Finance Committee - 10/2/2021 - FINANCIAL ACTIVITY STATEMENTS - YEAR TO DATE AS AT</u> 31 DECEMBER 2020

STRATEGIC GOAL 6. LEADERSHIP Visionary, collaborative, accountable

STRATEGIC OBJECTIVE 6.1 Governance systems, process and practices are responsible,

ethical and transparent.

SUBJECT INDEX Financial Services **BUSINESS UNIT** Financial Services

REPORTING OFFICER Manager Financial Services - Paul Sheridan

AUTHORISING OFFICER Director Finance and Corporate Services - Tony Nottle

NATURE OF DECISION Executive: substantial direction setting, including adopting budgets,

strategies, plans and policies (excluding local planning policies); funding, donations and sponsorships; reviewing committee

recommendations

VOTING REQUIREMENT Simple Majority

ATTACHMENTS Attachment A Investment Report - December 2020 1 2020

Attachment B Financial Activity Statement - December 2020 U

This item was considered by the Finance Committee at its meeting on 10/2/2021, the recommendations from which have been included in this report.

COMMITTEE RECOMMENDATION AND OFFICER RECOMMENDATION

That the Council receives the statutory financial activity statement reports for the period ending 31 December 2020, pursuant to Regulation 34(4) of the *Local Government (Financial Management)* Regulations.

EXECUTIVE SUMMARY

Pursuant to Section 6.4 of the Local Government Act 1995 (the Act) and Regulation 34(4) of the Local Government (Financial Management) Regulations 1996 (the Regulations), a local government is to prepare, on a monthly basis, a statement of financial activity that reports on the City's financial performance in relation to its adopted / amended budget.

This report has been compiled to fulfil the statutory reporting requirements of the Act and associated Regulations, whilst also providing the Council with an overview of the City's financial performance on a year to date basis for the period ending 31 December 2020.

BACKGROUND

The Regulations detail the form and manner in which financial activity statements are to be presented to the Council on a monthly basis, and are to include the following:

- Annual budget estimates
- Budget estimates to the end of the month in which the statement relates
- Actual amounts of revenue and expenditure to the end of the month in which the statement relates
- Material variances between budget estimates and actual revenue/expenditure (including an explanation of any material variances)
- The net current assets at the end of the month to which the statement relates (including an explanation of the composition of the net current position)

Additionally, and pursuant to Regulation 34(5) of the Regulations, a local government is required to adopt a material variance reporting threshold in each financial year. At its meeting on 27 July 2020, the Council adopted (C2007/071) the following material variance reporting threshold for the 2020/21 financial year:

That pursuant to Regulation 34(5) of the Local Government (Financial Management) Regulations, the Council adopts a material variance reporting threshold with respect to financial activity statement reporting for the 2020/21 financial year as follows:

- Variances equal to or greater than 10% of the year to date budget amount as
 detailed in the Income Statement by Nature and Type/Statement of Financial
 Activity report, however variances due to timing differences and/or seasonal
 adjustments are to be reported only if not to do so would present an incomplete
 picture of the financial performance for a particular period; and
- Reporting of variances only applies for amounts greater than \$25,000.

OFFICER COMMENT

In order to fulfil statutory reporting requirements and to provide the Council with a synopsis of the City's overall financial performance on a year to date basis, the following financial reports are attached hereto:

Statement of Financial Activity

This report provides details of the City's operating revenues and expenditures on a year to date basis, by nature and type (i.e. description). The report has been further extrapolated to include details of non-cash adjustments and capital revenues and expenditures, to identify the City's net current position; which reconciles with that reflected in the associated Net Current Position report.

Net Current Position

This report provides details of the composition of the net current asset position on a full year basis, and reconciles with the net current position as per the Statement of Financial Activity.

Capital Acquisition Report

This report provides full year budget performance (by line item) in respect of the following capital expenditure activities:

- Land and Buildings
- Plant and Equipment
- Furniture and Equipment
- Infrastructure

Reserve Movements Report

This report provides summary details of transfers to and from reserve funds, and associated interest earnings on reserve funds, on a full year basis.

Additional reports and/or charts are also provided as required to further supplement the information comprised within the statutory financial reports.

Comments on Financial Activity to 31 December 2020

The Statement of Financial Activity (FAS) for the year to date (YTD) as at 31 December 2020 shows an overall Net Current Position of \$26.4M as opposed to the budget of \$22.7M. This represents a positive variance of \$3.7M YTD. This variance fell by \$8M from \$11.7M at the end of November.

The following table summarises the major YTD variances that appear on the face of the FAS, which, in accordance with Council's adopted material variance reporting threshold, collectively make up the above difference. Each numbered item in this lead table is explained further in the report.

	Description	2020/21 Actual YTD \$	2020/21 Amended Budget YTD \$	2020/21 Amended Budget \$	2020/21 YTD Bud Variance %	2020/21 YTD Bud Variance \$	Change in Variance Current Month \$
Re	venue from Ordinar	y Activities		1.32%	879,400	636,389	
1.	Operating Grants, Subsidies & Contributions	2,756,809	1,964,051	4,782,445	40.36%	792,758	565,377
F	fuere Oudine	A ativities			0.070/	2742067	205 402
	penses from Ordina	ry Activities			8.97%	3,713,867	295,483
2.	Materials & Contracts	(7,151,732)	(9,226,677)	(18,710,746)	22.49%	2,074,945	224,669
3.	Utilities	(1,180,961)	(1,390,836)	(2,770,956)	15.09%	209,875	62,531
4.	Other Expenditure	(1,219,913)	(2,294,119)	(5,236,779)	46.82%	1,074,206	147,075
5.	Non-Operating Grants, Subsidies and Contributions	3,744,448	7,557,231	34,437,199	(50.45%)	(3,812,783)	(2,991,712)
Ca	oital Revenue & (Ex	penditure)			2.78%	614,321	(5,457,909)
6.	Land & Buildings	(2,502,565)	(3,201,852)	(17,454,059)	21.84%	699,287	199,115
	Plant & Equipment	(693,830)	(1,222,172)	(2,510,340)	43.23%	528,342	98,062
	Furniture & Equipment	(200,289)	(323,310)	(461,088)	38.05%	123,022	114,180
	Infrastructure	(7,880,369)	(17,007,033)	(40,004,996)	53.66%	9,126,664	1,242,448
7.	Proceeds from Sale of Assets	121,925	433,500	581,500	(71.87%)	(311,575)	(34,000)
8.	Proceeds from New Loans	0	7,500,000	7,700,000	(100.00%)	(7,500,000)	(7,500,000)
9.	Repayment of Capital Lease	(319,152)	(260,950)	(521,900)	(22.30%)	(58,202)	(80,829)
10.	Transfer to Restricted Assets	(2,638,608)	(27,504)	(62,750)	(9493.54%)	(2,611,104)	(35,241)
11.	Transfer from Restricted Assets	664,123	0	2,807,074	100.00%	664,123	532,143

Revenue from Ordinary Activities

In total, revenue from Ordinary Activities is \$636K, or 1.32%, ahead of budget YTD. The only material variance item contributing to this is:

1. Operating Grants, Subsidies and Contributions

Ahead of YTD budget by \$793K, or 40.36%, mainly due to the items listed in the table below:

Revenue Code	Revenue Code Description	Actual YTD \$	Amended Budget YTD \$	Variance YTD \$	Variance YTD %	Change in Variance Current Month \$
Finance and	d Corporate Services	952,706	930,106	22,601	2.37%	73,207
10200	Financial Services – Reimbursements	122,543	103,810	18,733	15.29%	58,315

The second instalment of the LGIS Contributions Assistance Package was due to be received in November, but instead a credit note received from LGIS was offset against scheme policies that were due for payment in early December, at their instruction.

Communit	y and Commercial Services	186,082	160,994	25,088	13.48%	(11,324)
10530	Community Services Administration – State Government Grants	50,000	25,002	24,998	50.00%	(4,167)

The Rio Tinto COVID Relief & Recovery Grant was invoiced in total in August, however the budget was spread evenly over 12 months.

Planning a	nd Development Services	710,930	754,343	(43,413)	(6.11%)	(75,265)
10820	Strategic Planning – State Government Grants	-	37,500	(37,500)	(100.00%)	(37,500)

The variation from Strategic Planning budget (Grant \$37,500) is due to the total grant (\$75,000) being acquitted in two instalments: a 50% payment was received some time ago on achievement of certain project milestones to that stage in the preparation of the 'Coastal Adaptation Strategy' or CHRMAP, 'Coastal Hazard Risk Management and Adaptation Plan'. The final 50% is due to be paid to the City upon Government endorsement of the *final* CHRMAP. Preparation of this complicated and comprehensive document has been set back several times over the past 2 years due to project requirements concerning financial modelling and Government Working Group reviews et al. As such, the City has received approval to extend the anticipated completion date for the project (this has occurred several times) until September 2021 (and it may require even longer). At the moment, it is expected to report on the draft CHRMAP to OCM 24 February, then, if approved, put out for public information/comment for 2-3 months. Then will need to be finalised etc. The \$37,500 final grant payment will therefore not be paid until FY 21/22.

neca to be	need to be initialised etc. The \$57,500 final grant payment will therefore not be paid until 1 1 21/22.					
10830	Environmental Management Administration – State Government Grants	18,780	1	18,780	100.00%	10,000
Grant received in two lots in September and December, however it was budgeted to be received in June.						
10925	Preventative Services – CLAG – State Government Grants	26,418	32,600	(6,182)	(23.40%)	(32,600)
The Depart	The Department of Health contribution to the mosquito program was less than expected.					
10940	Fire Prevention DFES – Contributions	21,203	39,944	(18,741)	(88.39%)	

The \$21K received relates to the last quarter of the 19/20 year. The half yearly reconciliation (for quarters 1 & 2 of the 20/21 year) of the CESM role with DFES remains outstanding and is in progress.

Engineering	g and Works Services	907,091	118,506	788,585	86.94%	578,862
W0267	Road Safety Signage Infrastructure – Federal government Grants	50,000	-	50,000	100.00%	1
The \$98K b	udget for year 1 of the \$194K grant	from the Ro	ad Safety Inn	ovation Fund	d was amend	ed to be
received in	January. However, \$50K relating to	milestone 1	was received	d in Novembe	er.	
11301	Regional Waste Management Administration – Reimbursements	47,958	10,998	36,960	77.07%	(1,833)
participatin	utions to the 2020/21 Southwest R g local governments in November, over 12 months.	•		*		
11501	Operations Services Works – Reimbursements	123,206	30,600	92,606	75.16%	20,938
Workers co	mpensation claims totalling \$122K	have been re	ceived YTD.	This is by nat	ure very diffi	cult to
predict. \$61K was budgeted for the year, spread evenly over 12 months.						
B1401 & B9610	Old Butter Factory – Insurance Reimbursements	149,415	-	149,415	100.00%	133,278

Conservation and fire damage works now completed. Insurance claim has now been approved and paid. Not budgeted as additional works were required for structural and fire compliance that had not been scoped at commencement of the works. Not unusual for conservation projects of this nature. Net impact after insurance claims is estimated at approximately (\$30K).

Expenses from Ordinary Activities

Expenditure from ordinary activities is \$3.7M, or 8.97%, less than expected when compared to the budget YTD as at December. The following individual expense line items on the face of the financial statement have YTD variances that meet the material reporting thresholds:

2. Materials and Contracts

Better than budget by \$2.07M or 22.49%. The table below lists the main variance items that meet the reporting thresholds:

Cost Code	Cost Code Description	Actual YTD \$	Amended Budget YTD \$	Variance YTD \$	Variance YTD %	Change in Variance Current Month \$
Finance a	nd Corporate Services	1,075,484	1,203,488	128,004	10.6%	16,139
10000	Members of Council	63,326	96,868	33,542	34.6%	63,971
The variance is primarily related to the audit fee for the 19/20 financial year, which as at YTD December had not been received.					ember had	
10151	Rates Administration	129,178	150,703	21,525	14.3%	18,797
The variar	nce is predominantly due to the unde	erspend in co	nsultancy. Th	nis budget wa	as for the Rat	ing

The variance is predominantly due to the underspend in consultancy. This budget was for the Rating Strategy Project, funded by reserves. The project has been delayed due to resourcing issues in the Rates Team, plus pending communications with the Minister regarding Rates reviews that could have significant impact on the scope of the project.

10250	Information & Communication Technology Services	680,099	666,212	(13,887)	(2.1%)	(77,415)
	recimology services					

- Software licences Our licences are on track to go over budget this year with the addition of some unplanned software; this should be balanced elsewhere. The payment curve for this is not smooth and we have recently paid some large invoices including T1.
- **Photocopying** As mentioned in Customer Service below, the printer costs are routing through this account hence the budget overspend.
- GIS costs We had planned to use a new image provider at a reduced cost, unfortunately they could
 not provide what was agreed upon and we had to stick with using Landgate, this will be adjusted for
 next budget.

10360	Customer Services	12,233	24,016	11,783	49.1%	2,465

- Photocopying The Finance team going paperless has had a significant impact on our paper spend, especially for coloured paper. In addition, an arrangement has been made with the Executive Assistants for auditing of the stationery supplies in their departments, so ordering has more closely aligned to needs rather than maintaining large stores.
- Computer Consumables Historically printer cartridges etc came from this bucket. With the adoption
 of more printers using a full supply contract this account is not being utilised. We still do order some
 cartridges manually but the number is heavily reduced. This will be reviewed during the upcoming
 budget considerations for 21/22 to get a better idea of actual spend.

10500	Legal & Compliance Services	49,617	30,690	(18,927)	(61.7%)	(21,459)			
Greater th	Greater than expected spend of external legal representation (largely due to increase in								
prosecuti	ons/compliance action plus a Suprem	ne Court mat	ter). It was a	cknowledged	when the le	gal budget			
was set la	st year that a transfer from the legal	reserve may	be required.						
10521	Human Resources & Payroll	19,524	37,678	18,154	48.2%	3,113			
The varia	nce is timing related, with consultand	y funds relat	ed to the org	anisational s	taff survey y	et to be			
expended	I. Procurement is currently in progres	ss with expen	ses expected	l to be incurr	ed by April 2	021.			
10616	Winderlup Villas Aged Housing	16,578	37,926	21,348	56.3%	3,872			
Lower tha	Lower than expected maintenance costs to the end of December. Less reactive maintenance for FY to date.								
Communi	<u>Community and Commercial Services</u> 624,330 1,065,400 441,070 41.4% 55,122								
10380	Busselton Library	24,226	62,309	38,083	61.1%	8,792			

- Furniture & Office Equipment The purchase of new furniture and office equipment (under the
 capitalisation threshold) has been held up due to the new renovations and subsequent requirement
 for furniture and fit-out of the new children's area. Increased expenditure will occur over the next few
 months in line with budget.
- Library Resources Spending on Library Resources was delayed whilst tenders were sought for a new "buy local" initiative. A significant number of purchase orders have been raised since November, with items due to be received over the next few months.
- Entity Specific Consumables Coffee machine has been disposed of which means that there will be no expenditure, and no offset income.
- Photocopying Currently investigating zero expenditure. It appears Photocopy Paper isn't being correctly costed to the library budget before being issued from central stores – will be rectified in consultation with Customer Service Team.

- Contractors Carpet cleaning has been rescheduled to occur in March/April 2021.
- Other Computer costs \$1800 Networking costs no longer required.
- Photocopying see Busselton explanation.
- Library Resources see Busselton explanation.

10510		0.070	07.450	10.10=	S= 22/	2 2 2 2		
10540	Recreation Administration	8,973	27,458	18,485	67.3%	2,907		
•	s still awaiting the outcome of the 20 ccessful, and as such this budget will	•		oplication. It i	is envisaged t	that this		
10541	Recreation Planning	1,030	61,832	60,802	98.3%	16,667		
	9	·	•	•				
Timing of expenditure is largely due in Q2 & Q3 awaiting the outcomes of external grant applications. As of 31 Dec, grant deeds have now been finalised. The expected expenditure is now Q3 and Q4.								
10590	Naturaliste Community Centre	24,791	60,087	35,296	58.7%	627		
The Natur	raliste Community Centre was closed	due to COVI	D and upon r	eopening, wa	as subject to	phased		
	restrictions which limited the attendance numbers and therefore expenditure associated with our programs							
	ces throughout the first two quarters		•					
limited nu	umbers in some activities affecting a	slow return t	o business as	usual and th	nerefore plan	ned		
expenditu	ire. Business is now picking up and w	e are likely to	see increas	ed expenditu	re over the r	next few		
months in	line with budget.			-				
10591	Geographe Leisure Centre	143,453	192,829	49,376	25.6%	3,347		
This is the	same as the factors listed above for	the NCC.	<u> </u>	·		<u> </u>		
10600	Busselton Jetty Tourist Park	213,945	290,508	76,563	26.4%	6,139		
	rity of this variance cost is the month			-		•		
-	resulted due to a timing issue with p					•		
	thin Materials & Contracts are related				•			
railing wit	Property and Business		willer v	VIII Occur till	Jugnout the	year.		
10630	Development	11,841	42,787	30,946	72.3%	5,836		
The budge	et is made up of numerous line items	that have be	en spread th	roughout th	e year. The a	ctual		
timing for	these things are inherently difficult	to predict, as	more often	than not they	y depend on			
interactio	ns with outside third parties for deve	elopment opp	ortunities ar	nd collaborat	ions. For exa	mple, we		
budget fo	r advertising and marketing, but nee	d to wait for	relevant opp	ortunities to	arise throug	hout the		
year that	may not necessarily align with budge	t timing.						
10900	Cultural Planning	46,487	34,448	(12,039)	(34.9%)	5,020		
	spend in YTD budget for Cultural Placks Sculpture.	anning is du	e to the ear	lier than pla	nned comple	etion of the		
11151	Airport Operations	79,512	197,715	118,203	59.8%	3,671		
			197,713	110,203	33.876	3,071		
	et variance YTD includes the key allow	Lations or.						
	urity screening of \$45K not spent;	completed/e	unandadi ani	J				
	tractors - \$42K for tree clearing not aller variances in other areas not yet	•	xpended, and	u				
B1361			20 424	15.022	52.9%	2 100		
	YCAB (Youth Precinct Foreshore)	13,401	28,434	15,033		2,180		
	g grants forecast were not available a	-						
	re funding was sourced to run a prog to deliver will start to be seen.	ram m Dunsb	orough whic	n commence	's rebruary w	nen		
•		F20 70F	1 044 461	FOF 676	10 10/	110 151		
	Statuter Planning	538,785	1,044,461	505,676	48.4%	118,454		
10810	Statutory Planning	5,374	17,022	11,648	68.4%	2,436		
as require	or design peer review work expected ed basis.	i to be paid ir	i January. Tr	iis buaget is e	expenaea in i	an ad noc,		
10830	Environmental Management	167 474	200 210	122.020	44.2%	05.300		
10030	Administration	167,471	300,310	132,839	44.2%	95,360		
Expenditu	ire variance due to timing of Barnard	Park East up	grade works	contract due	April 2021.			
10920	Environmental Health Services	523	15,383	14,860	96.6%	382		
	Administration							
_	et includes error of \$5,000 extra with	-						
•	nt audit outcomes now completed in		•			d level		
meters revealed little to no faults requiring repair due to 2020 COVID event cancellations.								

10931	Protective Burning & Firebreaks – Reserves	20,954	271,944	250,990	92.3%	36,049		
Mitigation	n work is heavily weather reliant. Gra	nt funding is	provided by	State govern	ment in a lur	np sum		
payment and is not reflective of timing on mitigation expenditure. Tender currently in development for the								
implemer	ntation of mechanical and chemical p	rogram acros	s the approv	ed grant app	lication treat	ments.		
Outstand	ing payments of \$16,000 for traffic m	anagement i	not reflected	in current YT	D. Additiona	lly		
payments	payments to Brigades for burning completed in spring has not been made to reflect in YTD, payments will be							
	processed as soon as practicable during summer operations.							
11170	Meelup Regional Park	33,948	91,345	57,397	62.8%	22,502		
Expenditu	ire variance due to timing of awardin	g cultural he	ritage assess	ment contrac	ct as part of t	he Meelup		
Regional I	Park Management Plan review. This v	vas budgeted	d to occur in	November, b	ut is now pla	nned for		
mid-Febru	uary 2021.	_						
B1010-	Bull Car Britania - Warter a	52.000	76 204	22.246	20.6%	(220)		
B1028	Bushfire Brigades – Various	52,968	76,284	23,316	30.6%	(330)		
Emergeno	cy operations dependant. YTD will var	ry according	to operation	al requireme	nts.			
	ng and Works Services	4,911,708	5,908,898	997,190	16.9%	34,549		
11160-				·	(0.4.00()			
11162	Busselton Jetty	31,519	16,248	(15,271)	(94.0%)	1,040		
An incorre	ect posting of \$17K of capital expend	iture will be	corrected in J	lanuary.				
12600	Street & Drain Cleaning	138,762	218,868	80,106	36.6%	(6,786)		
summer r There has	ire timing - The rate of expenditure for months with servicing of the town cent been delays in receiving invoicing from the prior to the rainy season in the last	ntres and sur	rounds incre ors. The majo	asing with th rity of drain a	e extra visito abduction wo	rs to town. orks will		
debris to	mitigate against flooding. This budge	t will be fully	expended co	ome June 30.				
12620 & 12621	Rural & Urban Tree Pruning	78,341	189,000	110,659	58.5%	5,110		
Expenditu	ire timing and reduced expenditure t	o potentially	offset May 2	020 storm d	amage subje	ct to		
DRFAWA	claims.							
Various	Bridges	9,265	90,606	81,341	89.8%	14,399		
Expenditu	ire timing and reduced expenditure t	o potentially	offset May 2	2020 storm d	amage subje	ct to		
DRFAWA	claims.							
Various	Buildings	667,130	710,538	43,408	6.1%	(49,602)		
The majority of scheduled maintenance activities to Buildings occur primarily in the second half of the financial year and costs associated with the busy tourist season also increase costs from December through to Easter; hence the year to date variance to budget (which is spread evenly).								
Various	Other Infrastructure Maintenance	504,098	917,683	413,585	45.1%	30,012		
This broad category encompasses the consolidation of 84 separate and unique services delivered across the City, this includes things like Event support; Boat Ramp maintenance; Cemetery maintenance; maintenance at the Libraries and GLC; Caravan Park maintenance, Street Lighting installation; the Foreshores; the CBD's; Cycleway, Footpaths Maintenance etc. Expenditure variance for November is attributable to timing with the budget having been evenly spread across the financial year. Material & Contractor costs associated with the majority of these areas will gradually increase as we move into the busy summer months of the year.								
_								

Various	Masta sarvisas	998,985	1 224 104	335,120	25.1%	100 262
Various	Waste services	290,965	1,334,104	333,120	25.1%	108,262

The pandemic resulted with more people remaining at home for extended periods, generating more household waste. This, coupled with the two major storm events, requiring more time to process the increased volumes and therefore delays in payment of invoices, has contributed to the larger variances. Other significant contributing factors include:

- The City has suspended the FOGO service (i.e. no collection and no processing costs) for the remainder of the financial year. Furthermore, there were also delays in receiving invoices from various aspects of the recycling contractor as well.
- The planned restoration works associated with the decontamination of the Busselton Transfer Station and its surrounds have not as yet commenced.
- When works at either waste facility have occurred, they were done internally using casual labour and the City's Plant and Equipment, instead of external contractors.

Various	Roads Maintenance	936,967	433,404	(503,563)	(116.2%)	(50,026)
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Higher than normal costs are largely associated with DRFCA WA storm damage claims from the May 2020 storm events. Four claims have been submitted to DFES totalling \$789K, with \$150K of these associated with costs incurred in the previous financial year. The State Government has received advice from the Federal Government in relation to debris removal from road verges and the evidence requirements in support of these types of claims. The State Government is scheduled to commence their detailed review in early February.

Various	Reserve Maintenance	744,597	987,486	242,889	24.6%	(52,354)
Costs asso	ociated with Public Open Spaces are	historically lo	wer in the fir	st half of the	financial vea	ar with an

costs associated with Public Open Spaces are historically lower in the first half of the financial year with an increase in costs beginning as we move into the busier summer period. Monthly costs in December continued to rise accordingly.

5280	Transport - Fleet Management	802,044	1,010,961	208,917	20.7%	34,494

Fuel was underspent by \$112,999 YTD due to lower fuel cost and lower plant and vehicle utilisation. Tyre purchase was underspent by \$15,634 YTD, replacement parts/tooling/contractor costs were underspent by \$80,284 YTD. Budget is spread evenly across the year, however spending is generally more cyclical in nature and peaks in the busier spring/summer/autumn months.

3. Utilities

Costs are \$210K, or 15.1%, under budget as at December YTD. Contributing factors include:

- At year ended 30 June 2020, the June street lighting account was booked in June, rather than in the following month when received per normal practice. Accruals are not done on a monthly basis, so this has the effect of causing actuals to appear to be on average \$75K behind budget in relation to street lighting (until the following June, when actuals will catch up to budget).
- There have been delays in receiving the accounts for parks and reserves from Synergy, due to system issues at their end (along with a number of other electricity accounts). With no accruals on a monthly basis, this also causes what appears to be an underspend against the budget. As at December, system issues at Synergy are still ongoing. Pending resolution of this and a catch up in billing, this should largely rectify itself in coming months as the billing cycles re-align.
- Apart from the Synergy system issues, the invoices that were in fact emailed from Synergy were quarantined at the City end due to the new cyber security practices. The quarantined messages are not visible to Accounts staff, however processes are being developed to ensure they are made aware in a timely fashion to avoid supplier payment delays.

4. Other Expenditure

\$1.07M, or 46.8%, under the budget YTD. The main contributing items are listed below:

Cost Code	Cost Code Description	Actual YTD \$	Amended Budget YTD \$	Variance YTD \$	Variance YTD %	Change in Variance Current Month \$		
Executive S	<u>ervices</u>	48,189	61,482	13,293	21.6%	4,943		
10001	Office of the CEO	48,189	61,482	13,293	21.6%	4,943		
Just under S	Just under \$10,000 is related to there being no expenditure of the CEO's discretionary account. The							
balance are	balance are timing differences.							
Finance and	d Corporate Services	408,376	497,628	89,252	17.9%	10,252		
10000	Members of Council	224,113	275,420	51,307	18.6%	10,324		
reimbursen arrears with Council hole	Timing variances exist in relation to the payment of elected member allowances and reimbursements. As per previous commentary, some of this is related to sitting fees being paid in arrears with a double payment in June. \$7,500 is related to there being no expenditure against the Council holding account, and the balance relates to timing variances for expense reimbursements which are difficult to predict when budgeting.							
10700	Public Relations	37,455	58,112	20,657	35.5%	989		
school exch	The underspend variance is related to a reduced payment to BASSCA this year given COVID-19 and no school exchanges, the cancelling of the Mayoral Breakfast and a reduced spend associated with functions such as the launch of Jetstar flights.							
Community	and Commercial Services	601,743	1,456,616	854,873	58.7%	117,322		
10530	Community Services Administration	265,809	405,538	139,729	34.5%	117,889		
Invoices from Royal Lifesaving have not yet been received for services rendered YTD.								
10532	BPACC Operations	11,668	25,000	13,332	53.3%	5,000		
	arketing materials have been de arge investments in event attrac	•			is secured ι	inder the		
10536	School Chaplaincy Programs	41,400	-	(41,400)	(100.0%)	-		
Historically, budgeted.	Youthcare invoices the City in t	he 2 nd half of	the year, bu	t this year in	voiced earlie	r than		
10546	Jetty Swim	-	20,600	20,600	100.0%	20,600		
that they ar	y Swim agreement, they have been contracted to receive for the 23645.0000 Events Sponsorship (2021 event. T	The PO for th	is was incorre	ectly raised a	gainst		
10547	Iron Man	-	200,000	200,000	100.0%	-		
resolved (Cabillboard, h	s been cancelled for this year ar 2012/159 – 9 December 2020) t owever this will not likely be co	o utilise the r mpleted unti	remaining bu I closer to the	dget towards e end of the f	an electron inancial year	ic ·		
10567	CinefestOZ	80,000	120,000	40,000	33.3%	(80,000)		
COVID (C20 2021/22 Ma	e is due to the sponsorship cont 09/110) - \$80k paid in 2020/21 arket Yield Adjustment.	with the bala	ince (\$38k) c	arried over to	be paid in a	iddition to		
10625	Art Geo Administration	1,628	15,132	13,504	89.2%	1,546		
Underspend interpretati	d is offset by additional wages on work.	due to in h	ouse produc	tion of mark	eting, prom	otional and		

10630	Economic and Business Development Administration	2,010	17,127	15,117	88.3%	1,899
The budget	t is made up of numerous line i	tems that ha	ive been spr	ead through	out the year.	. The actual
timing for	these things are inherently diff	icult to pred	ict, including	valuations	as more ofte	en than not
they depen	d on interactions with outside th	hird parties fo	or developm	ent opportur	nities and col	laborations.
For example, we budget for marketing and promotions, but need to wait for relevant opportunities to						
arise throughout the year that may not necessarily align with budget timing. It should be noted that a						
large portion of the total annual budget (\$55K) relates to cruise ship visitor servicing (\$38K), which due to						
the effects	of COVID is unlikely to be spent	by the end o	f the financia	ıl year.		
11151	Airport Operations	76	413,981	413,905	100.0%	52
Relates to r	marketing activities for RPT servi	ces which ha	ve not comm	nenced due t	o COVID.	
Planning a	nd Development Services	63,517	110,635	47,118	42.6%	11,628
10805	Planning Administration	8,523	30,000	21,477	71.6%	5,000
The subsidy	y for the façade refurbishment a	t the old Hob	son's site wa	s delayed. Tl	nis will be pa	id in
January.						
10830	Environmental Management Administration	119	18,301	18,182	99.3%	773
YTD variand	ce due to timing of Biodiversity I	ncentive Reb	ate Scheme	payment due	May 2021.	
Engineering	g and Works Services	98,088	167,758	69,670	41.5%	2,931
B1223	Micro Brewery - Public Ablution	60,000	120,000	60,000	50.0%	-
The City's f	und contribution to the construc	ction of these	ablutions is	due to be pa	id upon rece	ipt of

5. Non-Operating Grants, Subsidies & Contributions

invoice from the company.

The negative variance of \$3.8M is mainly due to the items in the table below. It should be noted that apart from the first two items in the table (Locke Estate contributions due to COVID hardship relief), any negative variance in this area will approximately correlate to an offsetting variance in a capital project tied to these funding sources. This can be seen in the section below that outlines the capital expenditure variances. The positive variances generally relate to budget timing, i.e. the funds are usually brought to account during the end of financial year reconciliation process, so hence are budgeted in June.

Revenue Code	Revenue Code Description	Actual YTD \$	Amended Budget YTD \$	Variance YTD \$	Variance YTD %	Change in Variance Current Month \$
Finance ar	nd Corporate Services	-	52,000	(52,000)	(100.0%)	(48,000)
R0288	Locke Estate – Leaseholder Contributions	-	52,000	(52,000)	(100.0%)	(48,000)
Planning of	and Development Services	10,592	-	10,592	100.0%	-
B1025	Yallingup Coastal Bushfire Brigade – Donated Assets	10,592	-	10,592	100.0%	-
Engineerin	ng and Works Services	3,733,856	7,505,231	(3,771,375)	(50.2%)	(2,943,712)
A0025	Tuart Drive Bridge 0238 – Federal Capital Grant	-	170,330	(170,330)	(100.0%)	(170,330)
B9407	Busselton Senior Citizens – Developer Cont. Utilised	595,306	162,479	432,827	266.4%	-
B9591	Performing Arts Convention Centre – Developer Cont. Utilised	-	3,000,000	(3,000,000)	(100.0%)	(2,000,000)

C0059	Dunsborough Yacht Club Carpark – Developer Cont.	60,000	-	60,000	100.0%	-
C3116	Dawson Park (McIntyre St POS) – Developer Cont.	-	77,467	(77,467)	(100.0%)	-
F1002	Dual Use Path - Dunsborough to Busselton - State Capital Grant	64,000	-	64,000	100.0%	-
F1022	Buayanyup Drain Shared Path – State Capital Grant	1	160,002	(160,002)	(100.0%)	(26,667)
S0005	Ludlow Hithergreen Road - Second Coat Seal — Main Roads Capital Grant	180,000	225,000	(45,000)	(20.0%)	(37,500)
S0048	Bussell Highway – Developer Cont. Utilised	200,000	250,002	(50,002)	(20.0%)	(41,667)
S0070	Peel & Queen Street Roundabout Service Relocation – Developer Cont. Utilised	120,000	240,000	(120,000)	(50.0%)	-
S0073	Gale Road Rural Reconstruction – Federal Capital Grant	515,811	686,244	(170,433)	(24.8%)	(114,374)
S0074	Causeway Road Duplication – Developer Cont. Utilised	500,000	300,000	200,000	66.7%	-
S0075	Local Road and Community Infrastructure Program – Federal Capital Grant	480,935	525,483	(44,548)	(8.5%)	(285,015)
T0020	Capel Tutunup Road – RTR Capital Grant	-	713,364	(713,364)	(100.0%)	(118,894)
W0067	Ford Road Reconstruct and Asphalt Overlay – Main Roads Direct Grant	10,875	-	10,875	100.0%	-
W0121	Geographe Bay Road Quindalup – Developer Cont. Utilised	12,000	-	12,000	100.0%	-

6. Capital Expenditure

As at 31 December 2020, there is an underspend variance of 48.2%, or \$10.5M, in total capital expenditure, with YTD actual at \$11.3M against the YTD amended budget of \$21.8M. A portion of this positive underspend variance is offset by the negative variance in Non-Operating Grants, Contributions & Subsidies discussed above, with the remainder offset by the negative variances in Transfers From Reserves related to funds held aside for these projects. The attachments to this report include detailed listings of all capital expenditure (project) items, however the main areas of YTD variance are summarised as follows:

Cost Code	Cost Code Description	Actual YTD \$	Amended Budget YTD \$	Variance YTD \$	Variance YTD %	Change in Variance Current Month \$		
<u>Land</u>		-	50,000	50,000	100.0%	37,100		
10610	Property Services Administration	-	50,000	50,000	100.0%	37,100		
The budget represents funds allocated for costs associated with potential strategic land purchases in t City of Busselton. To date, there have been no expenses incurred, as potential transactions have not progressed beyond informal discussions.								
Buildings	<u> </u>	2,502,565	3,151,852	649,287	20.6%	162,015		
B9516	Busselton Library Upgrade	582,177	603,000	20,823	3.5%	(17,214)		
Library w	orks completed. Balance of funds to	be directed	to fit-out item	ıs.				
B9300	Aged Housing Capital Improvements – Winderlup	-	39,600	39,600	100.0%	6,600		
The pow	Works proposed are to separate power and drainage servicing Winderlup Court and Winderlup Villas. The power requirements will not be triggered until the new conditional land title lot is created. Upgrade and separation of drainage is planned to occur this financial year as the infrastructure is damaged.							
B9302	Aged Housing Capital Improvements - Winderlup Court (City)	-	52,000	52,000	100.0%	-		
As per ab	oove.		,					
B9407	Busselton Senior Citizens	620,333	738,128	117,795	16.0%	-		
roof repl	ere completed in September. The sa acement and carpark works. Contrac cement of these works.		_	_	-	tial use on		
B9558	Churchill Park - Change Room Refurbishment	-	21,000	21,000	100.0%	-		
	e scheduled to be completed before tly underway.	the end of t	he financial ye	ear. Procure	ment for ro	of sheeting		
B9591	Performing Arts Convention Centre	923,912	1,143,756	219,844	19.2%	71,961		
_	Growth Fund milestones are under program extension pending. Budget	•	•			esign		
B9596	GLC Building Improvements	57,164	245,826	188,662	76.7%	(13,629)		
	ver works from the prior year. Worked in February/March 2021 to minim				en forecast t	o be		
B9606	King Street Toilets	49,061	23,016	(26,045)	(113.2%)	3,421		
_	vorks completed. ditional works undertaken in this pe	riod to impro	ove accessibili	ty to new vie	ewing platfo	rm.		

B9608	Demolition Allocation	2,011	12,500	10,489	83.9%	12,500	
	(Various Buildings)		·				
	ave been allocated to partial demolitition for its integration with the BPAC		eid Theatre by	tne end of t	ne financia	i year, in	
В9610	Old Butter Factory	130,269	_	(130,269)	(100.0%)	(1 716)	
	ation and fire damage works now cor				•	(1,716)	
	ition estimated to be in the order of	•					
for this v		(JOOK), WILII	savings being	identined in	Other areas	s to account	
	Churchill Park						
B9612	Renew Sports Lights	-	70,000	70,000	100.0%	70,000	
A review of consultants work to date is being undertaken, with a decision to be made Feb/March with							
	f this site is the subject of a grant app						
submitte	ed and funds to be carried forward; if	not, funds t	o be spent thi	s financial ye	ar.		
B9711	Busselton Airport – Building	-	15,000	15,000	100.0%	-	
Small ca	pital works projects to be completed	either prior	to Jetstar fligh	its commend	ing or by th	e end of	
the finar	ncial year.	·					
B9717	Airport Construction, Existing		21,402	21,402	100.0%	3,567	
D3/1/	Terminal Upgrade	_	21,402	21,402	100.0%	3,307	
As per al	oove.						
B9809	Busselton Jetty Tourist Park	3,600	40,000	36,400	91.0%	40,000	
D3003	Compliance Works	3,000	40,000	30,400	91.076	40,000	
Complia	nce electrical works to be completed	by the end o	of the financia	l year.			
Plant &	<u>Equipment</u>	693,830	1,222,172	528,342	43.2%	98,062	
10372	Dunsborough Cemetery	-	20,000	20,000	100.0%	-	
The budget is for maintenance trailers for the cemetery, both for grave shoring equipment and watering							
THE BUU			our for grave	shoring equi	ipinent and	watering	
-	ent, as well as fencing and turf upgrad	•	_		•	_	
equipme		des. The dela	y in procurem	ent of these	•	_	
equipme	ent, as well as fencing and turf upgrad	des. The dela	y in procurem	ent of these	•	_	
equipme workload 10810	ent, as well as fencing and turf upgrades of relevant staff and other project	des. The dela s taking a hig -	y in procurem ther priority to 35,000	nent of these o date. 35,000	items is du	e to current	
equipme workload 10810 Vehicle d	ent, as well as fencing and turf upgrad ds of relevant staff and other project Statutory Planning	des. The dela s taking a hig - ted in Januar	y in procurem ther priority to 35,000 ry. A delay in t	nent of these o date. 35,000 he order was	items is du 100.0% s due to a d	e to current - elay in	
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11403	Plant Purchases (P11)	-	190,000	190,000	100.0%	22,500
1 x vehic	le ordered, delivery expected in Janu	iary – reason	ing similar to	above, anoth	ner ordered	with
delivery	expected in March. 1 x light truck or	dered in Dec	ember, delive	ry expected	in May.	
11404	Plant Purchases (P12)	-	114,000	114,000	100.0%	19,000
1 x light	truck and concrete scarifier to be ord	dered early F	ebruary, deliv	erv expected	l in May.	
11407	P&E - P&G Smart Technologies	, _	49,998	49,998	100.0%	8,333
	ual scope of the project is currently b	l Jeing finalise	•	•		
20/21.	day scope of the project is currently to	cing initialises	a ana achivery	Will follow ii	Title last qu	aditer of
11500	Operations Services	_	40,000	40,000	100.0%	_
	Administration		•	•		
	ordered in October, delivery expecte					
	being experienced by dealers due t	o the govern	ment's stimuli	us package ir	n concurren	ce with
supply cl	hain restrictions due to COVID.	1				
B1025	Yallingup Coastal Bushfire	10,592	-	(10,592)	(100.0%)	-
	Brigade		`			
	eted donated asset (offsetting revenue			400.000	20.40/	444400
<u>Furnitur</u>	e & Office Equipment	200,289	323,310	123,022	38.1%	114,180
10250	Information & Communication Technology Services	190,289	287,310	97,022	33.8%	111,180
Project o	delivery has been affected by COVID	including the	single label d	omain of wh	ich the maj	ority should
-	en spent by now. We are soon to be	_	-		-	•
the varia	·		·			
10591	Geographe Leisure Centre	_	20,000	20,000	100.0%	_
Funds ha	ave been committed in January for th	ne purchase a		•	sability acc	ess hoist for
the pool	•				,	
<u>Infrastru</u>	<u>icture By Class</u>	7,880,369	17,007,033	9,126,664	53.7%	1,242,448
<i>Infrastru</i> Various	<u> </u>	7,880,369 4,245,345	17,007,033 8,443,107	9,126,664 4,197,762	53.7% 49.7%	1,242,448 (183,073)
Various	1	4,245,345	8,443,107	4,197,762	49.7%	(183,073)
Various Capital p	Roads	4,245,345 ly scheduled	8,443,107 to be carried	4,197,762 out later in t	49.7% he financial	(183,073) year, in the
Various Capital p drier sur	Roads projects with civil works are common	4,245,345 ly scheduled The capital w	8,443,107 to be carried orks budgets I	4,197,762 out later in t nave been er	49.7% he financial ntered base	(183,073) year, in the d on an
Various Capital p drier sun even spr	Roads projects with civil works are common nmer/autumn construction season.	4,245,345 ly scheduled The capital w	8,443,107 to be carried orks budgets I	4,197,762 out later in t nave been er	49.7% he financial ntered base	(183,073) year, in the d on an
Various Capital p drier sun even spr	Roads projects with civil works are common nmer/autumn construction season. The add method and approach, not on a	4,245,345 ly scheduled The capital w	8,443,107 to be carried orks budgets I	4,197,762 out later in t nave been er	49.7% he financial ntered base	(183,073) year, in the d on an
Various Capital p drier sur even spr during D Various Bridge p	Roads projects with civil works are common nmer/autumn construction season. The additional earth of the action and approach, not on a ecember. Bridges projects are largely completed toward.	4,245,345 ly scheduled The capital w scheduled tin - Is the end of	8,443,107 to be carried orks budgets h ming of works 721,998	4,197,762 out later in t nave been er basis. Proje 721,998	49.7% he financial ntered base ct delivery 100.0%	(183,073) year, in the d on an increased
Various Capital p drier sur even spr during D Various Bridge p come the	Roads projects with civil works are common mer/autumn construction season. The ead method and approach, not on a ecember. Bridges projects are largely completed toward prough towards the end of the third quantum methods.	4,245,345 ly scheduled The capital w scheduled til - Is the end of uarter.	8,443,107 to be carried orks budgets he ming of works 721,998 the summer n	4,197,762 out later in the nave been ended basis. Proje 721,998 months, will l	49.7% he financial ntered base ct delivery 100.0% billing expec	(183,073) year, in the d on an increased 5,333 cted to
Various Capital p drier sun even spr during D Various Bridge p come the	Roads projects with civil works are common nmer/autumn construction season. The common sead method and approach, not on a ecember. Bridges projects are largely completed toward towards the end of the third questions.	4,245,345 ly scheduled The capital w scheduled tin - ls the end of uarter. 873,044	8,443,107 to be carried orks budgets hing of works 721,998 the summer n 1,026,238	4,197,762 out later in the have been end basis. Project 721,998 nonths, will late 153,194	49.7% he financial ntered base ct delivery i 100.0% billing expect	(183,073) year, in the d on an increased 5,333 eted to (93,408)
Various Capital p drier sur even spr during D Various Bridge p come the Various Generall	Roads projects with civil works are common mer/autumn construction season. The ead method and approach, not on a ecember. Bridges projects are largely completed toward rough towards the end of the third question can be commediately completely compl	4,245,345 ly scheduled The capital w scheduled tin - Is the end of uarter. 873,044 nt, however	8,443,107 to be carried orks budgets hing of works 721,998 the summer n 1,026,238	4,197,762 out later in the have been end basis. Project 721,998 nonths, will late 153,194	49.7% he financial ntered base ct delivery i 100.0% billing expect	(183,073) year, in the d on an increased 5,333 eted to (93,408)
Various Capital p drier sur even spr during D Various Bridge p come the Various Generall projects	Roads projects with civil works are common mer/autumn construction season. The ead method and approach, not on a ecember. Bridges projects are largely completed toward rough towards the end of the third query car Parks y similar to the above Roads comme now that inclement weather has above	4,245,345 ly scheduled The capital w scheduled til - Is the end of uarter. 873,044 nt, however ated.	8,443,107 to be carried orks budgets he ming of works 721,998 the summer n 1,026,238 good progress	4,197,762 out later in the have been ended basis. Project 721,998 months, will be 153,194 shas been metals.	49.7% he financial ntered base ct delivery in 100.0% billing expect 14.9% ade with se	(183,073) year, in the d on an increased 5,333 cted to (93,408) veral
Various Capital p drier sun even spr during D Various Bridge p come the Various Generall projects Various	Roads projects with civil works are common nmer/autumn construction season. The additional method and approach, not on a ecember. Bridges projects are largely completed toward rough towards the end of the third query car Parks y similar to the above Roads comme now that inclement weather has abance of the compaths & Cycleways	4,245,345 ly scheduled The capital w scheduled tin - Is the end of uarter. 873,044 nt, however ated. 164,908	8,443,107 to be carried orks budgets hing of works 721,998 the summer n 1,026,238 good progress 740,910	4,197,762 out later in the have been end basis. Project 721,998 nonths, will late 153,194 has been m	49.7% he financial ntered base ct delivery in 100.0% billing expect 14.9% ade with se 77.7%	(183,073) year, in the d on an increased 5,333 eted to (93,408)
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7. Proceeds From Sale of Assets

YTD proceeds from sale of assets is \$312K behind budget due to delays in delivery of acquisitions, and the associated transfer to auction of the vehicles being replaced.

Also, aside from a significantly reduced capital replacement program in both light vehicles and heavy plant items, many existing items of plant that were due to be replaced have been retained in service to maintain operational requirements.

8. Proceeds From New Loans

The budgeted proceeds of \$7.5M are related to the 50% drawdown on the construction loan for the BPAC. This project has been deferred in consultation with the Federal Government. Construction is now planned to commence in July 2021. Grant funding will start to be acquitted in the second half of 2021, as will the drawdown on the borrowing facility.

9. Repayment of Capital Lease

The budget was being finalised during the first COVID lockdown. As such, the timing was not set as accurately as it could have. The timing difference at the end of December YTD will rectify by the end of January.

10. Transfer to Restricted Assets

There is a YTD variance in transfers to restricted assets of \$2.6M more than amended budget. Grant funding received from Federal Government for "Drought Communities Program" of \$500k (attributable to CC C3223 Dunsborough Non-Potable Water Network). The funding was received in September whereas budget projected allocation was in June. It was anticipated that the expenditure would be incurred in June, hence the funding timing projections followed.

Developer contributions, deposits and bonds are inherently hard to predict and budget for. An annual amount of \$50K spread evenly over 12 months was budgeted, however, over \$2.1M has been received in the YTD as at December, the bulk of which are for road works bonds (\$1.7M).

11. Transfer from Restricted Assets

YTD there has been \$664K transferred from restricted assets into the Municipal Account. This was mainly attributable to refunds of road work bonds of \$492K, refund of hall deposits of \$14K, Busselton Jetty Tourist Park deposit refunds of \$136K, and other sundry refunds of \$22K.

Investment Report

Pursuant to the Council's Investment Policy, a report is to be provided to the Council on a monthly basis, detailing the investment portfolio in terms of performance and counterparty percentage exposure of total portfolio. The report is also to provide details of investment income earned against budget, whilst confirming compliance of the portfolio with legislative and policy limits.

As at 31 December 2020, the value of the City's invested funds totalled \$87.29M, steady from \$89.29M as at 30 November 2020.

The balance of the 11am account (an intermediary account which offers immediate access to the funds compared to the term deposits and a higher rate of return compared to the cheque account) remained unchanged at \$6.0M.

During the month of December, two term deposits totalling the amount of \$8.0M matured. Existing deposits were renewed for a further 182 days at 0.36% on average.

The official cash rate remains steady for the month of December at 0.10%. This will have a strong impact on the City's interest earnings for the foreseeable future.

<u>Chief Executive Officer – Corporate Credit Card</u>

Details of transactions made on the Chief Executive Officer's corporate credit card during December 2020 are provided below to ensure there is appropriate oversight and awareness.

Date	Payee	Description	\$ Amount
14/12/2020	ADINA APARTMENT HOTEL	ACCOMMODATION - RCAWA MEETING	201.39
14/12/2020	PRINT HALL PERTH	MEALS - RCAWA MEETING	74.17
14/12/2020	PRINT HALL PERTH	MEALS - RCAWA MEETING	78.23
15/12/2020	ADINA APARTMENT HOTEL	ACCOMMODATION - RCAWA MEETING	10.12
18/12/2020	RAMADA RESORT DUNSBOROUGH	END OF YEAR COUNCILLOR FUNCTION	1,442.00
21/12/2020	PHIL HOLLETT GALLERY	GIFTS FOR 2021 COMMUNITY CITIZEN OF THE YEAR NOMINEES	220.00
			2,025.91

Statutory Environment

Section 6.4 of the Act and Regulation 34 of the Regulations detail the form and manner in which a local government is to prepare financial activity statements.

Relevant Plans and Policies

There are no relevant plans or policies to consider in relation to this matter.

Financial Implications

Any financial implications are detailed within the context of this report.

Stakeholder Consultation

No external stakeholder consultation was required or undertaken in relation to this matter.

Risk Assessment

An assessment of the potential implications of implementing the officer recommendation has been undertaken using the City's risk management framework, with risks assessed taking into account any controls already in place. No risks of a medium or greater level have been identified.

Options

The Statements of Financial Activity are presented in accordance with Section 6.4 of the Act and Regulation 34 of the Regulations and are to be received by Council. Council may wish to make additional resolutions as a result of having received these reports.

CONCLUSION

Budget timings remain affected by COVID impacts and are gradually being re-aligned. As at 31 December 2020, the City's net current position stands at \$26.4M. The City's financial performance is considered satisfactory, and cash reserves remain strong.

TIMELINE FOR IMPLEMENTATION OF OFFICER RECOMMENDATION

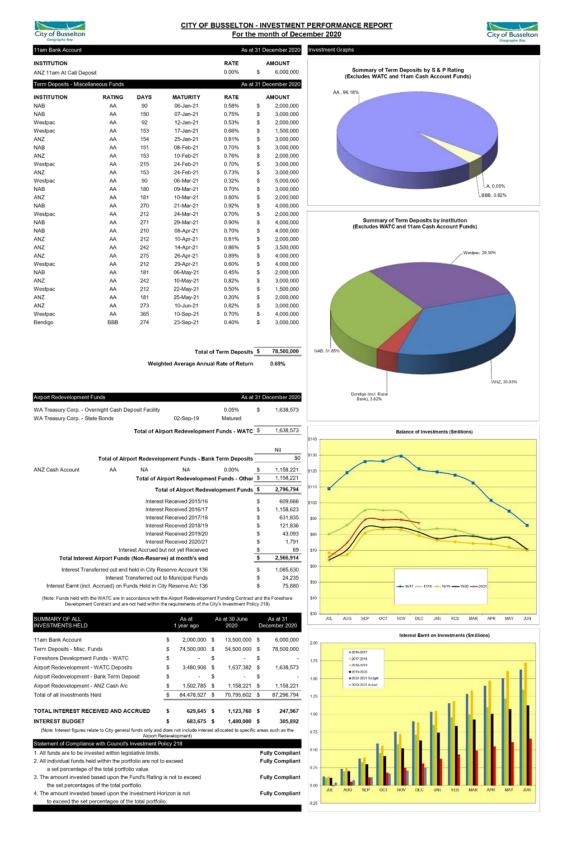
Not applicable.

Attachment A

12.2

Investment Report - December 2020

24 February 2021



City of Busselton

Statement of Financial Activity

Year to Date As At 31 December 2020

	2020/2021	2020/2021	2020/2021	2020/2021	2020/2021	2020/21
	Actual YTD	Amended	Original	Amended	Original	YTD Bud (A)
		Budget YTD	Budget YTD	Budget	Budget	Variance
Revenue from Ordinary Activities	\$	\$	\$	\$	\$	%
Rates	52,260,525	52,404,962	52,404,962	52,759,360	52,759,360	-0.28%
Operating Grants, Subsidies and Contributions	2,756,809	1,964,051	1,844,127	4,782,445	4,454,801	40.36%
Fees & Charges	11,517,823	11,295,361	11,413,676	16,398,638	16,398,638	1.97%
Other Revenue	213,856	204,936	204,936	424,730	424,730	4.35%
Interest Earnings	640,588	640,892	640,892	1,046,684	1,046,684	-0.05%
	67,389,601	66,510,202	66,508,593	75,411,857	75,084,213	1.32%
	67,383,001	00,310,202	00,300,333	73,411,637	73,004,213	1.32/6
Expenses from Ordinary Activities						
Employee Costs	(16,152,379)	(16,986,778)	(16,986,778)	(33,604,206)	(33,604,206)	4.91%
Materials & Contracts	(7,151,732)	(9,226,677)	(9,299,916)	(18,710,746)	(18,710,746)	22.49%
Utilities (Gas, Electricity, Water etc)	(1,180,961)	(1,390,836)	(1,390,836)	(2,770,956)	(2,770,956)	15.09%
Depreciation on non current assets	(12,047,086)	(11,963,694)	(11,963,694)	(24,050,074)	(24,050,074)	-0.70%
Insurance Expenses	(748,617)	(750,924)	(750,924)	(770,664)	(770,664)	0.31%
Other Expenditure	(1,219,913)	(2,294,119)	(2,720,268)	(5,236,779)	(5,236,779)	46.82%
Allocations	804,087	1,202,560	1,202,560	2,425,700	2,425,700	33.14%
	(37,696,601)	(41,410,468)	(41,909,856)	(82,717,725)	(82,717,725)	8.97%
Borrowings Cost Expense						
Interest Expenses	(616,419)	(622,649)	(622,649)	(1,301,926)	(1,301,926)	1.00%
	(616,419)	(622,649)	(622,649)	(1,301,926)	(1,301,926)	1.00%
	(010,413)	(022,043)	(022,043)	(1,301,320)	(1,301,520)	1.00%
Non-Operating Grants, Subsidies and Contributions	3,744,448	7,557,231	6,720,581	34,437,199	29,090,854	-50.45%
Profit on Asset Disposals	(10,232)	19,193	19,193	19,193	19,193	-153.31%
Loss on Asset Disposals	(3,346)	(76,916)	(76,916)	(90,673)	(90,673)	95.65%
	3,730,870	7,499,508	6,662,858	34,365,719	29,019,374	-50.25%
Net Result	32,807,451	31,976,592	30,638,946	25,757,925	20,083,936	2.60%
THE RESULT	32,007,431	31,570,332	30,030,540	25,757,525	20,003,330	2.00%
Adjustments for Non-cash Revenue & Expenditure						
Depreciation	12,047,086	11,963,694	11,963,694	24,050,074	24,050,074	
Donated Assets	0	0	0	(6,873,200)	(6,597,200)	
(Profit)/Loss on Sale of Assets	13,578	57,723	57,723	71,480	71,480	
Allocations & Other Adjustments	217,234	0	0	0	0	
Deferred Pensioner Movements (Non-current) Recording of Employee Benefit Provisions (NC)	20,466	0	0	0	0	
Deposit & Bonds Movements (cash backed NC)	1,464,369	0	0	0	0	
Future Obligations Net Movements (NC)	878,509	332,610	332,610	(4,969,897)	(4,909,897)	
Capital Revenue & (Expenditure) Land & Buildings	(2,502,565)	(3,201,852)	(8,733,075)	(17,454,059)	(17,454,059)	21.84%
Plant & Equipment	(693,830)	(1,222,172)	(1,222,172)	(2,510,340)	(2,510,340)	43.23%
Furniture & Equipment	(200,289)	(323,310)	(247,090)	(461,088)	(461,088)	38.05%
Infrastructure	(7,880,369)	(17,007,033)	(16,655,020)	(40,004,996)	(33,943,507)	53.66%
Right of Use Assets	(7,000,505)	(17,007,033)	(10,033,020)	(40,004,550)	(33,343,307)	33.00%
Proceeds from Sale of Assets	121,925	433,500	433,500	581,500	581,500	-71.87%
	121,525	,	455,500	552,555		
Proceeds from New Loans					7.700.000	-100.00%
Proceeds from New Loans Self Supporting Loans - Repayment of Principal	0	7,500,000	7,500,000	7,700,000	7,700,000 76,082	-100.00% 5.53%
Self Supporting Loans - Repayment of Principal	0 38,385	7,500,000 36,372	7,500,000 36,372	7,700,000 76,082	76,082	-100.00% 5.53% 0.00%
	0 38,385 (1,513,229)	7,500,000 36,372 (1,513,230)	7,500,000 36,372 (1,513,230)	7,700,000		5.53%
Self Supporting Loans - Repayment of Principal Total Loan Repayments - Principal	0 38,385	7,500,000 36,372	7,500,000 36,372	7,700,000 76,082 (3,202,662)	76,082 (3,202,662)	5.53% 0.00%
Self Supporting Loans - Repayment of Principal Total Loan Repayments - Principal Repayment Capital Lease	0 38,385 (1,513,229) (319,152)	7,500,000 36,372 (1,513,230) (260,950)	7,500,000 36,372 (1,513,230) (260,950)	7,700,000 76,082 (3,202,662) (521,900)	76,082 (3,202,662) (521,900)	5.53% 0.00% -22.30%
Self Supporting Loans - Repayment of Principal Total Loan Repayments - Principal Repayment Capital Lease Advances to Community Groups	0 38,385 (1,513,229) (319,152) 0	7,500,000 36,372 (1,513,230) (260,950) 0	7,500,000 36,372 (1,513,230) (260,950) 0	7,700,000 76,082 (3,202,662) (521,900) (200,000)	76,082 (3,202,662) (521,900) (200,000)	5.53% 0.00% -22.30% 0.00%
Self Supporting Loans - Repayment of Principal Total Loan Repayments - Principal Repayment Capital Lease Advances to Community Groups Transfer to Restricted Assets	0 38,385 (1,513,229) (319,152) 0 (2,638,608)	7,500,000 36,372 (1,513,230) (260,950) 0 (27,504)	7,500,000 36,372 (1,513,230) (260,950) 0 (27,504)	7,700,000 76,082 (3,202,662) (521,900) (200,000) (62,750)	76,082 (3,202,662) (521,900) (200,000) (62,750)	5.53% 0.00% -22.30% 0.00% -9493.54%
Self Supporting Loans - Repayment of Principal Total Loan Repayments - Principal Repayment Capital Lease Advances to Community Groups Transfer to Restricted Assets Transfer from Restricted Assets	0 38,385 (1,513,229) (319,152) 0 (2,638,608) 664,123	7,500,000 36,372 (1,513,230) (260,950) 0 (27,504)	7,500,000 36,372 (1,513,230) (260,950) 0 (27,504)	7,700,000 76,082 (3,202,662) (521,900) (200,000) (62,750) 2,807,074	76,082 (3,202,662) (521,900) (200,000) (62,750) 2,747,074	5.53% 0.00% -22.30% 0.00% -9493.54% 0.00%
Self Supporting Loans - Repayment of Principal Total Loan Repayments - Principal Repayment Capital Lease Advances to Community Groups Transfer to Restricted Assets Transfer from Restricted Assets Transfer to Reserves	0 38,385 (1,513,229) (319,152) 0 (2,638,608) 664,123 (9,160,769)	7,500,000 36,372 (1,513,230) (260,950) 0 (27,504) 0 (9,229,472)	7,500,000 36,372 (1,513,230) (260,950) 0 (27,504) 0 (9,229,472)	7,700,000 76,082 (3,202,662) (521,900) (200,000) (62,750) 2,807,074 (20,025,834)	76,082 (3,202,662) (521,900) (200,000) (62,750) 2,747,074 (20,025,834)	5.53% 0.00% -22.30% 0.00% -9493.54% 0.00% 0.74%
Self Supporting Loans - Repayment of Principal Total Loan Repayments - Principal Repayment Capital Lease Advances to Community Groups Transfer to Restricted Assets Transfer from Restricted Assets Transfer from Reserves Transfer from Reserves	0 38,385 (1,513,229) (319,152) 0 (2,638,608) 664,123 (9,160,769) 2,575,952	7,500,000 36,372 (1,513,230) (260,950) 0 (27,504) 0 (9,229,472) 2,692,905	7,500,000 36,372 (1,513,230) (260,950) 0 (27,504) 0 (9,229,472) 2,692,905	7,700,000 76,082 (3,202,662) (521,900) (200,000) (62,750) 2,807,074 (20,025,834) 34,768,797	76,082 (3,202,662) (521,900) (200,000) (62,750) 2,747,074 (20,025,834) 34,105,297	5.53% 0.00% -22.30% 0.00% -9493.54% 0.00% 0.74%

City of Busselton

Net Current Position

Year to Date As At 31 December 2020

	2020/21 Actual	2020/21 Amended Budget	2020/21 Original Budget	2019/20 Actual
NET CURRENT ASSETS	\$	\$	\$	\$
CURRENT ASSETS				
Cash - Unrestricted	13,809,124	1,121,325	1,121,325	1,595,11
Cash - Restricted	77,465,488	51,418,897	52,142,397	68,906,18
Sundry Debtors	1,226,520	2,000,000	2,000,000	2,122,41
Rates Outstanding - General	13,621,238	1,500,000	1,500,000	1,506,93
Stock on Hand	16,543	25,802	25,802	25,80
	106,138,912	56,066,024	56,789,524	74,156,45
LESS: CURRENT LIABILITIES				
Bank Overdraft	0	0	0	
Sundry Creditors	2,259,365	4,647,127	4,647,127	4,776,47
Performance Bonds	3,929,844	2,465,476	2,465,476	2,465,47
	6,189,209	7,112,603	7,112,603	7,241,94
Current Position (inclusive of Restricted Funds)	99,949,703	48,953,421	49,676,921	66,914,50
Add: Cash Backed Liabilities (Deposits & Bonds)	3,929,844	2,465,476	2,465,476	2,465,47
Less: Cash - Restricted Funds	(77,465,488)	(51,418,897)	(52,142,397)	(68,906,18
NET CURRENT ASSET POSITION	26,414,060	(0)	0	473,79

Financial Activity Statement - December 2020

	Description	2020/ 21 Actual	2020/21 Amended Budget YTD	2020/21 Original Budget YTD	2020/21 Amended Budget	2020/21 Original Budget	2020/21 Budget YTD Variance
>> Prope	erty, Plant & Equipment	\$	\$	\$	\$	\$	%
	Land						
10610	Property Services Administration	0	50,000	50,000	150,000	150,000	-100.00%
10010	rioperty services Administration						
		0	50,000	50,000	150,000	150,000	-100.00%
	Buildings						
	Major Projects						
	Major Project - Library Expansion						
B9516	Busselton Library Upgrade	582,177	603,000	442,490	608,000	608,000	-3.45%
		582,177	603,000	442,490	608,000	608,000	-3.45%
	Major Project - Administration Building	382,177	603,000	442,490	608,000	608,000	-3.4370
B9010	Civic and Administration Centre Minor Upgrades	5.155	3.624	3,624	7,248	7,248	42.26%
					77.10		
	Buildings (Other)	5,155	3,624	3,624	7,248	7,248	42.26%
B9300	Aged Housing Capital Improvements - Winderlup	0	39,600	39,600	80,000	80,000	-100.00%
B9301	Aged Housing Capital Improvements - Harris Road	39,294	30,000	30,000	60,000	60,000	30.98%
B9302 B9407	Aged Housing Capital Improvements - Winderlup Court (City)	0 620,333	52,000 738,128	52,000 450,305	52,000 738.128	52,000 738.128	-100.00% -15.96%
B9534	Busselton Senior Citizens Community Resource Centre	6,061	738,128	450,305	738,128 50.000	738,128 50.000	-15.96%
B9556	NCC Upgrade	0,001	0	0	130,000	130,000	0.00%
B9558	Churchill Park - Change Room Refurbishment	0	21,000	21,000	21,000	21,000	-100.00%
B9591	Performing Arts Convention Centre	923,912	1,143,756	7,123,312	14,246,200	14,246,200	-19.22%
B9596	GLC Building Improvements	57,164	245,826	245,826	491,657	491,657	-76.75%
B9605 B9606	Energy Efficiency Initiatives (Various Buildings King Street Toilets	0 49,061	0 23,016	0 23,016	103,000 46,026	103,000 46,026	0.00% 113.16%
B9607	General Buildings Asset Renewal Allocation (Various Building	66,234	75,000	75,000	150,000	150,000	-11.69%
B9608	Demolition Allocation (Various Buildings)	2,011	12,500	12,500	25,000	25,000	-83.91%
B9610	Old Butter Factory	130,269	0	0	0	0	0.00%
B9611	Smiths Beach New Public Toilet	398	0	0	200,000	200,000	0.00%
B9612	Churchill Park Renew Sports Lights	0	70,000	70,000	140,000	140,000	-100.00%
B9613	GLC CCTV Installation	16,895	18,000	18,000	18,000	18,000	-6.14%
B9711 B9717	Busselton Airport - Building Airport Construction, Existing Terminal Upgrade	0	15,000 21,402	15,000 21,402	15,000 42,800	15,000 42.800	-100.00% -100.00%
B9809	Busselton Jetty Tourist Park Compliance Works	3,600	40,000	40,000	80,000	80,000	-91.00%
		1,915,232	2,545,228	8,236,961	16,688,811	16,688,811	-24.75%
	Total Buildings	2,502,565	3,151,852	8,683,075	17,304,059	17,304,059	-20.60%
	Plant & Equipment						
40:							
10100 10372	Finance & Corporate Services Support Dunsborough Cemetery	0	20,000	20,000	50,000 20,000	50,000 20,000	0.00%
10372	Statutory Planning	0	35,000	35,000	35,000	35,000	-100.00%
10920	Environmental Health Services Administration	0	35,000	35,000	35,000	35,000	-100.00%
10950	Animal Control	52,228	50,000	50,000	50,000	50,000	4.46%
10980	Other Law, Order & Public Safety	52,228	50,000	50,000	50,000	50,000	4.46%
11106	Street Lighting Installations	17,300	0	0	0	0	0.00%
11151 11156	Airport Operations Airport Development Operations	38,845 172,865	40,000 141,552	40,000 141,552	40,000 283,100	40,000 283,100	-2.89% 22.12%
11156	Airport Development Operations Busselton Jetty	172,865	141,552 15,000	141,552 15,000	283,100 15,000	283,100 15,000	-100.00%
11401	Transport - Workshop	10,410	30,000	30,000	30,000	30,000	-65.30%
11402	Plant Purchases (P10)	321,201	400,000	400,000	1,420,000	1,420,000	-19.70%
11403	Plant Purchases (P11)	0	190,000	190,000	205,000	205,000	-100.00%
11404	Plant Purchases (P12)	0	114,000	114,000	114,000	114,000	-100.00%
11406	Plant Purchases (P14)	18,160	11,622	11,622	23,240	23,240	56.26%
11407	P&E - P&G Smart Technologies	0	49,998	49,998	100,000	100,000	-100.00%

12.2 Attachment B Financial Activity Statement - December 2020

	Description	2020/21					
		Actual	2020/21	2020/21	2020/21	2020/21	2020/21
			Amended	Original	Amended	Original	Budget YTD
			Budget YTD	Budget YTD	Budget	Budget	Variance
11500	Operations Services Administration	0	40,000	40,000	40,000	40,000	-100.00%
B1025	Yallingup Coastal Bushfire Brigade	10,592	0	0	0	0	0.00%
	-	693,830	1,222,172	1,222,172	2,510,340	2,510,340	-43.23%
		,				, ,	
	Furniture & Office Equipment						
10250	Information & Communication Technology Services	190,289	287,310	211.090	407,088	407,088	-33,77%
10590	Naturaliste Community Centre	190,289	6,000	6,000	12,000	12,000	-100.00%
10591	Geographe Leisure Centre	0	20,000	20,000	20,000	20,000	-100.00%
10625	Art Geo Administration	10,000	10,000	10,000	10,000	10,000	0.00%
10900	Cultural Planning	0	0	0	12,000	12,000	0.00%
	-	200,289	323,310	247.090	461.088	461.088	-38.05%
		200,289	323,310	247,090	461,088	461,088	-38.03%
	Sub-Total Property, Plant & Equipment	3,396,684	4,747,335	10,202,337	20,425,487	20,425,487	-28.45%
>> Infras	structure						
	Roads						
50005	Ludlow Hithergreen Road - Second Coat Seal	119,671	337,506	337,506	675,000	675,000	-64.54%
\$0048	Bussell Highway	21,136	374,988	374,988	750,000	750,000	-94.36%
50070	Peel & Queen Street Roundabout Service Relocation	69,275	225,000	225,000	1,200,000	450,000	-69.21%
50072	Kaloorup Road - Reconstruct and Seal Shoulders	825	205,002	205,002	410,000	410,000	-99.60%
S0073 S0074	Gale Road Rural Reconstruction Causeway Road Duplication	8,199 1,858,811	718,500 2,036,002	718,500 2,036,002	1,437,000 2,286,000	1,437,000 2,286,000	-98.86% -8.70%
50074	Local Road and Community Infrastructure Program	1,858,811	525,483	480,936	1,006,417	961,870	-8.70%
50076	Kaloorup Road (Stage 1)	29,865	0	0	400,500	0	0.00%
50321	Yoongarillup Road - Second Coat Seal	135	69,504	69,504	139,000	139,000	-99.81%
S0323	Piggot Road - Second Coat Seal	0	6,498	6,498	13,000	13,000	-100.00%
50328	Wonnerup South Road Second Coat Seal	446	36,000	36,000	72,000	72,000	-98.76%
S0329	Georgette Street Reconstruction	109	70,014	70,014	140,000	140,000	-99.84%
50330 T0019	Hakea Way Asphalt Overlay Wonnerup South Road - Reconstruct and Widening (narrow seal)	226 109,974	42,450 448,000	42,450 0	85,000 448,000	85,000 0	-99.47% -75.45%
T0020	Capel Tutunup Road	13,677	757,506	757,506	1,515,000	1,515,000	-98.19%
T0086	Yoongarillup Road - Reconstruct & Widen (Western Section)	204,763	212,952	212,952	425,917	425,917	-3.85%
V0002	Eastern Link - Busselton Traffic Study	412,622	541,750	541,750	541,750	541,750	-23.84%
V0006	Eastern Link - Causeway Road Service Relocations	170,051	200,000	200,000	200,000	200,000	-14.97%
W0015	Gale Road - Reconstruction (50% Council)	20,414	15,000	15,000	30,000	30,000	36.09%
W0027	Bus Bays & Shelters	235	0	0	0	0	0.00%
W0032 W0044	Chamber Road Brash Road Yallingup	3,003 12,210	12,024 27,504	12,024 27,504	24,000 55,000	24,000 55,000	-75.02% -55.60%
W0044	Ford Road Reconstruct and Asphalt Overlay	246	40,000	40,000	75,600	75,600	-99.38%
W0108	Yelverton Road	143	58,026	58,026	116,000	116,000	-99.75%
W0121	Geographe Bay Road Quindalup	457,871	365,010	365,010	990,000	730,000	25.44%
W0176	Signage (Alternate CBD Entry)	18,883	16,000	16,000	16,000	16,000	18.02%
W0201	McDonald Rd Gravel Resheet Slk 1.40 - 2.49	32,918	29,004	29,004	58,000	58,000	13.50%
W0231 W0232	Carey Street - Asphalt Overlay & Kerb Stanley Street - Asphalt Overlay, Kerbing & Parking	187,031 0	94,590 73,530	94,590 73.530	189,179 147,000	189,179 147,000	97.73% -100.00%
W0240	Metricup Yelverton Road - Gravel Resheet	58,908	24,978	24,978	50,000	50,000	135.84%
W0242	Doyle Road - Gravel Resheet	347	0	0	0	0	0.00%
W0243	Alfred Road - Gravel Resheet	5,649	24,978	24,978	50,000	50,000	-77.38%
W0244	Koorabin Drive - Reconstruction & Intersection	1,235	72,000	72,000	144,000	144,000	-98.28%
W0246	Barnard Park East Foreshore Stage 2 Capital Works	0	203,000	203,000	203,000	203,000	-100.00%
W0247	Harvest Road Asphalt Overlay Kerb & Footpath	186	160,002	160,002	320,000	320,000	-99.88% 66.41%
W0248 W0249	Boyle Street Asphalt Overlay Chloe Court Asphalt Overlay	99,848 65,851	60,000 60,000	60,000 60,000	120,000 120,000	120,000 120,000	9.75%
W0249	Egret Close Asphalt Overlay	28,608	32,502	32,502	65,000	65,000	-11.98%
W0254	Bird Crescent Asphalt Overlay	98	6,996	6,996	14,000	14,000	-98.60%
W0255	Donnelly Court Reseal	441	14,982	14,982	30,000	30,000	-97.06%
W0258	Jingarie Place Reconstruction	502	34,998	34,998	70,000	70,000	-98.57%
W0259	Clinker Drive Roundabout Reconstruction	90	7,530	7,530	15,000	15,000	-98.80%
W0260	Sanson Road Resheet	1,718 30.982	6,024	6,024	12,000	12,000	-71.48% 121.24%
W0261 W0262	Treemartin Road Resheet Yallingup Siding Road Resheet	30,982 9,991	14,004 26,496	14,004 26,496	28,000 53,000	28,000 53,000	121.24% -62.29%
W0262	Marybrook Road Resheet	4,664	12,024	12,024	24,000	24,000	-61.21%
W0264	Caves Road - Median Crossing	0	12,252	12,252	24,500	24,500	-100.00%
W0265	Seascape Rise - Road Safety Upgrade	1,985	117,498	117,498	235,000	235,000	-98.31%
W0266	Layman Road Pull Over Bay	0	15,000	15,000	30,000	30,000	-100.00%

	Description	2020/21					
	- Search British	Actual	2020/21	2020/21	2020/21	2020/21	2020/21
			Amended	Original	Amended	Original	Budget YTD
			Budget YTD	Budget YTD	Budget	Budget	Variance
W0267	Road Safety Signage Infrastructure	8,498	0	0	117,985	0	0.00%
		4,245,345	8,443,107	7,950,560	15,170,848	13,149,816	-49.72%
A0014	Bridges Bussell Highway - 0241	0	372,000	372,000	744,000	744,000	-100.00%
A0022	Yallingup Beach Road Bridge - 3347	0	349,998	349,998	700,000	700,000	-100.00%
A0023	Kaloorup Road Bridge - 3381	0	0	69,000	936,000	138,000	0.00%
A0024	Boallia Road Bridge - 4854	0	0	69,000	1,009,000	138,000	0.00%
A0025	Tuart Drive Bridge 0238	0	0	0	3,010,989	567,000	0.00%
		0	721,998	859,998	6,399,989	2,287,000	-100.00%
C0043	Car Parks Administration Building Carpark	0	50,000	50,000	100,000	100,000	-100.00%
C0044	Meelup Coastal Nodes - Carpark upgrade	21,648	10,296	10,296	20,595	20,595	110.26%
C0050	Forth Street Groyne Carpark - Formalise and Seal	0	27,300	27,300	54,600	54,600	-100.00%
C0051	Vasse Oval Gravel Car Parking - Dawson (Eastern Side)	0	100,002	100,002	200,000	200,000	-100.00%
C0052	Vasse Kaloorup Oval Carpark Development	51,625	27,138	27,138	54,270	54,270	90.23%
C0053	Car Parking - Rear of Hotel Site 1	450,965	261,240	261,240	522,480	522,480	72.62%
C0054	Barnard East Car Parking	0	39,366	39,366	78,730	78,730	-100.00%
C0055	Barnard Park East Foreshore Car Parking	13,237	80,000	80,000	310,000	310,000	-83.45%
C0057 C0058	Baudin Memorial Carpark Eagle Bay Carpark	102,088	42,018 42,018	42,018 42,018	84,000 84,000	84,000 84,000	-100.00% 142.96%
C0059	Dunsborough Yacht Club Carpark	42,869	160,000	160,000	160,000	160,000	-73.21%
C0060	King Street Carpark Reconstruction	190,611	186,860	140,000	186,860	140,000	2.01%
		873,044	1,026,238	979,378	1,855,535	1,808,675	-14.93%
	Footpath and Cycleways	073,044	1,020,230	373,370	1,000,000	1,000,075	14.5570
F0002	Bussell Highway - Novacare link to Broadwater Shops	16,153	15,000	15,000	15,000	15,000	7.69%
F0066	Bussell Highway Footpath Sections	960	85,000	85,000	143,000	143,000	-98.87%
F0067	Beach Road Dunsborough Footpath	3,817	103,002	103,002	206,000	206,000	-96.29%
F0084	Thompson Way - New Path	1,079	3,924	3,924	7,848	7,848	-72.50%
F0089	Barnard East Footpaths	878	45,618	45,618	91,240	91,240	-98.08%
F0090	DAIP - Disability Access	0	12,330	12,330	24,657	24,657	-100.00%
F0092	Acorn Place Webb Street	0 50,704	20,004 22,770	20,004	40,000 45.500	40,000 45,500	-100.00% 122.68%
F0093	Georgette Street	30,704	15,756	15,756	31.500	31,500	-100.00%
F0095	Fern Road	7,446	22,506	22.506	45.000	45.000	-66.91%
F0096	Stanley Place	218	5,004	5,004	10,000	10,000	-95.64%
F0098	Dunsborough Centennial Park Project	0	49,998	49,998	100,000	100,000	-100.00%
F0100	Micro Brewery - Footpath and Landscaping	81,120	0	0	170,000	170,000	0.00%
F0101	Yalyalup Pump Track & Temporary Toilet	0	0	0	150,000	150,000	0.00%
F1005	End of Trip Facilities for Cyclists	284	20,000	20,000	20,000	20,000	-98.58%
F1022	Buayanyup Drain Shared Path	2,250	319,998	319,998	640,000	640,000	-99.30%
		164,908	740,910	740,910	1,739,745	1,739,745	-77.74%
C1012	Parks, Gardens and Reserves Townscape Street Furniture Replacement - Busselton	0	4.998	4.998	10.000	10.000	-100.00%
C1012	Townscape Works Dunsborough	2,072	75.000	75.000	150,000	150,000	-97.24%
C1511	RBFS Various Grant Applications	26,270	25.000	25,000	50,000	50.000	5.08%
C1604	Pioneer Cemetery Infrastructure Upgrades	0	41,125	41,125	41,125	41,125	-100.00%
C1605	Busselton Cemetery Infrastructure Upgrades	6,486	39,998	39,998	80,000	80,000	-83.78%
C1609	Pioneer Cemetery - Implement Conservation Plan	2,811	10,002	10,002	20,000	20,000	-71.89%
C1753	Eagle Bay Viewing Platform	0	0	0	95,458	95,458	0.00%
C1760	King Street Reserve - Park Upgrade (Coastal Node)	53,980	23,790	23,790	47,582	47,582	126.90%
C2006	Depot Washdown Facility Upgrades	0	41,250	41,250	82,500	82,500	-100.00%
C2504 C2512	Groyne Construction Sand Re-Nourishment	44,270	25,752 62,250	25,752 62,250	51,500 124.500	51,500 124,500	71.91%
C2512	Sand Re-Nourishment Coastal Protection Works	37,022 21,607	22,500		124,500 45.000	45.000	-40.53% -3.97%
C2520	Baudin/ Wonnerup Groynes	28,558	22,500	22,500	45,000 25.000	25.000	0.00%
C2520	Storm Damage Renewal of Infrastructure	20,530	18.546	18.546	37.090	37.090	-100.00%
C2527	Craig Street Groyne and Sea Wall	16,880	450,000	450,000	660,000	660,000	-96.25%
C3006	Playgrounds General - Replacement of playground equipment	4,535	12,498	12,498	25,000	25,000	-63.71%
C3007	Park Furniture Replacement - Replace aged & unsafe Equip	0	12,504	12,504	25,000	25,000	-100.00%
C3048	BBQ Placement and Replacement	2,253	15,000	15,000	15,000	15,000	-84.98%
C3094	Busselton Foreshore - Stage 3	2,681	52,718	52,718	55,436	55,436	-94.91%
C3103	Youth Skate Park	4,768	7,500	7,500	15,000	15,000	-36.42%
C3112	Busselton Foreshore - Exercise Equipment	36,611	217,650	217,650	217,650	217,650	-83.18%
C3113	Busselton Tennis Club - Infrastructure	33,347	23,868	23,868	47,739	47,739	39.71%
C3116	Dawson Park (Mcintyre St Pos)	98	187,467	110,000	187,467	110,000	-99.95%

Financial Activity Statement - December 2020 Attachment B

Description	2020/ 21 Actual	2020/21 Amended	2020/21 Original	2020/21 Amended	2020/21 Original	2020/21 Budget YTD
		Budget YTD	Budget YTD	Budget	Budget	Variance
Rails to Trails - Continuation of Implementation Plan	27,766	49,998	49,998	100,000	100,000	-44.47%
Vasse Oval Kaloorup - Grassing of Existing Oval	3,470	15,000	15,000	30,000	30,000	-76.87%
Churchill Park Vasse River Foreshore - Bridge to Bridge	98,527	109,998 13.998	109,998 13,998	220,000 28.000	220,000 28.000	-10.43% -100.00%
vasse River Foreshore - Bridge to Bridge Lou Weston Oval - Courts	507,103	253,824	253,824	507,650	507,650	99.79%
Port Geographe Reticulation Upgrades	55	47,297	47.297	47,297	47.297	-99.88%
Possum Park Barnard East Upgrade	839	25,000	25,000	30,000	30.000	-96,64%
Meelup Regional Park - Capital Projects	47,125	42,756	42,756	85,509	85,509	10.22%
Vasse SAR Area General Improvements to the Area	29,635	25,002	25,002	50,000	50,000	18.53%
Provence SAR Area General Improvements to the Area	93,581	100,002	100,002	125,000	125,000	-6.42%
Port Geographe Street Light Replacement	6,490	41,502	41,502	82,994	82,994	-84.36%
Port Geographe General Improvements/ Foreshore	2,355	17,502	17,502	35,000	35,000	-86.54%
andscaping - Old Busselton Tennis Club Site	368,420	184,758	184,758	369,520	369,520	99.41%
Barnard East Underground Power Barnard East Landscaping	6,996	82,650 120,000	82,650 120.000	165,297 240,000	165,297 240.000	-91.54% 17.79%
Barnard East Landscaping VicBride Park - POS Upgrade	141,349 0	120,000 32,538	32,538	32,538	32,538	-100.00%
Fulloh St (Geographe Bay Road) - POS Upgrade	0	90,332	90.332	90,332	90.332	-100.00%
Siesta Park -Beach Acesss - POS Upgrade	0	13,379	13,379	13,379	13,379	-100.00%
Cabarita Road - POS Upgrade	0	28,141	100,000	28,141	100,000	-100.00%
Kingsford Road - POS Upgrade	147	154,375	154,375	154,375	154,375	-99.90%
Vonash Way - POS Upgrade	0	167,174	167,174	167,174	167,174	-100.00%
Wagon Road - POS Upgrade	0	167,174	167,174	167,174	167,174	-100.00%
imestone Quarry - POS Upgrade	0	167,174	167,174	167,174	167,174	-100.00%
Dolphin Road - POS Upgrade	98	91,000	91,000	91,000	91,000	-99.89%
Kingfish/ Costello - POS Upgrade	98	91,000	91,000	91,000	91,000	-99.89%
Quindalup Old Tennis Courts Site - POS Upgrade	0	53,283	53,283	53,283	53,283	-100.00%
King St Reserve Park - POS Upgrade	147,167	73,674	73,674	147,348	147,348	99.75%
Oursborough Non-Potable Water Network	770	0	0	2,000,000	2,000,000	0.00%
Dunsborough Nature Based Playground Dunsborough Lakes Sporting Precinct (Stage 1)	9,682	0 234,999	0 234,999	40,000 2,288,000	40,000 2,288,000	0.00% -95.88%
Oursborough Lakes Sporting Precinct (Stage 1) Mitchell Park Upgrade	11,583	234,999	234,999	2,288,000 820,000	820,000	-95.88% -94.48%
Barnard Park Opgrade Barnard Park East Foreshore Landscaping	3,652	190,000	190,000	280,000	280,000	-98.08%
General Works - Replacement of Capital Items	0	30.000	30,000	30.000	30.000	-100.00%
rrigation Renewal	0	19,998	19,998	40.000	40.000	-100.00%
Eastern Link Landscaping	76,476	100,002	100,002	200,000	200,000	-23.53%
Dunsborough Foreshore Lighting	586	25,002	25,002	50,000	50,000	-97.65%
King Street Landscaping Stage 2	40,831	46,998	31,998	79,000	64,000	-13.12%
/asse River - General Upgrade	0	100,000	100,000	100,000	100,000	-100.00%
Aged Housing Infrastructure (Upgrade)	3,773	6,120	6,120	12,250	12,250	-38.36%
Vidler Road Waste Site Capital Improvements	7,510	0	0	50,000	50,000	0.00%
Fransfer Station Development	18,206	75,000	75,000	150,000	150,000	-75.73%
Site Rehabilitation - Busselton	190,268	499,998	499,998	1,000,000	1,000,000	-61.95%
Liquid Waste Pond Renewal Works	0	25,002	25,002	50,000 870,000	50,000	-100.00% 47.16%
Busselton Jetty - Capital Expenditure	294,324	200,000	200,000	870,000	870,000	47.16%
Drainage	2,463,130	5,391,066	5,370,458	13,486,482	13,465,874	-54.31%
Busselton LIA - Geocatch Drain Partnership WSUD Improvements	0	15.000	15.000	30,000	30.000	-100.00%
Glenmeer Ramble Drainage Upgrade	0	25,350	25.350	50,700	50,700	-100.00%
Chugg Road Drainage Upgrade	0	15,044	15,044	15,044	15,044	-100.00%
	0	55,394	55,394	95,744	95,744	-100.00%
Airport Industrial Parks						
nstallation of Bird Netting	0	38,850	38,850	77,703	77,703	-100.00%
Airport Car Park Reseal	74,795	38,358	38,358	76,700	76,700	94.99%
Airport Construction Stage 2, Landside Civils & Services Inf	0	49,998	49,998	100,000	100,000	-100.00%
Airport Construction Stage 2, Noise Management Plan	0	433,230 9.960	433,230 9.960	866,500 19.900	866,500	-100.00% 95.00%
Airport Construction Stage 2, Airfield	19,422 39,724	9,960 57,924	9,960 127,926	19,900 115.850	19,900 255.850	95.00%
Airport Development - Project Expenses					,	
	133,942	628,320	698,322	1,256,653	1,396,653	-78.68%
Sub-Total Infrastructu	7,880,369	17,007,033	16,655,020	40,004,996	33,943,507	-53.66%
Grand Total - Capital Acquisitions	11,277,053	21,754,368	26,857,357	60,430,483	54,368,994	
Grand Total - Capital Acqui infrastructure by class nfrastructure (WIP)			sitions 11,277,053 21,754,368	sitions 11,277,053 21,754,368 26,857,357	sitions 11,277,053 21,754,368 26,857,357 60,430,483	sitions 11,277,053 21,754,368 26,857,357 60,430,483 54,368,994

Description	2020/ 21 Actual	2020/21 Amended Budget YTD	2020/21 Original Budget YTD	2020/21 Amended Budget	2020/21 Original Budget	2020/21 Budget YTD Variance
Roads	4,245,345	8,443,107	7,950,560	18,170,848	16,149,816	-49.72%
Bridges	0	721,998	859,998	6,675,989	2,287,000	-100.00%
Car Parks	873,044	1,026,238	979,378	1,855,535	1,808,675	-14.93%
Footpaths & Cycleways	164,908	740,910	740,910	2,239,745	2,239,745	-77.74%
Parks, Gardens & Reserves	2,463,130	5,391,066	5,370,458	14,986,482	14,965,874	-54.31%
Drainage	0	55,394	55,394	1,595,745	1,595,745	-100.00%
Regional Airport & Industrial Park Infrastructure	133.942	628.320	698.322	1.256.653	1.396.653	-78.68%

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Reserves Movement Report

		2020/2021 Actual	2020/2021 Amended Budget	2020/2021 Original Budget	2020/2021 Amended	2020/2021 Original	2019/2020 Actual
		\$	YTD \$	YTD \$	Budget \$	Budget \$	\$
		•	•	•	•	•	•
100	Airport Infrastructure Renewal and Replacement I	Reserve					
	Accumulated Reserves at Start of Year	1,712,272.40	1,712,272.40	1,712,272.40	1,712,272.40	1.712.272.40	1.821.552.89
	Interest transfer to Reserves	6,142.57	9,330.00	9,330.00	18,660.00	18,660.00	28,582.65
	Transfer from Muni	1,377.68	1,576.71	1,576.71	1,576.71	1,576.71	0.00
	Transfer to Muni	0.00	(26,000.00)	(26,000.00)	(288,364.00)	(288,364.00)	(137,863.14)
		1,719,792.65	1,697,179.11	1,697,179.11	1,444,145.11	1,444,145.11	1,712,272.40
136	Airport Marketing and Incentive Reserve						
	Accumulated Reserves at Start of Year	4,073,790.64	4,073,790.64	4,073,790.64	4,073,790.64	4,073,790.64	3,396,150.77
	Interest transfer to Reserves	15,567.73	22,200.00	22,200.00	44,401.00	44.401.00	58,291.83
	Transfer from Muni	104,238.00	104,238.00	104,238.00	328,471.00	328,471.00	619,348.04
	Transfer to Muni	0.00	0.00	0.00	(1,180,572.00)	(1,180,572.00)	0.00
		4,193,596.37	4,200,228.64	4,200,228.64	3,266,090.64	3,266,090.64	4,073,790.64
143	Airport Noise Mitigation Reserve						
143	curport moise minigation neserve						
	Accumulated Reserves at Start of Year	904,896.43	904,896.43	904,896.43	904,896.43	904,896.43	890,709.89
	Interest transfer to Reserves	3,308.99	4,932.00	4,932.00	9,864.00	9,864.00	14,186.54
	Transfer to Muni	0.00	0.00	0.00	(866,500.00)	(866,500.00)	0.00
		908,205.42	909,828.43	909,828.43	48,260.43	48,260.43	904,896.43
147	Airport Development Reserve						
	Accumulated Reserves at Start of Year	1,576.71	1,576.71	1,576.71	1,576.71	1,576.71	0.00
	Interest transfer to Reserves	(199.03)	0.00	0.00	0.00	0.00	1,576.63
	Transfer from Muni	0.00	0.00	0.00	0.00	0.00	165,882.00
	Transfer to Muni	(1,377.68)	(1,576.71)	(1,576.71)	(1,576.71)	(1,576.71)	(165,881.92)
		0.00	0.00	0.00	0.00	0.00	1,576.71
148	Airport Existing Terminal Building Reserve						
	Accumulated Reserves at Start of Year	122,795.41	122,795.41	122,795.41	122,795.41	122,795.41	39,882.21
	Interest transfer to Reserves	663.54	672.00	672.00	1,344.00	1,344.00	635.20
	Transfer from Muni	41,142.00	41,142.00	41,142.00	82,278.00	82,278.00	82,278.00
		164,600.95	164,609.41	164,609.41	206,417.41	206,417.41	122,795.41
106	Building Asset Renewal Reserve - General Building	ţs					
	Accumulated Reserves at Start of Year	1,483,242.45	1,483,242.45	1,483,242.45	1,483,242.45	1,483,242.45	1,725,055.66
	Interest transfer to Reserves	5,299.63	8,082.00	8,082.00	16,164.00	16,164.00	32,703.18
	Transfer from Muni	363,576.00	363,576.00	363,576.00	1,037,148.00	1,037,148.00	727,148.00
	Transfer to Muni	0.00	0.00	0.00	(1,071,026.00)	(1,071,026.00)	(1,001,664.39)
		1,852,118.08	1,854,900.45	1,854,900.45	1,465,528.45	1,465,528.45	1,483,242.45
404	Barnard Park Sports Pavilion Building Reserve						

	Accumulated Reserves at Start of Year	41,352.43	41,352.43	41,352.43	41,352.43	41,352.43	10,666.20
	Interest transfer to Reserves Transfer from Muni	193.37 15,114.00	228.00 15,114.00	228.00 15,114.00	456.00 30,226.00	456.00 30,226.00	460.23 30,226.00
		56,659.80	56,694.43	56,694.43	72,034.43	72,034.43	41,352.43

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Reserves Movement Report

		2020/2021 Actual	2020/2021 Amended Budget YTD	2020/2021 Original Budget YTD	2020/2021 Amended Budget	2020/2021 Original Budget	2019/2020 Actual
405	Bailway Hayas Buildin - Sarray	\$	\$	\$	\$	s	\$
405	Railway House Building Reserve						
	Accumulated Reserves at Start of Year	36,854.54	36,854.54	36,854.54	36,854.54	36,854.54	16,761.18
	Interest transfer to Reserves Transfer from Muni	162.15 9,816.00	198.00 9,816.00	198.00 9,816.00	396.00 19,635.00	396.00 19,635.00	458.36 19,635.00
	transfer from Wuni	9,816.00	9,810.00	9,010.00		19,033.00	19,033.00
		46,832.69	46,868.54	46,868.54	56,885.54	56,885.54	36,854.54
406	Youth and Community Activities Building Reser	rve					
	Accumulated Reserves at Start of Year	80,356.10	80,356.10	80,356.10	80,356.10	80,356.10	45,712.30
	Interest transfer to Reserves Transfer from Muni	339.98 21,420.00	438.00 21,420.00	438.00 21,420.00	876.00 42,840.00	876.00 42,840.00	1,148.35 42,840.00
	Transfer from Muni Transfer to Muni	21,420.00	21,420.00	21,420.00	42,840.00	42,840.00	42,840.00 (9,344.55)
		102,116.08	102,214.10	102,214.10	124,072.10	124,072.10	80,356.10
407	Busselton Library Building Reserve						
	Accumulated Reserves at Start of Year	111,021.85	111,021.85	111,021.85	111,021.85	111,021.85	85,071.29
	Interest transfer to Reserves Transfer from Muni	204.16 22,848.00	606.00 22,848.00	606.00 22,848.00	1,212.00 45,696.00	1,212.00 45,696.00	1,716.82 45,696.00
	Transfer from Muni Transfer to Muni	(100,000.00)	(100,000.00)	(100,000.00)	(105,000.00)	(105,000.00)	(21,462.26)
		34,074.01	34,475.85	34,475.85	52,929.85	52,929.85	111,021.85
131	Busselton Community Resource Centre Reserve	•					
	Accumulated Reserves at Start of Year	272,693.17	272,693.17	272,693.17	272,693.17	272,693.17	190,875.82
	Interest transfer to Reserves Transfer from Muni	1,115.92 43,200.00	1,488.00 43,200.00	1,488.00 43,200.00	2,976.00 86,394.00	2,976.00 86,394.00	3,791.98 81,752.64
	Transfer to Muni	0.00	0.00	0.00	(50,000.00)	(50,000.00)	(3,727.27)
		317,009.09	317,381.17	317,381.17	312,063.17	312,063.17	272,693.17
408	Busselton Jetty Tourist Park Reserve						
	Accumulated Reserves at Start of Year	222,752.80	222,752.80	222,752.80	222,752.80	222,752.80	159,725.80
	Interest transfer to Reserves	812.83	1,212.00	1,212.00	2,424.00	2,424.00	4,342.04
	Transfer from Muni Transfer to Muni	126,414.00 (81,800.00)	126,414.00 (81,800.00)	126,414.00 (81,800.00)	252,833.00 (243,600.00)	252,833.00 (243,600.00)	168,021.20 (109,336.24)
	Table to Wall	268,179.63	268,578.80	268,578.80	234,409.80	234,409.80	222,752.80
		200,270,00	200,010.00	200,0100	23-1,103:00	23 1,103.00	222,752.00
409	Geographe Leisure Centre Building (GLC) Reser	ve					
	Accumulated Reserves at Start of Year	615,084.29	615,084.29	615,084.29	615,084.29	615,084.29	381,186.42
	Interest transfer to Reserves Transfer from Muni	2,751.91 130,260.00	3,354.00 130,260.00	3,354.00 130,260.00	6,708.00 260,521.00	6,708.00 260,521.00	7,619.95 570,521.00
	Transfer to Muni	0.00	0.00	0.00	(819,657.00)	(819,657.00)	(344,243.08)
		748,096.20	748,698.29	748,698.29	62,656.29	62,656.29	615,084.29
331	Joint Venture Aged Housing Reserve (Harris/ W	/inderlup)					
	Accumulated Reserves at Start of Year	1,237,306.78	1,237,306.78	1,237,306.78	1,237,306.78	1,237,306.78	1,085,870.41
	Interest transfer to Reserves	4,772.51	6,744.00	6,744.00	13,488.00	13,488.00	17,937.89
	Transfer from Muni Transfer to Muni	65,904.00 0.00	65,904.00 0.00	65,904.00 0.00	131,806.00 (152,250.00)	131,806.00 (152,250.00)	185,261.37 (51,762.89)
		1,307,983.29	1,309,954.78	1,309,954.78	1,230,350.78	1,230,350.78	1,237,306.78
		2,507,505125	2,000,000,110	2,505,554,70	2,230,330.70	2,200,000.70	2,237,330170

Financial Activity Statement - December 2020

City of Busselton

Reserves Movement Report

		2020/2021	2020/2021	2020/2021	2020/2021	2020/2021	2019/2020
		Actual	Amended Budget	Original Budget	Amended	Original	Actual
			YTD	YTD	Budget	Budget	1777777
		\$	\$	\$	\$	\$	\$
403	Winderlup Aged Housing Reserve (City Controlled)						
	Accumulated Reserves at Start of Year	212.935.38	212.935.38	212.935.38	212.935.38	212.935.38	212.501.16
	Interest transfer to Reserves	830.18	1,158.00	1,158.00	2,316.00	2,316.00	3,457.97
	Transfer from Muni	24,276.00	24,276.00	24,276.00	48,550.00	48,550.00	2,046.25
	Transfer to Muni	0.00	0.00	0.00	(52,000.00)	(52,000.00)	(5,070.00)
	-	238,041.56	238,369.38	238,369.38	211,801.38	211,801.38	212,935.38
410	Naturaliste Community Centre Building (NCC) Reserv	ve					
	Accumulated Reserves at Start of Year	125,076.60	125,076.60	125,076.60	125,076.60	125,076.60	63,745.73
	Interest transfer to Reserves	540.64	684.00	684.00	1,368.00	1,368.00	1,622.87
	Transfer from Muni	29.856.00	29,856.00	29,856.00	59,708.00	59,708.00	59,708.00
	Transfer to Muni	0.00	0.00	0.00	(142,000.00)	(142,000.00)	0.00
	_						
		155,473.24	155,616.60	155,616.60	44,152.60	44,152.60	125,076.60
411	Civic and Administration Building Reserve						
	Accumulated Reserves at Start of Year	429,689.17	429,689.17	429,689.17	429,689.17	429.689.17	187,928,40
	Interest transfer to Reserves	1,953.01	2,340.00	2,340.00	4,680.00	4,680.00	5,512.65
	Transfer from Muni	141,000.00	141,000.00	141,000.00	282,000.00	282,000.00	282,000.00
	Transfer to Muni	0.00	0.00	0.00	(48,983.00)	(48,983.00)	(45,751.88)
	_						
		572,642.18	573,029.17	573,029.17	667,386.17	667,386.17	429,689.17
412	Vasse Sports Pavilion Building Reserve						
	Accumulated Reserves at Start of Year	541.14	541.14	541.14	541.14	541.14	0.00
	Interest transfer to Reserves	2.71	0.00	0.00	0.00	0.00	5.14
	Transfer from Muni	270.00	270.00	270.00	536.00	536.00	536.00
	-	813.85	811.14	811.14	1,077.14	1,077.14	541.14
110	Jetty Maintenance Reserve						
	Accumulated Reserves at Start of Year	5,239,342.58	5,239,342.58	5,239,342.58	5,239,342.58	5,239,342.58	4,806,278.94
	Interest transfer to Reserves	19,567.69	28,554.00	28,554.00	57,108.00	57,108.00	82,679.79
	Transfer from Muni Transfer to Muni	100,560.00	100,560.00 (15,000.00)	100,560.00 (15,000.00)	1,325,111.00 (1,255,708.00)	1,325,111.00 (1,255,708.00)	1,286,516.00 (936,132.15)
	Transfer to Muni	0.00	(15,000.00)	(15,000.00)	(1,255,708.00)	(1,255,708.00)	(936,132.13)
		5,359,470.27	5,353,456.58	5,353,456.58	5,365,853.58	5,365,853.58	5,239,342.58
150	Jetty Self Insurance Reserve						
	Accumulated Reserves at Start of Year	432,198.16	432,198.16	432,198.16	432,198.16	432,198.16	365,698.37
	Interest transfer to Reserves	1,664.10	2,358.00	2,358.00	4,716.00	4,716.00	6,499.79
	Transfer from Muni	30,000.00	30,000.00	30,000.00	60,000.00	60,000.00	60,000.00
	-	463,862.26	464,556.16	464,556.16	496,914.16	496,914.16	432,198.16
223	Road Asset Renewal Reserve						
223	nodu Asset Kenewai Keserve						
	Accumulated Reserves at Start of Year	1,597,128.65	1,597,128.65	1,597,128.65	1,597,128.65	1,597,128.65	1,119,116.75
	Interest transfer to Reserves	7,767.20	8,706.00	8,706.00	17,412.00	17,412.00	39,808.24
	Transfer from Muni	1,750,896.00	1,750,896.00	1,750,896.00	3,501,790.00	3,501,790.00	3,458,128.00
	Transfer to Muni	0.00	(203,000.00)	(203,000.00)	(4,638,999.00)	(3,995,499.00)	(3,019,924.34)
	_	3,355,791.85	3,153,730.65	3,153,730.65	477,331.65	1,120,831.65	1,597,128.65
		3,333,731.05	3,133,730.03	3,133,730.03	477,331.03	1,120,031.03	1,557,120.03

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Reserves Movement Report

		2020/2021 Actual	2020/2021 Amended Budget YTD	2020/2021 Original Budget YTD	2020/2021 Amended Budget	2020/2021 Original Budget	2019/2020 Actual
		\$	\$	\$	\$	\$	\$
224	Footpath/ Cycle Ways Reserve						
	Accumulated Reserves at Start of Year	408,437.28	408,437.28	408,437.28	408,437.28	408,437.28	3,670.90
	Interest transfer to Reserves Transfer from Muni	2,493.22 608,022.00	2,226.00 608,022.00	2,226.00 608,022.00	4,452.00 1,216,038.00	4,452.00 1,216,038.00	8,786.80 1,184,602.00
	Transfer to Muni	0.00	0.00	0.00	(1,382,583.00)	(1,382,583.00)	(788,622.42)
		1,018,952.50	1,018,685.28	1,018,685.28	246,344.28	246.344.28	408,437.28
		1,010,552.50	1,010,003.20	1,010,005.20	240,544.20	240,544.20	400,437.20
226	Other Infrastructure Reserve						
	Accumulated Reserves at Start of Year	264,388.99	264,388.99	264,388.99	264,388.99	264,388.99	0.00
	Interest transfer to Reserves Transfer from Muni	1,337.16 178,500.00	1,440.00 178,500.00	1,440.00 178,500.00	2,880.00 357,000.00	2,880.00 357,000.00	3,298.02 347,000.00
	Transfer to Muni	0.00	0.00	0.00	(297,041.00)	(297,041.00)	(85,909.03)
		444,226.15	444,328.99	444,328.99	327,227.99	327,227.99	264,388.99
225	Parks, Gardens and Reserves Reserve						
	Accumulated Reserves at Start of Year	833,946.23	833,946.23	833,946.23	833,946.23	833,946.23	0.00
	Interest transfer to Reserves	4,438.28	4,548.00	4,548.00	9,096.00	9,096.00	10,825.77
	Transfer from Muni	642,582.00	642,582.00	642,582.00	1,285,166.00	1,285,166.00	1,214,001.00
	Transfer to Muni	0.00	(160,000.00)	(160,000.00)	(1,983,645.00)	(1,983,645.00)	(390,880.54)
		1,480,966.51	1,321,076.23	1,321,076.23	144,563.23	144,563.23	833,946.23
151	Furniture and Equipment Reserve						
	Accumulated Reserves at Start of Year	257,784.19	257,784.19	257,784.19	257,784.19	257,784.19	0.00
	Interest transfer to Reserves Transfer from Muni	1,817.65 217,002.00	1,404.00 217,002.00	1,404.00 217,002.00	2,808.00 434,000.00	2,808.00 434,000.00	0.00 364,900.00
	Transfer from Muni	0.00	(30,000.00)	(30,000.00)	(434,000.00)	(434,000.00)	(107,115.81)
		476,603.84	446,190.19	446,190.19	260,592.19	260,592.19	257,784.19
115	Plant Replacement Reserve						
	Accumulated Reserves at Start of Year	1,098,441.92	1,098,441.92	1,098,441.92	1,098,441.92	1,098,441.92	1,205,526.70
	Interest transfer to Reserves	4,051.86	5,988.00	5,988.00	11,976.00	11,976.00	23,720.77
	Transfer from Muni Transfer to Muni	554,759.44 0.00	580,834.00 (388,000.00)	580,834.00 (388,000.00)	1,027,662.00 (492,240.00)	1,027,662.00 (492,240.00)	900,737.00 (1,031,542.55)
	Turber to main	1,657,253.22	1,297,263.92	1,297,263.92	1,645,839.92	1,645,839.92	1.098,441.92
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-,,	,,	-,,	-,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
137	Major Traffic Improvements Reserve						
	Accumulated Reserves at Start of Year	638,845.53	638,845.53	638,845.53	638,845.53	638,845.53	1,495,577.97
	Interest transfer to Reserves	2,562.27	3,480.00	3,480.00	6,960.00	6,960.00	25,423.53
	Transfer from Muni Transfer to Muni	544,494.00 (900,000.00)	544,494.00 0.00	544,494.00 0.00	1,088,988.00 (1,641,750.00)	1,088,988.00 (1,641,750.00)	1,128,705.00 (2,010,860.97)
	Transier to main						
		285,901.80	1,186,819.53	1,186,819.53	93,043.53	93,043.53	638,845.53
132	CBD Enhancement Reserve						
	Accumulated Reserves at Start of Year	613,762.47	613,762.47	613,762.47	613,762.47	613,762.47	171,316.34
	Interest transfer to Reserves	2,953.22	3,348.00	3,348.00	6,696.00	6,696.00	7,539.43
	Transfer from Muni Transfer to Muni	270,204.00 0.00	270,204.00 0.00	270,204.00 0.00	540,415.00 (590,000.00)	540,415.00 (590,000.00)	524,713.00 (89,806.30)
		886,919.69	887,314.47	887,314.47	570,873.47	570,873.47	613,762.47

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Reserves Movement Report

		2020/2021 Actual	2020/2021 Amended Budget YTD	2020/2021 Original Budget YTD	2020/2021 Amended Budget	2020/2021 Original Budget	2019/2020 Actual
127	New Infrastructure Development Reserve	\$	\$	\$	\$	\$	\$
12,	new minastracture beveropment reserve						
	Accumulated Reserves at Start of Year Interest transfer to Reserves	1,506,175.05 3,226.03	1,506,175.05 8,208.00	1,506,175.05 8,208.00	1,506,175.05 16,416.00	1,506,175.05 16,416.00	1,803,171.42 26,494.60
	Transfer from Muni	97,379.20	93,114.00	93,114.00	186,231.00	186,231.00	201,157.40
	Transfer to Muni	(223,000.00)	(50,000.00)	(50,000.00)	(1,420,645.00)	(1,400,645.00)	(524,648.37)
		1,383,780.28	1,557,497.05	1,557,497.05	288,177.05	308,177.05	1,506,175.05
141	Commonage Precinct Infrastructure Road Reserve						
	Accumulated Reserves at Start of Year	234,906.64	234,906.64	234,906.64	234,906.64	234,906.64	231,223.87
	Interest transfer to Reserves	(340.58)	1,278.00	1,278.00	2,556.00	2,556.00	3,682.77
	Transfer from Muni Transfer to Muni	1,199.58 0.00	0.00	0.00	0.00 (235,000.00)	0.00 (235,000.00)	0.00
	narsier to Mun						
		235,765.64	236,184.64	236,184.64	2,462.64	2,462.64	234,906.64
114	City Car Parking and Access Reserve						
	Accumulated Reserves at Start of Year	1,555,124.38	1,555,124.38	1,555,124.38	1,555,124.38	1,555,124.38	1,281,336.70
	Interest transfer to Reserves	5,450.89	8,478.00	8,478.00	16,956.00	16,956.00	24,799.27
	Transfer from Muni Transfer to Muni	6,228.00 0.00	6,228.00 (80,000.00)	6,228.00 (80,000.00)	52,465.00 (1,375,579.00)	52,465.00 (1,375,579.00)	505,188.00 (256,199.59)
	naisier to Mulii	1,566,803.27	1,489,830.38	1,489,830.38			
		1,566,803.27	1,489,830.38	1,489,830.38	248,966.38	248,966.38	1,555,124.38
154	Debt Default Reserve						
	Interest transfer to Reserves	575.73	0.00	0.00	0.00	0.00	0.00
	Transfer from Muni	250,002.00	250,002.00	250,002.00	500,000.00	500,000.00	0.00
	,	0.00	0.00	0.00	0.00	0.00	0.00
107	Corporate IT Systems Reserve						
	Accumulated Reserves at Start of Year	226,750.02	226,750.02	226,750.02	226,750.02	226,750.02	80,398.99
	Interest transfer to Reserves	1,155.49	1,236.00	1,236.00	2,472.00	2,472.00	1,280.52
	Transfer from Muni Transfer to Muni	49,998.00 0.00	49,998.00	49,998.00 0.00	100,000.00	100,000.00	145,070.51
	iransier to iviuni				(207,900.00)	(207,900.00)	
		277,903.51	277,984.02	277,984.02	121,322.02	121,322.02	226,750.02
133	Election, Valuation and Other Corporate Expenses	Reserve					
	Accumulated Reserves at Start of Year	560,994.18	560,994.18	560,994.18	560,994.18	560,994.18	499,905.97
	Interest transfer to Reserves	2,260.58	3,060.00	3,060.00	6,120.00	6,120.00	8,664.58
	Transfer from Muni Transfer to Muni	75,000.00 0.00	75,000.00 0.00	75,000.00 0.00	150,000.00 (140,900.00)	150,000.00 (140,900.00)	150,000.00 (97,576.37)
	Harbier to Mulii						
		638,254.76	639,054.18	639,054.18	576,214.18	576,214.18	560,994.18
111	Legal Expenses Reserve						
	Accumulated Reserves at Start of Year	636,940.12	636,940.12	636,940.12	636,940.12	636,940.12	577,255.71
	Interest transfer to Reserves	2,402.92	3,474.00	3,474.00	6,948.00	6,948.00	8,995.41
	Transfer from Muni	0.00	0.00	0.00	0.00	0.00	50,689.00
		639,343.04	640,414.12	640,414.12	643,888.12	643,888.12	636,940.12

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Reserves Movement Report

		2020/2021	2020/2021	2020/2021	2020/2021	2020/2021	2019/2020
		Actual	Amended Budget YTD	Original Budget	Amended	Original	Actual
		\$	\$	YTD	Budget \$	Budget	\$
152	Marketing & Area Promotion Reserve	•	•	,	*	•	•
	Accumulated Reserves at Start of Year	166,392.00	166,392.00	166,392.00	166,392.00	166,392.00	0.00
	Interest transfer to Reserves	2,337.91	906.00	906.00	1,812.00	1,812.00	0.00
	Transfer from Muni	645,816.00	645,816.00	645,816.00	1,291,627.00	1,291,627.00	166,392.00
	Transfer to Muni	0.00	0.00	0.00	(1,347,817.00)	(1,347,817.00)	0.00
		814,545.91	813,114.00	813,114.00	112,014.00	112,014.00	166,392.00
135	Performing Arts and Convention Centre Reserve						
133	Performing Arts and Convention Centre Reserve						
	Accumulated Reserves at Start of Year	2,625,599.20	2,625,599.20	2,625,599.20	2,625,599.20	2,625,599.20	0.00
	Interest transfer to Reserves	9,615.83	14,310.00	14,310.00	28,620.00	28,620.00	14,751.12
	Transfer from Muni	0.00	0.00	0.00	50,000.00	50,000.00	2,610,848.08
	Transfer to Muni	0.00	0.00	0.00	(1,446,200.00)	(1,446,200.00)	0.00
		2,635,215.03	2,639,909.20	2,639,909.20	1,258,019.20	1,258,019.20	2,625,599.20
202	Long Service Leave Reserve						
	Accumulated Reserves at Start of Year	3,482,110.00	3,482,110.00	3,482,110.00	3,482,110.00	3,482,110.00	3,096,583.00
	Interest transfer to Reserves	13.113.69	18,978.00	18,978.00	37,956.00	37,956.00	50,518.40
	Transfer from Muni	124,998.00	124,998.00	124,998.00	250,000.00	250,000.00	687,986.09
	Transfer to Muni	(34,895.96)	(46,650.00)	(46,650.00)	(438,250.00)	(438,250.00)	(352,977.49)
		(,,	(,,	(,,	(,,	(,,	,,,
		3,585,325.73	3,579,436.00	3,579,436.00	3,331,816.00	3,331,816.00	3,482,110.00
203	Professional Development Reserve						
	Accumulated Reserves at Start of Year	145,028.93	145,028.93	145,028.93	145,028.93	145,028.93	122,771.88
	Interest transfer to Reserves	554.93	792.00	792.00	1,584.00	1,584.00	2,418.13
	Transfer from Muni	34,998.00	34,998.00	34,998.00	93,500.00	93,500.00	70,000.00
	Transfer to Muni	0.00	0.00	0.00	(88,500.00)	(88,500.00)	(50,161.08)
		180,581.86	180,818.93	180,818.93	151,612.93	151,612.93	145,028.93
		,	,	,	,	,	,
204	Sick Pay Incentive Reserve						
	Accumulated Reserves at Start of Year	144,632.39	144,632.39	144,632.39	144,632.39	144,632.39	150,403.55
	Interest transfer to Reserves	508.54	786.00	786.00	1,572.00	1,572.00	2,374.88
	Transfer from Muni	0.00	0.00	0.00	0.00	0.00	327.14
	Transfer to Muni	0.00	0.00	0.00	(73,550.00)	(73,550.00)	(8,473.18)
		145,140.93	145,418.39	145,418.39	72,654.39	72,654.39	144,632.39
		210,210.00	210,120.00	215/120105	12,001100	12,00-1100	211,032133
124	Workers Compensation, Extended SL & AL Conting	ency Reserve					
	_						
	Accumulated Reserves at Start of Year	309,751.42	309,751.42	309,751.42	309,751.42	309,751.42	305,100.95
	Interest transfer to Reserves	1,132.69	1,686.00	1,686.00	3,372.00	3,372.00	4,650.47
	Transfer to Muni	0.00	0.00	0.00	(147,607.00)	(147,607.00)	0.00
		310,884.11	311,437.42	311,437.42	165,516.42	165,516.42	309,751.42
		310,004.11	311,437.42	311,437.42	105,510.42	105,510.42	309,751.42
302	Community Facilities - City District						
	any product						
	Accumulated Reserves at Start of Year	1,120,869.85	1,120,869.85	1,120,869.85	1,120,869.85	1,120,869.85	2,552,707.62
	Interest transfer to Reserves	(3,294.20)	6,108.00	6,108.00	12,216.00	12,216.00	39,319.39
	Transfer from Muni	277,727.02	193,524.00	193,524.00	387,050.00	387,050.00	216,051.38
	Transfer to Muni	0.00	0.00	0.00	(1,031,448.00)	(1,031,448.00)	(1,687,208.54)
		1,395,302.67	1,320,501.85	1,320,501.85	488,687.85	488,687.85	1,120,869.85

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Reserves Movement Report

		2020/2021 Actual	2020/2021 Amended Budget YTD	2020/2021 Original Budget YTD	2020/2021 Amended Budget	2020/2021 Original Budget	2019/2020 Actual
		\$	\$	s	\$	\$	\$
304	Community Facilities - Broadwater						
	Accumulated Reserves at Start of Year	166,413.55	166,413.55	166,413.55	166,413.55	166,413.55	158,523.04
	Interest transfer to Reserves Transfer from Muni	(240.76)	906.00 4,998.00	906.00 4,998.00	1,812.00	1,812.00 10,000.00	2,585.73 5,304.78
	transfer from Wurii	15,549.41	4,996.00	4,998.00	10,000.00	10,000.00	3,304.76
		181,722.20	172,317.55	172,317.55	178,225.55	178,225.55	166,413.55
303	Community Facilities - Busselton						
	Accumulated Reserves at Start of Year	9,177.47	9,177.47	9,177.47	9,177.47	9,177.47	44,011.77
	Interest transfer to Reserves	(11.03)	48.00	48.00	96.00	96.00	526.95
	Transfer from Muni Transfer to Muni	13,983.92	11,250.00	11,250.00 0.00	22,500.00	22,500.00 0.00	8,638.75 (44,000.00)
	Talloct to Main						
		23,150.36	20,475.47	20,475.47	31,773.47	31,773.47	9,177.47
305	Community Facilities - Dunsborough						
	Accumulated Reserves at Start of Year	255,152.46	255,152.46	255,152.46	255,152.46	255,152.46	188,062.67
	Interest transfer to Reserves Transfer from Muni	(311.90) 38,469.44	1,392.00 13,752.00	1,392.00 13,752.00	2,784.00 27,500.00	2,784.00 27,500.00	3,283.35 63,806.44
	Halister Hom Wall						
		293,310.00	270,296.46	270,296.46	285,436.46	285,436.46	255,152.46
311	Community Facilities - Dunsborough Lakes Estate						
	Accumulated Reserves at Start of Year	937,470.05	937,470.05	937,470.05	937,470.05	937,470.05	922,772.84
	Interest transfer to Reserves Transfer from Muni	(1,359.20)	5,112.00	5,112.00	10,224.00	10,224.00	14,697.21
	Transfer to Muni	4,787.29 0.00	0.00	0.00	0.00 (938,000.00)	0.00 (938,000.00)	0.00
		940,898.14	942,582.05	942,582.05	9,694.05	9,694.05	937,470.05
306	Community Facilities - Geographe						
	Accumulated Reserves at Start of Year	101,978.74	101,978.74	101,978.74	101,978.74	101,978.74	99,175.93
	Interest transfer to Reserves	(147.60)	558.00	558.00	1,116.00	1,116.00	1,594.87
	Transfer from Muni	2,624.58	3,750.00	3,750.00	7,500.00	7,500.00	1,207.94
		104,455.72	106,286.74	106,286.74	110,594.74	110,594.74	101,978.74
310	Community Facilities - Port Geographe						
	Accumulated Reserves at Start of Year	348,980.41	348,980.41	348,980.41	348,980.41	348,980.41	343,509.27
	Interest transfer to Reserves	(505.97)	1,902.00	1,902.00	3,804.00	3,804.00	5,471.14
	Transfer from Muni	1,782.11	0.00	0.00	0.00	0.00	0.00
		350,256.55	350,882.41	350,882.41	352,784.41	352,784.41	348,980.41
309	Community Facilities - Vasse						
	Accumulated Reserves at Start of Year	489,904.76	489,904.76	489,904.76	489,904.76	489,904.76	615,585.54
	Interest transfer to Reserves	(821.04)	2,670.00	2,670.00	5,340.00	5,340.00	9,471.24
	Transfer from Muni Transfer to Muni	2,501.30 0.00	0.00	0.00	0.00 (284,270.00)	0.00 (284,270.00)	0.00
	Transfer to Muni						
		491,585.02	492,574.76	492,574.76	210,974.76	210,974.76	489,904.76
308	Community Facilities - Airport North						
	Accumulated Reserves at Start of Year	3,017,487.28	3,017,487.28	3,017,487.28	3,017,487.28	3,017,487.28	2,970,179.38
	Interest transfer to Reserves	(4,374.94)	16,446.00	16,446.00	32,892.00	32,892.00	47,307.90
	Transfer from Muni Transfer to Muni	15,409.14 0.00	49,998.00 0.00	49,998.00 0.00	100,000.00 (150,000.00)	100,000.00 (150,000.00)	0.00
		3,028,521.48	3,083,931.28	3,083,931.28	3,000,379.28	3,000,379.28	3,017,487.28

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Reserves Movement Report

		2020/2021	2020/2021	2020/2021	2020/2021	2020/2021	2019/2020
		Actual	Amended Budget YTD	Original Budget YTD	Amended Budget	Original Budget	Actual
		\$	\$	\$	Budget \$	\$	\$
130	Locke Estate Reserve						
	Accumulated Reserves at Start of Year	6,269.61	6,269.61	6,269.61	6,269.61	6,269.61	1,012.99
	Interest transfer to Reserves	21.46	36.00	36.00	72.00	72.00	420.15
	Transfer from Muni	30,000.00	30,000.00	30,000.00	60,000.00	60,000.00	60,000.00
	Transfer to Muni	0.00	0.00	0.00	0.00	0.00	(55,163.53)
		36,291.07	36,305.61	36,305.61	66,341.61	66,341.61	6,269.61
122	Port Geographe Development Reserve (Council)						
	Accumulated Reserves at Start of Year	224,952.38	224,952.38	224,952.38	224,952.38	224,952.38	682,470.41
	Interest transfer to Reserves	669.09	1,224.00	1,224.00	2,448.00	2,448.00	8,839.73
	Transfer from Muni	25,986.00	25,986.00	25,986.00	51,975.00	51,975.00	51,975.00
	Transfer to Muni	0.00	0.00	0.00	(219,167.00)	(219,167.00)	(518,332.76)
		251,607.47	252,162.38	252,162.38	60,208.38	60,208.38	224,952.38
123	Port Geographe Waterways Managment (SAR) Res	erve					
	Accumulated Reserves at Start of Year	3,275,191.63	3,275,191.63	3,275,191.63	3,275,191.63	3,275,191.63	3,349,716.94
	Interest transfer to Reserves	11,781.74	17,850.00	17,850.00	35,700.00	35,700.00	54,429.05
	Transfer from Muni Transfer to Muni	110,106.00 0.00	110,106.00 0.00	110,106.00 0.00	220,210.00 (375,000.00)	220,210.00 (375,000.00)	218,328.64 (347,283.00)
	naisier to wuni						
		3,397,079.37	3,403,147.63	3,403,147.63	3,156,101.63	3,156,101.63	3,275,191.63
126	Provence Landscape Maintenance (SAR) Reserve						
	Accumulated Reserves at Start of Year	1,308,476.49	1,308,476.49	1,308,476.49	1,308,476.49	1,308,476.49	1,194,759.54
	Interest transfer to Reserves Transfer from Muni	5,009.47	7,134.00	7,134.00	14,268.00	14,268.00	20,031.01
	Transfer from Muni Transfer to Muni	90,912.00	90,912.00	90,912.00	181,819.00 (252,948.00)	181,819.00 (252,948.00)	179,838.99 (86,153.05)
		1,404,397.96	1,406,522.49	1,406,522.49	1,251,615.49	1,251,615.49	1,308,476.49
		1,404,597.90	1,400,322.49	1,400,322.49	1,231,613.49	1,231,013.49	1,300,470.49
128	Vasse Newtown Landscape Maintenance (SAR) Re	serve					
	Accumulated Reserves at Start of Year	636,364.43	636,364.43	636,364.43	636,364.43	636,364.43	575,151.53
	Interest transfer to Reserves Transfer from Muni	2,538.62 90,792.00	3,468.00	3,468.00 90,792.00	6,936.00	6,936.00	9,845.01
	Transfer from Muni Transfer to Muni	0.00	90,792.00 0.00	0.00	181,583.00 (190,539.00)	181,583.00 (190,539.00)	181,289.97 (129,922.08)
		729,695.05	730,624.43	730,624.43	634,344.43	634,344.43	636,364.43
138	Commonage Precinct Bushfire Facilities Reserve						
	A	go - mo # -	ga - ma = -	E0 170 FC		50.172.52	g= acc -
	Accumulated Reserves at Start of Year Interest transfer to Reserves	58,172.53 (84.34)	58,172.53 318.00	58,172.53 318.00	58,172.53 636.00	58,172.53 636.00	57,260.53 912.00
	Transfer from Muni	297.07	0.00	0.00	0.00	0.00	0.00
		58,385.26	58,490.53	58,490.53	58,808.53	58,808.53	58,172.53
139	Commonage Community Facilities Dunsborough La	kes South Res					
	Accumulated Reserves at Start of Year	73,779.08	73,779.08	73,779.08	73,779.08	73,779.08	72,622.42
	Interest transfer to Reserves Transfer from Muni	(106.97) 376.76	402.00 0.00	402.00 0.00	804.00 0.00	804.00 0.00	1,156.66 0.00
	- Second House House						
		74,048.87	74,181.08	74,181.08	74,583.08	74,583.08	73,779.08

Financial Activity Statement - December 2020

City of Busselton

Reserves Movement Report

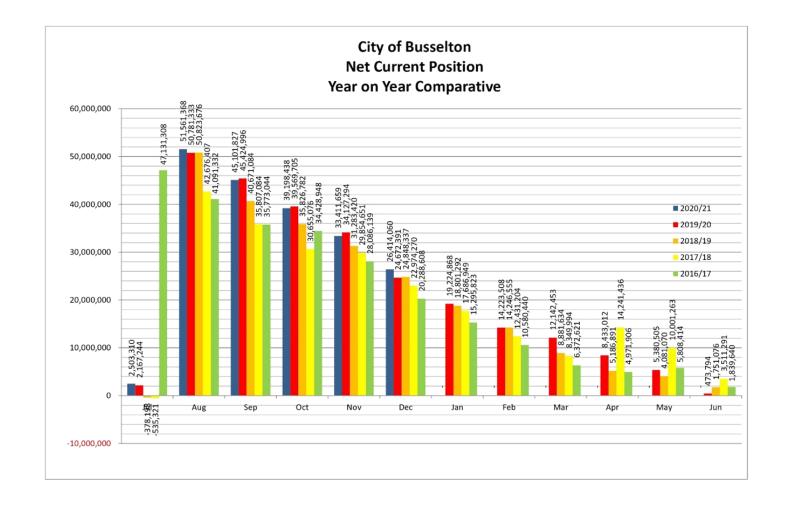
		2020/2021 Actual	2020/2021 Amended Budget YTD	2020/2021 Original Budget YTD	2020/2021 Amended Budget	2020/2021 Original Budget	2019/2020 Actual
	Company to Faithful Control of the C	\$	\$	\$	\$	\$	\$
140	Commonage Community Facilities South Biddle	Precinct Reserve					
	Accumulated Reserves at Start of Year	899,694.77	899,694.77	899,694.77	899,694.77	899,694.77	886,172.58
	Interest transfer to Reserves	(1,304.43)	4,902.00	4,902.00	9,804.00	9,804.00	13,522.19
	Transfer from Muni	4,594.39	0.00	0.00	0.00	0.00	0.00
		902,984.73	904,596.77	904,596.77	909,498.77	909,498.77	899,694.77
321	Busselton Area Drainage and Waterways Impro	vement Reserve					
	Accumulated Reserves at Start of Year	475,582.52	475,582.52	475,582.52	475,582.52	475,582.52	546,471.37
	Interest transfer to Reserves	(754.01)	2,592.00	2,592.00	5,184.00	5,184.00	8,450.99
	Transfer from Muni Transfer to Muni	2,428.35	0.00	0.00	0.00	0.00	0.00
	Transfer to Muni	0.00	0.00	0.00	(188,000.00)	(188,000.00)	(79,339.84)
		477,256.86	478,174.52	478,174.52	292,766.52	292,766.52	475,582.52
102	Coastal and Climate Adaptation Reserve						
	Accumulated Reserves at Start of Year	2,157,591.81	2,157,591.81	2,157,591.81	2,157,591.81	2,157,591.81	2,845,578.60
	Interest transfer to Reserves	7,567.54	11,760.00	11,760.00	23,520.00	23,520.00	46,381.06
	Transfer from Muni Transfer to Muni	237,024.00	237,024.00	237,024.00	474,044.00 (2,130,000.00)	474,044.00 (2,130,000.00)	529,207.53 (1,263,575.38)
	naisier to wun						
		2,402,183.35	2,406,375.81	2,406,375.81	525,155.81	525,155.81	2,157,591.81
144	Emergency Disaster Recovery Reserve						
	Accumulated Reserves at Start of Year	94,137.10	94,137.10	94,137.10	94,137.10	94,137.10	72,781.94
	Interest transfer to Reserves Transfer from Muni	372.14 10,002.00	516.00	516.00	1,032.00 20,000.00	1,032.00	1,355.16
	Transfer from Muni	10,002.00	10,002.00	10,002.00	20,000.00	20,000.00	20,000.00
		104,511.24	104,655.10	104,655.10	115,169.10	115,169.10	94,137.10
145	Energy Sustainability Reserve						
	Accumulated Reserves at Start of Year	137,955.03	137,955.03	137,955.03	137,955.03	137,955.03	181,852.87
	Interest transfer to Reserves	689.79	750.00	750.00	1,500.00	1,500.00	2,798.84
	Transfer from Muni Transfer to Muni	51,378.00 0.00	51,378.00 0.00	51,378.00 0.00	102,750.00	102,750.00	130,000.00
	rransfer to Muni				(103,000.00)	(103,000.00)	(176,696.68)
		190,022.82	190,083.03	190,083.03	139,205.03	139,205.03	137,955.03
146	Cemetery Reserve						
	Accumulated Reserves at Start of Year	35,871.90	35,871.90	35,871.90	35,871.90	35,871.90	157,626.57
	Interest transfer to Reserves	217.47	198.00	198.00	396.00	396.00	2,730.72
	Transfer from Muni Transfer to Muni	72,984.00 0.00	72,984.00 (20,000.00)	72,984.00 (20,000.00)	145,950.00 (120,000.00)	145,950.00 (120,000.00)	104,314.16 (228,799.55)
	rransfer to iviuni						
		109,073.37	89,053.90	89,053.90	62,217.90	62,217.90	35,871.90
341	Public Art Reserve						
	Accumulated Reserves at Start of Year	87,051.39	87,051.39	87,051.39	87,051.39	87,051.39	86,198.07
	Interest transfer to Reserves	(126.21)	474.00	474.00	948.00	948.00	853.32
	Transfer from Muni	444.53	0.00	0.00	0.00	0.00	0.00
	Transfer to Muni	0.00	0.00	0.00	(49,060.00)	(49,060.00)	0.00
		87,369.71	87,525.39	87,525.39	38,939.39	38,939.39	87,051.39

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Reserves Movement Report

		2020/2021 Actual	2020/2021 Amended Budget YTD	2020/2021 Original Budget YTD	2020/2021 Amended Budget	2020/2021 Original Budget	2019/2020 Actual
121	Waste Management Facility and Plant Reserve	\$	\$	\$	\$	\$	\$
	Accumulated Reserves at Start of Year Interest transfer to Reserves Transfer from Muni Transfer to Muni	7,629,358.39 22,464.30 510,564.00 0.00	7,629,358.39 41,580.00 510,564.00 (256,000.00)	7,629,358.39 41,580.00 510,564.00 (256,000.00)	7,629,358.39 83,161.00 1,056,131.00 (2,540,500.00)	7,629,358.39 83,161.00 1,056,131.00 (2,540,500.00)	7,867,210.16 124,135.01 881,561.42 (1,243,548.20)
		8,162,386.69	7,925,502.39	7,925,502.39	6,228,150.39	6,228,150.39	7,629,358.39
120	Strategic Projects Reserve						
	Accumulated Reserves at Start of Year Interest transfer to Reserves Transfer from Muni Transfer to Muni	295,560.51 1,161.90 26,850.00 0.00 323,572.41	295,560.51 9,192.00 26,850.00 0.00 331,602.51	295,560.51 9,192.00 26,850.00 0.00 331,602.51	295,560.51 18,386.00 53,700.00 (96,000.00) 271,646.51	295,560.51 18,386.00 53,700.00 (96,000.00) 271,646.51	257,162.94 4,340.77 47,852.48 (13,795.68) 295,560.51
129	Prepaid Grants and Deferred Works & Services Re	eserve					
	Accumulated Reserves at Start of Year Interest transfer to Reserves Transfer from Muni Transfer to Muni	1,391,422.00 630.22 0.00 (1,234,878.00)	1,391,422.00 0.00 0.00 (1,234,878.00)	1,391,422.00 0.00 0.00 (1,234,878.00)	1,391,422.00 0.00 0.00 (1,391,422.00)	1,391,422.00 0.00 0.00 (1,391,422.00)	1,232,906.00 0.00 1,391,422.00 (1,232,906.00) 1,391,422.00
153	Busselton Foreshore Reserve						
	Accumulated Reserves at Start of Year interest transfer to Reserves Transfer from Muni	100.00 0.51 0.00 100.51	100.00 0.00 0.00	100.00 0.00 0.00 100.00	100.00 0.00 10.00	100.00 0.00 10.00	0.00 0.00 100.00
155	LED Street Light Replacement Program Reserve						
	Interest transfer to Reserves Transfer from Muni Transfer to Muni	57.56 24,996.00 0.00 25,053.56	0.00 24,996.00 0.00 24,996.00	0.00 24,996.00 0.00 24,996.00	0.00 50,000.00 (50,000.00)	0.00 50,000.00 (50,000.00)	0.00
	Total Cash Back Reserves	66,482,701.64	66,434,452.76	66,434,452.76	45,154,921.76	45,818,421.76	59,897,884.76
	Summary Reserves Accumulated Reserves at Start of Year Interest transfer to Reserves Transfer from Muni Transfer to Muni	59,897,884.76 174,849.31 8,985,919.21 (2,575,951.64)	59,897,884.76 326,448.00 8,903,024.71 (2,692,904.71)	59,897,884.76 326,448.00 8,903,024.71 (2,692,904.71)	59,897,884.76 652,900.00 19,372,933.71 (34,768,796.71)	59,897,884.76 652,900.00 19,372,933.71 (34,105,296.71)	55,590,217.66 965,722.02 22,230,759.20 (18,888,814.12)
	Closing Balance	66,482,701.64	66,434,452.76	66,434,452.76	45,154,921.76	45,818,421.76	59,897,884.76

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13. PLANNING AND DEVELOPMENT SERVICES REPORT

13.1 COASTAL HAZARD RISK MANAGEMENT AND ADAPTATION PLAN - PROPOSED ADOPTION AS DRAFT FOR CONSULTATION

STRATEGIC GOAL 3. ENVIRONMENT Valued, conserved and enjoyed

STRATEGIC OBJECTIVE 3.4 Climate change risks and impacts are understood, acknowledged

and responded to through appropriate planning and community

education.

SUBJECT INDEX Coastal Adaptation Strategy

BUSINESS UNIT Planning and Development Services

REPORTING OFFICER Director, Planning and Development Services - Paul Needham

Manager, Strategic Planning - Matthew Riordan Principal Strategic Planner - Louise Koroveshi

AUTHORISING OFFICER Director, Planning and Development Services - Paul Needham

NATURE OF DECISION Executive: Substantial direction setting, including adopting budgets,

strategies, plans and policies (excluding local planning policies); funding, donations and sponsorships; reviewing committee

recommendations

VOTING REQUIREMENT Simple Majority

ATTACHMENTS Attachment A Draft CHRMAP !!

Attachment B Research Solutions report \(\frac{1}{2} \)
Attachment C Multi-criteria analysis \(\frac{1}{2} \)

Attachment D Advisian report 1

OFFICER RECOMMENDATION

That the Council adopt the *City of Busselton Coastal Hazard Risk Management and Adaptation Plan* (Attachment A) as a draft for consultation, subject to:

- 1. Detailed editing and refinement of presentation of the document;
- 2. Development of artists' impressions and cutaway drawings illustrating existing coastal protection infrastructure in place at the Busselton and Dunsborough town foreshores, as well as for recommended protection approaches; and
- 3. Referral to the project steering group (and subject to changes to detailed presentation and wording as a result of steering group feedback, but not in terms of strategic direction).

EXECUTIVE SUMMARY

The Council is asked to consider adopting the *City of Busselton Coastal Hazard Risk Management and Adaptation Plan* as a draft for consultation. The document seeks to set out the strategic direction on what is a very important issue for the City and our community. It is vital, however, that our community and other stakeholders are consulted and engaged with before firm decisions are made about that direction. The officer recommendation, if adopted by the Council, would allow that to occur.

BACKGROUND

Introduction

The Council is asked to consider adopting the *City of Busselton Coastal Hazard Risk Management and Adaptation Plan* (CHRMAP) as a draft for consultation. The need to develop the CHRMAP reflects requirements of *State Planning Policy 2.6*: *Coastal Planning* (SPP2.6) and the fact that the City has a long, dynamic coastline; with significant property, infrastructure and environmental assets in close proximity to the coast and potentially vulnerable to coastal processes. The CHRMAP is provided as Attachment A.

SPP2.6 requires planning authorities to consider the potential impact of coastal processes on proposed development over a 100 year time horizon (i.e. if a decision is being made in 2021, through to 2121). SPP2.6 also sets out that planning authorities should assume an increase in mean sea level over that period of 0.9 metres. That rise, should it occur, is expected to significantly increase risks associated with the two main coastal hazards — coastal erosion and coastal inundation (the latter may also be referred to as 'storm surge' or 'coastal flooding'). It may also increase other hazards, such as through the lifting and salinization of groundwater tables in near coastal areas. Such a rise in mean sea level is expected to result in accelerated coastal erosion, with approximately 100-200 metres of land along the City's northern coast potentially being lost to erosion over the 100 year period, if the coast is not actively managed.

SPP2.6 also requires that planning authorities consider the potential coastal inundation impact of a 1 in 500 year coastal storm surge event (or, to use the current technical term, a 1 in 500 Annual Exceedance Probability - 'AEP' - event). Whilst there have been more recent assessments which indicate the risk may be somewhat lower, the current advice of the Department of Transport ('DoT' - which is effectively the State's 'coastal engineer') applicable to most of the City's northern / Geographe Bay coast is that such an event may result in storm surge as high as 2.9 AHD (i.e. 2.9 metres above mean sea level) with present day mean sea levels, or 3.8 AHD with mean sea level 0.9 metres higher. Cyclone Alby is thought to have resulted in water levels of around 1.8 AHD and, unless steps were taken to prevent ocean water moving inland, a 3.8 AHD event could result in coastal inundation several kilometres inland in some cases, and could result in significant flooding, to depths of up to around 2.0 metres, in significant parts of both Busselton and Dunsborough.

It should be noted that much of the City's coast is, in fact, actively managed today. Much of the coast has, in fact, been actively managed for many decades. It should also be noted that both coastal erosion and coastal inundation risks are significantly lower on the City's west-facing coast; although there are still risks, especially in relation to coastal erosion.

The process of preparing the CHRMAP was preceded by a series of other projects, undertaken over the course of more than a decade; by both the City and other agencies. That includes coastal erosion studies undertaken for the City around 2010, coastal inundation studies undertaken by DoT and referenced above, as well as other inundation studies undertaken for the City or the State Government. It also includes the 'Coastal Adaptation Pathways' work undertaken by the Peron-Naturaliste Partnership ('PNP' - a partnership of the nine local governments between Point Peron, in the City of Rockingham, and Cape Naturaliste, in the City of Busselton). It also includes shorter-term coastal management programmes for the City's coast; developed, implemented and periodically reviewed over the last ten years or so.

Those earlier studies also identified that coastal erosion and/or inundation risks along the City's coast are significant. The aim of the CHRMAP is to set out how the City, necessarily working in partnership with the State Government and other partners, intends to manage those risks into the future – essentially, the 'adaptation strategy' that the City intends to pursue in response to those risks.

Whilst the challenges that may be faced in the future may be greater than those of the past, the City and its community have been faced with the challenges of a highly dynamic coastline, in close proximity to significant assets and infrastructure, for well over 100 years. As a result, both the City and the community have more experience and more knowledge of those challenges than most, if not all, local governments and communities in Western Australia. As such, we are well prepared to develop and consider our future adaptation strategies. In doing so, we are also guided by SPP2.6.

SPP2.6 defines 'adaptation' as follows:

'adaptation' means an adjustment in natural or human systems in response to actual or expected stimuli or their effects, which moderates harm or exploits beneficial opportunities. Adaptation is the means for maximising the gains and minimising the losses associated with coastal hazards over the planning timeframe.

SPP2.6 also sets out a hierarchy of coastal adaptation options to be considered in preparing CHRMAPs, as set out in clause 5.5 (iii) (bold text in original):

Where risk assessments identify a level of risk that is unacceptable to the affected community or proposed development, adaptation measures need to be prepared to reduce those risks down to acceptable or tolerable levels. Adaptation measures should be sought from the following coastal hazard risk management and adaptation planning hierarchy on a sequential and preferential basis:

- (1) **Avoid** the presence of new development within an area identified to be affected by coastal hazards. Determination of the likely consequences of coastal hazards should be done in consideration of local conditions and in accordance with the guidelines provided in Schedule One.
- (2) **Planned** or **Managed Retreat** or the relocation or removal of assets within an area identified as likely to be subject to intolerable risk of damage from coastal hazards over the planning time frame.
- (3) If sufficient justification can be provided for not avoiding development of land that is at risk from coastal hazards then **Accommodation** adaptation measures should be provided that suitably address the identified risks. Such measures would involve design and/or management strategies that render the risks from the identified coastal hazards acceptable.
- (4) Where sufficient justification can be provided for not avoiding the use or development of land that is at risk from coastal hazards and accommodation measures alone cannot adequately address the risks from coastal hazards, then coastal **Protection** works may be proposed for areas where there is a need to preserve the foreshore reserve, public access and public safety, property and infrastructure that is not expendable.

In simple terms, this hierarchy can be described as setting out that, if a section of the coast is likely to be affected by coastal hazards over the next 100 years, the response in relation to both potential and existing development should be as follows:

- 1. Avoid: If there is no existing development within the area thought to be potentially affected, then no development should occur in that area that is an 'avoid' strategy. For most of the City's coast, an avoid strategy is not possible over the 100 year planning time horizon, as there is already significant development in areas thought to be potentially affected.
- 2. Retreat: If an avoid strategy is not possible (i.e. because there is existing development in the area thought to be potentially affected), then a 'retreat' strategy should be pursued, progressively removing or relocating development, so that the coast can progressively move inland, before it affects the existing development (new development may be contemplated in vulnerable areas, but only where the development is temporary in nature).

- 3. Accommodate: If a retreat strategy is not possible (it is not clear what tests may need to be met to demonstrate that), then an 'accommodate' strategy may be pursued. Accommodate is probably only a relevant strategy in relation to coastal inundation hazard as it can be addressed through some combination of building design (e.g. minimum floor levels above projected flood levels) and emergency management (e.g. sandbagging, evacuation). Accommodate is usually not a relevant strategy in relation to coastal erosion hazard, as the protection of a building whilst the land around it erodes is simply an inappropriate protection strategy.
- 4. Protect: If an accommodate strategy is not possible (again, it is not clear what tests may need to be met to demonstrate that), then a 'protect' strategy may be pursued. A protect strategy may involve things like groynes (to manage erosion and protect beaches), seawalls or bunds/levees (to protect property or infrastructure from erosion or inundation) or artificial reefs (principally to manage erosion, through reducing the wave energy that reaches the beach). A protect strategy may also involve things like beach nourishment, where sand is added to the beach or placed offshore, to compensate for sand lost through coastal erosion. Beach nourishment could potentially be seen as an accommodate strategy too it is though a semantic and unimportant distinction when identifying and assessing real world adaptation options.

Whilst there is obviously some variation in the character of different sections of the City's coast, and therefore some variation in the assessment of potential adaptation strategies in different sections of the coast, the character of much of the City's northern / Geographe Bay coast is quite similar, and similar observations can be made about much of that part of our coast. It is therefore possible to make some general comment about the different adaptation options. Given the above, and the nature of the City's coast, the choice is essentially between a retreat strategy, or a protect strategy. That is especially the case for coastal erosion hazard; an accommodate strategy may be appropriate in relation to coastal inundation hazard in some areas at some times.

If the City's CHRMAP adopted a 'retreat' strategy for a particular section of the coast, it is strongly arguable that the planning response should involve: (1) no densification of development, and no approval of new development without a sunset clause or similar placed on that approval in areas thought to be vulnerable to coastal erosion hazard and; (2) no approval for new development with a floor level lower than 3.4-3.8 AHD within areas thought to be vulnerable to coastal inundation hazard, noting that in some cases existing ground and floor levels in substantial parts of the affected area are as low as 1.5-2.0 AHD.

In addition, unless affected private land was acquired by government, along most of the City's coast there would no longer be a public beach or foreshore reserve – the beach and foreshore would be in private property. There are means by which such land might be acquired by government, but a lot of uncertainty around: precisely what means may be used; which level of government does the acquisition; how it is funded; and the basis for land valuation. Acquisition of land at unaffected market value, if that were to occur, would be a very significant cost (see 'Financial Implications').

Further, once land had been acquired, it would no longer be economically productive to any significant degree, and would no longer generate local government rates revenue, or State land tax revenue. Because of the affect that a decision to retreat would have on land valuation, especially a retreat strategy that did not provide for acquisition at unaffected market value, State land tax revenue from the affected area may also be significantly reduced well ahead of the actual acquisition occurring.

Over and above the issues related to land acquisition, retreat would also not be a passive process in other ways. Whilst in a more natural context the shoreline could 'naturally' recede, and 'nature' may progressively adjust, that is not the context along most of the City's coast. There are buildings, roads and other infrastructure (e.g. sewer pipes) which would most likely need to be proactively and progressively removed in advance of coastal erosion. There would also be substantial costs associated with that work, including costs of removal and, potentially, building new infrastructure further inland (which may also be temporary in nature in some cases, as it may need to be removed in a later phase of the retreat process).

Conversely, if the City's CHRMAP adopted a 'protect' strategy for a particular section of the coast, the planning response would not need to involve limitations on development (there may, however, be other reasons to limit development potential). If a protect strategy was adopted in relation to coastal inundation hazard, there may also be no need to set minimum floor levels for new development, once such protection was in place. There would also not be the same impact on economic productivity or government revenues (revenues which could support, amongst other things, coastal management).

It is also true, though, that a protect strategy that did not preserve beach and foreshore amenity may have significant impacts on the broader community, whilst disproportionately benefitting the owners of vulnerable property. Further, protection of a particular section of the coast may impact other sections of the coast; in two key ways. Firstly, groynes or similar structures which help to protect the coast in one location can accelerate erosive pressures elsewhere. Secondly, the chief means of combatting that impact, other than sensitive and strategic design of such structures, is through beach nourishment – and the supply of sand for those and other purposes is constrained.

Finally, in relation to a protect strategy, it needs to be understood that, whilst the potential means of protection may be well understood in some parts of the coast, they are less well understood in others. For instance, along much of the City's northern / Geographe Bay coast, especially places where there are still fairly wide foreshore reserves, some combination of geotextile groynes, beach nourishment, and either buried seawalls or other means of lifting and strengthening the ground in the foreshore reserve, should be a workable protection strategy – possibly in tandem with localised retreat in the short to medium-term, where that can occur without affecting any significant assets. The potential means of protection, though, are less well understood in some other contexts. For instance: in the much higher energy sections of the coast at Yallingup and Smiths Beach; in an area like Siesta Park where there is often little or no foreshore reserve; or at the mouth of the Vasse Diversion Drain or the Port Geographe Marina entry channel.

There are also significant financial challenges associated with both retreat and protect strategies. Those challenges relate in substantial part to the scale of funding that may be required. There are also challenges, however, in ensuring that expenditure is efficient and strategic in nature, and that revenue is secured in an efficient, sustainable and equitable fashion. For reasons that are outlined further in 'Financial Implications', meeting all of those challenges properly is probably beyond the scope of the City alone – or indeed of any local government acting alone.

On top of those challenges, it needs to be understood that there is a lot of uncertainty associated with long-term coastal adaptation planning — in fact there is a lot of uncertainty associated with planning at such a large scale over such a long period of time in general, but more so in this context than in many others. There are uncertainties associated with future sea level change and how those changes may affect the coast. There are uncertainties around the future cost and availability of materials, especially sand, which is so critical for beach nourishment. There are also uncertainties around the future financial capacity of the City and our community to meet the challenges. The City is, however, required by SPP2.6 to set out its strategic direction, notwithstanding those uncertainties.

Process

The process of preparing the CHRMAP, and determining which adaptation strategies may be best pursued, consisted of six key elements:

- 1. Assembling, synthesizing and supplementing (essentially, filling in the gaps) coastal hazard assessments, to identify when and where different sections of the coast may be vulnerable (each of these sections is identified as a 'Management Unit', of which there are 19).
- 2. Considering and supplementing consultation / engagement undertaken over an extended period to determine what the community values about the coast, and their views on how coastal hazards should be managed.
- 3. Developing a financial model to identify potential financial implications associated with different adaptation strategies and that model does allow the testing of different strategies or assumptions about future costs, as well as allowing for the application of different strategies to different sections of the coast, or during different time periods.
- 4. Developing and then applying a multi-criteria analysis (MCA) framework to identify which of the fundamental adaptation options is most appropriate for each Management Unit, in both the short-term (through to 2040), medium-term (2040-2070) and long-term (2070-2020 noting that the latter date will require adjustment as the project progresses).
- 5. Reflecting the outcomes of the MCA (Attachment C), developing a set of recommendations some of which are overarching recommendations, related to the coast as a whole, or to multiple Management Units, and some of which are specific to particular Management Units. A number of recommendations also set out further, more detailed work that is required to refine and implement the proposed strategic direction.
- 6. Assembling that work in the CHRMAP.

Most of the technical work which underpins the CHRMAP was undertaken by an external consulting team, led by Advisian (part of Worley Group) – see Attachment D. The development of the MCA framework and recommendations, however, was largely undertaken in-house. The development of the CHRMAP was also assisted by a multi-agency Steering Group (see 'Stakeholder Consultation').

Should the Council adopt the CHRMAP as a draft for consultation, there are several further steps that would need to be taken before consultation actually commences, mostly related to the presentation of the document. The draft document would be subject of detailed review and editing; with the presentation also improved to reflect the City's style guide and accessibility standards.

It is also proposed that some artists' impressions be developed to illustrate what the coast may actually look like, if the recommended strategies are pursued. It is envisaged that would involve 'cutaway' drawings, illustrating what may be in place beneath the land surface, as well as above the surface. To a significant extent, the recommended approach for much of the City's northern / Geographe Bay coast reflects what has already been implemented in sections of the Busselton and Dunsborough town foreshore areas – 'cutaway' drawings illustrating what is already in place in those areas are also envisaged. The CHRMAP also needs to be referred to the Steering Group (also see 'Financial Implications' and 'Stakeholder Consultation'). The recommendation allows adjustments to be made to detailed presentation and wording as a result of steering group feedback, but not changes to strategic direction.

SPP2.6 does not set out a particular process for the adoption of a CHRMAP. State planning policies in general, however, must be given due regard in the making of all planning decisions, including applications for development approval, applications for subdivision approval, assessments of structure plans or similar and, most importantly, in the making and amending of town planning schemes. The Western Australian Planning Commission (WAPC) is, for obvious reasons, aware of the coastal adaptation issues in the City, and it is likely that the CHRMAP and its recommendations will be very important to support the City's new town planning scheme, currently under development (and as required by the WAPC). For that reason, officers envisage that, after consultation and further consideration by the Council, the City's CHRMAP be sent to the WAPC for its formal consideration, ahead of the City's new scheme also being forwarded to the WAPC.

Recommendations

The CHRMAP's recommendations and a brief description of their rationale is set out below (Recommendation 8 is summarised only).

Recommendation 1

That the coastal erosion hazard lines shown on the maps for each of the identified Management Units in Recommendation 8 be adopted as a guide for future planning.

Key rationale: The most pervasive hazard for most of the City's coast, especially over the short to medium term, is coastal erosion. Unless and until direction is set regarding how that hazard is to be addressed, it is difficult to develop clear direction on the other key hazard; coastal inundation. There are also a range of other recommendations that require the identification of an area that may be subject to coastal erosion hazard, if the coast is not protected from that hazard. Given that some sections of the coast already benefit from coastal erosion protection, and especially because those protections do not have a 100 year design life, in adopting coastal erosion hazard lines for those purposes, it is seen as appropriate to assume that existing protections are not in place, even though it is clear that, unless those structures were deliberately removed, they would provide some coastal erosion protection.

Recommendation 2

That the adaptation pathways for the identified Management Units are generally as set out in Recommendation 8.

Key rationale: This identifies the key role that the Management Unit specific recommendations play in setting the overall strategic direction.

Recommendation 3

That, in addition to the financial responses set out in Recommendation 8, the City:

- a. Allocates (through a phased increase from 1.0% currently) a minimum of 2.0% of total rates revenue to the 'Coastal Adaptation Reserve' within the City's next 10 year Long Term Financial Plan;
- b. Advocates and makes application for State and/or Federal Government grant funding to support coastal adaptation as possible and necessary;
- c. Advocates at State and Federal level for the identification and implementation of a sustainable, equitable and efficient framework for funding of coastal adaptation; and
- d. Advocates at State level to identify and secure strategic sand supplies for beach nourishment, including a coordinated regional approach to the delivery of sand supplies.

Key rationale: Part (a) reflects a decision that the Council has already made in adopting the City's latest Long-Term Financial Plan, and is prudent given the potential risks and costs faced by the City and our communities. It is also a demonstration that, whilst the City sees a clear case and need for support from higher levels of government, the City is also prepared to make a significant financial commitment itself. Parts (b) and (c) reflect the fact that support from higher levels of government will be required, but the City obviously cannot make decisions on their behalf – the focus needs to be on advocacy. Part (d) reflects the vital importance of sand supplies, and that the issue would be best addressed at a regional or State level.

Recommendation 4

That the City undertake or support, subject to appropriate assistance from the State and/or Federal Government, the following additional work:

- a. A cost-benefit and/or benefit distribution analysis and/or systemic financial and economic system risk analysis of the identified adaptation pathways;
- b. Further coastal erosion modelling, following further geotechnical investigations, possibly in partnership with landowners, for the following Management Units
 - i. Smiths Beach;
 - ii. Yallingup;
 - iii. Bunker Bay;
 - iv. Eagle Bay; and
 - v. Old Dunsborough.
- c. Further coastal inundation hazard modelling, given the identified pathways for coastal erosion hazard management, and including coastal inundation hazard modelling for both Geographe Bay and west coast settlements (Yallingup and Smiths Beach);
- d. Preliminary design and costings associated with storm surge (coastal inundation hazard) protection at –
 - i. Toby Inlet mouth;
 - ii. The mouths of all agricultural drains;
 - iii. The eastern bank of the Buayanyup Drain;
 - iv. Vasse Diversion Drain mouth and Vasse Estuary storm surge barrier;
 - v. Port Geographe Marina entry channel and seawall;
 - vi. Vasse Estuary Channel;
 - vii. Layman Road, from a point just to the north of Vasse Estuary Channel to a point somewhat to the north of Tuart Drive; and
 - viii. Urban stormwater outlets.

Key rationale: Part (a) reflects the fact that in advocating for or otherwise pursuing appropriate funding options, and refining the adopted adaptation pathways, further economic or financial assessments of that kind may be appropriate and useful. Part (b) recognises that existing coastal erosion hazard assessments in those areas are not informed by detailed geotechnical information, and more detailed assessments would be appropriate to get a better sense of the potential risks. Part (c) recognises that the response to coastal erosion hazard can have profound impacts on coastal inundation hazard, and that little work has been done to assess inundation hazard on the west coast (although the risk are thought to be relatively low). Part (d) reflects the fact that there are a number of locations where there needs to be connection between inland waterways / drainage infrastructure and the ocean, and that means of preventing coastal inundation in those locations have not been scoped or costed yet, but do need to be at some stage.

Recommendation 5

That the above recommendations are incorporated into:

- a. The City's Strategic Community Plan;
- b. The City's Corporate Business Plan;
- c. The City's Long-Term Financial Plan;
- d. The City's rolling, ten-year Coastal Management and Monitoring Programme;
- e. The City's Local Emergency Management Arrangements; and
- f. The City's town planning scheme.

Key rationale: This reflects the fact the CHRMAP, in and of itself, does not set the direction for the City. Rather, the direction set out in the CHRMAP needs to be reflected in a suite of other documents. The City's town planning scheme is listed last because, in many respects, given the proposed strategic direction, it is the least important of those documents. It also reflects a view that coastal adaptation planning has been too narrowly focused on and driven by town planning considerations to date, rather than from the 'whole-of-government' perspective that is required.

Recommendation 6

That the City provide an annual update to the community and other stakeholders on progress towards implementation.

Key rationale: This reflects the fact this is a very significant issue for the community, and that annual updates to the community would be appropriate, and a useful tool to keep the community engaged and informed.

Recommendation 7

That the CHRMAP is subject of periodic review, at least once every ten years.

Key rationale: This reflects the fact that periodic review is likely to be appropriate, as further information becomes available. Also, community values and aspirations may change over time.

Recommendation 8

Recommendation 8 sets out the direction for each of the 19 Management Units. It sets out the adaptation pathways for three time periods: short-term (through to 2040); medium-term (2040-2070); and long-term (2070-2020 – noting that the latter date will require adjustment as the project progresses, to ensure the CHRMAP time horizon extends to 100 years). In some cases, the fundamental adaptation pathway differs between the two key coastal hazards of erosion and inundation. Four sets of adaptation responses are also identified: planning; infrastructure / coastal management; emergency management; and financial.

Fundamentally, five different kinds of adaptation strategies are recommended, for the various Management Units (MUs), summarised as follows:

- 1. *MU01 Smiths Beach, MU02 Yallingup and MU03 Bunker Bay:* Protect from coastal erosion hazard, and avoid coastal inundation hazard. The key rationale for this is that the public foreshore reserves in these areas are vulnerable to coastal erosion, and, further, these are some of the only places where there is easy public access to the beach on or near the City's west coast and the only ones not in National Park. Yallingup Beach Road may also be vulnerable. Coastal inundation risk, however, can be avoided. In part, because of the high energy nature of these sections of the coast, significant further work would be required to determine the most appropriate approach to erosion protection. Through potential future development of the 'Farmbreak' site to the east of the 'Pullman' site at Bunker Bay, there is also an opportunity to provide a second public foreshore area, in an area where there are very few opportunities to provide additional access or facilities a recommendations related to that potential is also set out.
- 2. MUO4 Eagle Bay and MUO5 Old Dunsborough: Protect from coastal erosion hazard, and accommodate coastal inundation hazard (principally, through setting minimum finished floor levels for new development, in the small areas that may be vulnerable). The key rationale for this is that narrow public foreshore reserves in these areas are vulnerable to coastal erosion, and if those foreshore reserves were lost, it would not be possible to provide replacement access to the beach or facilities without private land acquisition, or further development of facilities in highly sensitive and valuable areas in Meelup Regional Park. Coastal inundation hazard is limited to small pockets very close to the coast, and in the case of new development can be accommodated through the setting of minimum floor levels.
- 3. MU06 - Dunsborough Townsite, MU07 - Quindalup, MU11 - Abbey, MU12 -Broadwater, MU13 - Busselton West (A), MU14 - Busselton West (B), MU15 - Busselton Central, MU16 – Busselton East, MU17 – Port Geographe and MU18 – Wonnerup: Protect from coastal erosion hazard. Accommodate coastal inundation hazard through setting minimum finished floor levels for new development over the short term (and emergency management responses), and protect from inundation in the medium and long terms (through a continuous seawall / bund or elevated / protected foredune). These are the main urban areas, all of which are vulnerable to both coastal erosion and coastal inundation. Other than where inland waterways intersect the coast, it is also fairly clear that, in a practical sense, they are able to be protected (subject to funding). In the shorter term some retreat may be sensible in some areas (such as what has occurred in recent times in the section of the coast to the east of Alan Street, where the coastal dual-use path has been relocated inland, after the earlier path closer to the coast was affected by erosion). In the medium to longer term, though, erosion hazard would either require protection, or retreat strategies that progressively impact significant private property over time, perhaps in a series of phases, but in a process that would be very complex, uncertain and costly.

A retreat strategy in this section of the coast would also mean an accommodate strategy would be needed for inundation in the longer-term, rather than just the shorter term, meaning that minimum floor levels for new development may need to be set as high as 3.8 AHD, which may be more than 2.0 metres above existing ground and floor levels in some areas. It would also mean that existing development, much of which may still be in place in 100 years, would be highly vulnerable. The protect strategy recommended for these areas, however, would protect beaches, foreshore reserves and property / infrastructure from erosion, and also allow a shift to a protect strategy for inundation over the medium to long term. Once reasonable judgements are made around the costs associated with retreat, protection is also much less expensive in these areas than retreat.

- 4. MU08 - Marybrook, MU09 - Siesta Park and MU19 - Forrest Beach: Protect from coastal erosion hazard for the short term (subject to resolution of land tenure issues, and to be fully funded by the benefitting landowners). Accommodate coastal inundation through setting minimum finished floor levels for new development over the short term (and emergency management responses). The direction is to leave open the option of retreat in the longer-term, which would be supported by only approving new development subject to a 'sunset clause' (i.e. a time limited approval - with development approval not extending beyond 1 July 2070). The absence of a substantial foreshore reserve in most of Marybrook and Siesta Park means that protection from inundation is not practicable - hence the accommodate strategy proposed. Also, the absence of a foreshore reserve means there is little broader public benefit in coastal protection in this area – as such, it is considered that the costs of protection should be borne by the benefiting landowners. An integrated approach, led by the City, however, would likely result in protection at lower overall cost and with less unintended consequences (such as protection on one property increasing erosion elsewhere). Because there are not substantial developed areas inland of the narrow strips of private property along the coast, some of the issues that would arise with retreat strategies elsewhere would also not arise here; certainly not to the same degree. Once the planned Vasse-Dunsborough Link is built, the importance of Caves Road as a transport route would also diminish significantly. For those reasons, it is seen as appropriate to provide for potential retreat from this section of the coast in the longer-term – although that does not mean that would necessarily occur, but the adoption of such a strategy would provide flexibility for future decision-makers (albeit less certainty for landowners). The issues at Forrest Beach are somewhat different, but the proposed direction is the same, other than that there is a substantial public foreshore reserve in this area, meaning the costs of protection, especially in the short term, are much lower, and there is a greater rationale for the community in general to meet some of the costs of protecting the coast (as there is a foreshore reserve and beach that can be used by the community in general, as well as significant environmental values).
- 5. *MU10 Locke Estate:* As the land in this Management Unit is all publicly owned, and the campsites on the northern side of Caves Road are leasehold facilities, in some respects there is a different planning time horizon, which coincides with the lease terms in place (which cannot extend beyond 21 years at present). The strategy proposed is to protect from erosion in the short-term (noting there are already coastal protections in place with a design life that extends for at least another ten years), and to accommodate inundation risk (through minimum floor levels for new development and emergency management approaches). The option of retreat over the medium to long term is, however, left open for future decision-makers.

OFFICER COMMENT

The CHRMAP seeks to address what is clearly a very significant issue for the City and our communities. The consequences of not adopting a sound, robust and well-considered strategic approach to addressing this issue could be very significant — socially, economically and environmentally. Especially over the longer term, there are also no easy choices. It is also clear that the City will not be able to make all of those choices on its own. The State also has a key role to play. Over time it is considered highly likely that the State will need to play a progressively bigger role, both in our District and elsewhere in the State; and in relation to funding, coordinating and planning of coastal adaptation.

It is considered that the CHRMAP sets out a well-reasoned and appropriate strategic direction for the City on this issue. It is clear, though, that further work is needed to refine that direction, so the CHRMAP also sets out what further work is required. Whilst, in some respects, it may be desirable for some of that further work to occur before the CHRMAP is subject of consultation, it is considered that there is already sufficient information available to engage and consult with the community, and other stakeholders. In part, that recognises that the CHRMAP is not just a technical exercise — it is also substantially about political choices and community values.

On balance, it is considered that now is the right time to adopt a draft CHRMAP, setting out what the City considers at this stage to be an appropriate strategic direction on this issue. It is also the right time to seek feedback from the community and other stakeholders, as a critical part of testing and refining that direction. As such it is recommended that the Council adopt the CHRMAP as a draft for consultation.

Statutory Environment

The Officer Recommendation supports the general function of a local government under the *Local Government Act 1995* to provide for the good government of persons in its district.

In addition, the CHRMAP will guide the City and WAPC in the development and review of the City's town planning scheme, which is adopted pursuant to powers established in the *Planning and Development Act 2005*.

Relevant Plans and Policies

The key policy considerations are set out in SPP2.6, as set out in the Background section of this report.

Financial Implications

The financial model developed as part of the CHRMAP process seeks to identify the potential long-term financial implications associated with different adaptation strategies, both generally and for particular sections of the coast. The model, like all such models, has its limitations, but is considered to provide a reasonable basis for high level direction setting.

In terms of some of the limitations of the model, it is incomplete in some respects. For instance, it does not identify costs associated with coastal inundation protection at places like the Port Geographe Marina entry channel. It also does not identify the legal and other administrative costs that may be associated with land acquisition as part of retreat scenarios, or costs of land acquisition where property is rated on the basis of unimproved value. Another limitation reflects the fact that the model is a tool which has been designed to calculate potential costs at decadal time scales. It has not been set up to provide a realistic guide to expenditures in any given year, or over shorter time periods.

Also worth noting is that the model is not a 'cost-benefit analysis' in the usual sense of that term, as it does not seek to identify the value of non-financial costs or benefits. There are three key reasons for that. Firstly, all of the modelled scenarios, reflecting the outcomes of coastal values work undertaken (see 'Stakeholder Consultation'), assume the retention of a continuous beach and foreshore reserve along the whole of the coast, wherever possible – essentially giving that benefit an infinite value. Secondly, ascribing equivalent dollar values to non-financial costs or benefits is fraught with difficulty. For instance, what is the value of a beach? Is it to be valued on a per-linear metre or a per-square metre basis? How is that value to be derived? There are means of doing so – one of which is a set of techniques sometimes known as 'hedonic pricing' – but it is not clear what such an approach would add, when it comes to real world decision-making. Finally, in this particular case, to secure many of the non-financial benefits, financial costs would be involved, and money is required for that. Including non-financial costs and benefits in the model would have meant that it was a less useful tool to isolate and identify what funds may be required and when.

The model identifies that, for most sections of the City's coast, once reasonable assumptions about property values are made for the purposes of retreat, a protect strategy would be significantly less costly than a retreat strategy. Over the 100 year planning time horizon and on the basis of a 'best estimate' scenario, the cost of retreat is estimated at approximately \$8.3B in today's dollars, whereas the least expensive of the protect scenarios modelled is estimated to cost approximately \$1.6B in today's dollars. Even that protect scenario represents a very significant cost, equivalent to an average of \$16M per annum over the 100 year period. Average annual costs for the next few decades, however, are substantially lower than that, and higher in later decades. It also needs to be noted that, in some Management Units, the relative costs of different scenarios vary somewhat.

Set out below are the estimated long-term (100 year) costs and benefits, in today's dollars, of several different adaptation scenarios, derived from the financial model (which correlate with the scenarios described in the 'Officer Comment' section of this report):

Adaptation	Financial cost	Public financial	Private financial	Net financial
scenario		benefit	benefit	benefit (cost)
1. Tailored (mostly protection for erosion through groynes, seawalls and nourishment, protection for inundation in main urban areas vulnerable to erosion, accommodate elsewhere, with some densification)	\$1,601,271,518	\$277,762,764	\$11,670,524,258	\$10,347,015,503
2. Retreat, with	\$8,297,425,778	\$214,787,607	\$7,484,391,656	(\$598,246,515)
densification and unaffected value land acquisition (requires accommodation for inundation)				

3. Retreat, without densification, but with unaffected value land acquisition (requires accommodation for inundation)	\$5,605,555,122	\$214,787,607	\$4,792,521,000	(\$598,246,515)
4. Retreat, without land acquisition (requires accommodation for inundation)	\$813,034,122	\$214,787,607 (probably overvalued – model not set up with this option in mind, as it doesn't preserve public beach / foreshore)	Nil	(\$598,246,515)

It is highly likely those costs will not be able to be met through the City's resources alone. It is also unreasonable to expect that would occur. The City already allocates 1.0% of total rates revenue to a 'Coastal Adaptation Reserve' each year, drawing on the balance as required to support coastal management. The City's Long Term Financial Plan also provides for that to increase to 2.0% of total rates revenue in coming years. The CHRMAP also recommends that consideration be given to applying a higher differential rate to properties in the areas identified as vulnerable, and which would therefore be disproportionate beneficiaries of coastal management spend. It is clear, however, that will be insufficient over the longer term, if it is to be the only source of funding for coastal adaptation.

In a practical/physical sense this may be an issue that can be addressed at a local government scale by the City of Busselton. That is not the case, certainly not to the same degree, in the Greater Bunbury, Peel or Perth regions. It does seem that a more pro-active role will need to be taken by the State in the future, in relation to planning, coordinating and funding coastal adaptation. The State has recently increased the funding it provides to support coastal adaptation work, but it is clear that it is still insufficient to meet current demands, let alone the larger demands expected in the future.

At some stage, that may best be supported by the introduction of a levy or similar by the State that would provide an equitable, sustainable and efficient basis for addressing this significant risk. The Emergency Services Levy (ESL) is one example of where that kind of thing has been implemented, but there are many others from around the country and elsewhere in the world. Whatever funding approach is taken, it may be sensible for it to support both coastal protection, where appropriate, but also managed retreat, in contexts where that may be appropriate. These are not, however, matters that will be simply or easily resolved – and it is likely that whatever approaches are adopted from time to time, the approach will evolve over time.

There are a number of other reasons why the costs of coastal adaptation should not be met by local government ratepayers alone. State government and utilities own very significant assets that are potentially vulnerable to coastal risks — and the owners of those assets would benefit from coastal protection. There are also very significant environmental assets at potential risk, including the Ramsar-listed Vasse-Wonnerup Wetlands, and significant habitat for the Critically Endangered Western Ringtail Possum which is located in coastal areas in both Busselton and Dunsborough.

The financial challenge is also potentially less significant when looked at in the context of the economy of the City of Busselton as a whole, rather than from the perspective of the local government rate-base alone. Projecting what the City's rate-base may be over such a long period of time is obviously very difficult and highly uncertain. But, on the basis of a scenario which assumes continued rate-base growth, and continued economic growth, at rates somewhat lower than what has occurred over recent decades, costs of the tailored scenario calculated through the financial model would be around 9.0% of total rates revenue over the 100 year period, but less than 0.2% of gross regional product (i.e. crudely, for every \$100 spent in the City in a year, 20c would need to be spent on coastal management).

It does need to be very strongly emphasised, though, that is merely one, fairly crude scenario, and over such a long period, small adjustments in underlying assumptions can have a very significant impact on those figures. For instance, if growth in the rate-base and economy ceased at the end of the ten year period of the City's current *Long-Term Financial Plan*, but other assumptions remained the same, costs of the tailored scenario calculated through the financial model might be as high as 33.6% of total rates revenue over the 100 year period, and more than 0.6% of gross regional product (i.e. crudely, for every \$100 spent in the City in a year, 60c would need to be spent on coastal management).

It is for the reasons set out above that the CHRMAP does not make specific recommendations about long-term funding arrangements. Rather, there is a focus on advocacy and working with partners to resolve those issues over time. The key partner being the State Government, although the Federal Government is also identified in the recommendations.

As well as needing to address these long-term funding issues, it should be noted that the CHRMAP recommendations involve extensive further work to better define the approach and associated costs. Grant funding, or other support from partners may be able to assist with those tasks, but there will be a need for City funds to be allocated to that work as well in coming years. Those costs are not captured in the financial model.

In relation to the financial implications of the CHRMAP *per se*, the project has been undertaken with the support of funds allocated to the Strategic Planning Consultancies budget, drawn from what is now the Climate Adaptation Reserve (which is intended to become the Coastal Adaptation Reserve in the 2021/22 budget), as well as from a State Government grant; with the grant component being a total of \$75,000. Half of those grant funds are yet to be received, and receipt of half of that is conditional on steering group sign-off on the CHRMAP prior to consultation. Given the feedback from some steering group members, however, it is not certain that sign-off will be achieved.

Stakeholder Consultation

In developing the CHRMAP, input and feedback was sought from a steering group, which consisted of City officers, as well as representatives of —

- Department of Planning, Lands and Heritage (DPLH);
- Department of Transport (DoT);
- Department of Water and Environmental Regulation (DWER);
- Geographe Catchment Council (Geocatch);
- Department of Biodiversity, Conservation and Attractions (DBCA); and
- Water Corporation.

There have been a number of consultation / engagement exercises identifying our communities' thoughts / feelings on long-term coastal adaptation issues, some of which have been undertaken by the City, and some by the PNP. As part of the CHRMAP process, the City commissioned a firm called Research Solutions to undertake a community survey to determine what the community values about our coastline (Attachment B).

The survey sample was divided into coastal and inland residents/property owners. An important outcome was to deliver a random and representative sample of the community, including those members of the community who may not typically participate in consultation.

The survey intended to:

- Establish how the coastline is used and compare this with the values people espouse for the coastline.
- Establish key values and what people feel should be protected and preserved from future erosion.
- Establish whether the community understands the changes that are occurring on the coastline and the level of awareness of the City's actions to manage coastal erosion.
- Explore who the community feels should pay for the work required to reduce the impact of coastal erosion.

The survey found that the north facing beaches in the City are strongly valued by the community, with over half of those surveyed feeling that uninterrupted stretches of sandy beaches are a vital part of the character of Busselton and our social wellbeing.

The most important coastal value cited was handing the coastal area onto our children and grandchildren in the same or better state than it is now. Other important values cited were:

- Knowing that there are places on the coast that feel 'natural'
- Natural vegetation/habitat on foreshore and beach areas
- Uninterrupted stretches of sandy beach to walk along
- Heritage historical features such as the Pioneer Cemetery or the Busselton Jetty
- Safe swimming beaches

The survey established that a significant proportion of the community use our local beaches. Over 53% of respondents cited walking/jogging on the beach or foreshore at least once a week. Of those, 42% of respondents living in the western part of the City preferred remotely located parts of the beaches (this increased to 54% of respondents who lived in the eastern part of the City). Of all respondents, 22% cited using areas close to the Busselton 'town beach' or Old Dunsborough beach and remote beach areas for walking and/or jogging.

There was a high level of awareness of natural changes in the coastline over the year preceding the survey (62%) and 60% of respondents were aware that the City had taken action to stop or reduce impacts from coastal erosion over the previous five years (e.g. groynes, seawalls, beach nourishment and revegetation).

On the question of who should pay to mitigate coastal erosion impacts, 41% of respondents felt that the taxpayer should bear the cost, with the balance feeling that costs should be borne by all ratepayers in the City (29%) or the private landowners/businesses most affected (30%).

The results of the community coastal values survey have been used to inform the MCA, the financial model (where all scenarios assume preservation of a continuous beach and foreshore wherever possible) and the recommendations.

If the Council adopts the CHRMAP as a draft for consultation, and once the final editing of the document and related tasks has occurred, a two month consultation period is envisaged. During the period, the following consultation activities are envisaged:

- The document would be published on the City's website;
- Notices advising of the consultation process would be published in the newspaper, in the *Bay-to-Bay* electronic newsletter and promoted on the City's homepage;
- An online survey and portal for submissions would be established via the City's YourSay portal;
- Community information sessions would be organized one in Busselton and one in Dunsborough;
- Static displays in the City's Administration foyer and the Naturaliste Community Centre foyer;
- Some manned 'shopping centre' display days;
- Sessions with community groups and organisations (e.g. YRA, BCCI) if requested; and
- Some independently facilitated focus group sessions, with representative samples of the community.

Should it be necessary, further consultation with particular parts of the community or other stakeholders may also occur before or after Council's consideration of the CHRMAP after the initial round of consultation. That may occur because changes to the strategic direction are being contemplated as a result of the consultation responses, or because there is seen to be a need to get further feedback from particular stakeholders.

Risk Assessment

An assessment of the potential implications of implementing the officer recommendation has been undertaken using the City's risk management framework, with risks assessed taking into account any controls already in place. As the recommendation is to adopt a CHRMAP for consultation only, the key risks at this stage are reputational. The following risks have been identified:

Reputational risks may arise associated with recommendations of the CHRMAP, as well as through the supporting information. Those risks may be mitigated through a careful and proactive approach to community engagement. There are some members of the community, however, who may have concerns with elements of the CHRMAP and its recommendations, and their reaction may pose reputational risks for the City. Key groups that may have concerns are: landowners in the Marybrook, Siesta Park and Forrest Beach areas; those who are sceptical of sea level rise projections; those who have concerns about coastal protection in general; and those concerned about the financial implications of coastal adaptation.

Risk Category	Risk Consequence	Likelihood of Consequence	Risk Level
Reputation	Moderate	Possible	Medium

These risks will be best mitigated through clear and patient communication during the consultation phase, and through careful and thorough considerations of issues raised through the consultation process, before seeking to finalise the CHRMAP. It is still likely, though, that there will be some people aggrieved to some degree by the direction set out in the CHRMAP.

Options

As an alternative to the proposed recommendation the Council could:

- 1. Not adopt the CHRMAP as a draft for consultation; or
- 2. Require further work before adopting the CHRMAP as a draft for consultation.

CONCLUSION

It is recommended that the Council adopt the CHRMAP as a draft for consultation, subject to refinement / review of the documentation prior to consultation commencing. That will be an important step in setting the City's strategic direction in relation to this important issue, and allow community consultation and engagement to occur as a vital next step.

TIMELINE FOR IMPLEMENTATION OF OFFICER RECOMMENDATION

Should the Council adopt the CHRMAP as a draft for consultation, it is envisaged that it could take up to around six weeks to complete the document to a presentation standard, including the artists' impressions referred to in the recommendation, and it is therefore envisaged consultation may commence in early April 2021. Given the envisaged two month consultation period, and the need to consider and assess any submissions received, it is anticipated the CHRMAP could be considered by the Council after consultation in August 2021.

Coastal Hazard Risk Management and Adaptation Plan



February 2021



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- 5.1 Key concepts
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Appendices



1.0 Introduction

Attachment A

Development in the City of Busselton is focused on the north facing, sandy coastline of Geographe Bay and the nodal settlements of Yallingup, Eagle Bay, Bunker Bay and Smiths Beach. The coast (including vegetation/habitat, foreshore reserves and wetlands and estuaries) is highly valued by our community. It underpin the City's identity, prosperity and lifestyle, and accommodates a variety of recreation, conservation, residential, commercial and tourist uses.

Narrow coastal setbacks and low relief topography make the Geographe Bay sandy coastline sensitive to changing environmental conditions, including storm events and seasonal cycles, and has always been subject to the impacts of coastal hazards, such as erosion and inundation. It is expected that vulnerability may increase in the future due to the projected effects of climate change and sea level rise.

This Coastal Hazard Risk Management and Adaptation Plan (CHRMAP) provides a long term view of future coastal hazards for the City, and highlights pathways to adapt to future oceanic and coastal conditions. The CHRMAP aims to ensure the City is well placed to deal with those hazards arise.

The CHRMAP process is designed to be ongoing, with regular updates associated with the emergence and collection of new information. Development of the CHRMAP has followed the requirements of the Western Australian Planning Commission State Planning Policy No. 2.6 State Coastal Planning Policy (SPP2.6) and supporting guideline documents.

Community consultation has contributed to the development of this CHRMAP through the Community Coastal Values Survey and public information sessions. The CHRMAP also aims to respond to the following objective and strategy of the City of Busselton *Strategic Community Plan 2017* (Review 2019):

Key Goal Area 3 - Environment

- Community objective 3.4 Climate change risks and impacts are understood, acknowledged and responded to through appropriate planning and community education.
- Community strategy (d) Continue to work with key partners to manage our dynamic coastline, including potential adverse impacts arising from climate change.

A coastal hazard assessment was undertaken to determine potential extent of coastal erosion hazard over a 100 year planning timeframe. A risk and vulnerability assessment was then applied, with results highlighting the most vulnerable assets and areas along the City's coastline, for which a more detailed investigation of adaptation options was undertaken.

The majority of residential and commercial development along the City's coastline lies generally less than three metres above sea level. The CHRMAP acknowledges the challenges associated with managing risks in a dynamic coastal environment, together with the need to balance environmental, social and economic values to ensure the long term sustainable use and management of the City's unique coastline.

1.1 Purpose

The purpose of the CHRMAP is to identify the current and projected extent of risk to private assets, public infrastructure and environmental/social/cultural values from coastal hazards including those

arising from projected sea level rise; and provide a framework for adapting to those hazards, including financial modelling for recommended pathways over a 100 year timeframe.

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1.2 Objectives

The CHRMAP is driven by the following overarching objectives:

- Ensure that development and the location of coastal facilities takes into account coastal processes, landform stability, hazards, climate change/sea level rise and biophysical criteria;
- ii. Guide the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, commercial and other activities;
- Provide for public coastal foreshore reserves and ensure access to them; and
- Protect, conserve and enhance coastal zone values, particularly in areas of landscape, biodiversity and ecosystem integrity, and indigenous and cultural significance.

1.3 Study area

The study area includes the north facing sandy coast from the City's municipal boundary at Forrest Beach, Wonnerup to Curtis Bay, Dunsborough (approximately 37km in length) as well as the coast at the Eagle Bay, Bunker Bay, Yallingup and Smiths Beach settlements (Figure 1). The rest of the City's west coast, which is mostly in the Leeuwin Naturaliste National Park, is not in the study area, although the findings of this strategy will be shared with the Department of Biodiversity, Conservation and Attractions and could be considered as part of their future planning and management.

The study area has been divided into nineteen 'Management Units', defining sections of the coastline which share similar characteristics. These have been developed based on:

- coastal hazard assessments for the study area;
- sediment cell framework developed by the Department of Transport;
- existing coastal infrastructure (such as groynes, drains and seawalls); and
- the distribution and types of assets vulnerable to coastal hazards.

The Management Units provide a framework for the evaluation of risk management options, adaptation pathways and future monitoring and management. The Management Units are listed with a description of their characteristics in Table 1.

Table 1 - Management Units

Management Unit No.	Management Unit Name	Boundaries	Description
01	Smiths Beach	South: start of rocky headland North: start of secondary headland	The southern portion of a west facing Bay and includes the Gunyulgup Brook mouth. The continuous public foreshore reserve is currently unallocated Crown land and its northern end is contiguous with the Leeuwin Naturaliste National Park. There are no current coastal protection structures.
02	Yallingup	South: start of rocky headland	The southern portion of a west facing sandy beach with rock platforms. Continuous public foreshore reserve

		North: start of northern rock platform	partly within the Leeuwin Naturaliste National Park with the remainder vested in the City. There are no current coastal protection structures.		
03	Bunker Bay	West: rocky headland East: rocky headland	North facing sandy bay in the lee of a rock headland. Limited public foreshore reserve and facilities. Flows from Lake Jingi breach the dune barrier and discharge into the ocean. There are no current coastal protection structures.		
04	Eagle Bay	West: rock outcrop East: rock outcrop	North west facing sandy bay in the lee of a rock headland. Includes a series of rock outcrops and the mouth of Jingarmup Brook. Continuous public foreshore reserve contiguous with Meelup Regional Park. There are no current coastal protection structures.		
05	Old Dunsborough	North: boundary to Meelup Regional Park South: Beach Road (Tertiary sediment cell boundary)	East facing mixed sandy/rocky coastline including Point Daking and Point Dalling. Continuous public foreshore reserve but often very narrow. There are no current coastal protection structures.		
06	Dunsborough Townsite	North: Beach Road (Tertiary sediment cell boundary) South: Elmore Road	North east facing sandy beach in the lee of rocky headlands. Includes the Dunn Bay Bar, and the mouths of the Dandatup and Dugalup Brooks. Continuous public foreshore reserve (including vegetation and habitat). Coastal protection structures: buried geotextile sand container (GSC) seawall installed in 2012.		
07	Quindalup	West: Elmore Road East: Station Gully Drain	North east facing sandy beach that includes the point of land fall for the Dunn Bay Bar. Continuous public foreshore reserve (with significant vegetation & habitat values). Toby Inlet runs generally parallel to the coast and discharges to the west of Station Gully Drain. Coastal protection structures: stone revetment (1973), timber groynes (1982) and Quindalup Sea Rescue trial groyne (2013).		
08	Marybrook	West: Station Gully Drain East: Lennox River Drain (Tertiary sediment cell boundary)	North east facing sandy beach with the Molloy Drain outlet. Includes the 'Deadwater' – the easternmost section of Toby Inlet dissected by Station Gully Drain. Public access to the beach becomes increasingly constrained between Birl Elbow and the Lennox River Drain. There is no continuous public foreshore reserve in the eastern section of this Management		

			Unit. There are some private coastal protection structures.		
09	Siesta Park	West: Lennox River Drain (Tertiary sediment cell boundary) East: Locke Swamp Drain	North facing beach that has been influenced by the Siesta Park groyne. There is limited public access to the beach and there is not a continuous, usable public foreshore reserve. Coastal protection structures: Siesta Park jetty groyne (1950s), East Lennox timber groyne field (1960s) and Siesta Park groyne (1965/67). There are a number of private coastal protection structures.		
10	Locke Estate	West: Locke Swamp Drain East: Buayanyup River Drain	North facing beach backed by leasehold land and, further inland, the Locke Nature Reserve. Camp lease sites. Coastal protection structures: Buayanyup River Drain training wall (1985), groyne field (1988-1992 & 2014/15), Locke Estate seawall (1985-1992/2014).		
11	Abbey	West: Buayanyup River Drain East: Holgate Road Groyne (Secondary sediment cell boundary)	North facing sandy beach with a continuous narrow public foreshore reserve (including vegetation and habitat). Coastal protection structures: boat ramp headland (1978, refurbished 2011 & 2013), groyne field (1990s, 2011 & 2012/13), Abbey West groyne (2012/13).		
12	Broadwater	West: Holgate Road Groyne (Secondary sediment cell boundary) East: Dolphin Road	North facing sandy beach with a wide continuous public foreshore reserve (including vegetation and habitat). Landfall for the Abbey sand bar. Coastal protection structures: two trial groynes (2011).		
13	Busselton West (A)	West: Dolphin Road East: Vasse River Diversion Drain	North facing sandy beach with a narrow continuous public foreshore reserve. Coastal protection structures: seawalls (1970s), groynes (1990-1995 & 2016) and Vasse River Diversion Drain outlet training wall (1983).		
14	Busselton West (B)	West: Vasse River Diversion Drain East: Gale Street	North west facing sandy beach with a generally narrow, continuous public foreshore reserve. Coastal protection structures: King Street carpark buried geotextile sand container seawall (2013).		
15	Busselton Central	West: Gale Street East: Ford Road	North west facing sandy beach with a continuous public foreshore reserve that widens to the east. Includes the Busselton Foreshore Precinct and significant heritage assets. Coastal protection structures: Busselton Jetty GSC groynes (2008), seawalls (refurbished 2011, 2015 & 2017), Scout Road groynes (2013).		

13.1	Attachment A

16	Busselton East	West: Ford Road East: Freycinet Drive	North west sandy facing beach with continuous public foreshore reserve. Wide beach and foreshore reserve. Land fall for the Busselton Jetty sand bar. No
17	Port Geographe	West: Freycinet Drive East: Port Geographe breakwater	Port Geographe Marina and canal development. Public foreshore reserve from the inner marina entry wall extending along the seawall. Coastal protection structures: Port Geographe seawall and west breakwater.
18	Wonnerup	West: Port Geographe breakwater East: Wonnerup Inlet	North west facing sandy beach and low lying coastal barrier backed by the Vasse-Wonnerup Estuary. Includes the mouth of the Wonnerup Inlet. Continuous public foreshore reserve. Coastal protection structures: Wonnerup groyne field (2004-2006), buried seawall and Baudin Reserve GSC groynes (2017). Flood protection structures: Vasse Estuary storm surge barrier.
19	Forrest Beach	West: Wonnerup Inlet East: LGA boundary with Shire of Capel	North west facing sandy beach and coastal barrier backed by the Vasse-Wonnerup Estuary. Includes the 'Deadwater' wetland and a continuous public foreshore reserve. No current coastal protection structures. Flood protection structures: Wonnerup Estuary storm surge barrier.

Each Management Unit is delineated on an aerial photo, with coastal hazard lines superimposed, as well as an indication of the various assets at risk in section 7.2 of this CHRMAP.

1.4 **Coastal management**

Prior to the development of this CHRMAP, the City has undertaken or been involved in a number of projects and initiatives that have assisted in setting the future direction for the management of our coastline, including:

- Formation of the Peron-Naturaliste Partnership (PNP), which is a partnership of the nine local authorities along the coast between Point Peron (in the City of Rockingham) and Cape Naturaliste, and which is providing regional direction and leadership in this area, particularly through the -
 - Coastal Adaptation Pathways project that delivered an economic analysis of adaptation options at a whole of region scale and a demonstration of coastal adaptation pathways and options at a scale relevant to partner local governments (ACIL Tasman/Damara 2012).
 - Coastal Community Adaptation Awareness Plan project (2013) that engaged with the City of Busselton community regarding coastal adaptation challenges and options, with the aim that lessons could be applied for similar engagement elsewhere within the PNP region and beyond (ACCARNSI 2013).

- ii. A number of coastal erosion studies to model the potential impacts of sea level rise on our Geographe Bay coastline, with the most recent (Damara 2012) reflecting the direction of the Western Australian Planning Commission (WAPC) that coastal planning be undertaken on the basis of a predicted 0.9 metre sea level rise over 100 years. The 2012 study produced interim coastal modelling maps that provide an interpretation of development planning setbacks for coastal erosion under a set of possible climate change scenarios. These are publicly available on the City's website.
- A Coastal Vulnerability Assessment for four settlements either side of Cape Naturaliste: Smiths Beach, Yallingup, Bunker Bay and Eagle Bay (Damara 2017).
- iv. A ten year Coastal Management Programme 2018-2028 (CMP) for the Geographe Bay coastline that provides the basis for a 'whole of coast' approach to managing coastal erosion, with the definition of six coastal management areas based on tertiary sediment cells and local management practices (Shore Coastal 2018). The CMP also sets out planned and costed coastal protection maintenance works, beach width monitoring, investigations (such as sediment and coastal inlet dynamics, coastal stratigraphy, numerical modelling of coastal flooding and review of sand and rock sources) and coastal adaptation works. The CMP has a time horizon less than what is needed for long term coastal adaptation planning. The focus of the CMP is also on reserves and public assets, rather than private land. A previous five year CMP (2014-2018) has been implemented.
- v. The transition of the City's 'Beach Protection Reserve' to a 'Climate Adaptation Reserve' in 2015/16 to enable the allocation of funds towards the preparation of a short term (<25 years) coastal protection plan/long term coastal adaptation strategy (i.e. this strategy) to be reflected in an integrated way in the City's local planning scheme, as well as in the City's long term infrastructure and financial planning. Funds in this reserve have been utilised in climate-related projects and now the City plans to establish a dedicated 'Coastal Adaptation Reserve'.</p>
- Two legal implications related projects to assist coastal local governments to identify, manage and mitigate their legal risks in an environment of changing climate policy.
- vii. WALGA (2020)

1.5 Assets and values

For the purpose of the CHRMAP 'assets' include:

- · Natural features such as beaches, dunes and native vegetation;
- Land, both public and private;
- · Buildings and other structures;
- Infrastructure relating to drainage, water, sewerage, electricity, communications and gas infrastructure:
- Roads, car parks and dual use paths/beach access stairs and ramps; and
- Coastal structures such as jetties, boat ramps, seawalls and groynes.

The value of an asset can be tangible or intangible, financial or non-financial. Examples of non-tangible assets include ecological function and coastal views/amenity. The value of an asset also includes consideration of risks and liabilities, and can be positive or negative at different stages of the asset's life. Values in the context of the CHRMAP further encompass the broader economic, social (including heritage) and environmental values of the coastal area.

2.0 Existing Environment

2.1 Climate

The south west of Western Australia has a Mediterranean climate with hot, dry summers and cool, wet winters. Mean maximum temperatures vary from 28.5°C in summer and 16°C in winter. The mean annual rainfall in Busselton is approximately 826mm, with most falling from May through to October.

2.2 Geology and landform

The Geographe Bay coastline, is comprised of low-relief topography and parallel estuaries and wetlands, with openings to the ocean via a man-made drainage network and natural streams or inlets/estuary mouths. The coastal dunes are limited in height largely due to offshore prevailing winds, with many areas of the coastal zone lying below three metres above sea level. The coastline around Cape Naturaliste is characterised by steeper relief topography with distinct bays or beaches separated by rocky headlands. Dunes are higher, ranging from around five metres above sea level at Eagle Bay and Bunker Bay to over 20 metres at Yallingup.

2.3 Hydrology

A number of ephemeral waterways are present in the catchment of Geographe Bay. The Lower Vasse, Lower Sabina, Abba and Ludlow rivers feed into the Vasse Wonnerup estuary, which discharges into the ocean via the Wonnerup Inlet (Department of Water 2010) A network of man-made drains (including diverted rivers) constructed in the 1920's to ameliorate flooding of agricultural land and urban areas also intersect with the Geographe Bay coastline and discharge into the ocean (WAPC 2005).

Natural outlets to Geographe Bay occur at the Vasse-Wonnerup estuaries, Toby Inlet, Dugalup Brook (Dunsborough), Dandatup Brook (Dunsborough), Jingarmup Brook (Eagle Bay), Lake Jingi (Bunker Bay) and Gunyulgup Brook (Smiths Beach). Floodgates located on the exit channels of the Vasse-Wonnerup estuaries (originally installed in 1908) essentially control tidal saltwater intrusion and winter outflow of freshwater (WAPC 2005).

Groundwater flow systems in Geographe Bay catchment include the:

- Superficial aquifer the near surface unconfined aquifer that is mostly recharged by rainfall and has a general northerly flow towards the coast;
- Leederville aquifer underlies the Superficial aquifer and varies in thickness from50 metres
 to500 metres. The confined aquifer provides potable water supplies in Busselton and
 Dunsborough. This groundwater aquifer also flows generally north and discharges into
 Geographe Bay (WAPC 2005). Sea level rise and a drying climate are likely to increase the risk
 of saltwater intrusion into freshwater aquifers and wetlands;
- Yarragadee aquifer the oldest and deepest confined aquifer underlying the Superficial and Leederville aquifers. It ranges in thickness from 600 metres to 1,600 metres and also flows towards Geographe Bay (Department of Water 2010).

2.4 Coastal processes

The City's weather is influenced by an extra-tropical high pressure ridge and mid-latitude low pressure trough. Under high pressure conditions, winds have a typical pattern of easterlies in the morning and

> south-westerlies in the afternoons. Potentially damaging wind speeds/gusts are associated with higher storm frequency, proximity and intensity during the winter months.

> Geographe Bay is microtidal, with an average daily range of approximately 0.6m and a lowest to highest astronomic range of 1.20m. Sea level variability due to storm surge and high tides can produce a range of more than 2m. Extreme water levels were experienced during Tropical Cyclone Alby (1978) and following the Sumatra tsunamis in 2004 (Damara WA Pty Ltd 2011). The diffraction of wave direction and swell around Cape Naturaliste, combined with a northerly aspect provides Geographe Bay with more protection from westerly and south-westerly storm events. Northerly and northwesterly storms, however, create the highest wave events along the Geographe Bay coastline.

> While tides cause small, predictable changes in sea level, storm surge can result in short term sea level rises associated with strong winds and barometric pressure changes. In particular, strong winds can generate high, steep waves which can erode higher sections of beach which are not typically vulnerable. The level of beach impact can be substantial, particularly if storm events occur during high tide. Overall, the impact on beach profile is dependent on the magnitude, intensity and duration of the associated storm system and tidal cycle (diurnal, spring-neap or bi-annual) at the time of the storm event.

2.5 **Historic Shoreline Changes**

Historical aerial photography dating back to November 1941 has been used to map the movement of the coastline of Geographe Bay and to identify areas of accretion and erosion. Generally, the Geographe Bay coastline has been accreting, however localised variations show that, in an unmanaged state, the coastline can be highly mobile, with most of the coast experiencing, at the decadal-scale, periods of both significant net accretion and significant net erosion over the last 70 years.

These changes are natural responses to storm erosion and recovery, influenced locally by the installation of coastal protection structures, the construction of the regional drainage network (drains that bisect the coast and influence trapping and release of sediment) and the large, active sandbars within Geographe Bay. The prevailing swell and alongshore tidal and wave currents generate sand feeds, resulting in wider beaches near the tips of sandbars. The largest sandbars have an eastward migratory trend and influence beach width by moving coastal sand accumulation with them.

Why does the City need a CHRMAP?

Globally, mean sea level has risen since the 19th century and this is predicted to continue at an increasing rate through the 21st century, significantly altering the Western Australian (WA) coastline over the coming decades. Changes to mean sea level over the past century have been observed for the coastline adjacent to the Perth Metropolitan Area. Under SPP2.6, the City is required to address projected sea level rise of 0.9m over the next 100 years which could clearly have significant impacts on the City's coastal zone in the future.

Because our coast is mobile and dynamic and has been affected by coastal processes historically, both the City and private landowners have taken steps to manage those affects periodically. It is not a question of if and when the City's coast may be affected by coastal hazards, but the extent to which those affects will continue and accelerate over time. Unless actions are taken to protect the coast, not only may private land and development be affected, but so may public beaches, foreshore reserves, environmental assets (vegetation/habitat and wetlands/estuaries), cultural assets and public infrastructure such as roads. Irrespective of whether the projected 0.9m sea level rise is realised, our coast requires a strategic management approach.

13.1 Attachment A Draft CHRMAP

It is worthwhile thinking about the issue in in comparison to the way one thinks about insurance. A person may insure their house for fire, even though it is overwhelmingly unlikely that the house will not be damaged or destroyed by fire. A judgement is made about the likelihood and consequences of an adverse event relative to the cost of insurance, even while still hoping and taking care to ensure that the adverse event does not occur. In considering the potential effects of coastal processes generally, coupled with sea level rise, the likelihood of an adverse event is high (and has occurred both historically and very recently), the consequences very significant and the cost of 'insurance' is relatively low, when compared to the likelihood and consequences of the potential harm. The cost is, however, still substantial, and likely to be beyond the reasonable financial capacity of local government to manage.

Long term projected increases in mean sea level have the potential to exacerbate existing coastal processes. As such, all levels of government are putting measures in place to ensure that communities understand the risks to values and assets on the coast, with a plan to adapt over time.

While the scientific community has established that human-induced climate change is occurring, uncertainty remains about the magnitude and extent of the likely impacts from these changes. Despite such uncertainty, early consideration of coastal hazards and the adaptation and management of appropriate planning responses is important to ensure economic, environmental and social objectives can be achieved.

National and international coastal planning practices are increasingly adopting a risk management approach to deal with the potential adverse impacts of coastal hazards. These help ensure that coastal hazards are appropriately factored into decision-making processes for sustainable land use and development in the coastal zone.

3.1 Community and stakeholder engagement

Community input is the cornerstone of an effective CHRMAP process, helping the City to understand how the community uses and values the coast, and how it should be best managed.

3.1.1 Community Coastal Values Survey

The City commissioned Research Solutions to undertake a community survey to determine what the community values about our coastline (Research Solutions, 2018). The survey is provided in Appendix One. The survey sample was divided into coastal and inland residents/property owners. An important outcome was to deliver a random and representative sample of the community, including those members of the community who may not typically participate in consultation.

The survey intended to:

- Establish how the coastline is used and compare this with the values people espouse for the coastline.
- Establish key values and what people feel should be protected and preserved from future erosion.
- Establish whether the community understands the changes that are occurring on the coastline and the level of awareness of the City's actions to manage coastal erosion.
- Explore who the community feels should pay for the work required to reduce the impact of coastal erosion.

The survey found that the north facing beaches in the City are strongly valued by the community, with over half of those surveyed feeling that uninterrupted stretches of sandy beaches are a vital part of the character of Busselton and our social wellbeing.

The most important coastal value cited was handing the coastal area onto our children and grandchildren in the same or better state than it is now. Other important values cited were:

- Knowing that there are places on the coast that feel 'natural'
- Natural vegetation/habitat on foreshore and beach areas
- Uninterrupted stretches of sandy beach to walk along
- Heritage historical features such as the Pioneer Cemetery or the Busselton Jetty
- Safe swimming beaches

The survey established that a significant proportion of the community use our local beaches. Over 53% of respondents cited walking/jogging on the beach or foreshore at least once a week. Of those, 42% of respondents living in the western part of the City preferred remotely located parts of the beaches (this increased to 54% of respondents who lived in the eastern part of the City). Of all respondents, 22% cited using both close to the Busselton 'town beach' or Old Dunsborough beach and remote beach areas for walking and/or jogging.

There was a high level of awareness of natural changes in the coastline over the year preceding the survey (62%)and 60% or respondents were aware that the City had taken action to stop or reduce impacts from coastal erosion over the previous five years (e.g. groynes, seawalls, beach nourishment and revegetation).

On the question of who should pay to mitigate coastal erosion impacts 41% of respondents felt that the taxpayer should bear the cost, with the balance borne by all ratepayers in the City (29%) and private landowners/businesses affected (30%).

The results of the community coastal values survey have been used to inform the multi-criteria analysis of adaptation options and the financial model (where all scenarios assume preservation of a continuous beach and foreshore wherever possible).

Community Information Sessions

In March 2019, the City held community information sessions in both Dunsborough and Busselton about the development of a CHRMAP for the City's coastline. Information disseminated during the sessions included the findings of the community coastal values survey, the State's position on coastal management and projected sea level rise, the City's coastal areas potentially vulnerable to coastal hazards in future decades and options for managing the effects of sea level rise and coastal hazards.

3.1.3 Strategic Community Plan

In June 2020, the City undertook a community scorecard survey to support a review of the Strategic Community Plan and to assist with identify community priorities. The survey asked respondents to rank local projects and issues from the most important to the least important. Of those respondents. 46% ranked the management and protection of the City's coastline from erosion as the most important.

3.1.4 Steering Group

> The City engaged with relevant government and external stakeholders in preparation of this CHRMAP through a Steering Group and will continue to liaise with relevant agencies as required, in order to ensure coastal hazard management and strategic planning is coordinated within the municipality and across the region. Represented on the Steering Group were:

- Department of Transport
- Department of Planning, Lands and Heritage
- Department of Water and Environmental Regulation
- Department of Biodiversity, Conservation and Attractions
- Water Corporation
- GeoCatch

4.0 What are coastal hazards and how are they identified?

4.1 Coastal hazards

The coast is a relatively narrow dynamic zone characterised by complex interactions between oceanic, terrestrial and atmospheric processes. Ocean temperature, waves, tides, ocean currents and wind all contribute energy to form and shape the coast. These interactions result in natural changes to the coast over a range of timescales, including -

- long-term changes to the coastline from global climatic change and geological processes, including the 120 m rise in sea level since the last glacial maximum 20,000 years ago;
- ongoing processes of coastal sediment transport, including the supply of sediment from rivers, coastal erosion or offshore sources, and sediment transport by ocean currents, waves and
- short-term effects of extreme events such as the landfall of a severe tropical cyclone.

Coastal erosion is a natural, seasonal process that occurs when winds, waves and coastal currents act to shift sediments away from an area of the shore, often during storm events. Typically erosion occurs during the winter months, with recovery and build up (accretion) during the summer months. In most locations, this is a short-term process and the beaches gradually regain sediment.

Coastal inundation results from the interaction of a number of elements. During a storm, strong onshore winds can increase water levels close to the coast and low atmospheric pressure raises the level of the ocean. A storm surge can interact with other drivers to increase the severity of inundation, including coincident high tides and riverine flooding.

4.2 Coastal hazard modelling

Coastal hazards are modelled as per the parameters outlined in SPP2.6, which stipulate allowances for erosion as follows:

- (S1 Erosion) Allowance for the current risk of erosion;
- (S2 Erosion) Allowance for historic shoreline movement trends; and
- (S3 Erosion) Allowance for erosion caused by future sea level rise.

For sandy coastlines, the allowance should include a 0.2m per year allowance for uncertainty. The allowance for inundation should be based on:

• (S4 Inundation) Allowance for the current risk of storm surge inundation.

Coastal hazards were assessed for the planning timeframes of 2040, 2070 and 2115. The planning timeframe of 2115 reflects the timing of the most recent coastal hazard modelling and, given the preparation of this CHRMAP over several years, the 100 year planning timeframe is 2120. As there is uncertainty as to the extent of sea level rise, the difference is not viewed as significant. The CHRMAP will undergo review during planning timeframes. In accordance with SPP2.6, the hazard modelling applied in this CHRMAP considers a sea level rise of 0.9m by 2115.

A significant number of coastal studies have been undertaken in the City and it is preferential for the CHRMAP to be based on hazard mapping conforming to the requirements of SPP2.6, to ensure the CHRMAP's overall compliance with planning and regulatory requirements.

Practical recommendations on the selection and application of coastal hazard lines for inclusion in the CHRMAP are summarised below and the detailed technical methodology used in the various studies can be viewed in Part 1 of the CHRMAP Technical Assessment Report (Advisian 2020a). The coastal hazard lines described below can be viewed on the Management Unit aerial photographs provided in section 7.2 of this CHRMAP.

4.2.1 Erosion – Geographe Bay (Old Dunsborough to Forrest Beach)

Damara WA (2012) provides hazard lines for the likelihood of coastal erosion for 2040, 2070 and 2115 for 0.15m (low), 0.4m (medium) and 0.9m (high) sea level rise scenarios respectively. The hazard lines have been extrapolated west to the boundary of Meelup Regional Park to incorporate Old Dunsborough. This is because existing coastal hazard studies have not included this section of the coast and this CHRMAP contains recommendations to further investigate coastal hazard risk for the Old Dunsborough management unit. The S1 erosion values in Damara WA (2011) are utilised in this CHRMAP to evaluate the present day risk to assets, which is in accordance with SPP2.6.

Existing coastal protection structures (e.g. Port Geographe breakwater and seawall) were not factored into the modelling for coastal erosion for the various planning timeframes. That is because it cannot necessarily be assumed that those structures will be maintained and no current structures have been designed with a 100 year design life.

Whilst the coastal erosion hazard lines for Geographe Bay are likely to be conservative, they are deemed appropriate for the development of this CHRMAP (Advisian 2020a).

4.2.2 Erosion – Smiths Beach, Yallingup, Bunker Bay and Eagle Bay (Cape settlements)

Damara WA (2017) erosion hazard maps are generally consistent with SPP2.6, other than not including a present day or short-term (2030) hazard scenario. For the purposes of this CHRMAP the 'Type 1 Application' erosion hazard lines are used for the years 2040, 2070 and 2115. This application uses an estimate for S1 based on beach variability and a 100:1 ratio of coastal response to sea level rise for S3. Progressive erosion allowances for S2 over 100 years are included for Smiths Beach and Yallingup. No S2 allowance is made for Bunker Bay or Eagle Bay due to active sediment supply. Hazard lines are provided for 2040, 2070 and 2115 for 0.15m, 0.4m and 0.9m sea level rise respectively.

4.2.3 Inundation – Geographe Bay (Old Dunsborough to Forrest Beach)

Inundation hazard lines are contained within the collection of hazard studies for a number of scenarios. These indicate that the extent of inundation is very sensitive to the selected water levels

within each study, with a tipping point between minor localised impacts and widespread flooding of between 2.3m and 2.6m AHD (Advisian 2020a).

SPP2.6 recommends the management of inundation risk up to a 1 in 500 year ARI event. However, due to the small number of extreme events in the recorded datasets, it is very difficult to accurately quantify the expected water levels during a 1 in 500 year event. The hazard lines contained within the Damara WA (2012) report adopted a range of 1.48 to 1.70m AHD, varying across Geographe Bay for a present day 1 in 500 year ARI event, and a range of 2.38 to 2.60m AHD (includes 0.9m sea level rise) for a similar event at 2110.

A present day event is comparable to the actual recorded peak water levels during Tropical Cyclone (TC) Alby in 1978 (1.76m AHD in Geographe Bay). However, this level is still well below more recent estimates of a 1 in 500 year ARI. Current assessments categorise TC Alby at around a 1 in 200 year event. A study commissioned by Department of Transport (Seashore Engineering 2018) identifies 2.9m AHD as a preliminary upper bound estimate of a 1 in 500 year ARI event in Busselton, which would give a 100 year water level in the order of 3.8m AHD, allowing for 0.9m sea level rise (noting that this is conservative and water levels could be somewhat lower).

The existing hazard lines and studies used to inform the CHRMAP indicate that at a 2.9m AHD water elevation the majority of the study area would be impacted by inundation, both directly from breaches in the dunes and flooding of drainage channels (Advisian 2020a). There is also the added complexity of the potential combined impacts of flooding due to a rising groundwater table and rainfall surface run-off.

Geoscience Australia (2014) modelled the extent of inundation from Wonnerup to Dunsborough resulting from the storm scenarios of:

- i. TC Alby based on the actual storm track; and
- TC Alby storm track and timing modified to direct maximum winds over Busselton with a coincident spring tide of 1.5m.

The extreme storm scenario was combined with three sea level rise projections (0.4m, 0.9m and 1.1m) and riverine flooding scenarios for the Vasse Estuary (Lower Vasse River, Sabina River and Abba River). The key findings of the study were:

- Coincident riverine flooding with a large storm such as TC Alby has relatively little effect on the extent of inundation compared with that caused by storm-spring tide inundation.
- ii. Increases in sea level increases the extent of overland inundation.
- Increases in sea level have the effect of increasing water velocity and depth and will have a bearing on destructive potential.

In liaison with the Department of Transport, an inundation study was prepared for the proposed Newport Geographe development at Port Geographe (Baird 2020). The study makes recommendations for the 1 in 500 ARI coastal water level for the site in accordance with SPP2.6. The study used TC Alby as the design storm basis for determining a recommendation for the 1 in 500 ARI water level for the canal waterways for the planning year of 2120 of 3.4m AHD.

For the purpose of assessing the risk of inundation to allow the development of short-term management actions, and longer-term adaptation pathways, the CHRMAP assumes:

In the short-term (0-10 years) – all areas below 3.0m AHD are at risk from inundation (majority
of the study area).

In the longer-term (up to 100 years) – all areas below 3.8 m AHD are at risk from inundation (Advisian 2020a).

This allows for the broader identification and evaluation of management actions.

Inundation - Smiths Beach, Yallingup, Bunker Bay and Eagle Bay (Cape settlements)

The physical characteristics of the City's west coast are different to those of Geographe Bay. Coastal inundation on the Cape Naturaliste coast comprises two distinct components (Damara 2017) -

- For exposed west coast beaches, such as Yallingup and the middle/northern sections of Smiths Beach, coastal inundation caused by wave run-up is the combined effects of high ocean water levels and onshore waves. This has caused significant dune erosion or 'scarping' in the past. Areas exposed to wave run-up hazard have been included in areas identified as potentially affected by coastal erosion.
- For low-lying areas of beaches that are more sheltered from wave action (sections of Bunker Bay, Eagle Bay and Smiths Beach in the lee of rocky headlands), localised coastal inundation is determined by ocean water level and areas associated with creek lines). Estimates of inundation hazard likelihood have been based on previous observations with the risk of higher water levels resulting from tropical cyclone scenarios.

Detailed inundation hazard mapping has not been undertaken for Yallingup, Bunker Bay and Eagle Bay. Damara (2017) provides a qualitative assessment of the present day risk from a 100 year water level event that indicates that only a small number of built assets are likely to be at risk in the shortterm. Given the relatively high topography of the Capes settlements, it is expected that the only built assets with potential to be at risk of inundation in the short-term are in Eagle Bay in the vicinity of the Jingarmup Brook outlet. (Advisian 2020a).

4.2.5 Evaluating the combined risk of erosion and inundation

Within the Geographe Bay portion of the study area there is a risk of both erosion and inundation. Although SPP2.6 requires the evaluation of these hazards independently, the assessment of adaptation options will require an integrated approach. In particular the selection of erosion adaptation options can have a direct influence on the management of coastal inundation. For example, a decision to maintain or abandon a foreshore reserve can directly affect the ability to mitigate against inundation.

However, given the immediate and long-lasting risks from erosion, the first priority of the CHRMAP is the evaluation of adaptation options for erosion. Recommended adaptation options for erosion will assist in mitigating inundation hazard. A recommendation of the CHRMAP is to commission targeted inundation investigations for Geographe Bay, Yallingup and Smiths Beach, once the direction on managing coastal erosion hazard is set.

4.3 How are the risks assessed?

To provide a transparent and logical basis for determining adaptation planning priorities, a risk assessment was undertaken that aligned with the City's Risk Management Framework (2017). A detailed explanation of the methods and criteria used is provided in Part 2 of the CHRMAP Technical Assessment Report (Advisian 2020a).

Risk was assessed in relation to the -

- Likelihood of a hazard occurring;
- Consequences if it were to occur; and
- · Capacity for the management of the assets to adapt and address coastal hazards.

The risk assessment assumes that existing coastal protection structures will not perform a function beyond their current design life. For the purpose of estimating worst case scenario coastal hazards therefore, it is assumed that no other adaptation intervention will occur. For the steeper, rocky coastline at Old Dunsborough and further west, there is uncertainty about the local geology and the predicted erosion hazard mapping. For the purposes of risk assessment and the multi-criteria analysis, it is assumed that the likelihood of risk is accurate (assuming no erosion controls). The CHRMAP includes a recommendation for an additional study to investigate local geomorphological influences on erosion risk

4.4 What could be affected?

Over the 100 year planning timeframe, the whole of the coast along Geographe Bay is vulnerable to coastal erosion. The severity of impact and the extent of affected areas are predicted to increase progressively. The risk of coastal inundation along the Geographe Bay coastline is also significant because it is low lying. The complexity and level of risk increases with the interaction between sea level rise, storm surge and rainfall run-off flooding associated with rivers, wetlands/estuaries and agricultural drains.

The coastline at Eagle Bay, Bunker Bay, Yallingup and Smiths Beach is also at risk from coastal hazards but those risks can be considered separately for each, and to Geographe Bay, due to the different influencing elements (e.g. topographic 'controls' such as rocky headlands separating beaches, steeper topography and prevailing wave swell/energy).

The total present day value of existing assets potentially at risk from coastal hazards in the City of Busselton to 2115 is estimated at over \$5 billion. This figure includes private residential and commercial properties (valued at approximately \$4.9 billion and City of Busselton and State/utility assets (valued at approximately \$513 million (Advisian 2020a).

Public infrastructure assets include -

- Grassed foreshore areas (including furniture/BBQs/play equipment/irrigation/fencing)
- Carparks
- Dual use paths
- Jetties and boat ramps
- Buildings
- Coastal protection structures
- Roads and bridges
- Utilities (infrastructure for flood protection, stormwater, sewerage, water, power, gas and communications)

There are also significant assets that are inherently difficult to derive a dollar figure for, such as the Ramsar-listed Vasse Wonnerup Estuary, Western Ringtail Possum habitat, freshwater wetlands and groundwater aquifers and sites of European and Aboriginal historical, spiritual and cultural significance.

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The potential impacts from coastal erosion are typically much more damaging/threatening than the effects of inundation (noting that inundation is different to flooding in the context of the CHRMAP). For example, if a carpark is temporarily inundated with sea water during a storm event, the water will eventually subside and may not result in significant structural damage. If a carpark is eroded during a storm event, it is likely to require repair or complete replacement.

In terms of risk, coastal erosion hazards generally lead to the highest vulnerability in the short-term, due to their greater capacity to damage assets. The risk of coastal inundation, however, increases substantially over future planning timeframes and extends across large areas of low-lying land along the City's coastline and in some cases, extends a significant distance inland.

5.0 What are the management options and considerations for coastal hazards?

5.1 **Key concepts**

5.1.1 Equity

Equity is a concept central to the purpose of the CHRMAP process. The City's coastline is considered by the community as a highly valuable public asset, with a range of stakeholders including individual property owners in coastal areas, ratepayers, taxpayers in general, and environmental/non-human

Responsibility for coastal planning in W.A. currently lies with both State and local governments and there is a need to ensure decision making considers equity in terms of:

- Access if the foreshore reserve erodes to the point where private houses directly front the beach, then this would restrict or even prevent public access to those areas. The coast and coastal foreshore reserves are public assets that should, where possible, be available for current and future generations to benefit from and enjoy.
- Enjoyment if a seawall is installed, then a fisherman may still be able to enjoy the coastal environment by fishing from the rocks, however, the loss of a sandy beach would affect enjoyment of the coastal environment by someone who wants to walk along the beach or swim.
- Beneficiaries coastal protection structures, such as groynes, may create beneficiaries (those who are protected from hazards) but potentially disadvantage others. For example, protection structures may exacerbate erosion further along the coast from the structure, and limit sediment availability for maintaining beaches some distance from the protected area. Protection structures can also result in significant impacts to coastal ecosystems, well beyond the local area in which the structures are installed.
- Intergenerational equity in planning for a 100 year timeframe, how will decisions made now affect future generations? Continuing to develop the coastline without planning for hazards has potential to result in increased risk and expense for future generations. Letting the foreshore and beach erode would mean future generations could not enjoy them.

In light of the above, it is critical that planning and management of coastal hazards is as transparent, effective, strategic and equitable as possible.

5.1.2 Coastal foreshore reservation

The coastal foreshore provides beach access and public spaces for recreation and conservation. It is also a tourist attraction and provides habitat for native flora and fauna. Importantly, it can provide a buffer to protect built assets, such as buildings and infrastructure, from coastal hazards.

SPP2.6 Schedule One provides guidance for calculating the component of a coastal foreshore reserve required to accommodate coastal processes. This should ensure that, at the end of the planning timeframe, a coastal foreshore reserve is still present for recreation and/or conservation and is not instead exposed to the adverse impacts of erosion and inundation. It is inland from this reserve that additional development can be considered, that provides a sufficient foreshore reserve for future generations. In most cases, there is not a sufficient foreshore reserve for this now and, because of this, the City is already actively managing the coast.

Notwithstanding, Schedule One also contains Clause 7 - Variations, which outlines specific instances where certain types of development may be considered appropriate within a coastal foreshore reserve, regardless of the allowance for physical coastal processes.

5.1.3 Rights and responsibilities

There is no law requiring any level of government to provide protection of private property from natural hazards, nor compensation when land is lost to the sea. There are, however, several laws that allow the intervention of governments to enforce eviction if private property becomes uninhabitable, or removal of the property itself if it constitutes a public risk. In the event of coastal erosion causing a property to "fall into the sea", and the land to disappear below the high water mark, the loss is to be borne by the property owner.

The current situation in WA determines that property titles remain, however, even if the land is lost to coastal processes, and this can mean that public access to foreshore areas is lost in the event that erosion encroaches on private property.

Nonetheless, the CHRMAP process ultimately intends to minimise risks and maximise beneficial use of the coast from an economic, social and environmental perspective. For more information on rights and responsibilities, refer to the State Government's WA Coastal Zone Strategy 2017.

5.2 Adaptation hierarchy

There are four broad categories of potential risk management options for responding to coastal hazard risks for any given section of coastline. The hierarchy of options are described as follows in SPP2.6 -

5.2.1 Avoid

Avoid any further residential or commercial development within areas identified as vulnerable to the impacts of coastal hazards. Avoid is seen as the preferred strategy but is generally only applicable to undeveloped coastal land and areas of the coast where intensification of development in hazardous areas might be proposed. This option is underpinned by the implementation of planning controls which should prevent inappropriate use of land in areas identified as potentially at risk from coastal

13.1	Attachment A	Draft CHRMA
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Pros	Cons
Ensures that property and infrastructure will	Not an option for much of the City's
not require costly management in the	coastline, where development already exists
future.	in vulnerable areas.

5.2.2 Planned or Managed Retreat

This option provides for the progressive removal of assets ahead of risk from coastal hazards. This would be a significant undertaking and could potentially involve acquisition of vulnerable private property and the removal and relocation of public infrastructure in order to preserve beach and coastal foreshore assets, public access, recreation, conservation and coastal foreshore management.

Planned or managed retreat for existing development involves relocating or sacrificing infrastructure, both public assets and private property, when the effects of erosion and coastal recession reach trigger points.

Managed retreat is identified as the generally preferred adaptation pathway under SPP2.6. The *Planned or Managed Retreat Guidelines* (DPLH, 2019) outline mechanisms for securing the transfer of land from private ownership to the public realm under this approach. Although the State Government recommends managed retreat, it does not propose to fund it at this stage. While there is no obligation at any level of government to compensate landholders for the effects of coastal hazards and sea level rise, there is an evident responsibility to act in the best interests of the community. The community values survey supported the retention of a continuous beach and foreshore, and to do that, properties would need to be purchased.

This option can be facilitated in a number of ways, such as:

- leaving assets unprotected and repairing or removing them only when they are affected (e.g. minor park infrastructure)
- removing or relocating assets before they are affected (e.g. larger assets and infrastructure, including commercial/private property and roads)
- not acting to retreat until certain triggers have been reached (e.g. shoreline recedes to a defined point)
- pre-emptive planning controls such as the application of a Special Control Area over vulnerable areas
- reserving land to expand existing foreshore reserves; including the acquisition of land either voluntary or compulsory

It is important to note that without acquisition of private property to expand the foreshore reserve, a managed retreat may result in a loss of public access to foreshore areas and a related loss of amenity as houses become uninhabitable.

Pros Removing assets from hazardous areas eliminates the need to fund ongoing protection. From an intergenerational equity perspective, failing to retreat when needed could be seen to disadvantage future generations, who would effectively be paying to rectify land mismanagement attributable to previous generations. prohibitively

Cons

- Well defined trigger levels based on long term datasets are critical to ensure that management responses are appropriate and timely. For example, an arbitrary trigger might be that managed retreat will be implemented once more than 40 m of beach is lost. However, if 80 m of beach was lost in one storm, it would not allow time to implement a contingency response.
- There is currently no funding proposed by the State or Federal governments to assist with the costs of managed retreat, making it expensive for government to fund.
- Loss of income, economic productivity and investment confidence - much of the most desirable property would no longer attract investment.
- Unless private properties are acquired, a useable beach and foreshore reserve will be lost to the community.
- With the progressive removal of significant infrastructure such as roads, there is a need to maintain safe public access to private property.
- Managed retreat strategy would result in the blighting of existing residential areas over a period of time while homes and infrastructure are removed and then repeatedly, as retreat continues.

5.2.3 Accommodate

Accommodate options aim to re-design existing infrastructure to mitigate potential impacts as they occur, and allow for land use of a low risk (for example temporary) nature. This option is rarely applicable to areas at risk of coastal erosion but is suitable to some areas prone to coastal inundation, where assets can be elevated above flooding to maintain useability in an otherwise hazardous area. The ability for substantial built assets to be redesigned to accommodate coastal erosion hazards is generally limited.

responsibilities, along with measures such as signage and barriers to prevent access.

Emergency response plans and controls are also considered as a measure to accommodate coastal hazards. This involves the implementation of plans for assets and areas that are at risk from hazards, with procedures in place for before, during and after events. This would identify roles and

Pros	Cons	
Relatively simple to implement through planning controls in undeveloped areas.	 Is not effective for existing developed areas within the City that could be affected. Is not effective for areas impacted by erosion. Retrofitting existing structures to accommodate inundation would be challenging and costly. Where substantial inundation levels are expected, the accommodate option may adversely impact on the character and amenity of the area. 	

5.2.4 Protect

Protect options proactively seek to hold the coast (maintain the foreshore reserve, public access and safety, property and infrastructure) as best as feasibly possible for a specific timescale. Protect options include:

- Beach nourishment
- Dune stabilisation
- Grovnes
- Vegetated/landscaped bund
- Exposed seawall or revetment
- Buried seawall
- Detached breakwaters

Coastal protection works may be categorised as either 'soft' or 'hard' options and are described below (Advisian 2020a).

5.2.4.1 Soft protection

Beach nourishment involves placing sand on beaches or dunes following erosion to create an additional buffer to future storm events. Sand nourishment is regularly undertaken by the City along the Geographe Bay coastline to manage beach erosion. This is an important coastal risk management option that at some beaches can be the primary response, and at other sites subject to more persistent erosion, provides an interim response prior to storm events and construction of protective works. Sand nourishment is also undertaken at the time of capital works to minimise 'downdrift effects' (Barr et al 2017). The feasibility of this option is influenced by the availability of suitable sand supplies. Where suitable sources are not readily available, or are located considerable distance away, costs are increased. The City's coast is part of the Ngari Capes Marine Park (State) which is adjoined by the Geographe Marine Park (Commonwealth). The latter protects ecologically important seagrass meadows, which contribute to natural sediment supply. Offshore sand supply is not available directly off the City's coast and land based sources are also constrained/limited.

Dune stabilisation and management involves an ongoing program for revegetation and rehabilitation of the dune system, including fencing, and is usually undertaken in tandem with other protection works.

Pros	Cons	
 Lower up front cost compared to other management options. Does not require significant infrastructure. Can delay the need for hard protection structures or managed retreat. Locally stabilises the beach and foreshore reserve. Can assist with retaining beach amenity and aesthetics. Maintains access and enjoyment of the beach. 	 and may not be a feasible long term option. Significant and progressively escalating ongoing cost. Uncertainty of suitable sand supplies to meet future demand. 	

5.2.4.2 Hard protection

This option involves the construction of engineered structures to protect the coast and/or landward assets from the effects of coastal hazards. There are more than 50 coastal protection structures already in place along the Geographe Bay foreshore. Types of structures include low profile rock groynes, exposed and buried seawalls, timber groynes and granite training walls for regional drain ocean outlets. More recently, geotextile sand container groynes and revetments have been constructed adjacent to the Busselton Jetty. This protection approach has been feasible due to an ongoing net supply of sand from west to east along Geographe Bay over recent decades (Shore Coastal 2018).

It should be noted that no protection option is considered permanent, and all have associated expenses to implement, maintain, remove and potentially replace. Hard protection options also have the potential to divert coastal erosion hazards, increasing risk for adjacent areas or assets and potentially creating liability for those responsible for the structures. Seawalls are exposed or buried structures built in front of identified assets along the coast. The rate of erosion in front of an exposed seawall can increase due to wave refraction, resulting in the loss of a useable beach over time. Beach nourishment is usually required to assist with maintaining a beach.

The potential to degrade beach amenity is likely to lower the deemed acceptability of exposed seawalls to the broader community, unless they perform the dual function of protecting assets and/or broader areas from intermittent coastal inundation. Therefore, exposed seawalls are not considered to be a best option for areas that are solely at risk from coastal erosion. A buried seawall is rock or geotextile sand container protection buried under the beach or foreshore reserve. It can be covered with sand and vegetated to form a protective bund.

Groynes are structures constructed of timber, rock or geotextile and are placed perpendicular to a beach. Usually constructed in groups, groynes restrict or stop longshore sand movement and stabilise beaches locally. This form of stabilisation is usually supplemented with beach nourishment as localised erosion down-drift usually occurs.

 $\label{eq:Adetached} \mbox{A detached breakwater is a structure, usually made of rock or geotextile, constructed parallel to the}$ coastline. Detached breakwaters reduce wave-induced longshore currents/sand transport and stabilise beaches locally.

Pros	Cons
Exposed seawall	
 Provides interim protection against coastal hazards for the assets and private properties behind the seawall. Locally stabilises the beach and foreshore reserve. 	 Hard protection structures generally divert erosion issues elsewhere, such as to beaches either side of, and directly in front of, a seawall. May have significant effects on coastal ecosystems. Require a significant up front capital cost and long term maintenance. May eventually result in complete loss of a beach. Over time, may require beach stabilisation through sand nourishment. This may not be sustainable in the long term due to cost and limited sand supply relative to increasing demand. Protects assets directly affected by coastal hazards, however, the loss of beach amenity would affect the broader community.
Buried seawall	
 Unobtrusive and can be landscaped with vegetation and managed to resemble a natural dune. Provides interim protection against coastal hazards for landward assets. Locally stabilises the beach and foreshore reserve. Would not impede longshore sand movement, unless eroded. Can be reinstated relatively quickly if eroded by a storm event. 	 May result in down-drift erosion if exposed during a storm event. May require supplementary beach nourishment, particularly after a storm event. May be difficult to implement where the beach and foreshore reserve are narrow and/or lot boundaries extend to the high water mark.
Groynes	
 Sand trapped on the up-drift side of groynes may act as a buffer to absorb storm erosion. Correctly designed, groynes can allow both longshore sand movement and retention. Locally stabilises the beach and foreshore reserve. Most effective where there is predominant longshore sand movement. 	 Usually requires supplementary beach nourishment. May result in down-drift erosion if poorly designed.
Detached breakwater	
Locally stabilises the beach and foreshore reserve. Shelter the beach from waves and reduces longshore currents and sand movement.	The Geographe Bay coastline is adjacent to the Ngari Capes Marine Park which contains ecologically important seagrass beds.

•	Over time a tombolo, or sand connection		Construction of detached breakwaters
	between the breakwater and the beach, can		within the marine park may not be feasible.
	form.	•	Provide limited protection against sudden,
			short term events such as a storm.
		•	Usually requires supplementary beach
			nourishment.
		•	Can change the nature and appearance of a
			coastline.

5.3 Multi-criteria analysis

Risk management options have been considered for each Management Unit. As recommended in the CHRMAP Guidelines (WAPC, 2014a) a multi-criteria analysis (MCA) has been used as a preliminary step to identify potentially suitable risk management options for each Management Unit, as well to identify those that are 'fatally flawed' (and therefore can be discounted).

The MCA was guided by the following criteria:

Acceptability Criteria

- Social Impact (property & infrastructure) loss or damage to private property or privately operated leasehold land, reticulated services, roads etc.
- Social Impact (community use) ability to use a beach and foreshore/public recreational infrastructure (e.g. dual use path).
- Environmental Impact possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage.

Feasibility Criteria

- Effectiveness in risk reduction how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective.
- Practicability can a risk management option actually be implemented (e.g. is it 'doable'/workable/politically practicable?).
- Reversibility/adaptability can it be reversed or adapted.

Financial Criteria

- Cost (implementation) cost to implement a specific risk management option (includes modifying/relocating/voluntary acquisition costs).
- Ongoing cost (maintenance) cost to keep maintaining a risk management option.
- Ongoing cost (lost revenue) how much revenue (specifically rates) would be lost due to a risk management option.

The risk management options were scored based on assessment against each of the above criteria, with a score of 1 having the least impact and 4 having the highest impact, as follows -

- 1. Socially & environmentally acceptable, easily adaptable, long term effectiveness, low
- 2. Minor social & environment impacts, may be acceptable, partially adaptable, medium term effectiveness, acceptable cost
- 3. Significant social & environmental impacts, difficult to adapt, limited or short term effectiveness, high cost
- 4. Unacceptable social & environmental impact, not adaptable, ineffective, cost prohibitive

Additionally, each criteria was weighted because not all criteria have equal importance. The MCA outcomes for coastal erosion hazard are based on the following assumptions for the risk management options –

- Avoid fatally flawed where hazard lines intersect infrastructure and/or property (i.e. cannot avoid because structures/development already exists).
- Managed Retreat assumes that all existing protection structures are removed, no new structures are installed, and the coast is allowed to retreat. A Managed Retreat response would require property acquisition (compulsory, if necessary) and planning controls to prevent further development in the interim. Other risk management options could include a Special Control Area in the local planning scheme and notifications on title. A key consideration would be maintaining public access to a useable beach and foreshore reserve.
- Accommodate fatally flawed where hazard lines intersect infrastructure and/or property. In some areas, Accommodate for inundation could be considered in conjunction with Protect (but this option has not been specifically assessed from this perspective, rather as a 'standalone' option it is considered to be fatally flawed, like Avoid, where hazard lines intersect property and/or infrastructure).
- Protect to maintain a useable beach & foreshore using beach nourishment, or a combination of coastal protection structures and beach nourishment. Nourishment alone will not address inundation hazard to any significant degree.

The MCA recognised the importance of retaining coastal amenity (useable beach and foreshore) as a key outcome of the community coastal values survey. Refer to Appendix A for the MCA results tables. Based on the MCA, the risk management options that could be considered for each of the Management Units are summarised in Table 2

Table 2 Summary of MCA of coastal erosion hazard management options

Management Unit	2040	2070	2115
MU01 Smiths Beach	Protect	Protect	Protect
MU02 Yallingup	Protect/Managed Retreat	Protect	Protect
MU03 Bunker Bay	Protect/Managed Retreat	Protect	Protect
MU04 Eagle Bay	Protect	Protect	Protect
MU05 Old Dunsborough	Protect	Protect	Protect
MU06 Dunsborough Town site*	Protect	Protect	Protect
MU07 Quindalup	Protect	Protect	Protect
MU08 Marybrook	Protect	Protect	Protect
MU09 Siesta Park*	Protect	Protect	Protect
MU10 Locke Estate*	Protect	Protect	Protect

MU19 Forrest Beach

MU11 Abbey*	Protect	Protect	Protect
MU12 Broadwater*	Protect	Protect	Protect
MU13 Busselton West (A)*	Protect	Protect	Protect
MU14 Busselton West (B)*	Protect	Protect	Protect
MU15 Busselton Central*	Protect	Protect	Protect
MU16 Busselton East	Protect	Protect	Protect
MU17 Port Geographe*	Protect	Protect	Protect
MU18 Wonnerup*	Protect	Protect	Protect

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retreat

Protect/Managed

Protect

Protect

The following tables identify key assets within each Management Unit and a snapshot of MCA considerations -

MU01 Smiths Beach		
Assets – beach, continuous public foreshore reserve (including dunes & vegetation), recreational facilities/carparks/beach access, tourist accommodation/facilities, Smiths Beach Road, utilities		
Avoid	Existing assets in hazard areas preclude this option	
Managed Retreat	 Continuous public foreshore reserve (including vegetation/habitat) and beach access increasingly constrained by existing land tenure Opportunities to locate new facilities and/or relocate existing recreational and public assets increasingly constrained Progressive removal of Smiths Beach Road/car parking/utilities Removal of existing tourist accommodation and associated facilities. Opportunities to relocate and/or build new accommodation units within already developed Tourist zoned land constrained 	
Protect	 Retain continuous public foreshore reserve and beach access Retain opportunities to locate additional public recreational assets such as a surf lifesaving club facility Retain road access, foreshore carparks and utilities Retain tourist accommodation and associated facilities 	

 $^{{\}color{blue}*} \textit{Management Unit already has City of Busselton or Department of Transport managed protection}$

13.1 Draft CHRMAP Attachment A

MU02 Yallingup		
Assets - beach, continuous foreshore reserve, beach access, carparks, public ablutions, playground, Yallingup Beach Road/other local roads, tourist accommodation/commercial/residential properties, utilities		
Avoid	 Existing assets in hazard areas preclude this option 	
Managed Retreat	 Continuous public foreshore reserve (including vegetation/habitat contiguous with the Leeuwin Naturaliste National Park) and beach access increasingly constrained by land tenure 	
	 Opportunities to locate new facilities and/or relocate existing recreational and public assets increasingly constrained 	
	 Progressive removal of Yallingup Beach Road, Dawson Drive and other local roads and options for relocation/alternative routes constrained by surrounding land tenure, existing development and environmental considerations 	
	Removal of existing tourist accommodation (especially Yallingup Beach Holiday Park) and associated facilities. Opportunities to relocate and/or build new accommodation units within already developed Tourist zoned land increasingly constrained Removal of residential properties	
Protect	Retain continuous public foreshore reserve and beach access Retain opportunities to locate additional/or upgrade existing public recreational assets	
	 Retain road access, foreshore carparks and utilities Retain tourist accommodation and associated facilities Retain residential properties 	

Assets - beach, continuous foreshore reserve, beach access, carpark, public ablutions, tourist/commercial/residential properties, utilities, Lake Jingi		
Avoid	 Existing assets in hazard areas preclude this option 	
Managed Retreat	Continuous public foreshore reserve (including vegetation/habitat) and beach access increasingly constrained by adjoining land tenure Opportunities to locate new facilities and/or relocate existing recreational and public assets increasingly constrained Removal of existing tourist accommodation and associated facilities. Opportunities to relocate and/or build new accommodation units within already developed Tourist zoned land constrained Removal of residential properties Environmental and possibly Aboriginal cultural heritage implications for Lake Jingi	
Protect	 Preserve continuous public foreshore reserve and beach access Retain foreshore carpark and associated facilities/utilities Retain tourist accommodation and associated facilities Retain residential properties Retain Lake Jingi 	

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MU04 Eagle Bay Assets - beach, continuous foreshore reserve (including vegetation/habitat), beach access and foreshore carparks, Eagle Bay-Meelup Road and other local roads, community centre and fire station, residential properties, utilities Avoid • Existing assets in hazard areas preclude this option Managed Retreat Continuous public foreshore reserve (including vegetation and habitat contiguous with Meelup Regional Park) and beach access increasingly constrained Opportunities to locate new facilities and/or relocate existing recreational and public assets increasingly constrained Removal of residential properties Protect Retain continuous public foreshore reserve and beach access Retain foreshore carparks and associated facilities/utilities Retain residential properties

MU05 Old Dunsborough	
Assets - beach, continuous foreshore reserve (including dual use path), beach access, boat ramp/jetty, foreshore carparks and public ablutions, Hurford Street and Bay View Crescent, residential properties, utilities	
Avoid	Existing assets in hazard areas preclude this option
Managed Retreat	 Continuous public foreshore reserve and beach access increasingly constrained Opportunities to locate new facilities and/or relocate existing recreational and public assets increasingly constrained Removal of residential properties
Protect	 Retain continuous public foreshore reserve and beach access Retain foreshore carparks and associated facilities/utilities Retain residential properties

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MU06 Dunsborough Town Site Assets - beach, continuous foreshore reserve (including dual use path), beach access and foreshore carparks, public ablutions, Geographe Bay Road and other local roads, tourist accommodation/commercial/residential properties, utilities Avoid Existing assets in hazard areas preclude this option Managed Retreat Continuous public foreshore reserve (including vegetation/habitat) and beach access increasingly constrained Opportunities to locate new facilities and/or relocate existing recreational and public assets increasingly constrained Removal of tourist accommodation and associated facilities Removal of residential properties Protect Retain continuous public foreshore reserve and beach access Retain Geographe Bay Road and other local roads/utilities Retain foreshore carparks and associated facilities Retain residential properties

MU07 Quindalup Beach

Assets - beach, continuous foreshore reserve (including vegetation/habitat), beach access and foreshore carparks, Toby Inlet, Dunsborough Bay Yacht Club, Naturaliste Volunteer Marine Rescue/jetty, public ablutions, Geographe Bay Road/Caves Road and other local roads, tourist accommodation, residential properties, utilities

Avoid	Existing assets in hazard areas preclude this option
Managed Retreat	 Continuous public foreshore reserve and beach access increasingly constrained Implications for vegetation and habitat values Opportunities to locate new facilities and/or relocate existing recreational and public assets increasingly constrained Removal of tourist accommodation and associated facilities Removal of residential properties Implications for Toby Inlet and management of the inlet/ocean mouth in terms of inland flood risk if left unmanaged Potential environmental issues associated with saltwater intrusion into groundwater and wetlands
Protect	 Retain continuous public foreshore reserve (including important vegetation and habitat values) and beach access Retain Geographe Bay Road and other local roads/utilities Retain foreshore carparks and associated facilities Retain opportunities to locate new recreational facilities and public assets Retain residential properties Management of Toby Inlet mouth and Station Gully Drain outlet would require investigation Environmental issues associated with saltwater intrusion into groundwater and wetlands may require monitoring and/or investigation within planning timeframes

MU08 Marybrook		
Assets - beach, foreshore reserve (including dual use path between Caves Road & Birl Elbow), tourist accommodation, residential properties, Caves Road/bridges and other local roads, utilities		
Avoid	Existing assets in hazard areas preclude this option	
Managed Retreat	 Continuous public foreshore reserve and beach access increasingly constrained Implications for vegetation and habitat values within the foreshore reserve and south of Caves Road Removal of tourist accommodation and associated facilities Removal of residential properties Implications for the management of agricultural drain outlets in terms of inland flood risk, if left unmanaged Potential environmental issues associated with saltwater intrusion into groundwater and wetlands 	
Protect	Retain public foreshore reserve (including vegetation/habitat values), dual use path and beach access in western part of the management unit Retain Caves Road and other local roads/utilities Retain residential properties Management of agricultural drain outlets would need further investigation in conjunction with a Protect strategy Environmental issues associated with saltwater intrusion into groundwater and wetlands may require monitoring and/or investigation within planning timeframes	

MU09 Siesta Park		
Assets - beach, fragmented foreshore reserve, tourist accommodation, residential properties, Caves Road/other local roads, utilities		
Avoid	Existing assets in hazard areas preclude this option	
Managed Retreat	 Fragmented foreshore reserve increasingly constrained Implications for vegetation and habitat values west of the Siesta Park groyne and south of Caves Road Removal of tourist accommodation and associated facilities Removal of residential properties Implications for the management of agricultural drain outlets in terms of inland flood risk, if left unmanaged Environmental issues associated with saltwater intrusion into groundwater and wetlands 	
Protect	 Retain existing (fragmented) foreshore reserve Retain Caves Road and other local roads/utilities Retain residential properties Management of agricultural drain outlets would need further investigation Environmental issues associated with saltwater intrusion into groundwater and wetlands may require monitoring and/or investigation within planning timeframes 	

MU10 Locke Estate		
Assets - beach, continuous public foreshore reserve, leasehold holiday accommodation, Caves Road, utilities, Locke Nature Reserve		
Avoid	Existing assets in hazard areas preclude this option	
Managed Retreat	 Continuous public foreshore reserve increasingly constrained Implications for the environmental values of Locke Nature Reserve Removal of holiday accommodation and associated facilities Implications for the management of agricultural drain outlets in terms of inland flood risk, if left unmanaged Potential environmental issues associated with saltwater 	
Protect	intrusion into groundwater and wetlands Retain continuous public foreshore reserve	
	 Retain Caves Road and associated infrastructure/utilities Retain holiday accommodation and associated facilities Management of agricultural drain outlets would need further investigation Environmental issues associated with saltwater intrusion into 	
	groundwater and wetlands may require monitoring and/or investigation within planning timeframes	

MU11 Abbey

Assets - beach, continuous public foreshore reserve (including vegetation and habitat/dual use path), boat ramp/jetty/carpark, public ablutions, tourist accommodation (resorts & infrastructure), residential and commercial properties, local shopping centre, aged care facility, Bussell Highway/Geographe Bay Road/other local roads, utilities

Avoid	Existing assets in hazard areas preclude this option
Managed Retreat	 Continuous public foreshore reserve increasingly constrained Removal of recreational assets Removal of tourist accommodation and associated facilities Removal of residential properties and aged care facility Removal of local shopping centre Implications for the management of agricultural drain outlets in terms of inland flood risk, if left unmanaged
Protect	Retain continuous public foreshore reserve and existing recreational facilities Retain tourist accommodation and associated facilities, residential properties, aged care facility and the local shopping centre Retain Bussell Highway, Geographe Bay Road and other local roads and utilities Management of agricultural drain outlets would need further investigation in conjunction with a Protect strategy

MU12 Broadwater

Assets - beach, continuous wide public foreshore reserve (including vegetation and habitat/dual use path), boat ramp/carpark, public ablutions, tourist accommodation (resorts & infrastructure), residential properties, Bussell Highway/Geographe Bay Road/other local roads, utilities

Avoid	Existing assets in hazard areas preclude this option
Managed Retreat	Continuous public foreshore reserve increasingly constrained Removal of recreational assets Implications for vegetation and habitat values Removal of tourist accommodation and associated facilities Removal of residential properties Progressive removal of Bussell Highway, Geographe Bay Road and other local roads/utilities and options for relocation/alternative routes constrained
Protect	 Retain continuous public foreshore reserve, vegetation/habitat and existing recreational facilities Retain tourist accommodation and associated facilities, Retain residential properties Retain Bussell Highway, Geographe Bay Road and other local roads and utilities

MU13 Busselton West (A)

Assets - beach, continuous but narrow public foreshore reserve (including dual use path), vegetation and habitat, tourist accommodation (resorts & infrastructure), residential and commercial properties, primary school, hospital, local centre, Bussell Highway/Geographe Bay Road/other local roads, utilities, Vasse River Diversion Drain

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Avoid	Existing assets in hazard areas preclude this option
Managed Retreat	 Continuous public foreshore reserve increasingly constrained Removal of recreational assets Removal of tourist accommodation and associated facilities Removal of residential properties Progressive removal of Bussell Highway, Geographe Bay Road and other local roads/utilities and options for relocation/alternative routes constrained Implications for the management of the Vasse diversion Drain outlet in terms of inland flood risk, if left unmanaged
Protect	 Retain continuous public foreshore reserve Retain tourist accommodation and associated facilities, Retain residential and commercial properties Retain hospital, primary school and local centre Retain Bussell Highway, Geographe Bay Road and other local roads and utilities Management of Vasse Diversion Drain outlet would need further investigation in conjunction with a Protect strategy

MU14 Busselton West (B)

Assets - beach, continuous but narrow public foreshore reserve, Geographe Bay Yacht Club/boat ramp, fitness club, foreshore carpark and public ablutions, residential and commercial properties, Bussell Highway/Geographe Bay Road/other local roads and utilities

busself ringithary, octographic buy risday, other local risday and definices		
Avoid	Existing assets in hazard areas preclude this option	
Managed Retreat	Continuous public foreshore reserve increasingly constrained Removal of recreational assets Removal of residential properties Progressive removal of Bussell Highway, Geographe Bay Road and other local roads/utilities and options for relocation/alternative routes constrained	
Protect	Retain continuous public foreshore reserve Retain residential and commercial properties Retain Bussell Highway, Geographe Bay Road and other local roads and utilities	

MU15 Busselton Central

Assets - beach, continuous public foreshore reserve, recreational/sporting/tourist/visitor infrastructure and commercial properties within the Busselton Foreshore Precinct, Busselton Jetty, Busselton Volunteer Marine Rescue/boat ramp, Pioneer Cemetery, heritage buildings, Busselton City Centre commercial and residential properties, tourist accommodation, Churchill Park, vegetation and habitat for the Western Ringtail Possum, Geographe Bay Road/other local roads, utilities

Avoid	Existing assets in hazard areas preclude this option
Managed Retreat	 Continuous public foreshore reserve increasingly constrained Removal of recreational/sporting/tourist/visitor infrastructure and commercial properties within the Busselton Foreshore Precinct Removal of heritage and recreational assets Removal of residential, tourist and commercial properties within, and adjacent to, the Busselton City Centre Retain Geographe Bay Road/foreshore carparks and other local roads/utilities Implications for the management of the Vasse diversion Drain outlet in terms of inland flood risk, if left unmanaged
Protect	Retain continuous public foreshore reserve Retain recreational/tourist/visitor infrastructure and commercial properties within the Busselton Foreshore Precinct Retain heritage and recreational assets Retain residential, tourist and commercial properties within, and adjacent to, the Busselton City Centre Retain Geographe Bay Road and other local roads/utilities Management of Vasse Diversion Drain outlet would need further investigation in conjunction with a Protect strategy

MU16 Busselton East			
Assets - beach, continuous wide public foreshore reserve (including dual use path), Geographe Bay residential properties, tourist accommodation, vegetation and habitat for the Western Ringtain Possum, primary school, local centre, Geographe Bay Road/other local roads, utilities			
Avoid	Existing assets in hazard areas preclude this option		
Managed Retreat	 Continuous public foreshore reserve increasingly constrained Removal of residential, tourist and commercial properties Progressive removal of Geographe Bay Road, Marine Terrace and other local roads/utilities Implications for vegetation and habitat for Western Ringtail Possum 		
Protect	 Retain continuous public foreshore reserve Retain recreational assets Retain residential, tourist and commercial properties Retain Geographe Bay Beach Road and other local roads/utilities Retain vegetation and habitat for Western Ringtail Possum 		

MU17 Port Geographe			
Assets – beach (within breakwaters), public foreshore reserve (including dual use path), marina/bot ramp, residential properties, tourist accommodation, commercial properties, Layman Road/oth local roads, utilities			
Avoid	Existing assets in hazard areas preclude this option		
Managed Retreat	Public foreshore reserve increasingly constrained Removal of residential, tourist and commercial properties Progressive removal of marina infrastructure Progressive removal of Layman Road and other local roads/utilities		
Protect	 Retain public foreshore reserve and recreational assets Retain residential, tourist and commercial properties Retain marina infrastructure Retain Layman Road and other local roads/utilities 		

MU18 Wonnerup	
	s public foreshore reserve, residential properties, Layman Road/other local nnerup Estuary, flood barrier, vegetation and habitat for Western Ringtail
Avoid	Existing assets in hazard areas preclude this option
Managed Retreat	 Continuous public foreshore reserve increasingly constrained Removal of residential, tourist and commercial properties Progressive removal of Layman Road and other local roads/utilities Environmental implications for Vasse-Wonnerup Estuary changing from a freshwater estuary to a saltwater inlet Implications for the management of the Vasse-Wonnerup Estuary inlet in terms of inland flood risk, if left unmanaged
Protect	 Retain continuous public foreshore reserve Retain recreational assets Retain residential, tourist and commercial properties Retain Layman Road and other local roads/utilities Retain environmental values of Vasse-Wonnerup Estuary Management of Vasse-Wonnerup Estuary inlet would need further investigation in conjunction with a Protect strategy

MU19 Forrest Beach Assets – beach, continuous public foreshore reserve, residential properties, Forrest Beach Road, utilities, Vasse-Wonnerup Estuary, flood barrier, vegetation and habitat for Western Ringtail Possum Avoid • Existing assets in hazard areas preclude this option Managed Retreat Continuous public foreshore reserve increasingly constrained Removal of residential properties Progressive removal of Forrest Beach Road and utilities Potential environmental implications for Vasse-Wonnerup Estuary changing from a freshwater estuary to a saltwater inlet Implications for the management of the Vasse-Wonnerup Estuary inlet in terms of inland flood risk, if left unmanaged Protect Retain continuous public foreshore reserve Retain residential properties Retain Forrest Beach Road and utilities Potentially retain environmental values of the Vasse-Wonnerup Estuary Management of Vasse-Wonnerup Estuary inlet would need further investigation in conjunction with a Protect strategy Retain vegetation and habitat for Western Ringtail Possum

5.4 Cost Benefit Analysis

Section to be added

5.5 Triggers

Adaptation pathways comprise a sequence of risk management options and tipping points triggered by the impact of coastal hazards over planning timeframes. The approach seeks to keep options open to avoid path dependency and apply an appropriate sequence of actions in the short term, followed by a longer term pathway. Triggers for the implementation of risk management options are events or situations that occur as a direct result of natural coastal processes (e.g. a severe storm combined with a high tide that causes significant coastal erosion).

Trigger points are identified to flag the level of acceptable change where decisions on risk management measures must be implemented to reduce risk levels. This CHRMAP will set the direction for risk management and triggers will be determines through the City's 10 year rolling Coastal Management Program.

6.0 Financial considerations

Potential financial implications for the City arising from decisions made about coastal adaptation are likely to be very significant and will generally fall into one of four categories –

- Costs associated with researching and understanding the issues, and determining future direction (e.g. the preparation of this CHRMAP and coastal hazard assessments);
- Costs associated with coastal protection (e.g. beach nourishment, maintenance/construction of groynes or seawalls, dune stabilisation/revegetation, regulation of private coastal protection initiatives through the planning system);
- Costs associated with managed retreat (e.g. enforcement of planning controls in areas where managed retreat is recommended, relocation/removal of public buildings and infrastructure, land acquisition to create or maintain coastal foreshore reserves and beach amenity); or
- Costs associated with claims against the City where land, buildings or infrastructure are
 affected by coastal processes in the future and there are potential costs associated with
 both successful and unsuccessful claims.

It should be noted that there are also significant economic costs associated with coastal adaptation decisions which do not have any significant direct financial implications for the City, but which will have an impact on investment decisions in both the private and public sector, and hence on the overall rate of economic growth or contraction and the location of economic activity, as well as on community wellbeing more broadly.

Most of the costs that have been borne by the City to date are in the second category above – coastal protection. The total cost to the City of managing coastal hazards for the last five years was over \$3 million. As set out in the City's current *Coastal Management Programme* (2018 – 2028) it is estimated that expenditure will be in the vicinity of \$5.97 million (Shore Coastal 2018).

In the 2006/07 financial year the City established a 'Beach Protection Reserve' for the purpose of funding repairs or preventative measures necessary to protect the beach or land based assets, as well as specific capital projects designed to protect the coastline, such as a seawall. Since its inception, the Beach Protection Reserve has received budgeted yearly funding (1% from general rates revenue). In

2014 the Council made a decision to change the purpose and name of the Reserve in the 2015/16 financial year, to a 'Climate Adaptation Reserve' to ensure that funds could be utilised for things other than coastal protection works, such as coastal hazard modelling, the preparation of this CHRMAP and other issues associated with climate risk. This CHRMAP recommends the establishment of a separate 'Coastal Adaptation Reserve'.

A significant amount of work has been done to identify what sections of the City's coast may be vulnerable to coastal hazards, especially erosion, over coming decades and beyond. Much of our coast has been affected by coastal processes historically, including over the last ten years, with both the City and private landowners taking steps to manage those impacts from time to time. It is therefore not a question of if and when the City's coast may be affected by sea level rise and coastal hazards, but the extent to which those affects will continue and accelerate over time. In terms of detailed decision making on potential adaptation options for our coast, it is seen as important that the City and our community has a better understanding of what those costs may be and how the costs might be met.

6.1 Financial model

A forecast financial model has been prepared that allows for the investigation of estimated costs in relation to the following risk management scenarios over the 100 year planning timeframe:

- Protect the whole of the coast through beach nourishment to maintain beach amenity and environmental values (would address coastal erosion hazard only);
- Protect the whole of the coast through structures (buried seawall/bund and/or groynes) supplemented by beach nourishment, to maintain beach amenity and environmental values (would address both coastal erosion and inundation hazard); and
- Managed retreat of the whole of the coast by removal or relocation of public assets and
 property acquisition at unaffected market value (would address coastal erosion hazard only).
 The estimates for this scenario do not include cost associated with legal processes for land
 acquisition.

The model identifies all private, City of Busselton and State/utility assets within the mapped 100 year coastal hazard area and assesses impacts at 2040, 2070 and 2115. The model allows for indexation of costs at 2.5%, except for sand (for beach nourishment) which is indexed at 5% beyond 2023 (sand supply and availability is likely to become limited and more costly over time). Costs include: maintenance of beach and foreshore facilities; ongoing cost of sand replacement; capital, maintenance and replacement of protection infrastructure; demolition, relocation and/or replacement of public infrastructure; private property acquisition; and private property demolition.

The model also includes the financial benefit that would be delivered by each of the three scenarios. For protection of private and public assets by coastal structures, for example, the public financial benefit would be the value of the avoided loss of public infrastructure and rate revenue. For managed retreat, for example, private financial benefit would be the value of compensation through property acquisition.

The model enables a comparison of costs derived from the application of a single scenario for all, and each, Management Units i.e. protection by beach nourishment, protection by coastal structures or managed retreat. It also provides cost comparisons to the single scenario by 'tailored' adaptation pathways, whereby risk management options can be applied for individual management units at specified intervals over the 100 year planning timeframe. The estimated costs associated with these scenarios over the 100 year planning timeframe are:

- 13.1 Attachment A
 - Protect the whole of the coast through structures (groynes, buried seawall/bund as required) with supplementary beach nourishment ('tailored approach') - \$1,601,271,518;
 - Protect the whole of the coast through beach nourishment \$3,398,802,206
 - Managed retreat of the whole of the coast (excluding the cost to acquire land) \$813,034,122
 - Managed retreat of the whole of the coast (including the cost of land acquisition) -\$8,712,228,805 (note this figure does not include legal costs associated with land acquisition)

The estimated cost to protect the whole of the coast through structures (groynes and/or buried seawall/bund as required) with supplementary beach nourishment ('tailored approach') by Management Unit over the 100 year planning timeframe is set out below -

Management Unit	Financial Cost (millions)
MU01 Smiths Beach	24,495,407
MU02 Yallingup	29,321,238
MU03 Bunker Bay	50,382,318
MU04 Eagle Bay	41,989,319
MU05 Old Dunsborough	53,395,330
MU06 Dunsborough Townsite	114,834,182
MU07 Quindalup	205,438,840
MU08 Marybrook	88,221,138
MU09 Siesta Park	96,572,982
MU10 Locke Estate	49,465,938
MU11 Abbey	104,991,597
MU12 Broadwater	78,625, 457
MU13 Busselton West (A)	95,383,029
MU14 Busselton West (B)	73,529,100
MU15 Busselton Central	78,791,668
MU16 Busselton East	104,053,467
MU17 Port Geographe	52,179,764
MU18 Wonnerup	99,643,873
MU19 Forrest Beach	159,956,873

Refer to Part 4 Financial Modelling of the CHRMAP Technical Assessment Report (Advisian 2020a) and the CHRMAP Financial Model Instruction Manual (Advisian 2020b) for further information.

6.2 **Funding options**

Currently, the City places 1% (approximately \$475,000 in 2020/21) per annum of the total rate revenue in its 'Climate Adaptation Reserve' however not all of the funds are available for coastal management. The cost for future coastal management will be considerably greater than the City's current forecast expenditure as set out in the City's Coastal Management Programme (2018 - 28). Additional funding will be essential to implement the responses to managing coastal risks arising from climate change and predicted sea level rise recommended by this CHRMAP.

A key principle in considering funding is that the responsibility for paying for coastal adaptation lies with the beneficiaries of those actions. This includes land and asset owners that benefit from protection strategies, and coastal users that benefit from coastal management approaches. Where public funds are used for coastal adaptation works there should be a direct public benefit as a result

13.1 Attachment A

> of that investment. Ongoing cooperation between local and state government and key asset owners will be required to consider and address these funding issues and responsibilities.

> There is no legal obligation on the State or Local Governments to either protect public and private assets within coastal hazard areas, or to compensate for any losses incurred due to coastal hazards. Some options for managing and covering the costs of coastal adaptation options include:

- 1. Funding from State Government (noting that this source cannot be relied upon as there is no certainty around securing such funding and the amount of funding available from the funding 'pool' would be significantly less than that required in reality) -
 - Coastal Adaptation and Protection (CAP) grants through the Department of Transport
 - Coastal Management Plan Assistance Programme (CMPAP) through the Western Australian Planning Commission
- 2. Funding through the City's rates revenue -
 - Application of a flat rate (as is currently the case)
 - Application of specified area rates and/or differential rating within the coastal hazard risk
- 3. Advocate for State and Federal leadership and assistance to support coastal adaptation, including an equitable and sustainable funding framework.

The appropriate funding option for coastal adaptation options should reflect the beneficiaries of the measures taken, and the values being protected. Direct beneficiaries should directly contribute to coastal management and adaptation costs. Indirect beneficiaries also contribute through public funding investment (contribution through rates and taxes into public funds).

The Community Coastal Values Survey included a question on who should pay for the costs of managing/mitigating coastal hazard erosion. The response was 41% of respondents felt that the taxpayer should bear the cost, with the balance borne by all ratepayers in the City (29%) and private landowners/businesses affected (30%).

7.0 Recommendations and adaptation pathways

Given the CHRMAP is required to consider a 100 year planning timeframe, recommendations are presented in section 7.1 as:

- Recommendations to guide future coastal adaptation following adoption of the CHRMAP (Recommendations 1 – 7)
- Recommended adaptation pathways for sequential planning timeframes 2040, 2070 and 2120 for each of the nineteen Management Units (Recommendation 8)

In conjunction with the recommended adaptation pathways set out in Recommendation 8, each Management Unit is presented separately on an aerial photo, with coastal hazard lines superimposed and an indication of the various assets at risk. The hazard lines for the Management Units have been derived from Damara WA (2011), Damara WA (2012) and Damara WA (2017). Further information on the methodology used and application to the CHRMAP is provided in Part 1 of the CHRMAP Technical Assessment Report (Advisian 2020a). In viewing the Management Unit hazard maps, it should be noted that:

13.1 Attachment A

- The erosion hazard lines are based on a suite of assumptions that have varying degrees of uncertainty, which may influence the likelihood of affects being realised at each planning
- To account for the uncertainty associated with dynamic natural environments and the lack of long term datasets, the hazard lines are designed to be conservative.
- These hazard maps will be revised periodically (as part of formal CHRMAP reviews) to take into account new information as it emerges.

7.1 Recommendations

The City of Busselton adopts the following recommendations to guide future coastal adaptation -

- 1. That the coastal erosion hazard lines shown on the maps for each of the identified Management Units in Recommendation 8 be adopted as a guide for future planning.
- 2. That the adaptation pathways for the identified Management Units are generally as set out in Recommendation 8.
- 3. That, in addition, to the financial responses set out in Recommendation 8, the City
 - a. Allocates (through a phased increase from 1% currently) a minimum of 2.0% of total rates revenue to the 'Coastal Adaptation Reserve' within the City's next 10 year Long Term Financial Plan;
 - b. Advocates and make application for State and/or Federal Government grant funding to support coastal adaptation as possible and necessary;
 - c. Advocates at State and Federal level for the identification and implementation of a sustainable, equitable and efficient framework for funding of coastal adaptation; and
 - d. Advocates at State level to identify and secure strategic sand supplies for beach nourishment, including a coordinated regional approach to the delivery of sand supplies.
- 4. That the City undertake or support, subject to appropriate assistance from the State and/or Federal Government, the following additional work
 - a. A cost-benefit and/or benefit distribution analysis and/or systemic financial and economic system risk analysis of the identified adaptation pathways;
 - b. Further coastal erosion modelling, following further geotechnical investigations, possibly in partnership with landowners, for the following management units -
 - Smiths Beach;
 - ii. Yallingup;
 - iii. Bunker Bay;
 - iv. Eagle Bay; and
 - Old Dunsborough.

Draft CHRMAP

13.1 Attachment A

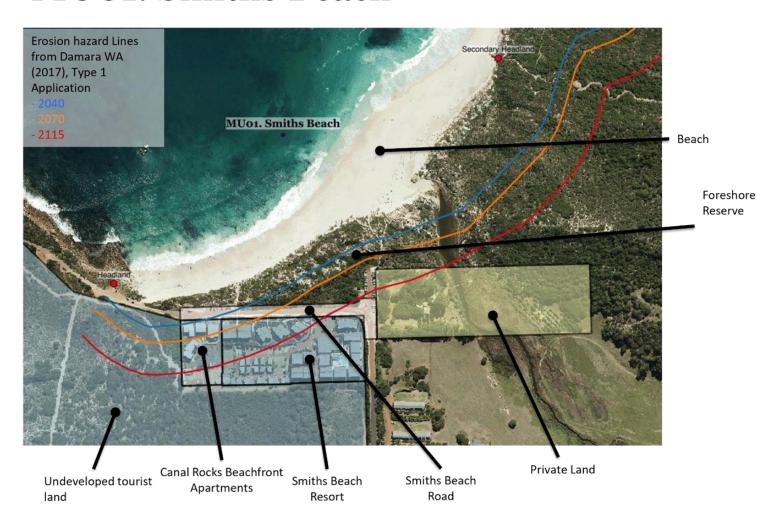
- Further coastal inundation hazard modelling, given the identified pathways for coastal erosion hazard management, and including coastal inundation hazard modelling for both Geographe Bay and west coast settlements (Yallingup and Smiths Beach);
- d. Preliminary design and costings associated with storm surge (coastal inundation hazard) protection at –
 - i. Toby Inlet mouth;
 - ii. The mouths of all agricultural drains;
 - iii. The eastern bank of the Buayanyup Drain;
 - iv. Vasse Diversion Drain mouth and Vasse Estuary storm surge barrier;
 - v. Port Geographe Marina entry channel and seawall;
 - vi. Vasse Estuary Channel;
 - vii. Layman Road, from a point just to the north of Vasse Estuary Channel to a point somewhat to the north of Tuart Drive; and
 - viii. Urban stormwater outlets
- 5. That the above recommendations are incorporated into
 - a. The City's Community Strategic Plan;
 - b. The City's Corporate Business Plan;
 - c. The City's Long-Term Financial Plan;
 - d. The City's rolling, ten-year Coastal Management and Monitoring Programme;
 - e. The City's Local Emergency Management Arrangements; and
 - f. The City's town planning scheme.
- 6. That the City provide an annual update to the community and other stakeholders on progress towards implementation.
- 7. That the CHRMAP is subject of periodic review, at least once every ten years.
- 8. Management Unit Specific Adaptation Pathways

RECOMMENDATION 8 - MANAGEMENT UNIT SPECIFIC ADAPTATION PATHWAYS

Attachment A

MANAG	MANAGEMENT UNIT		on Pathway			Infrastructure / coastal management	Emergency management response	Financial response
there are	s management units where e existing coastal on structures	Period	Erosion hazard	Inundation hazard		response		
MU01 Smiths Beach West facing beach si between headlands. within wester section of the for reserve up to 10n Includes Gun, Brook mouth. continuous foreshore reser currently Unalla Crown land ar northern ead contiguous with Leeuwin Natu National Park. are no current of	West facing sandy beach situated between rocky headlands. Dunes within westernmost section of the foreshore reserve up to 10m AHD. Includes Gunyulgup Brook mouth. The continuous public foreshore reserve is currently Unallocated Crown land and its northern end is contiguous with the	Current- 2040	Protect	Avoid.	Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. Prohibit private development (other than access, parking or landscaping works) on the seaward side of the 2040 erosion hazard line. As a condition of approval of any development or subdivision of vacant sites, ceding of a foreshore reserve of a width of approximately 40 metres, on the inland side of the 2040 erosion hazard line.	To protect the beach, beach amenity, foredune, infrastructure and buildings, maintain existing foredune and beach as much as possible, and install coastal protection structures, such as seawalls or groynes, as necessary. Supplement the infrastructure described above with beach nourishment.	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event. Note: Management unit should not be vulnerable to coastal inundation events during this period.	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazarline, and allocate that additionar evenue to the 'Coastal Adaptation Reserve'.
	National Park. There are no current coastal protection structures.	2040-2070	Protect.	Avoid.	As above.	To protect the foredune, infrastructure and buildings, construct a buried seawall from the western end of the beach to a point between the most eastward beach access path and Gunyulgup Brook. To protect the beach and beach amenity, construct one or more groynes (or other infrastructure to protect the beach, appropriate to the location) between the western end of the beach to a point between the most eastward beach access path and Gunyulgup Brook. Supplement the infrastructure described above with beach nourishment.	As above.	To be determined subject to furthe investigation and progress at Stat level towards identification o sustainable, equitable and efficien funding of coastal adaptation.
		2070- 2120	Protect.	Avoid.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment.	As above.	As above.

MU01. Smiths Beach



Attachment A

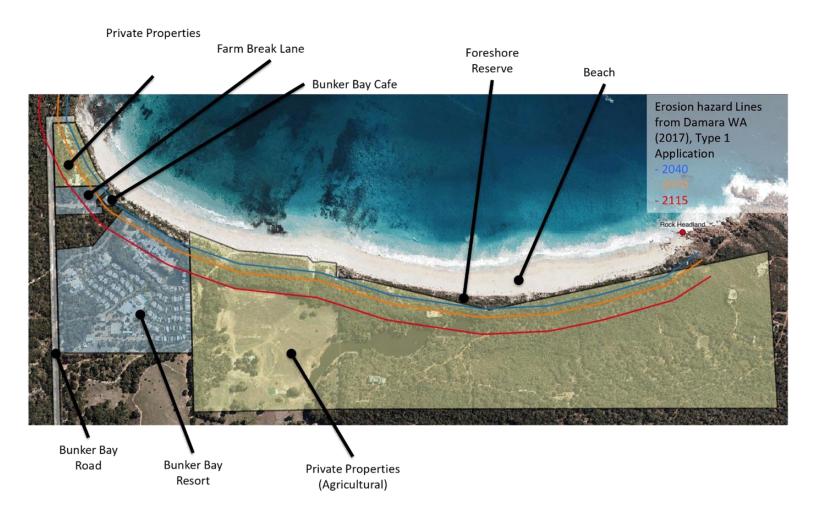
*Denote	MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		Adaptation Pathway		Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
MU02	Yallingup Southern section of a west facing sandy beach situated between a rocky headland and a rock platform. Continuous public foreshore reserve partly within the Leeuwin Naturaliste National Park with the remainder vested in the City. There are no current coastal protection structures. Dunes within the foreshore reserve range	Current- 2040	Protect.	Avoid.	Include all land within the 2120 coastal erosion hazard line within Coastal Management Area A. Prohibit development on the seaward side of the 2040 erosion hazard line (note: there is no private land on the seaward side of that line).	To protect the foredune, infrastructure and buildings, construct a buried seawall and/or bank stabilisation structure from a point just to the north of Yallingup Brook to a point between the Dawson Drive and Rabbits Hill beach access paths. To protect the beach and beach amenity, construct one or more groynes from a point just to the north of Yallingup Brook to a point between the Dawson Drive and Rabbits Hill beach access paths. Supplement the infrastructure described above with beach nourishment.	plans and protocols to identify, and	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
	from 5m AHD to 20m AHD.	2040- 2070	Protect.	Avoid.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment.	As above.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect.	Avoid.	As above.	As above.	As above.	As above.

MU02. Yallingup



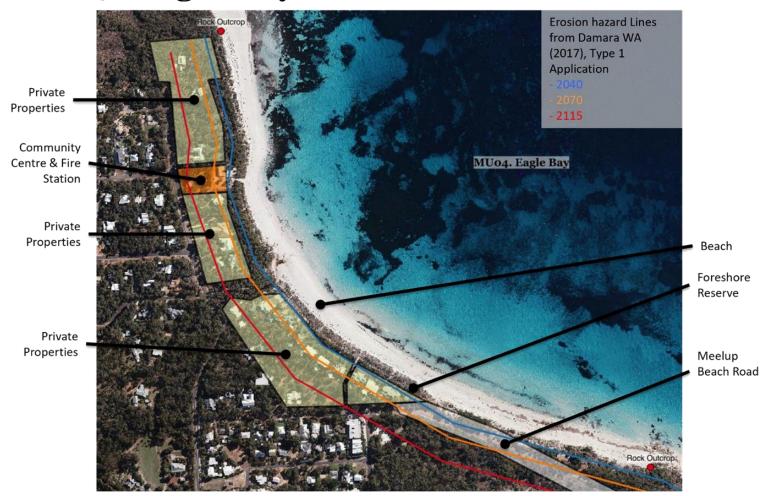
MANA	SEMENT UNIT	Adaptatio	on Pathway		Planning response	Infrastructure / coastal management	Emergency management response	Financial response
*Denotes management units where there are existing coastal protection structures						response		
	Bunker Bay North facing sandy beach situated between rocky headlands. Dunes within the foreshore reserve range from 5m AHD to 10m AHD. Limited public foreshore reserve and facilities. Flows from Lake Jingi breach the dune barrier and discharge into the ocean. There are no current coastal protection structures	Current- 2040	Protect.	Avoid.	Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. Prohibit private development (other than landscaping works) on the seaward side of the 2040 erosion hazard line. As a condition of approval of any development or subdivision of what is currently Lots 50 and 203 require, on the southern side of the vegetated dunes, a public foreshore reserve, configured such that the western section is approximately 1.5ha and can be developed to provide beach access and basic facilities similar to those at Meelup Beach.	To protect the beach, beach amenity, fore dune, infrastructure and buildings, maintain existing fore dune and beach as much as possible, without installing coastal protection structures, such as seawalls or groynes.	plans and protocols to identify, and evacuate or provide temporary	By 2030, consider applying a 2.09 higher differential rate to properties wholly or partly within the 2120 coastal erosion hazarline, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040-2070	Protect.	Avoid.	As above.	To protect the fore dune, infrastructure and buildings, construct a buried seawall from the northern end of the beach to a point to the east of the eastern end of Lake Jingi, with a gap to allow continued water flow from Lake Jingi into the ocean. To protect the beach and beach amenity, construct one or more groynes along the beach. Supplement the infrastructure described above with beach nourishment.	As above.	To be determined subject to furthe investigation and progress at State level towards identification o sustainable, equitable and efficien funding of coastal adaptation.
		2070- 2120	Protect.	Avoid.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment.	As above.	As above,

MUo3. Bunker Bay



*Denote	MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		on Pathway		Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
MU04	Eagle Bay North west facing sandy beach with a series of rock platforms and outcrops. Includes the Jingarmup Brook outlet. Continuous public foreshore reserve contiguous with Meelup Regional Park. There are no current coastal protection structures.	Current- 2040	Protect.	Accommodate.	1. Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. 2. Prohibit private development (other than landscaping works) on the seaward side of the 2040 erosion hazard line, or on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development', whichever is located further from the coast. 3. Establish minimum FFL for habitable floorspace at 3.8m AHD (note: existing private property ground and floor levels are already above 3.8m AHD, with very limited exceptions). 4. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.8m AHD (or higher, if natural ground level is higher than 3.8m AHD).	1. To protect the fore dune, infrastructure and buildings, construct a buried seawall from a point somewhat to the north of the northern extent of the town site to a point somewhat to the south-east of the south-eastern extent of the town site, with a gap to allow continued water flow from Jingarmup Brook into the ocean. 2. To protect the beach and beach amenity, construct one or more groynes along the beach. 3. Supplement the infrastructure described above with beach nourishment.		By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040- 2070	Protect.	Accommodate.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment.	As above.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect.	Accommodate.	As above.	As above.	As above.	As above.

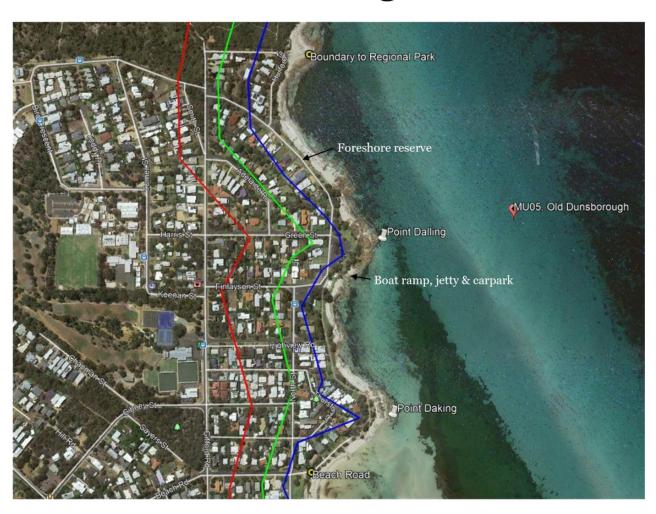
MU04. Eagle Bay



Draft CHRMAP

*Denote	MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		on Pathway		Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
MUOS	Old Dunsborough East facing mixed sandy/rocky coastline, including Point Daking and Point Dalling, with rock platforms. Continuous public foreshore reserve but often very narrow. There are no current coastal protection structures. The foreshore reserve lies generally at 5.0m AHD, with some sections lower.	Current- 2040	Protect.	Accommodate.	1. Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. 2. Prohibit private development (other than landscaping works) on the seaward side of the 2040 erosion hazard line, or on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development', whichever is located further from the coast. 3. Establish minimum FFL for habitable floorspace at 3.8m AHD. 4. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.8m AHD (or higher, if natural ground level is higher than 3.8m AHD).	1. To protect the foredune, infrastructure and buildings, construct a seawall from a point somewhat to the north of the northern extent of the town site to the southern boundary of the management unit, other than where natural rock formations already provide protection. 2. To protect the beach and beach amenity, construct one or more groynes along the beach. 3. Supplement the infrastructure described above with beach nourishment.	plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040- 2070	Protect.	Accommodate.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment.	As above.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect.	Accommodate.	As above.	As above.	As above.	As above.

MUo₅. Old Dunsborough



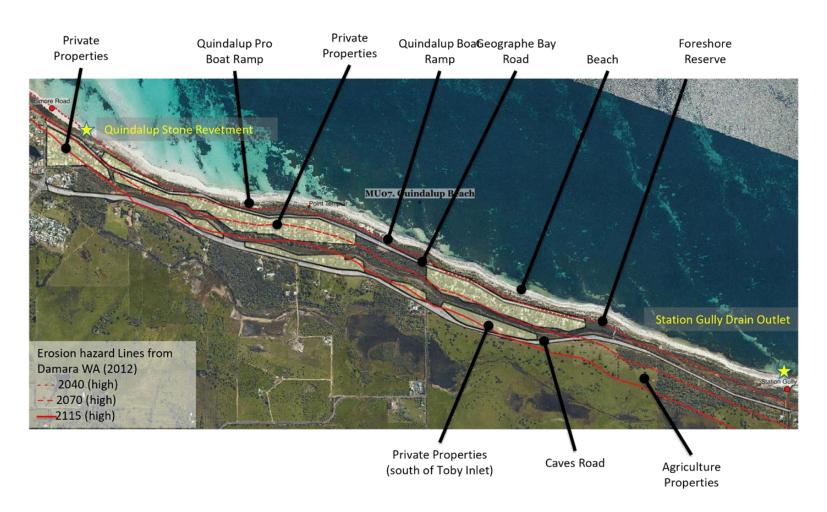
*Denote	MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		on Pathway		Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
site* North east beach in t rocky Includes th Bar, the m Dandatup Brooks. Threserve gubelow 5 Continuous foreshore (including and habit protection buried gecontainer (North east facing sandy beach in the lee of a rocky headland. Includes the Dunn Bay Bar, the mouths of the Dandatup and Dugalup Brooks. The foreshore reserve generally lies below 5.0m AHD. Continuous public	Current- 2040	Protect.	Accommodate.	1. Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. 2. Prohibit private development (other than landscaping works or development for public recreation purposes pursuant to part 7.1 of SPP2.6) on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. 3. Establish minimum FFL for habitable floor space at 3.0m AHD. 4. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.0m AHD (or higher, if natural ground level is higher than 3.0m AHD).	1. To protect the foredune, infrastructure and buildings, construct a buried seawall/ bund from a point somewhat to the north of the northern extent of the town site to the southern boundary of the management unit. 2. To protect the beach and beach amenity, maintain, upgrade and supplement as necessary the existing groynes along the beach. 3. Supplement the infrastructure described above with beach nourishment.	plans and protocols to identify, and evacuate or provide temporary	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040- 2070	Protect.	Protect.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment, including increases the height of the buried seawall/ bund to a minimum height of 3.5 -3.8m AHD.	As above. Note: If the buried seawall/bund has been constructed to a minimum height of 3.5 - 3.8m AHD, the management unit should not be vulnerable to coastal inundation events during this period.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect.	Protect.	As above.	As above.	As above.	As above.

MUo6. Dunsborough Town Site



*Denote	SEMENT UNIT	Adaptatio	on Pathway		Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
	e existing coastal on structures							
MU07	Quindalup North east facing sandy beach that includes the point of land fall for the Dunn Bay Bar and Station Gully Drain outlet. Continuous public foreshore reserve (with significant vegetation & habitat values). Toby Inlet runs generally parallel to the coast and discharges to the west of Station Gully Drain. Coastal protection structures: stone revetment (1973), timber groynes (1982) and Quindalup Sea Rescue trial groyne (2013).	Current- 2040	Protect.	Accommodate.	Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. Prohibit private development (other than landscaping works) on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. Establish minimum FFL for habitable floorspace at 3.0m AHD. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.0m AHD (or higher, if natural ground level is higher than 3.0m AHD).	To protect the fore une, infrastructure and buildings, construct a buried seawall/bund from the western boundary of the management unit to a point somewhat to the east of the existing cycle/pedestrian bridge across Toby Inlet. To protect the beach and beach amenity, construct one or more groynes along the beach. Supplement the infrastructure described above with beach nourishment.	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event.	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040-2070	Protect.	Protect.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment, including increases the height of the buried seawall/bund to a minimum height of 3.5 - 3.8m AHD. Increase the level of the fore dune from a point to the east of the existing cycle/pedestrian bridge across Toby Inlet to a point somewhat to the east to a minimum height of 3.5 - 3.8m AHD, construct a storm surge barrier across Toby Inlet at that point, and elevate portion of Caves Road to that height, to prevent storm surge events affecting property in the management unit.	Establish emergency management plans and protocols will be necessary to ensure that the elevated fore dune to the east of the eastward limit of the buried seawall/bund is sufficiently robust, and Caves Road may also need to be closed to traffic. Note: If the buried seawall/bund and storm surge barrier has been constructed to a minimum height of 3.5 – 3.8m AHD, private property in the management unit should not be vulnerable to coastal inundation events during this period.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect.	Protect.	As above.	As above.	As above.	As above.

MU07. Quindalup Beach

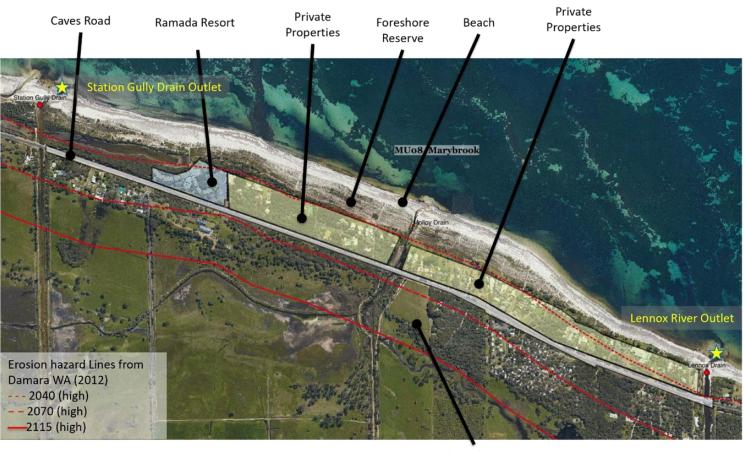


MANA	GEMENT UNIT	Adaptatio	on Pathway		Planning response	Infrastructure / coastal management	Emergency management response	Financial response
there ar	*Denotes management units where there are existing coastal protection structures					response		
MU08	Marybrook* North east facing wide sandy beach (narrowing to the east) with the Molloy Drain and Lennox River Drain outlets. Includes the 'Deadwater' — the easternmost section of Toby Inlet dissected by Station Gully Drain. Public access to the beach becomes increasingly constrained between Birl Elbow and the Lennox River Drain. There is no continuous public foreshore reserve in the eastern section of this Management Unit. There are some private coastal protection structures.	Current- 2040	Protect, keep option of managed retreat possible post 2070.	Accommodate.	1. Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. 2. Prohibit private development (other than landscaping works) on the on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. 3. As a condition of approval of any development or subdivision, ceding of land to ensure there is a foreshore reserve of a a minimum width of approximately 20m. 4. Establish minimum FFL for habitable floorspace at 3.8m AHD (note: existing private property ground and floor levels can be substantially below 3.8m AHD). 5. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.8m AHD (or higher, if natural ground level is higher than 3.8m AHD). 6. Require development approval for all development. 7. Prohibit private coastal protection structures. 8. Where development approval is granted, it must always be subject to a 'time limited approval', with development approval lapsing no later than 1 July 2070. 9. Do not support any subdivision or increases in permissible development density.	Subject to resolution of land tenure and access issues - 1. To protect buildings, construct a buried seawall from a point somewhat to the east of the Station Gully Drain to a point somewhat to the west of the Molloy Drain, continuing from a point somewhat to the east of the Molloy Drain to a point somewhat to the east of the Lennox Drain. 2. To protect the beach and beach amenity, construct one or more groynes along the beach. 3. Supplement the infrastructure described above with beach nourishment.		Apply a Specified Area Rate to fully fund works required to protect properties from coastal erosion hazard.

Draft CHRMAP

*Denotes management units where there are existing coastal protection structures		Adaptation Pathway			Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
			Protect, keep option of managed retreat possible post 2070.	Accommodate.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment.	As above.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- To be To be 2120 determined. determined.			To be determined.	To be determined.	To be determined.	To be determined.

MUo8. Marybrook



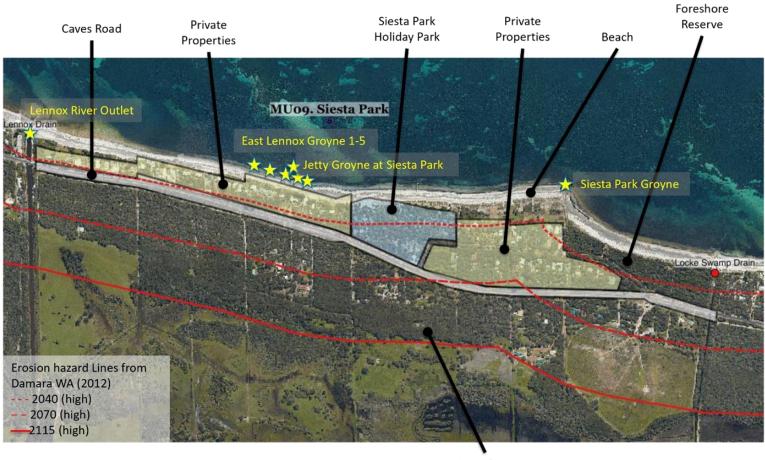
Agriculture Properties

*Denote there are	SEMENT UNIT s management units where e existing coastal on structures	Adaptatio	Adaptation Pathway		Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
миоэ	Siesta Park* North facing sandy beach that has been influenced by the Siesta Park Groyne. There is limited public access to the beach and there is not a continuous, usable public foreshore reserve. Coastal protection structures: Siesta Park jetty groyne (1950s), East Lennox timber groyne field (1960s) and Siesta Park groyne (1965/67). There are a number of private coastal protection structures. Includes the Lennox River and Locke Swamp Drain outlets.	Current- 2040	Protect, keep option of managed retreat possible post 2070.	Accommodate.	1. Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. 2. Prohibit private development (other than landscaping works) on the on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. 3. As a condition of approval of any development or subdivision, ceding of land to ensure there is a foreshore reserve of a a minimum width of approximately 20m. 4. Establish minimum FFL for habitable floorspace at 3.8m AHD (note: existing private property ground and floor levels are already above 3.8m AHD, with very limited exceptions). 5. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.8m AHD) (or higher, if natural ground level is higher than 3.8m AHD). 6. Require development approval for all development. 7. Prohibit private coastal protection structures. 8. Where development approval is granted, it must always be subject to a 'time limited approval', with development approval lapsing no later than 1 July 2070. 9. Do not support any subdivision or increases in permissible development density.	Subject to resolution of land tenure and access issues - 1. To protect buildings, construct a buried seawall from a point somewhat to the east of the Lennox Drain to a point somewhat to the east of Locke Swap Drain. 2. To protect the beach and beach amenity, construct one or more groynes along the beach. 3. Supplement the infrastructure described above with beach nourishment (note: the shortening of the existing Siesta Park Groyne may be appropriate, to reduce coastal erosion hazard on the eastern side).	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event. Caves Road may also need to be closed to traffic.	Apply a Specified Area Rate to fully fund works required to protect properties from coastal erosion hazard.

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*Denotes management units where there are existing coastal protection structures		Adaptation Pathway			Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
		2040- 2070	Protect, keep option of managed retreat possible post 2070.	Accommodate.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment.	As above.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	To be determined.	To be determined.	To be determined.	To be determined.	To be determined.	To be determined.

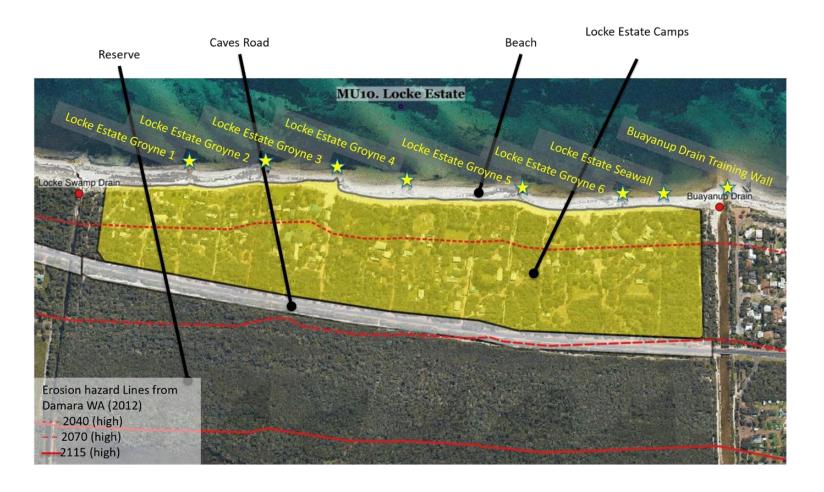
MU09. Siesta Park



Agriculture Properties

*Denote there are	MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		Adaptation Pathway		Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
MU10	Locke Estate* (Note: There is no privately owned land in this management unit) North facing sandy beach backed by camp lease sites and, further inland, the Locke Nature Reserve. Includes the Locke Swamp and Buayanyup River Drain outlets. Coastal protection structures: Buayanyup River Drain training wall (1985), groyne field (1988-1992 & 2014/15), Locke Estate seawall (1985-1992/2014).	Current- 2040	Protect, keep option of managed retreat possible post 2070.	Accommodate.	1. Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. 2. Prohibit private development (other than landscaping works) on the on the seaward side of a line that would be determined by identifying the line behind which development could be considered infill development. 3. Establish minimum FFL for habitable floorspace at 3.8m AHD (note: existing private property ground and floor levels are already above 3.8m AHD, with very limited exceptions). 4. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.8m AHD (or higher, if natural ground level is higher than 3.8m AHD). 5. Continue to offer leasehold tenure consistent with the reserve purpose and granting of the land to the Crown for periods no greater than 21 years.	1. To protect buildings, construct a buried seawall from a point somewhat to the east of the Locke Swamp Drain to the Buayanyup River Drain. 2. To protect the beach and beach amenity, maintain and upgrade as necessary the existing groynes along the beach. 3. Supplement the infrastructure described above with beach nourishment.	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event. Caves Road may also need to be closed to traffic.	Require at least 50% of the cost of coastal protection and management to be met by lesses, the remainder from State and/or Federal Government grants.
		2040- 2070	Protect, keep option of managed retreat possible post 2070.	Accommodate.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment.	As above.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	To be determined.	To be determined.	To be determined.	To be determined.	To be determined.	To be determined.

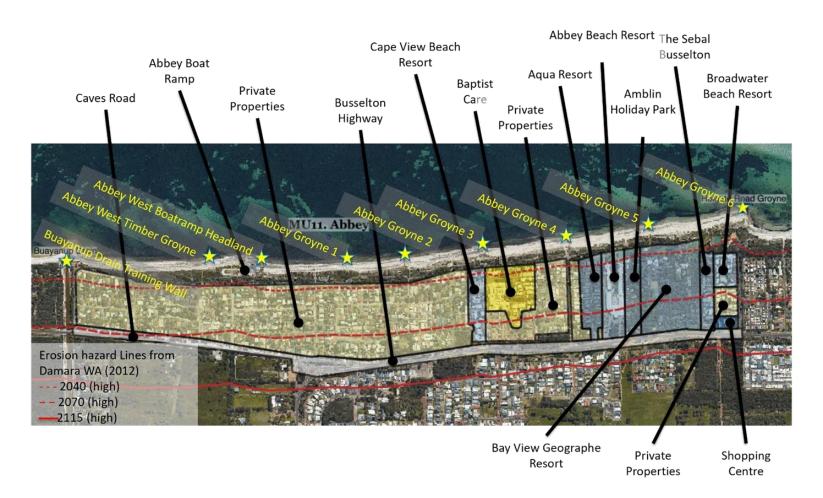
MU10. Locke Estate



Attachment A

*Denote there are	MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		Adaptation Pathway		Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
MU11		Current- 2040	Protect.	Accommodate.	Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. Prohibit private development (other than landscaping works) on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. Establish minimum FFL for habitable floorspace at 3.0m AHD. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.0m AHD (or higher, if natural ground level is higher than 3.0m AHD).	To protect the foredune, infrastructure and buildings, construct a buried seawall/bund from the Buayanyup River Drain to the eastern boundary of the management unit. To protect the beach and beach amenity, construct one or more groynes along the beach. Supplement the infrastructure described above with beach nourishment.	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event.	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040-2070	Protect.	Protect.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment, including increases the height of the buried seawall/bund to a minimum height of 3.5 – 3.8m AHD. Engage with the State Government (in particular, Water Corporation), to advocate for the upgrade of the eastern bank of the Buayanyup River Drain to minimum height of 3.5 – 3.8m AHD, and to be structurally capable of protecting land to the east from a major storm surge (coastal inundation hazard) event.	As above. Note: If the buried seawall/bund and eastern bank of the Buayanyup River Drain has been constructed to a minimum height of 3.5 - 3.8m AHD, the management unit should not be vulnerable to coastal inundation events during this period.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect.	Protect.	As above.	As above.	As above.	As above.

MU11. Abbey



*Denote	MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		on Pathway		Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
MU12	Broadwater* North facing sandy beach with a wide continuous public foreshore reserve (including vegetation and habitat). Landfall for the Abbey sand bar. Coastal protection structures: two trial groynes (2011).	Current- 2040	Protect.	Accommodate	Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. Prohibit private development (other than landscaping works) on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. Establish minimum FFL for habitable floorspace at 3.0m AHD. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.0m AHD (or higher, if natural ground level is higher than 3.0m AHD).	To protect the foredune, significant remnant vegetation, infrastructure and buildings, construct a buried seawail/Jound from the western to the eastern boundary of the management unit. To protect the beach and beach amenity, construct one or more groynes along the beach. Supplement the infrastructure described above with beach nourishment.	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event.	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040- 2070	Protect.	Protect.	As above.	Upgrade infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment, including increases the height of the buried seawall / bund to a minimum height of 3.5 – 3.8m AHD.	As above. Note: If the buried seawall/bund has been constructed to a minimum height of 3.5 – 3.8m AHD, the management unit should not be vulnerable to coastal inundation events during this period.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect.	Protect.	As above.	As above.	As above.	As above.

MU12. Broadwater



Attachment A

Draft CHRMAP

MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		Adaptation Pathway			Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
MU13	Busselton West (A)* North facing sandy beach with a narrow continuous public foreshore reserve. Includes the Vasse Diversion Drain outlet. Coastal protection structures: seawalls (1970s), groynes (1990-1995 & 2016) and Vasse River Diversion Drain outlet training wall (1983).	Current- 2040	Protect.	Accommodate.	Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. Prohibit private development (other than landscaping works) on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. Establish minimum FFL for habitable floorspace at 3.0m AHD. 4. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.0m AHD (or higher, if natural ground level is higher than 3.0m AHD).	1. To protect the foredune, infrastructure and buildings, construct a buried seawall/bund from the western boundary of the management unit to the Vasse Diversion Drain. Note: The foreshore reserve in much of this management unit is too narrow to allow effective landscaping over a buried seawall/bund. Where possible, though, it is envisaged that the seawall/bund would be landscaped. 2. To protect the beach and beach amenity, construct one or more groynes along the beach. 3. Supplement the infrastructure described above with beach nourishment.	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event.	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'. Require the State Government to meet 100% of the cost of protecting the Busselton Regional Hospital site.
		2040-2070	Protect.	Protect.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment, including increases the height of the buried seawall/bund to a minimum height of 3.5 – 3.8m AHD. Engage with the State Government (in particular, Water Corporation), to ensure that Water Corporation constructs a storm surge barrier at the mouth of the Vasse Diversion Drain.	As above. Note: If the seawall/bund and Vasse Diversion Drain storm surge barrier has been constructed to a minimum height of 3.5 – 3.8m AHD, the management unit should not be vulnerable to coastal inundation events during this period.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect.	Protect.	As above.	As above.	As above.	As above.

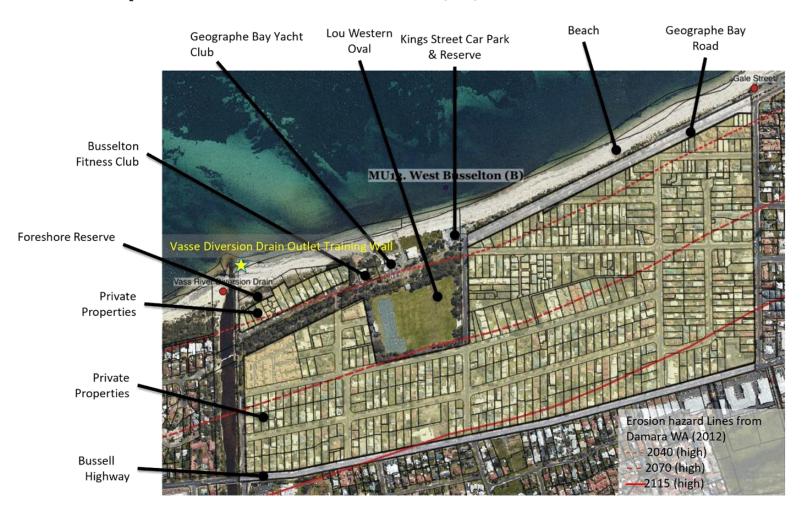
24 February 2021

MU13. Busselton West (A)



*Denote	MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		on Pathway		Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
MU14	Busselton West (B)* North west facing sandy beach with a generally narrow, continuous public foreshore reserve. Includes the Vasse Diversion Drain outlet. Coastal protection structures: King Street carpark burled geotextile sand container seawall (2013).	Current- 2040	Protect.	Accommodate.	Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. Prohibit private development (other than landscaping works) on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. Establish minimum FFL for habitable floorspace at 3.0m AHD. 4. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.0m AHD (or higher, if natural ground level is higher than 3.0m AHD).	1. To protect the foredune, infrastructure and buildings, construct a buried seawall/bund from the Vasse Diversion Drain to the eastern boundary of the management unit. Note: The foreshore reserve in some of this management unit is too narrow to allow effective landscaping over a buried seawall/bund. Where possible, though, it is envisaged that the seawall/bund would be landscaped. 2. To protect the beach and beach amenity, construct one or more groynes along the beach. 3. Supplement the infrastructure described above with beach nourishment.	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event.	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040-2070	Protect.	Protect.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment, including increases the height of the buried seawall/bund to a minimum height of 3.5 – 3.8m AHD. Engage with the State Government (in particular, Water Corporation), to ensure that Water Corporation constructs a storm surge barrier at the mouth of the Vasse Diversion Drain.	As above. Note: If the buried seawall/bund and Vasse Diversion Drain storm surge barrier has been constructed to a minimum height of 3.5 - 3.8m AHD, the management unit should not be vulnerable to coastal inundation events during this period.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect	Protect	As above.	As above.	As above.	As above.

MU14. Busselton West (B)

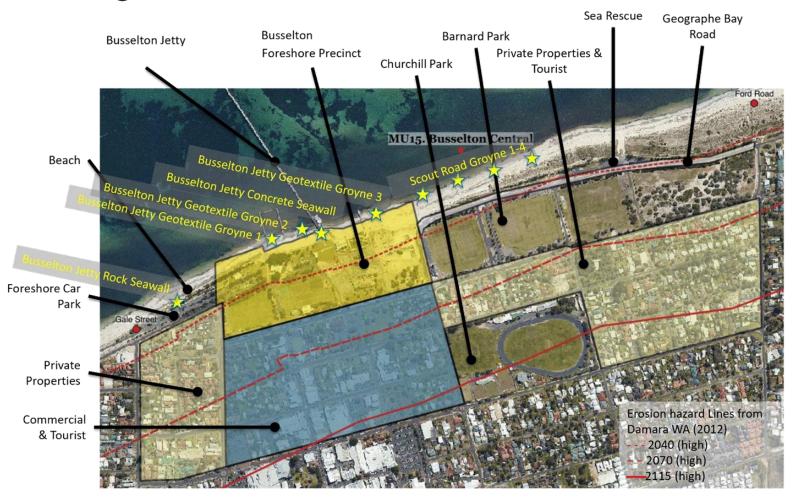


Attachment A

*Denote there are	MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		Adaptation Pathway		Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
MU15	Busselton Central* North west facing sandy beach with a continuous public foreshore reserve that widens to the east. Includes the Busselton Foreshore Precinct and significant heritage assets. Coastal protection structures: Busselton Jetty GSC groynes (2008), seawalls (refurbished 2011, 2015 & 2017), Scout Road groynes (2013).	Current- 2040	Protect.	Accommodate.	Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. Prohibit private development (other than landscaping works) on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. Establish minimum FFL for habitable floorspace at 3.0m AHD. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.0m AHD (or higher, if natural ground level is higher than 3.0m AHD).	To protect the foredune, infrastructure and buildings, extend and maintain the existing buried seawall/bund for the full length of the management unit. To protect the beach and beach amenity, supplement as necessary groynes along the beach. Supplement the infrastructure described above with beach nourishment.	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event.	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040- 2070	Protect.	Protect.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment, including increases the height of the buried seawall/bund to a minimum height of 3.5 – 3.8m AHD.	As above. Note: If the buried seawall/bund has been constructed to a minimum height of 3.5 – 3.8m AHD, the management unit should not be vulnerable to coastal inundation events during this period.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect.	Protect.	As above.	As above.	As above.	As above.

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MU15. Busselton Central



Attachment A

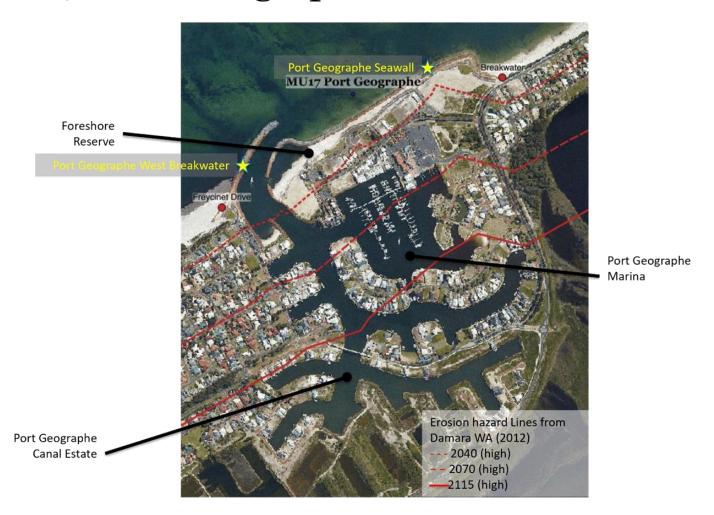
MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		Adaptation Pathway			Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
MU16	Busselton East North west sandy facing beach with continuous public foreshore reserve. Wide beach and foreshore reserve. Land fall for the Busselton Jetty sand bar. No current coastal protection structures.	Current- 2040	Protect.	Accommodate.	Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. Prohibit private development (other than landscaping works) on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. Setablish minimum FFL for habitable floorspace at 3.0m AHD. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.0m AHD (or higher, if natural ground level is higher than 3.0m AHD).	To protect the foredune, infrastructure and buildings, construct a buried seawall/bund for the full length of the management unit. To protect the beach and beach amenity, construct one or more groynes along the beach. Supplement the infrastructure described above with beach nourishment.	plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space	
		2040- 2070	Protect.	Protect.	As above.	Upgrade infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment, including increases the height of the buried seawall / bund to a minimum height of 3.5 – 3.8m AHD.	As above. Note: If the buried seawall/bund has been constructed to a minimum height of 3.5 – 3.8m AHD, the management unit should not be vulnerable to coastal inundation events during this period.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect	Protect.	As above.	As above.	As above.	As above.

MU16. Busselton East



MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		Adaptation Pathway			Planning response	1000	frastructure / coastal management sponse	Emergency management response	Financial response
MU17	Port Geographe* Port Geographe Marina and conal development. Public foreshore reserve from the inner marina entry wall extending along the seawall. Coastal protection structures: Port Geographe seawall and west breakwater.	Current- 2040	Protect.	Accommodate.	Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. Prohibit private development (other than landscaping works) on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. Establish minimum FFL for habitable floorspace at 3.4 AHD. 4. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.4 AHD (or higher, if natural ground level is higher than 3.4 AHD).	2.	To protect infrastructure and buildings, engage with the State Government (in particular, Department of Transport), to ensure that the Department of Transport maintains the existing seawall/bund for the full length of the management unit. To protect the beach and beach amenity, construct one or more groynes along the beach. Supplement the infrastructure described above with beach nourishment.	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event.	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040-2070	Protect.	Protect.	As above.	2.	Engage with the State Government (in particular, Department of Transport), to ensure that the Department of Transport upgrade and maintain the infrastructure in place in the preceding period as required, including increasing the height of the seawall/bund to a minimum height of 3.4m AHD. Engage with the State Government (in particular, Department of Transport), to ensure that the Department of Transport, to ensure that the Department of Transport constructs a storm surge barrier across the Marina Entry Channel. Potentially, in parallel with 2 above, a mechanical flushing system may be required to protect water quality in the Marina and canals.	As above. Note: If the seawall/bund and storm surge barrier has been constructed to a minimum height of 3.4m AHD, the management unit should not be vulnerable to coastal inundation events during this period.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect.	Protect.	As above.	As	s above.	As above.	As above.

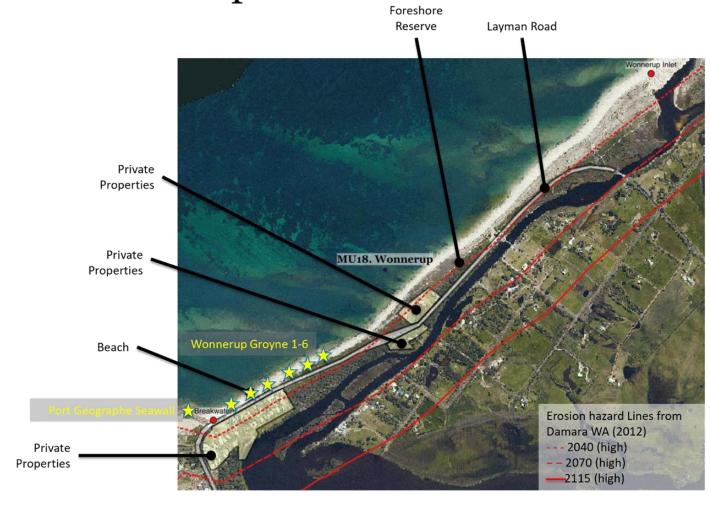
MU17. Port Geographe



Draft CHRMAP

MANAGEMENT UNIT *Denotes management units where there are existing coastal protection structures		Adaptation Pathway			Planning response	1000	frastructure / coastal management sponse	Emergency management response	Financial response
MU18	Wonnerup* North west facing sandy beach and low lying coastal barrier backed by the Vasse-Wonnerup Estuary. Includes the mouth of the Wonnerup Inlet. Continuous public foreshore reserve. Coastal protection structures: Wonnerup groyne field (2004-2006), buried seawall and Baudin Reserve GSC groynes (2017). Flood protection structures: Vasse Estuary storm surge barrier.	Current- 2040	Protect.	Accommodate.	Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. Prohibit private development (other than landscaping works) on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. Establish minimum FFL for habitable floorspace at 3.0m AHD. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.0 AHD (or higher, if natural ground level is higher than 3.0 AHD).	3.	To protect the foredune, infrastructure, buildings, and Vasse Estuary, construct a buried seawall/bund from a point somewhat to the north of the northern extent of the town site to the southern boundary of the management unit. To protect the beach and beach amenity, supplement as necessary groynes along the beach. Supplement the infrastructure described above with beach nourishment.	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event.	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040-	Protect.	Protect.	As above.		Upgrade infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment, including increases the height of the buried seawall/bund to a minimum height of 3.5 – 3.8m AHD. Consider increasing the height of Layman Road, from a point just to the north of Vasse Estuary inlet channel to a point somewhat to the north of Tuart Drive to a minimum height of 3.8m AHD.	As above. Note: If the buried seawall/bund has been constructed to a minimum height of 3.8m AHD, the management unit should not be vulnerable to coastal inundation events during this period.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect.	Protect.	As above.	As	s above.	As above.	As above.

MU18. Wonnerup



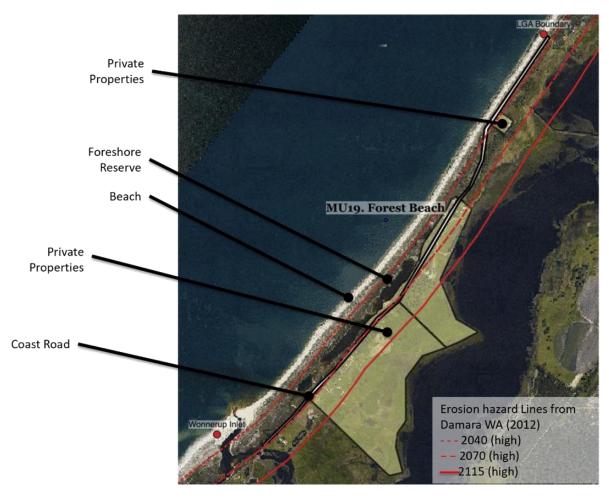
Attachment A

Draft CHRMAP

MANAGEMENT UNIT		Adaptation Pathway			Diaming response	Infrastructure / coastal mans	Emergency management recover	Financial response
*Denotes ma	*Denotes management units where there are existing coastal protection structures				Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
No. sa co by W Int Int Int we co fo cu pr Fi st Es	orrest Beach orth west facing andy beach and asstal barrier backed by the Vasse- /onnerup Estuary. cludes the Wonnerup left, the 'Deadwater' vetland and a ontinuous public oreshore reserve. No urrent coastal rotection structures. ood protection ructures: Wonnerup stuary storm surge arrier.	Current- 2040	Protect.	Accommodate.	1. Include all land within the 2120 coastal erosion hazard line within the Coastal Management Area. 2. Prohibit private development (other than access, parking or landscaping works) on the on the seaward side of a line that would be determined by identifying the line behind which development could be considered 'infill development'. 3. Establish minimum FFL for habitable floorspace at 3.0m AHD (note: existing private property ground and floor levels are already above 3.0m AHD, with very limited exceptions). 4. Calculate height for purposes of building height, setback, overshadowing and/or overlooking controls as if ground levels are a minimum of 3.0m AHD (or higher, if natural ground level is higher than 3.0m AHD). 5. Require development approval for all development. 6. Prohibit private coastal protection structures. 7. Where development approval is granted, it must always be subject to a 'time limited approval', with development approval lapsing no later than 1 July 2070. 8. Do not support any subdivision or increases in permissible development density.	1. To protect the fore dune, infrastructure, buildings, and Wonnerup Estuary, construct a buried seawall from a point somewhat to the east of the eastern end of the Deadwater to the eastern boundary of the management unit. 2. To protect the beach and beach amenity, construct one or more groynes along the beach. 3. Supplement the infrastructure described above with beach nourishment.	Establish emergency management plans and protocols to identify, and evacuate or provide temporary protection for, any remaining buildings with habitable floor space below projected the maximum potential water level for an expected storm surge event. Forrest Beach Road may also need to be closed to traffic.	By 2030, consider applying a 2.0% higher differential rate to properties wholly or partly within the 2120 coastal erosion hazard line, and allocate that additional revenue to the 'Coastal Adaptation Reserve'.
		2040- 2070	Protect, keep option of managed retreat possible post 2070.	Accommodate.	As above.	Upgrade and maintain infrastructure constructed in the preceding period as required and continue to supplement with beach nourishment, including extending to the buried seawall progressively to the west.	As above.	To be determined subject to further investigation and progress at State level towards identification of sustainable, equitable and efficient funding of coastal adaptation.
		2070- 2120	Protect, keep option of managed	Accommodate.	To be determined.	To be determined.	To be determined.	To be determined.

*Denote there are	SEMENT UNIT s management units where e existing coastal on structures				Planning response	Infrastructure / coastal management response	Emergency management response	Financial response
			retreat possible post 2070.					

MU19. Forrest Beach



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Attachment A

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Attachment A

Glossary of Terms

'accretion' refers to shoreline movement where the shoreline shifts seaward increasing the width of a coastal foreshore reserve and/or the distance to a fixed feature on the adjoining land.

'coastal foreshore reserve' is the area of land on the coast set aside in public ownership to allow for likely impacts of coastal hazards and provide protection of public access, recreation, safety, biodiversity and ecosystem integrity, landscape, visual landscape, indigenous and cultural heritage.

'coastal hazard' means the consequence of coastal processes that affect the environment and safety of people. Potential coastal hazards include erosion, accretion and inundation.

'coastal processes' means any action of natural forces on the coastal environment.

'coastal zone' includes the areas of water and land that may be influenced by coastal processes.

'erosion' refers to shoreline movement where the shoreline shifts landward reducing the width of a coastal foreshore reserve and/or the distance to a fixed feature on the adjoining land.

'horizontal shoreline datum (HSD)' defines the active limit of the shoreline under storm activity. It is the line from which a physical processes allowance will be applied from.

'inundation' means the flow of water onto previously dry land. It may either be permanent (for example due to sea level rise) or a temporary occurrence during a storm event.

'sediment cell framework' means the hierarchy of sediment cells along the Western Australian coast between the Moore River and Cape Naturaliste. The hierarchy includes primary, secondary and tertiary sediment cells.

'sediment cell' means a length of shoreline in which interruptions to the movement of sediment along beaches or near shore sea bed do not significantly affect beaches in the adjacent lengths of coastline. Within a sediment cell the sediments sources, transport pathways and sinks should be clearly definable.

Appendices



Research Solutions report

	Slide #
Background	3
Executive summary	5
Conclusions	17
Detailed findings	19
Sample profile	49
Technical appendix	52
Verbatim comments	59

13.1

Attachment B

Contents

Background

The City of Busselton is facing significant problems with coastal erosion and is in the process of developing a Coastal Adaptation Strategy to address these issues. The City is keen to have a balanced understanding of the expectations of its residents and ratepayers in relation to coastal adaptation and is keen to engage the silent majority of the community in this discussion.

The Coastal Adaptation Strategy is looking at a 100 year plan during which time the north-facing coastal area of the City will be affected by both erosion and rising sea levels. State government infrastructure, city facilities and private land will all be affected.

The project area is the City's north facing sandy coast from the City's municipal boundary at Forrest Beach, extending from Wonnerup (to the east), to Point Daken, Dunsborough to the west, with the addition of the beaches and settlements at Bunker Bay, Eagle Bay, Yallingup and Smiths Beach. The study area excludes the coastline within the national park and ends at the boundary of Leeuwin Naturalist Park at Smiths Beach.

The City of Busselton commissioned Research Solutions to undertake a representative survey of its community to determine what the community values about its coastline. It was important that this survey produced a random and representative sample of the community, including those members of the community who do not traditionally participate in consultation.

The process

The study proceeded as follows:

The sample was divided into coastal and inland residents/property owners and is similar to the actual distribution of homes.

A profile of the sample is appended.

The data was coded and checked and the results are provided below.

With the City and representatives from the Department of Planning, Lands and Heritage and from the Department of Transport

Telephone survey of 410 residents and ratepayers:

- 100 non resident ratepayers
- 300 residents

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Scoping meeting

Questionnaire development

Online survey

Telephone

survey

To discuss the study options and how it might proceed

The questionnaire was developed and agreed with the City

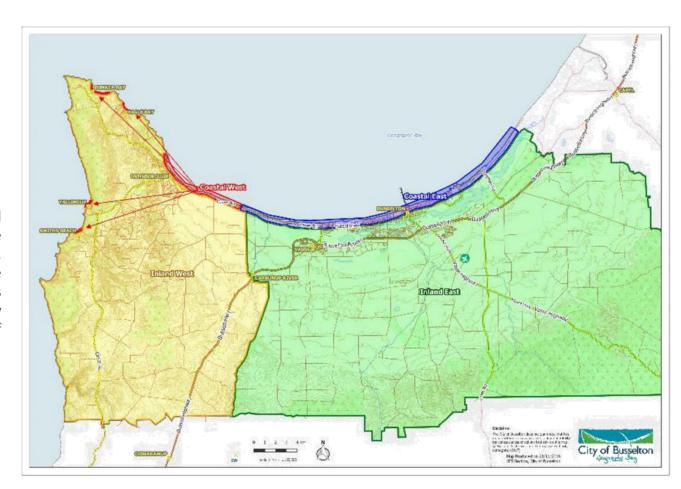
An online consultation survey on the City's website, open to everyone. 49 people responded of whom 46 lived in the LGA. The results are noted in the report where they vary from the random survey.

Detailed approach in the Technical Appendix



The process cont'd

The City of Busselton was divided into four areas as shown by the coloured regions in the map above. The distribution of the sample between each of the 4 areas is detailed in slide 51, this largely follows the distribution of residences.



13.1 Attachment B



Executive summary

Executive summary

The City of Busselton is in the process of developing a Coastal Adaptation Strategy to address the significant coastal erosion problems being experienced on the City's north facing sandy coast from Forrest Beach, Wonnerup (to the east) to Point Daken, Dunsborough to the west with the addition of the settlements at Bunker Bay, Eagle Bay, Yallingup and Smiths Beach. The study area excludes the coastline within the national park and ends at the boundary of the Leeuwin Naturaliste Park at Smiths Beach.

The City of Busselton commissioned Research Solutions to undertake a representative survey of its community to determine what the community values about its coastline. It was important that this survey produced a random and representative sample of the community, including those members of the community who do not traditionally participate in consultation.

A telephone survey was conducted of 410 residents and ratepayers:

- 300 residents
- 100 non resident ratepayers

An online survey using the same questionnaire was provided on the City's website which was open to all members of the community. In all 49 people responded of whom 46 lived in the City of Busselton. The results of this survey are compared to the main random survey at each stage of the report.

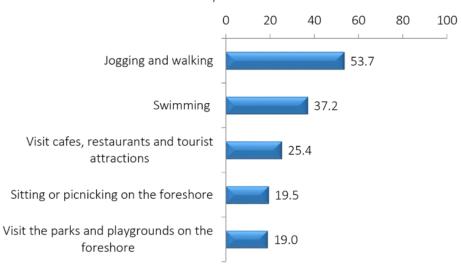
Executive summary cont'd

The report has been designed to:

- Establish how the coastline is used and compare this with the values which people espouse for the coastline.
- Establish the key values and what people feel should be preserved from future erosion.
- Establish whether the community understands the changes that are occurring on the coastline and awareness of the City's actions to reduce coastal erosion.
- Lastly the research explored who the community felt should pay for the work required to reduce the impact of coastal erosion.

Usage of the coastline

% of the community who use the coastline at least once a week



The chart shows that many of the community regularly use the beach and foreshore for jogging, walking and swimming at least once a week on average over the year.

In all 42.4% of residents and ratepayers use the remote part of the beach for their jogging, walking, sitting and picnicking activities (22.9% use both the remote part and the town beach).

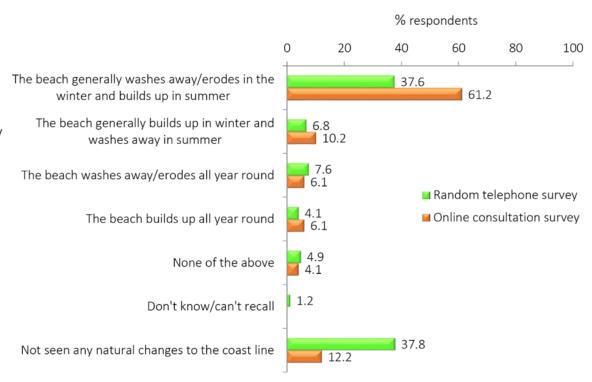
This increases to more than half of respondents (54.2%) likely to use the remote areas for those living in the eastern part of the City of Busselton.

Awareness and understanding of coastal erosion

The majority of residents (62.2%) were aware of natural changes in the coastline, including the beaches, over the past year and 37.6% of residents were aware of and understood the concept of erosion of the beaches in winter and accretion in summer. Participants in the online community consultation survey were significantly more aware and educated about the natural changes occurring to the City of Busselton's beaches:

 61.0% (almost double the number) were aware of the erosion in winter and accretion in summer.

Across residents and ratepayers 60.0% were aware that the City had taken action to stop or reduce coastal erosion over the past five years, particularly those who lived in inland areas. Actions they were aware of including building groynes, sea walls, beach nourishment and planting vegetation.



Q.5 What is the main change you have seen to the coastline including the beaches? n=410

research solutions

What the community values in its coastline

Pristine clean beaches and water (33%)

Unspoilt natural coastline/landscape (26%)

Calm, safe swimming beaches (11%)

Accessibility including car, boat and wheelchair (10%)

Sheltered, protected coastline (10%)

Serenity, solitude and peace (9%)

Ideal for boating, fishing and sailing (5%)

Good facilities and activities (6%)

Dog friendly (4%)



The importance of various features

Residents and ratepayers were asked to rate the importance of a range of coastal values derived from discussions with the City of Busselton and previous research undertaken by the City and by Research Solutions. These coastal values included both tangible values such as flora and fauna as well as emotional values. Asking all residents and ratepayers to consider the same set of values ensures that a diverse range of values are considered, not just those that are top of mind when the survey is administered.

The most important emotional and aspirational value of the coastline which was most frequently mentioned as critical to preserve from potential future erosion was:

• Handing the coastal area on to our children and grandchildren in the same or a better state (than it is now).

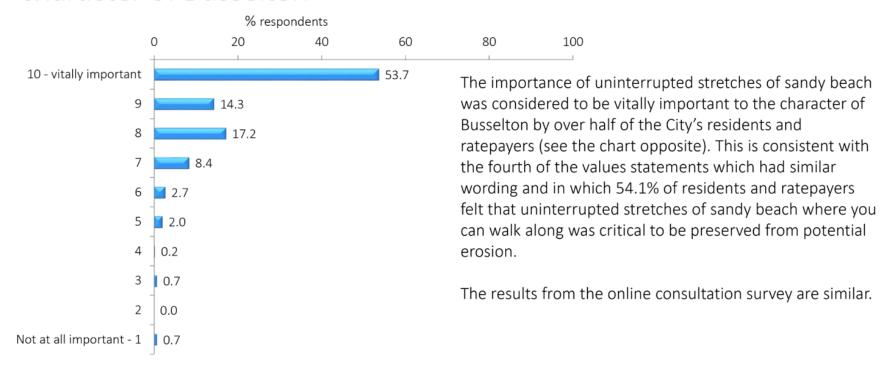
The importance of various features cont'd

The values were grouped as follows:

- Group 1 rated critically important (10/10) by 80% of respondents.
 - Handing the coastline on to our children and grandchildren in the same or a better state

- Group 2 rated critically important (10/10) to between 50 60% of residents and ratepayers
 - Knowing that there are places in the coastal area that feel natural
 - Natural vegetation/ habitat on the foreshore and beach
 - Uninterrupted stretches of sandy beach to walk along
 - Heritage historical features such as the Pioneer Cemetery or the jetty
 - Safe swimming beaches
- Group 3 –rated critically important to about 40% of residents and ratepayers.
 - Coastal dual use path
 - Beach and foreshore facilities

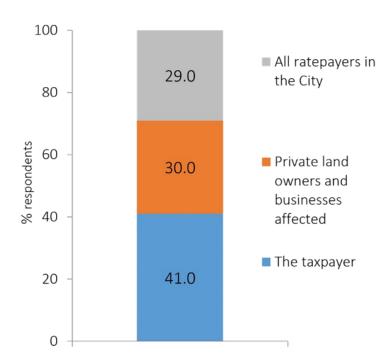
Importance of uninterrupted stretches of sandy beach to the character of Busselton



Q.10 How important do you feel that uninterrupted stretches of sandy beach which you can walk along is to the character of Busselton? N=606, unsure 4



The cost of reducing coastal erosion – who should pay?



Residents and ratepayers felt that the greater cost of reducing coastal erosion should be borne by the tax payer, with the balance borne by all ratepayers in the City and private land owners/ businesses affected in equal part.

The consultation survey was more evenly divided:

- 1. The tax payer 38%
- 2. Private landholders and businesses affected 35%
- 3. All ratepayers of the City of Busselton 27%

Some private land holders felt that they should not make a contribution to reducing coastal erosion:

- 40% of private land holders in the coastal west zone
- 24% of private land holders in the east coast zone.

Q.11 Within the next 100 years the land affected by coastal erosion may stretch for 100-200 metres inland impacting City assets and private homes. Who should pay for the work required to reduce the impact of this coastal erosion. How would you allocate the cost between these three groups? n=410

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Issues to be addressed via information sheets or discussed at the public meetings

- · How the boat ramps will be maintained
- Dune management
- Maintaining the sea grass
- Construction of retaining walls/ sea walls
- Information on global warming and its impact on the coastline
- Removal of sand and seaweed
- · Retention and management of flora and fora
- Discussion of the sand works
- Planning for the foreshore

- Planning for the Wonnerup inlet
- Planning for the long term withdrawal of private homes from the coast
- The management of new subdivisions and developments on the coast
- Discussion about development and businesses on the foreshore
- Building in potential erosion prone areas
- Evidence that coastal erosion will happen
- Plans for the future of the coastline
- Proposed solutions and options

Conclusions

The research shows that the north facing beaches in the City are strong valued by the community, with over half of the community feeling that uninterrupted stretches of sandy beaches are a vital part of the character of Busselton.

The most important coastal value is:

• Handing the coastal area on to our children and grandchildren in the same or a better state (than it is now).

This is followed by a second group of values:

- Knowing that there are places in the coastal area that feel natural
- Natural vegetation/ habitat on the foreshore and beach
- Uninterrupted stretches of sandy beach to walk along
- Heritage historical features such as the Pioneer Cemetery or the jetty
- Safe swimming beaches

The research shows that the beaches are used by a significant proportion of the community. In all over 50% of the community say that they jog/ walk on the beach or foreshore at least once a week and about 1 in 4 joggers/ walkers only use the remote part of the beach, particularly those who live in the eastern part of the City, a further 20% use both the busy areas and remote areas.

Conclusions cont'd

There is a high level of awareness of natural changes in the coastline over the past year and a fairly high level of residents and ratepayers aware that the City had taken action to stop or reduce coastal erosion over the past five years, particularly those who lived in inland areas including building groynes, sea walls, beach nourishment and planting vegetation.

Awareness of what actually happens in terms of coastal erosion in winter and accretion in summer is significantly lower. The research shows that there is a significant demand amongst the community for information on coastal erosion and the options for the future of the coastline.

The community feel that a slightly higher proportion of the cost of erosion should be borne by the tax payer, and the balance equally by the private landholders and businesses who benefit, and the ratepayers.

Those who participated in the online consultation survey gave similar results in many respects to the random survey, except they tended to be more aware of the issues and better informed and were also more likely to use the infrastructure and businesses at the beach and to walk/ picnic on the beach. Hence the results are fairly consistent across the two surveys.

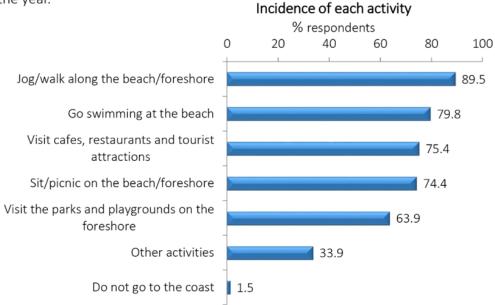




Detailed findings

How the coastline is used

The first stage of the research was to establish how the coastline was used by the community, the types of activities undertaken at the coast and the frequency with which these activities were undertaken. Jogging and walking; swimming; visiting cafes, restaurants and tourist attractions; and sitting or picnicking on the foreshore were all popular activities undertaken by at least 3 out of 4 people during the year.



Other activities included:

- Fishing
- Boating
- Cycling
- Surfing

Respondents participating in the online consultation survey reported a similar proportion of people using the coast to those in the random survey. The difference was that generally those reporting usage were more frequent users than amongst the general population.

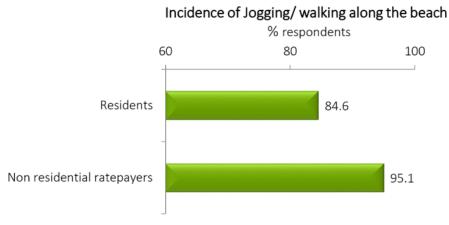
Q.1 Firstly can you tell me which of these things you usually do when you go to the coast? N=410

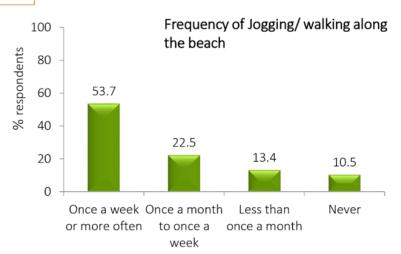
Jog/walk along the beach/foreshore

When visiting their Busselton property the number of non residential ratepayers who walk or jog on the beach was high at 95.1% with 40.0% of all non residential ratepayers saying that they walk or jog on the beach on average once a week or more often. By comparison the incidence of residents who say that they walk or jog on the beach once a week or more often is almost 60%.

Most respondents (73.6%) walked or jogged close to the town beach or old Dunsborough beach and just under half (42.4%) walked or jogged on the more remote parts of the coast, (some 22.9% jogged in both areas), this increases to more than half of respondents (54.2%) likely to walk/ jog in the remote areas for those living in the eastern part of the City of Busselton.

The results are similar between the random survey and the online consultation





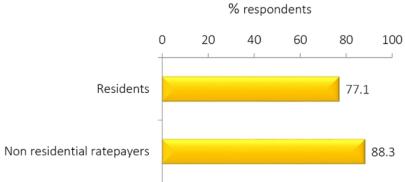
- Q.1a Firstly can you tell me which of these things you usually do when you go to the coast? n=410
- Q.2 How often have you done this activity this year, on average since the 1st January jogging/walking along the beach/foreshore? n=410, includes those who never do the activity

Swimming at the beach

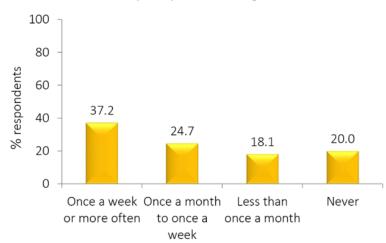
Whilst the incidence of swimming at the beach is higher amongst non residential ratepayers when visiting their Busselton property, residents swam at the beach more often, 40.6% swimming once a week or more often compared to 27.2% of non resident ratepayers swimming once a week or more often.

The results are similar between the random survey and the online consultation





Frequency of swimming at the beach

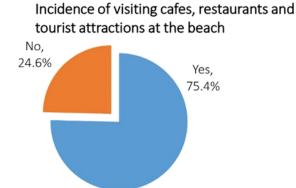


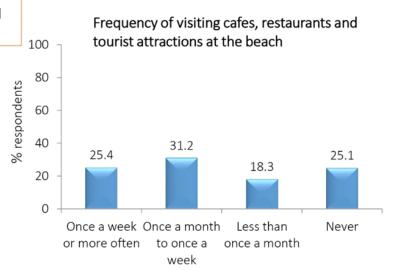
- Q.1a Firstly can you tell me which of these things you usually do when you go to the coast? n=410
- Q.2 How often have you done this activity this year, on average since the 1st January? Swimming n=410

Visit cafes, restaurants and tourist attractions

The propensity to visit cafes, restaurants and tourist attractions on the coast was high, but greater amongst Busselton residents and ratepayers who live inland (81.7%) than those who lived on the coast (64.2%). Those who lived inland were 50% more likely to visit cafes, restaurants and tourist attractions at the beach (27.8% visited once a week or more often) compared to those who lived on the coast (20.9%). Residents and non residential ratepayers said that they visited cafes, restaurants and tourist attractions on the coast with equal frequency.

Twice as many people participating in the online consultation survey visited cafes, restaurants and tourist attractions (53% once a week or more) compared to those participating in the random survey, results below.





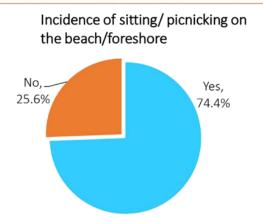
Q.1a Firstly can you tell me which of these things you usually do when you go to the coast? n=410

Q.2 How often have you done this activity this year, on average since the 1st January – visit cafes, restaurants and tourist attractions? n=410

Sit/picnic on the beach/foreshore

Younger residents and rate payers were 50% more likely to sit/ picnic on the beach/foreshore compared to older residents (91.9% residents and ratepayers aged under 35 compared to 61.7% aged 65 and over). The incidence of residents and ratepayers picnicking or sitting on the town beach was highest for those who lived in the west of the survey area. Those who lived in the east of the City were more likely to use the remote parts of the beach (28.5%) compared to residents and ratepayers who lived west of the City (10.8%). There was no difference between residents and non residential ratepayers in their incidence of sitting or picnicking on the beach/foreshore.

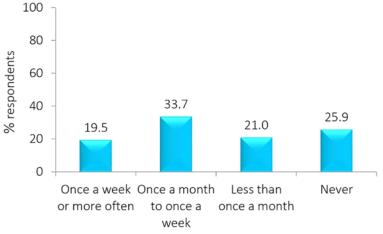
Twice as many people sat or picnicked on the beach/ foreshore (55% once a week or more) in the online consultation compared to the random survey below.





Q.2 How often have you done this activity this year, on average since the 1st January – sit/picnic on the beach/foreshore?

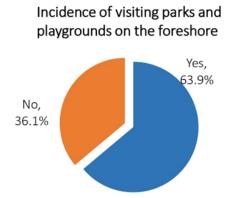
Frequency of sitting/picnicking on the beach/foreshore

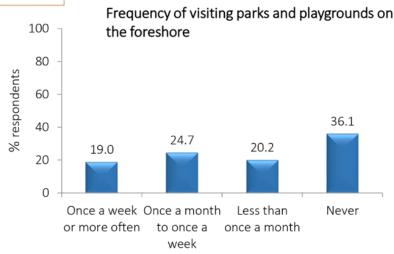


Visit parks and playgrounds on the foreshore

There was no significant difference between residents and non residential ratepayers nor in where the respondent lived. As with sitting or picnicking this activity declined with age -75.7% of the under 35 age group visited parks and playgrounds on the foreshore compared to 56.8% of the 65 and over age group. Those with children and grandchildren (68.7%) were more likely to undertake this activity than those without (53.2%).

Twice as many people visited parks and playgrounds (43% once a week or more) in the online consultation compared to the random survey below.



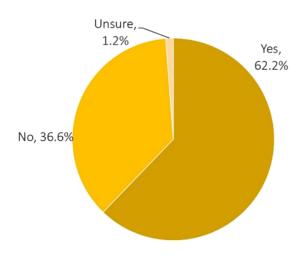


Q.1a Firstly can you tell me which of these things you usually do when you go to the coast? n=410

Q.2 How often have you done this activity this year, on average since the 1st January – visit parks and playgrounds on the foreshore? n=410

Awareness of coastal erosion

Awareness of changes to the coastline



Awareness of natural changes in the coastline, including the beaches amongst the community was measured with two questions:

- 1. Measuring awareness of changes to the coastline
- 2. Measuring awareness of the nature of the changes, specifically the erosion of sand in winter and the depositing of sand in the summer.

As shown opposite, almost two-thirds of residents and ratepayers were aware of changes to the coastline. Awareness was similar amongst all residents and ratepayer groups analysed, regardless of if they lived close to the coast or not.

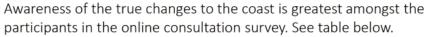
Participants in the online consultation survey were significantly more likely to be aware of coastal erosion (87.8% aware) compared to the 62.2% of the residents and ratepayers in the random community survey opposite.

Q.4 Have you noticed any natural changes in the coastline including the beaches over the past year, not deliberately man made? n=410



Awareness of erosion and accretion of the beaches

With prompting of the possible changes to the City of Busselton's beaches, 37.6% of residents and ratepayers were aware of and understood the issue which the City was experiencing, that of erosion in winter and accretion in summer. This understanding was similar amongst all groups of the community analysed and did not vary by age, gender, life stage or location.



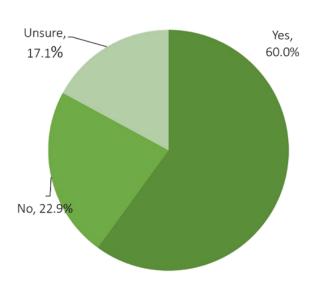


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Awareness of the City undertaking action to reduce coastal erosion

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Awareness of the City's activity to reduce coastal erosion



Awareness that the City had taken action to stop or reduce coastal erosion over the past 5 years was fairly good as shown opposite, with 60% of residents and ratepayers recalling some action.

Awareness that the City had taken action was highest amongst:

- ➤ Inland residents (71.4%) compared to those living on the coast (39.9%)
- Residents of the City (64.8%) compared to non residential ratepayers (45.6%)

Awareness was similar at 60% amongst other groups There is room to raise awareness across the board and particularly amongst coastal residents and non residential ratepayers, many of whom in this survey owned properties in the coastal area.

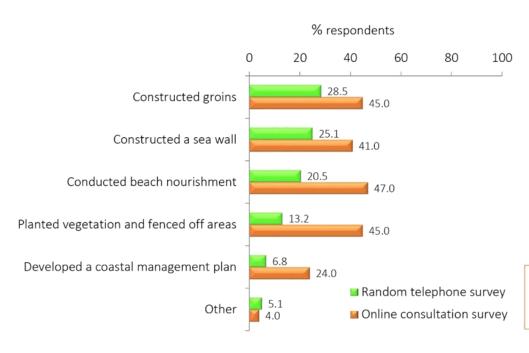
Awareness of the City undertaking action is similar between residents and ratepayers in the random survey and in the online consultation survey

Q.6 Has the City undertaken any actions to stop or reduce coastal erosion over the past 5 years? n=410



Actions taken by City done to stop or reduce coastal erosion

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Residents and ratepayers were most likely to recall that the City had constructed:

Coastal groynes 28.5% of all respondents Constructed sea walls 25.1% of all respondents

Other actions recalled as undertaken by the City included:

- Rocks on the beach front to protect the dunes
- Repairs and sand removed from boat ramps
- Repairs to carparks
- Signage on the beach
- Work at Toby Inlet and Wonnerup
- Dredging of Port Geographe

Awareness of the actions taken by the City are much higher amongst the online consultation survey participants (see graph opposite)

Q.6 Has the City undertaken any actions to stop or reduce coastal erosion over the past 5 years? If yes....

Q.7 What have they done? n=410

What the community values in its coastline

Pristine clean beaches and water (33%)

Unspoilt natural coastline/landscape (26%)

Calm, safe swimming beaches (11%)

Accessibility including car, boat and wheelchair (10%)

Sheltered, protected coastline (10%)

Serenity, solitude and peace (9%)

Ideal for boating, fishing and sailing (5%)

Good facilities and activities (6%)

Dog friendly (4%)



What the community values near the coastline

"Its natural, untouched beauty."

"The natural environment, unspoilt, not developed."

"It's protected from the sea breeze, good for boating and fishing"

"They are clean and it's safe to swim, for all ages; very scenic"

"Extremely picturesque and safe for children"

"The natural beauty; the facilities. it's sheltered from the weather"

"Drives on the beach; the warm waters; nice and clean"

"Beauty; cleanliness; natural; being able to take the dog to the beach; not crowded"

The importance of various features

Residents and ratepayers were asked to rate the importance of a range of coastal values derived from discussions with the City of Busselton and previous research undertaken by the City and by Research Solutions. These coastal values included both tangible values such as flora and fauna and emotional values. Asking all residents and ratepayers to consider the same set of values ensures that a diverse range of values are considered, not just those that are top of mind when the survey is administered.

The two emotional and aspirational features of the coastline were considered the most important features to be preserved from potential future erosion. These included:

- 1. Handing the coastal area on to our children and grandchildren in the same or a better state (than it is now)
- 2. Knowing that there are places in the coastal area that feel natural

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The importance of various features cont'd

The issues were grouped as follows:

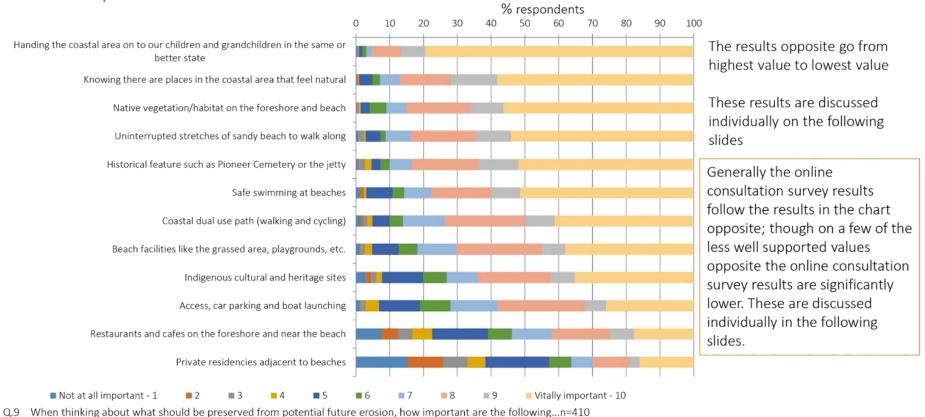
- Group 1 Handing the coastline on to our children and grandchildren in the same or a better state was rated critically important (10/10) by 80% of respondents.
- Group 2 Knowing that there are places in the coastal area that feel natural
 - Natural vegetation/ habitat on the foreshore and beach
 - Uninterrupted stretches of sandy beach to walk along
 - Heritage historical features such as the Pioneer Cemetery or the jetty
 - Safe swimming beaches

These were critically important (10/10) to between 50 - 60% of residents and ratepayers

- Group 3– Coastal dual use path
 - Beach and foreshore facilities

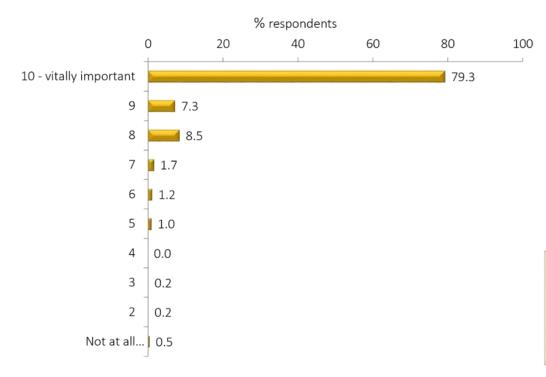
These were critically important to about 40% of residents and ratepayers.

The importance of various features



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Handing the coastal area on to our children and grandchildren in the same or a better state



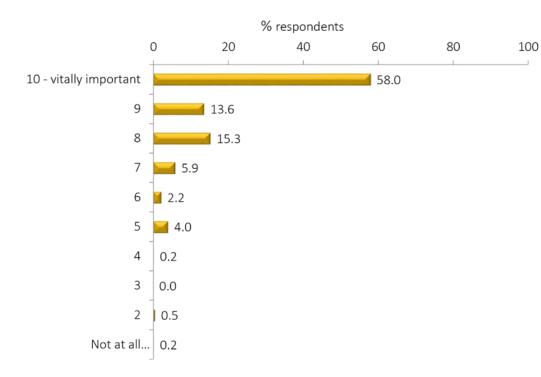
This value was identified as the most critical of all the values tested and articulated residents' and ratepayers' guiding value for the future.

The high level of support with 79.3% rating it as vitally important was consistent amongst all groups of people in the survey.

As in this survey handing the coastal area on to future generations in the same or a better state was also the most important value and had a similar level of support in the online consultation survey.

Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=410

Knowing that there are places in the coastal area that feel natural



Over 50% of the community rated this value as critically important.

Those to whom it was especially important were:

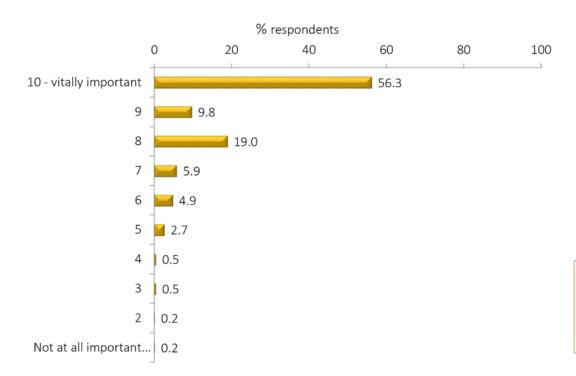
- Women
- ➤ Coastal dwellers, particularly those along the eastern portion of the coast and,
- > Home owners

However it was still critically important to almost 50% of males, inland dwellers and renters.

As in this survey knowing that there are places in the coastal area that feel natural was the second most important value and had a similar level of support in the online consultation survey as here.

Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=405, unsure 5

Native vegetation and habitat on the foreshore and beach



Flora and fauna was also highly valued, rated as vitally important by over 50% of residents and ratepayers.

It was slightly more important to:

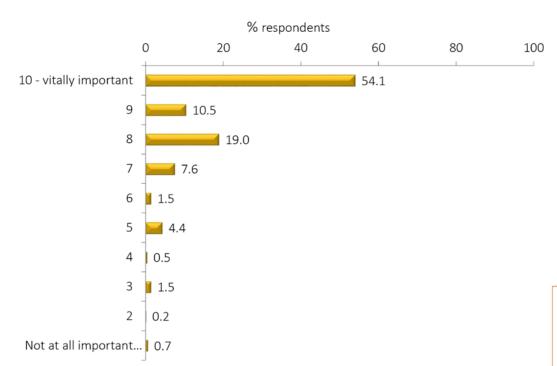
- > Females
- > Those living in the coastal east area
- > Those living in the inland west area

Again native vegetation and habitat on the foreshore and beach was equally important and had a similar level of support in the online consultation survey as here.

Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=410



Uninterrupted stretches of sandy beach where you can walk along



Another critically important value and something which residents and rate payers felt was integral to the character of the City of Busselton.

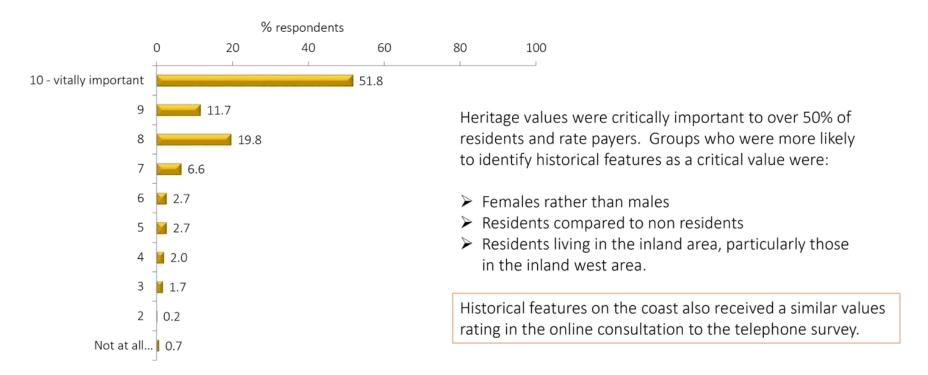
➤ A little less important to people living in the inland east area but as one would expect, critically important to a higher than average portion of people living on the coast.

As above, uninterrupted stretches of sandy beach to walk along had a similar levels of support in the online consultation survey and the random survey.

Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=410



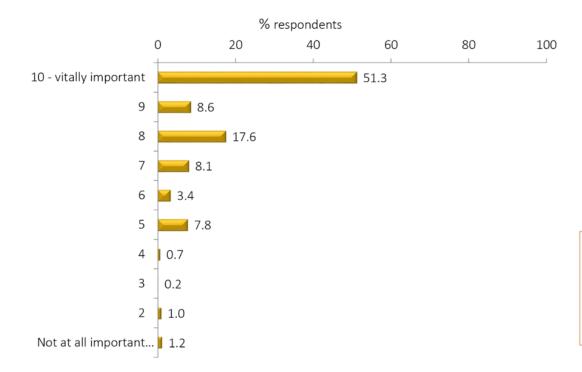
Historical features such as Pioneer Cemetery or the jetty



Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=409, unsure 1



Safe swimming beaches

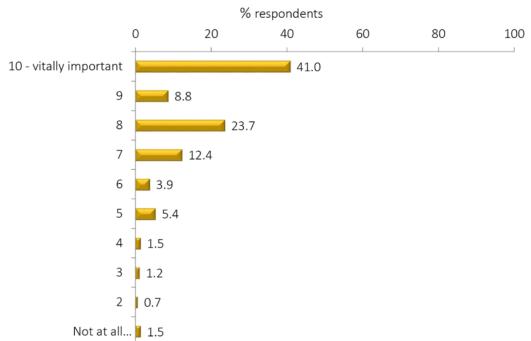


Critically important to over half of the residents and ratepayers and equally important to everyone in the survey regardless of how frequently they swam from the beach or whether they had children or grandchildren or not.

Safe swimming beaches were significantly less likely to be of critical importance to participants in the online consultation survey, only 31% identified them as a critical issue.

Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=409, unsure 1

Coastal dual use path (walking and cycling)

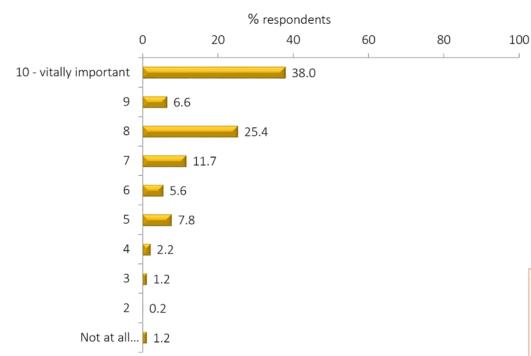


The coastal dual use path was critically important to 41% of residents and ratepayers. This value did not differ between the different groups of residents and ratepayers, including those who walked or jogged on the beach or foreshore.

The coastal dual use path was valued in a similar manner by participants in the online consultation survey.

Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=410

Beach facilities like the grassed areas, playgrounds, BBQ and toilets on the foreshore



Beach facilities were critically important to 38% of residents and ratepayers as shown in the chart opposite.

Beach facilities like grassed areas, playgrounds, BBQ and toilets were more important to residents and ratepayers who lived inland from the coast (43.9%) than those who lived on the coast (27.7%).

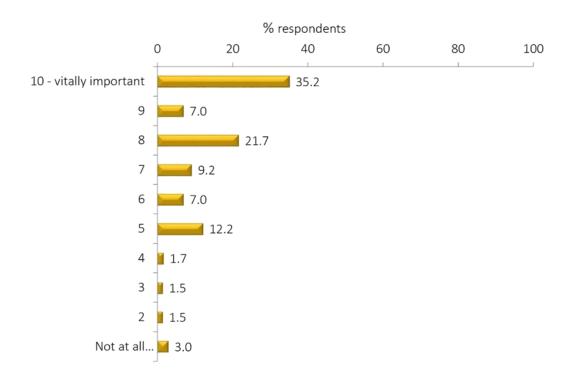
Beach facilities were significantly less likely to be considered of critical importance to those who participated in the online consultation with only 16% nominating them to be of critical importance.

Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=410



Attachment B

Indigenous cultural and heritage sites

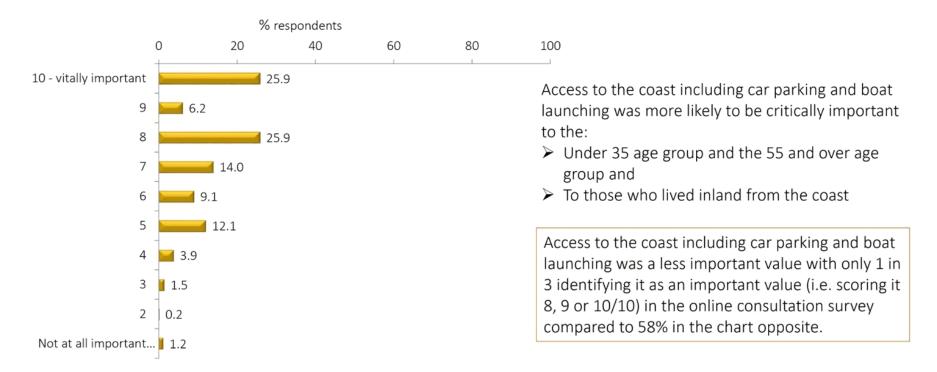


Indigenous cultural and heritage sites were critically important to 35.2% of residents and ratepayers. A fairly wide range of values was given for this rating but these did not differ between the different groups of residents and ratepayers. The average rating was 8/10.

Indigenous cultural and heritage sites were considered a critical value by 20% of respondents to the online consultation survey, this is lower than the general public survey.

Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=401, unsure 9

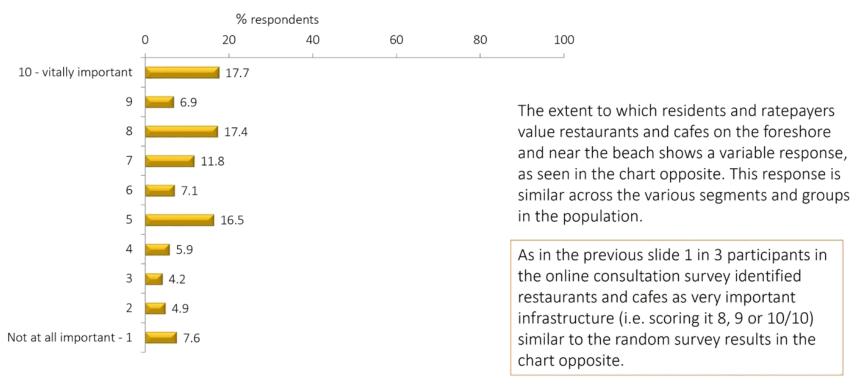
Access to the coast including car parking and boat launching



Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=406, unsure 4



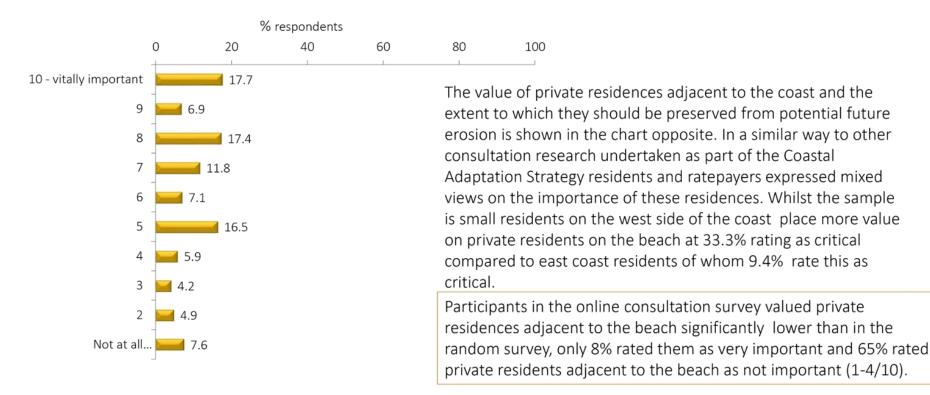
Restaurants and cafes on the foreshore and near the beach



Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=407, unsure 3



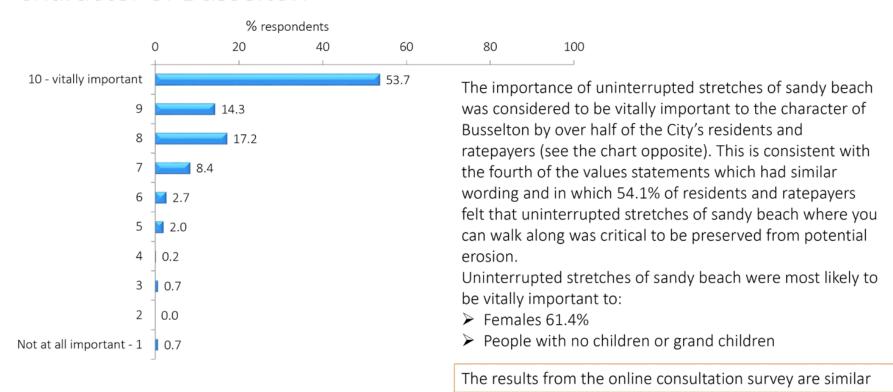
Private residences adjacent to beaches



Q.9 When thinking about what should be preserved from potential future erosion, how important are the following...n=407, unsure 3

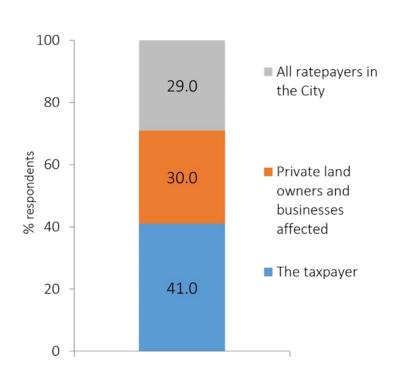


Importance of uninterrupted stretches of sandy beach to the character of Busselton



Q.10 How important do you feel that uninterrupted stretches of sandy beach which you can walk along is to the character of Busselton? N=606, unsure 4

The cost of reducing coastal erosion – who should pay?



As can be seen in the chart opposite residents and ratepayers felt that the greater cost of reducing coastal erosion should be borne by the tax payer, with the balance borne by all ratepayers in the City and private land owners/ businesses affected in equal part.

There was no statistically significant difference by any of the groups, even private landholders in the coastal zone generally agreed that they should make a contribution. The exception was those who felt that they should not make a contribution to reducing coastal erosion:

- o The 40% of private landholders with land in the coastal west zone
- o The 24% of private landholders with land in the east coastal zone
- o Across all residents and ratepayers 25.5% of ratepayers

The consultation survey was more evenly divided:

- 1. The tax payer 38%
- 2. Private landholders and businesses affected 35%
- All ratepayers of the City of Busselton 27%

Q.11 Within the next 100 years the land affected by coastal erosion may stretch for 100-200 metres inland impacting City assets and private homes. Who should pay for the work required to reduce the impact of this coastal erosion. How would you allocate the cost between these three groups? n=410

Issues to be addressed via information sheets or discussed at the public meetings

- · How the boat ramps will be maintained
- Dune management
- Maintaining the sea grass
- Construction of retaining walls/ sea walls
- Information on global warming and its impact on the coastline
- Removal of sand and seaweed
- Retention and management of flora and fora
- Discussion of the sand works
- Planning for the foreshore

- Planning for the Wonnerup Inlet
- Planning for the long term withdrawal of private homes from the coast
- The management of new subdivisions and developments on the coast
- Discussion about development and businesses on the foreshore
- Building in potential erosion prone areas
- Evidence that coastal erosion will happen
- Plans for the future of the coastline
- Proposed solutions and options

Profile of the sample

Gender	Random telephone survey %	Online consultation survey %	ABS data 2016 census %
Male	48.8	41.0	48.8
Female	51.2	55.0	51.2
Do not wish to disclose	-	4.0	-
Total	100.0	100.0	100.0
Age			
Under 18	-	2.0	-
18-24	1.5	-	8.3
25-34	7.6	10.2	13.5
35-44	20.7	22.4	17.7
45-54	31.7	18.4	17.7
55-64	18.8	32.7	16.9
65+	19.8	12.2	25.9
Do not wish to disclose	-	2.0	-
Total	100.0	100.0	100.0

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Profile of the sample cont'd

Residents and ratepayers	Random telephone survey %	Online consultation survey %	ABS data 2016 census %
Residents	74.9	-	-
Non residential ratepayer	25.1	-	-
Total	100.0		
Family composition			
Young child, oldest primary age or younger	28.8	24.0	-
Teenage children	25.6	12.0	-
Have grandchildren	25.1	31.0	-
No children	30.7	35.0	-
Total			
Property ownership			
Own the property	92.0	90.0	-
Rent the property	55.6	4.0	-
Other	2.4	-	-
Live outside the City of Busselton	-	6.0	-
Total	100.0		

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Profile of the sample cont'd

Location of the property	Random telephone survey %	% of properties on the rates data base
Coastal West	6.6	3.5
Coastal East	29.5 36.1 Coastal	27.1 30.6%
Inland East	29.8	23.6
Inland West	<u>34.1</u> 63.9 Inland	<u>45.8</u> 69.4%
	100.0	100.0

Technical Appendix Sampling and Data Collection Specifics

Component	Details	
Project Management Team		
Research Solutions Contact	Nicky Munro	
Client Contact	Louise Koroveshi	
Field Company	Ask Australia	
Field Company Credentials	ISO 20252	
Other Contractors	None	
Research Methodology		
Data collection method	Telephone with an online survey for all residents and ratepayers to use	

Component	Details
Sampling Methodology	
Target population for survey	Residents and ratepayers
Description of sampling frame	Sample drawn from coastal strip and in land
Source of sampling frame	Purchased list with mobile numbers
Sampling Technique	Telephone survey - Random sample; online survey self selecting sample
Sample Size e.g. if sample size achieved was different from planned sample, note this and reason why	Random telephone survey 400; online consultation survey 49 respondents, 46 lived in Busselton
Was sample quota'd? (note below or NA):	
Brief description of quota procedure	Quota'd by coastal verses inland, east and west close to population distribution, Residents sample = 300; non residential ratepayers =100
Information source of quotas drawn from	Actual number of residents in each area, actual number of non resident ratepayers

Component	Details
Fieldwork	
Briefing Method	In person, with written briefing notes provided
Pilot study date(s)	26 th September 2018
Changes made as result of pilot	None
Survey dates	1 st October – 8 st October 2018
Questionnaire length / administration time	13.4 minutes
Incentives provided for respondents e.g. No / yes & description of incentive	None
Survey Procedure for CATI	
Number of interviewers used	24 interviews
Times of day interviews took place	Evenings during the week and during the day on Saturday and Sunday
No of call backs before number replaced	Up to 6, at least 3-4 hours apart and at different shift days

Details Component **Data Collection Outcomes:** Response Rate or 7% Participation rate (non-probability samples) delete as required Research participant contact outcomes (note below): Interviews 410 Not available / away for duration of study/ answering machine (after 15% call backs) Answering machine (after call backs) 50% Refusals 27% Language/Behavioural Barrier 1% Overall sampling error <u>+</u>5 % At least 10% of all completed interviews validated by Field Company Validation procedures Not required as survey was self-completion

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Component	Details
Data Coding, Analysis and Data File Treatment	
Validity and Reliability Issues	
Data coding	 Procedure involves: Review of first 50 questionnaires (or similar) to develop coding sheets based on common responses Additional codes created when more than 2% of the sample record common response Approval of coding sheet by Research Solutions Project Manager
Consistency checks	 Preliminary data file checked by Project Manager using SPSS: Frequency counts Relevant cross tabulations Data outside the range/duplicates or abnormalities investigated with Field Company prior to coding and analysis
Treatment of missing data	 Excluded from analysis and/or noted where relevant Individual cases with excessive missing data excluded from sample
Was sample weighted? (note below or NA):	
Brief description of weighting procedure	N/A
Information source weights drawn from	N/A
Statistical tests used	See Survey Research Appendix: Statistical Tests
Data file provided to client	On request
De-identified data files retained	For five years
This project has been undertaken in compliance with ISO 20252.	

Test:	Z-Test
Use:	To determine if the proportions of a variable in two independent samples are significantly different.
Data Assumptions:	 Measure being tested is normally distributed with the two samples. Data must be interval or ratio. Sample size is large enough to form a normal curve (n>30) Variance of measure being tested is roughly similar (homogeneity of variance).
Test Measure / Cut-off Criterion:	p <= 0.5
Issues to be aware of:	The result should be both statistically significant and clinically or tactically or strategically significant. Be mindful of statistically significant differences where: 1. The sample sizes are very large 2. Scores within the groups are very similar (i.e. the groups have small standard deviations)

Criterion:

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Test:	Chi Square (Pearson's chi-square)						
Use:	To determine if two variables are related by more than chance alone.						
Data Assumptions:	 Data is from a random sample. Data must be nominal, ordinal or interval. Sufficiently large sample (absolute minimum n=30) & adequate cell sizes (n=10+) Observations must be independent. Observations must have the same underlying distribution. Data is unweighted 						
Test Measure / Cut-off	p <= 0.5						

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - Clean beach and the tracks are well looked after.
 - Lovely beaches.
 - Natural landscape; lookout points; marked short walks.
 - The lack of sea breezes and the lack of afternoon sun.
 - Very quiet and peaceful area, around Bunker Bay.
 - Natural beauty and they haven't been built up yet.
 - Plenty of room for all; it's free.
 - How clean and fresh the water is; foreshore is in great condition; unspoilt.
 - The beauty of the coastline.
 - Beauty and accessibility.
 - · Nice for the kids, shallow and safe.
 - Nice to go for a drive.
 - Safe.
 - Forrest beach and Wonnerup, you can drive your car along the beach.
 - Close to residence.
 - The relaxed atmosphere.
 - The natural environment; unspoilt; not developed.
 - It's untouched beauty.
 - It's gold, you are protected from the south westerly wind, which is very rare.
 - No high rise; beaches are beautiful to walk along; very peaceful area.
 - Sheltered bay; lots of sun.
 - The solitude at Yallingup Beach.
 - It's protected from the sea breeze, good for boating and fishing.

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - Walking; whales.
 - The natural environment.
 - The beauty of the area.
 - They are clean and it's safe to swim, for all ages; very scenic.
 - Natural beauty; accessible to everyone; wheelchair access.
 - The outlook, white sand, blue water and solitude.
 - The pristine beaches.
 - It's clean open coastline and there is never a crowd.
 - A wonderful natural resource, easily accessible.
 - Water access.
 - They are clean and easy to access.
 - The near pristine condition.
 - Access to the beaches.
 - Peaceful and quiet.
 - Clean, easy access and family friendly.
 - The swimming.
 - The coast line.
 - Nice sandy beach, lovely sailing area.
 - Everything.
 - Not crowded and easy access by boat and car.
 - Natural beauty.
 - Clear water and the sand has not been littered with rubbish.
 - Sun comes shining onto the beaches, very well protected from the south west breeze.

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - All are very nice places.
 - It's beauty, very natural.
 - Protected beaches.
 - They are clean.
 - Clear water and the rock coastline.
 - Nice sand, clean water, calm bays and good waves for surfing.
 - It's natural and untouched beauty.
 - Nice and safe for my grandchildren to swim.
 - Good surf, easily accessible.
 - A lovely place and our kelpie loves to go there.
 - Everything, the water quality, the lack of crowds.
 - A facility for people to use.
 - How beautiful it is in the summer, going fishing.
 - The scenery.
 - Extremely picturesque and safe for children.
 - The beautiful paradise.
 - Environment.
 - Cleanliness of the water, clean sandy beaches, easy access.
 - Unique and natural environment.
 - They are clean and safe for swimming.
 - Serenity.
 - They are accessible pristine and very family orientated.
 - Clean beaches.

Q.8 Whatdoyou value about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Eagle Bay, Yallingup and Smiths Beach? Random telephone survey

- Beautiful, I appreciate the lack of rocks and small waves.
- The clean sand and waters.
- Sheltered waters of Geographe Bay and surfing.
- Tranquillity and accessibility.
- Quiet in winter; whale watching; clean beaches.
- You miss out on the winds, it blows off shore.
- Scenery; close to where I live; clean water.
- Broadwater is calm and flat, better for the children.
- Unspoiled natural environment.
- The natural look of the beaches have not been changed much.
- Natural beaches; proximity to home; clean.
- The view and clear beaches
- They are accessible, clean/
- The natural beauty; the facilities. it's sheltered from the weather.
- The scenery.
- Natural beauty; accessible to everyone; facilities.
- Uncrowded and unspoilt.
- The coastal lifestyle.
- Safe beaches to go for a swim.
- Very easy to access the beaches.
- Drives on the beach; the warm waters; nice and clean.
- The natural environment.
- Clean; peace and quiet.

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Eagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - The rugged terrain, good for walking.
 - It's natural beauty.
 - The view and tranquillity.
 - Dunsborough is beautiful.
 - Their beauty and accessibility.
 - The natural beauty.
 - Clean and calm waters.
 - Very pleasant place to live.
 - Family friendly beaches.
 - unspoiled, beautiful coastline.
 - Lovely and clean surrounds.
 - Nice sunsets.
 - It is natural; no pollution.
 - Sheltered from strong winds.
 - Beautiful and not crowded.
 - Great beaches and clean water.
 - Attractive natural looking beaches.
 - Everything.
 - It's clear water and it's nice and protected.
 - Their natural beauty, unspoiled and accessible.
 - The calm waters for children to play.
 - Open area; the beauty; access for animals and vehicles; fishing.
 - The calmness.

Q.8 Whatdoyou value about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Eagle Bay, Yallingup and Smiths Beach? Random telephone survey

- Natural beauty.
- Clean Beaches; boat ramps.
- Where I live it is very good and very quiet.
- They are pristine and not too busy.
- It's clean and uncrowded.
- Cleanliness of the area and the natural beauty.
- The flora and fauna.
- Safe beach for the family.
- Walking area is scenic.
- Good sheltered place for children to swim.
- Clean white beaches.
- The scenery.
- It is protected and the beaches are clean.
- Unique coastline.
- The most natural, beautiful beaches I've ever seen.
- Able to use it for recreation.
- Beautiful white beaches; grandchild safe; fishing; swimming is good; crime free.
- Beauty; cleanliness; natural; being able to take the dog to the beach; not crowded.
- Pristine nature; calm waters; clean; dog walking areas; BBQ facilities.
- Pristine beauty.
- Calm in a south westerly; good for kids.
- The beauty, not too crowded, clean and peaceful.
- Clean and unspoiled.

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - Untouched natural beauty.
 - How good it is to swim and walk.
 - Due to being in the bay it is safer than some beaches.
 - Good tourist attraction.
 - It is calm.
 - The vegetation that surrounds it and all the natural habitats and fauna.
 - Safe for kids, no swell and pristine.
 - Very peaceful coastline.
 - Sheltered from the wind and you get to see the sun and moon rise out of the ocean.
 - Accessibility, not built up and clean.
 - Accessibility.
 - Accessibility and natural beauty.
 - Natural beauty of the area.
 - Pristine beaches, accessibility and activities.
 - The area is beautiful and absolutely pristine.
 - Protection from south west winds and boat access.
 - The accessibility to the beach and cleanliness.
 - A beautiful and clean bay.
 - The natural beauty.
 - Pristine beach.
 - Calm water.
 - Value the coastline very much.
 - Recreation, but, they shut it up all the time.

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - Easy to go to and safe.
 - Clean and beautiful; not crowded; natural scenery.
 - Accessibility, clean and not crowded.
 - Go fishing and also a nice view.
 - How clean they are.
 - Beautiful clean water and space to walk the dog.
 - Not too crowded and calm waters.
 - Ease of access; it hasn't been destroyed with high rise buildings; we have bush walking right up to the water's edge.
 - The clean water; it's pristine; dolphins; whales; sheltered bay.
 - It is very protected.
 - The sunset; looking out at the beach.
 - You can have a full day of activities.
 - Clean, still remote and easily accessible.
 - Clean and open spaces.
 - Not too busy.
 - A safe swimming place.
 - Nice beach, everything is good.
 - Beautiful and it offers lots of places for walks and picnics.
 - No development on the foreshore.
 - Nice environment.
 - Remained untouched; user friendly; dog friendly.
 - Their accessibility, without charge, and they are not overcrowded.
 - Natural beauty, it's a playground.

- Q.8 Whatdoyou value about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Eagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - Clean beaches, peace and quiet; good opportunities to go fishing and snorkelling.
 - Their beauty.
 - Beautiful to look at.
 - They are sheltered from the sea breeze; safe for little kids to go swimming; good for sailing and no rocks in the water.
 - The natural environment; clean; I feel safe.
 - Beautiful and relaxing.
 - Sun rises over the water.
 - Mostly natural and untouched.
 - These are amazing beaches.
 - Clean beaches.
 - The whole bay is sheltered in summer, I value the Wonnerup inlet and the estuaries.
 - Not too many people.
 - Natural areas; parks; caves; avoid the crowds.
 - Nice looking beach; clean white sand; wind is really calm; peaceful.
 - Views and the quiet.
 - Pretty beaches and the water is calm, a great place to fish and swim; clean apart from the seaweed at Geographe Bay.
 - Pristine.
 - The clarity of the water and the contrast of colours between the ocean and beach.
 - These beaches are often deserted, so I have them to myself.
 - Natural environment, clean and safe for children; uncrowded.
 - Pristine environment.
 - Clean and tidy.
 - Amenities on the beach; clean; recreation.

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - Natural beauty.
 - The white sandy beaches.
 - Wide expanses and it's beauty.
 - Natural environment, fantastic.
 - Protected from the weather.
 - It's beauty; clean; option to be near restaurants and people or alone.
 - Calm and sheltered bay.
 - It's a beautiful place and protected from the winds.
 - Clean, tidy and quiet beaches.
 - The peacefulness of the area.
 - Absolutely beautiful, pristine beaches; plenty of facilities and grassed areas.
 - Fishing.
 - The sheltered bay in Busselton.
 - Calm and quiet, can enjoy the afternoon sun.
 - Grassy and shaded.
 - The sheltered bays, not too much swell; exceptionally clean and no development on the Dunsborough foreshore.
 - The native flora and fauna and the tasteful and informative signage. It is beautiful and very accessible.
 - Sheltered for kids.
 - They're not over used and we use the horse beach.
 - Access to walk dogs.
 - Protected coves, quiet picnic areas, good fishing off the rocks and very pristine.
 - Overall quality, amazing beaches.
 - Love the water quality, the shallow water line, like seeing other peoples' dogs.

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - Easy access to get to the beaches, the Busselton foreshore is great.
 - The clean beaches and safe swimming.
 - · Great beaches and vehicle accessibility.
 - Calm water for all ages and beautiful beaches.
 - Cleanliness; lake of people; safe; north facing; accessible.
 - They are not full of people, most of the year and they are free to use.
 - The beautiful white sands and clear calm water.
 - The facilities; surfing; fishing.
 - It's beautiful and calm.
 - Beautiful natural environment.
 - Unspoilt natural coastline.
 - Calm and safe.
 - Accessibility.
 - Difficult to say since the shark attacks.
 - Pristine; access; dog beaches.
 - Calm, clean and not too busy.
 - Unbroken beach, no rocky outcrops.
 - Natural environment.
 - The parts where we can four wheel drive and fish.
 - Calm settling bay.
 - It's beautiful, I love it, it's paradise.
 - Lovely water to swim and beaches to walk along.
 - The outlook; fishing; swimming.

Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Eagle Bay, Yallingup and Smiths Beach? Random telephone survey

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- The peace and quiet.
- Safe swimming zone for the children; the facilities; areas for families.
- Not over populated.
- Natural environment with not much development; surfing.
- They're clean, well looked; it's calm; shark net in Dunsborough and Busselton; love the jetty and all that goes on around there.
- That is mostly untouched.
- The visual amenity.
- Accessibility and cleanliness.
- How pristine they are and the National Park.
- The landscape and the mixture of activities.
- The ability to use the beach to walk my dogs and the natural surroundings.
- Protected; natural; the wind and waves.
- Protected from winds; safe; diversity of the coastline.
- Pristine coastline and people enjoying the beach.
- Clean and calm waters for swimming; it's sheltered from the westerly wind; it's very scenic; watching the movement of the tide.
- Sandy beaches.
- It's unique to Western Australia.
- Sheltered from the southerlies.
- Useable regardless of wind direction.
- Really nice beaches.
- It's protected, pristine and a nice place to live.
- Easily accessible, you can visit whenever you like.
- Nice beaches for families; access for four wheel drives; walk dogs; good surfing beaches.

- Q.8 Whatdoyou value about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Eagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - The protected bay; calm waters; safe for children; being a long coastline, you have the choice of privacy.
 - The calm, clear blue water.
 - The peaceful bay.
 - Big open areas to take animals, family and cars.
 - Recreation; full access to beaches.
 - Pristine and lots of activities to do.
 - It's natural beauty.
 - Clean waters.
 - Untouched natural beauty and the bike path with beautiful scenery.
 - Marine life; pristine sand and water.
 - Good for fishing and swimming.
 - How easy it is to get around and access to playgrounds.
 - The calming effect.
 - Grew up on that beach and it's nice and guiet; plenty to do and plenty of space.
 - Untouched, clean and beautiful.
 - Good family beach; surfing.
 - How beautiful the beaches are.
 - Stretches of coast that are undeveloped.
 - The diversity.
 - Natural and clean.
 - Beautiful grassy areas, protected from sea breeze.
 - The natural beauty and playgrounds for children.
 - Clean beaches; safe.

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - Nice safe beaches and the cafes.
 - The isolation and the natural, pristine environment.
 - Nice view and pleasant, safe beaches.
 - Variety of waves and calm water; protection from the sea breeze.
 - Protected bay, calm and peaceful environment.
 - Nice clean beaches.
 - Open spaces.
 - The light in winter and the shelter from the south west wind.
 - For us to enjoy the beauty and remoteness.
 - The cleanliness and the natural state.
 - Natural clean beaches.
 - The beaches are natural and not polluted.
 - Very calm and natural.
 - Pristine beaches.
 - Protected areas and the beauty.
 - It's natural and not commercialised.
 - Protected from the sea breeze, not many buildings and good dunes.
 - Good fishing and well sheltered from the sea breeze.
 - Pristine beauty and the facilities.
 - Natural beauty and good access to the beach.
 - Beautiful white sands.
 - Pristine area; not crowded.
 - Family friendly.

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Eagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - The green lawns; the atmosphere; playground is great for our grandchild.
 - Good bike paths; swimming; cafes.
 - The solitude; cycle paths; taking part in the iron man; activities close to the beach; walking the dog.
 - Clean beaches, the quality of the sand.
 - The ability to have a swim.
 - The usability and choice of beaches.
 - One of the most magnificent areas in the world; restaurants; playgrounds; jetty bay; train; under water aquarium.
 - The easy visibility from the roads and paths for cycling and walking.
 - The water and how pristine and beautiful it is.
 - The southern beaches are pristine.
 - That you can take your dogs and good for surfing.
 - How sheltered they are, especially from the westerly winds.
 - Nice for kids to play, fishing and crabbing.
 - Nice blue water; good for kids to swim; good fishing.
 - Beautiful, easy to access beaches.
 - Natural habitat, clear water and bush walks available.
 - Clean area.
 - A safe place for children.
 - Sand and water is nice and clean.
 - Ease of access; not over populated; very clean.
 - The natural beauty and the clear crystal water.
 - Less people; north facing; degree of isolation and privacy.
 - The natural beauty.

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- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - Clean; natural; uncrowded; pristine.
 - Quiet and peaceful.
 - Swimming, it's calm and clean.
 - Natural beauty; child free beaches; quiet beaches.
 - White sand; clear water; protected area of the strip.
 - A lot of the areas we visit there are pristine and not heavily populated.
 - Good spot to take the dog and it's sheltered.
 - The peacefulness.
 - Clear clean water; calm for the children; the jetty; pristine area.
 - Pristine beaches.
 - Pristine bay and calm weather.
 - Natural beauty; all very clean.
 - Natural surroundings and ease of access.
 - Love the conditions and the fact it's natural and pristine.
 - Good beaches.
 - Picturesque place ; great fishing areas ; great whale watching.
 - Clean beautiful beaches.
 - You cannot beat the sunset. The beaches are sheltered and you have the choice of either a surf beach or a safe beach for children. Free parking and shark patrols.
 - Everything its fantastic.
 - Calm waters; pristine beach.
 - The cleanliness and the views.
 - The pristine waters of Geographe Bay; My ashes will be put there.
 - · Calm; quick access from where we live.

24 February 2021

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - They are great beaches; fishing is great.
 - Quiet; gentle swell; plenty of places to sit; good cycleways and walkways.
 - White sands; natural bush; wild life; clear water.
 - It's own micro climate; calm for kids; dogs; paddling.
 - It is very clean and beautiful.
 - Lifestyle.
 - Relatively quite; not many waves; good for relaxing.
 - Access to the beaches and facilities.
 - It's natural.
 - The cleanliness and easy access to walk through to the beach.
 - Four wheel drive on some of the beaches; dogs are allowed on some beaches; fishing; boat ramps.
 - Accessible.
 - Calm; easy access; north facing.
 - Quiet location.
 - Calm waters.
 - Cleanliness; the rules on dogs; natural environment.
 - It's a safe heaven, calm for boats and clean.
 - Sheltered from the elements, great for swimming.
 - Beautiful protected beaches and calm water.
 - Cleanliness; accessibility; sense of social safety; life guards; shark net.
 - Peaceful; tranquil; family environment; safe swimming.
 - The cleanliness of the beaches; the accessibility to the beaches.
 - Natural; quiet; relaxing; the landscape.

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Eagle Bay, Yallingup and Smiths Beach? Random telephone survey
 - In its natural state.
 - Clean; calm; remote; restricted dog access during holiday periods.
 - Nothing specific.
 - The cleanliness and nice water.
 - Clean beach and water.
 - The shallow waters and safe beaches; sandy beaches; fishing; playgrounds for the kids; the markets on a Sunday are good.

Q8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Online consultation survey

- Relatively clean land and water. Minimal degradation to date.
- I value the ability to sit with the whole family (dog included) and enjoy the peace that nature brings:
- The ease of access to enjoy everything the beach offers. Good cycling and walking paths make it possible to enjoy the beautiful views while exercising.

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- I love this part of the coastline because it is natural and you can view the natural flora and fauna in situ.
- I value the beauty of our coast, the varied character of the beaches (safe, gentle Geographe Bay vs the more rugged setting of the Capes beaches), lovely clean beaches to walk along and choice between the busier 'town' beaches and less crowded beaches
- Protected bays out of the wind, ease of access

Attachment B

- Sandy beach on which to lay on a beach towel, provides a safe area behind the shark barrier to exercise and allows my partners grandchildren to swim and snorkel
- calm water, white sand, fringing woodland and dune systems, accessibility, beach paths and coastal scene from local roads
- The clean open spaces; visiting whales; fishing; crabbing; walking; sunsets/sunrises; pristine clear water; meeting people; sitting and relaxing with no interference or man-made structures. Not every space has to have a man-made structure on it.
- the lack of development on the beach and the ability to walk my dog at these locations
- Natural looking, not too commercially built up
- it is a rare orientation along the Western Australian coastline and is to be valued as such. The management of the beach should reflect the difference in tides, currents and weather to be flexible in the future.
- It is such a safe beach for small children to swim at, the waves aren't big. It makes it a more enjoyable experience as a young family as I know the kids will be safe to paddle along in the water.
- The ability to spend time at the beach as a family with our dog
- · they are better looked after than the beach at Port Geographe
- the natural resource of open beaches with public access

- Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Online consultation survey
 - They are naturally beautiful and should not be marred by human intervention in the name of tourism. The town beach development is an exception and has been well done.
 - It is all a precious natural environment which is in danger from many fronts
 - I live in Dunsborough and love the bay. It is a sheltered area through winter and when the breeze is in. Dunsborough as a Town needs to be more focussed on the beach. Build a restaurant. Please. Also the Boat ramps in Dunsborough NEED improving ASAP
 - the s of the beach clean open space
 - Their natural appearance and lack of manmade sculpture, buildings etc. This is very relaxing and health enhancing.
 - Abbey beach because it is quiet and not busy even in tourist season. Value being able to walk along the beach. I would love it if there were more
 chairs
 - We like to be able to walk, fish, kayak and not be bothered by dogs. Far too many Dog access Beaches for dogs.
 - Protected calm swimming and walking area
 - Pristine, wilderness
 - More remote, less people, less paths and man made changes
 - Clean beaches, low population on beach
 - Sunset
 - The natural beauty. The lack of crowds.
 - the view of the beautiful bay, the boats and the sunsets
 - There beauty and access
 - out of wind and guieter

Q.8 Whatdoyouvalue about the north facing coastline from Forrest Beach, Wonnerup to Point Daken, Dunsborough and the beaches of Bunker Bay, Fagle Bay, Yallingup and Smiths Beach? Online consultation survey

Research Solutions report

- The natural environment, walking paths, dog beaches, bench seats,
- It's a beautiful, comfortable coastline to enjoy with family and friends, to walk dogs, to enjoy swimming and water sports. There doesn't seem to be enough protection of coastal vegetation (from alien species) or native birds that breed and feed onshore
- The clean and often empty space beside turquoise Geographe bay that in winter is alive with whales.
- Their changing beauty in all weather.
- Unspoiled, generally pristine
- Quiet, though getting busier. Not too built up.
- Great walking and swimming area for young families
- the Pristine water. clean beaches, the 4WD beach access. Meelup is fantastic. Bunker Bay is absolutely beautiful. The Boat Ramps Need attention especially the abbey one Dolphin Rd needs to be concreted.
- Clean water. Calm water (mostly). Not too crowded.
- The wide open spaces. Easy beach access. Being able to find areas all to ourselves. To be able to drive along and up to some beaches and appreciate their beauty,
- Uninterrupted views and beaches, Beach Access for recreation, beautiful Bays, Natural and Cultural Values- colour of water, coastal vegetation, seasonal change, shady peppy trees, biodiversity hotspot
- Natural beauty, more remote (quieter), excellent snorkelling.
- Sand, clear water
- The natural environment
- The north facing beaches are generally protected from the prevailing winds particularly in summer making them very useable for young children
- Natural beauty. Kid-friendly swimming spots.
- It seems untouched and naturally beautiful

Attachment B Research Solutions report

- Zoning, no short stay residential.
- Would groynes help the beach.
- What can be done to fix the problem.
- Utilise the bay for international events, build high rise apartments, bars and cafes to increase tourism.
- Usage of the coastline.
- This whole topic needs to be discussed.
- There should be no more development close to the beach and foreshore.
- The status of the shark enclosures.
- The seawall at Siesta Park needs to be discussed.
- The restaurant on the Dunsborough foreshore.
- The ramp in Dunsborough, near the jetty.
- The public should be consulted before any decisions are made.
- The public needs to be made aware.
- The problem of seaweed.
- The plans, what are the options and what is the cost.
- The placement of a key asset in the flood ways of Busselton. The risks of coastal erosion should be better managed.
- The parking on the foreshore in Dunsborough, for tourists, caravans and RV's.
- The parking issues in the coastal areas is a problem in the tourist season.
- The ongoing issues with seaweed.
- The new area on the Busselton foreshore that is being dug, what is going to be there.
- The erosion of the vegetation.
- The erosion is a concern and what they are going to do about it.
- The boat ramps in Dunsborough.

Q.12 Are there any issues or concerns that you would like information on or feel should be discussed in the public meetings? Random telephone survey

Research Solutions report

- Sustainable funding options such as tourism.
- Signage at the beaches.
- Sharks in the region.
- Sharks.
- Shark security.
- Seaweed problem.
- Seaweed near the Marina.
- Seaweed at Port Geographe, extra rate levy at Port Geographe.
- Seaweed and erosion.
- Seaweed.
- Sea grass.
- Safety on the beach is put in place, for families with children.
- Safety at Canal Rocks boat ramp needs to be talked about
- Safety and security at the play ground and skate park, on the foreshore.
- Rubbish bins.
- Roadways and car parks on the foreshore.
- Rising sea levels.
- Review the sea wall, it should be as seamless as possible.
- Retaining walls.
- Restaurants on the beachfront in both Dunsborough and Busselton.
- · Research information on global warming and its impact on the coastline.
- Removal of sand and seaweed which has built up on the steps in front of the Equinox.
- re holiday home owners do not necessarily reside in the city and therefore cannot attend meetings however their opinion is still important as ratepayers more effort is required to reach out and collaborate

- Rangers on the beaches.
- Put all options on the table for discussion and not just have an agenda for business owners and the Council.
- Public consultation on sand works.
- Protection for birds.
- Proper access to the beaches with good parking facilities.
- Preventing erosion.
- Preservation of wildlife and vegetation.
- Population growth.
- Plans for the Wonnerup inlet in the future.
- Planning on the foreshore.
- Plan long term withdrawal of homes from the coast.
- Parking at the beaches.
- Overpopulation in the area; more consultation with ratepayers.
- Non profit groups in the City of Busselton currently have to pay \$48,000.00 over twelve years, to contribute to beach erosion prevention. This needs to be discussed.
- No subdivision or development should be allowed on the coastline.
- More parking.
- More information on the erosion and sea weed build up.
- More dog free beaches.
- More discussion regarding the development of cafes and businesses around the foreshore.
- More access to dog beaches all year round.
- Local boat ramps need to be improved.
- Keeping the beaches clean so they're safe to use.
- Iron man events.

- Information on any potential climate change issues.
- Information about what's going, potential policies.
- Improve road access to the coastal beaches within the national parks.
- I am sceptical that the erosion they are talking about, will actually happen.
- Hotel development on the beaches; keeping the beaches open.
- Height restrictions with buildings along the coast. •
- Have they got a management plan for the future.
- Growing trees on the foreshore, there are enough already.
- General information, using email, about what they are going to do.
- Future planning.
- Future development of any canal residents.
- Forward predictions and plans for the future.
- Foreshore development.
- Facilities.
- Evidence of erosion prediction.
- Erosion.
- Environmental impact.
- Elected representatives should be proactive in developing a strategy.
- Dunsborough.
- Dune management.
- Drainage into the estuary and the algae.
- Dogs on the beaches.
- Dog friendly beaches.

13.1 Attachment B

- Disability access.
- Developments planned for the foreshore and any potential restrictions of access because of these.
- Development plans.
- Development on the foreshore.
- Development on the Dunsborough foreshore.
- Development and facilities on the foreshore.
- Development.
- Development on wet lands.
- Cycle tracks.
- Cost versus outcome.
- Continuing dog access.
- Constructing seawalls, rock barriers.
- Consider a marina development in Dunsborough.
- Conserve the nature of the area and minimise the amount of lawns, gardens and developments.
- Commercial fishing and sharks in the area.
- Commercial boating.
- Coastal erosion is not going to happen, it is part of the normal geological history of all areas. Move the buildings if there is erosion.
- Coastal erosion is a priority, we need policies and a budget.
- Coastal development.
- Closure of the Canal Rocks Boat ramp.
- Clean needle exchange at the beach and more doggy bags.
- City of Busselton and the residents should monitor the erosion.
- Car parking.

- Canal development in Port Geographe.
- Busselton Jetty safety.
- Building on the foreshore.
- Building in potential erosion prone areas.
- Boat use safety.
- Boat ramps in the western part of the bay.
- Boat ramp maintenance and more of them.
- Beaches should be more user friendly.
- Banned areas for dogs.
- Awareness about invasive plants.
- As a person inside that 200 metre zone, they should be letting us know as soon as possible.
- Are pollutants being monitored from the drainage system and channels.
- Any solutions to the erosion.
- Any proposed development along the foreshore.
- Any private development should be made public, with plenty of notice.
- Any major development which may impact the coastline.
- Amenities on the Dunsborough foreshore.
- All the issues should be discussed.
- All plans should be discussed in public meetings.
- All meetings should be open to the public.
- Addressing the fear about sharks.
- Access to the beaches.
- A donation box for Busselton jetty.
- A decent boat ramp in Dunsborough.

- An overall plan to mitigate the threat of rising sea levels
- Dunsborough to become its own shire it gets sidelined to the "need" of Busselton township
- The contribution of climate change to rising sea levels and local efforts to reduce the impact of climate change.
- The building of more seal walls or proper dune rehabilitation.
- there should be sufficient information/facts provided to help people understand real costs to address erosion and what coastal values they might be prepared to sacrifice to save what they value the most
- Loss of fauna habitat (possums and quendas etc.) from coastal reserve due to erosion
- awareness of the seriousness of these threats and making sure that when developments go ahead they are made aware and are responsible for their decision to go ahead and develop/build anyways
- Landowners should bear most cost as they have enjoyed the benefits of coastal locations, other costs should be apportioned based on levels of climate change limiting behaviour exhibited by any party, which include actions to reduce sea level rise impact.
- Port geo beach is a debacle, need attention, sick of not having a beach at the start of summer
- The present state of the Vasse River between Strelley Street bridge and the Bypass Road bridge. It's disgusting. The finger jetties at Geographe Marina. They're Dangerous!
- future planning should take account of the huge risk of coastal inundation due to climate change. This is not a new concern and council has continued to approve coastal developments such as Port Géographe in disregard of the science
- Dunsborough NEEDS better boating facilities, neither of the boat ramps are deep enough. Dunsborough needs to focus on the beach and build a restaurant like the goose. Busselton Airport It will boost tourism and help local businesses through winter
- when action will be taken to stop erosion. Especially around the Hospital foreshore
- please stop using rate payers money to put sculptures in inappropriate natural places on our foreshores.
- When making decisions that do not suit everyone, why not get a vote on line.
- Each year since the Port Geographe was constructed there has been a seaweed wrack problem on the Geographe fore shore. What is expected to happen over the coming years and what is planned over the next 5 years?

- protection of all houses along the foreshores from coastal erosion and encroaching seas
- Like more information updates on costal erosion and long term predictions
- Protecting natural vegetation and native bird breeding habitats, responsible dog walking and keeping beaches as natural as possible.
- · Advise the clueless people that the weed comes in and the weed goes out every year, and doesn't
- Erosion is a natural process and is the price you pay for building too close to the sea. Leave the beaches alone. Don't build manmade structures to try and prevent it
- Limit development! Especially private housing, car parks.
- The beach is sometimes ruined by dog owners who don't pick up especially in winter. At the Geographe end. Perhaps dog access should be reduced.
- The Boat Launching Facility's are in need of upgrading. Abbey boat Ramp Vehicles are constantly getting bogged a winching point would be helpful if you can't fix the sand problem.
- Future development elevations to allow for sea level rise.
- Who owns land down to the water's edge? Who pays for land erosion solutions in other parts of Australia? What businesses have lease agreements where they have to pay for the preservation of the coast line?
- Costs should be shared, all Australians to pay for maintaining public access to the coast, although cases where private benefits outweigh public benefit from protection works should 'chip in', pay and share the cost
- Sea weed removal from Geographe area
- Yes more concern shown for the Possum habitat please plant more trees and generally have more shade available in town. I.e. shade sails over parking areas
- The build up of seaweed is a natural occurrence during winter. This usually disperses during spring but often certain areas remain effected. The city should develop a policy to clean up these area before summer so they are useable to all residents.

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research solutions

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Attachment C

MCA completed by:

841101	Smiths	Danah
IVII III I	Smiths	Beach

		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria			
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1		
· · · · · · · · · · · · · · · · · · ·		(is) — socially & environmentally acceptable, easily adaptable, long term effectiveness, low cost; 2. (may) - minor social & environment impacts, may be acceptable, partially adaptable, medium term effectiveness, acceptable cost; (likely) — significant social & environmental impact, not adaptable, ineffective, cost prohibitive.									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue		
	Social Impact (property & infrastructure) — loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	Practicability – can a risk management option actually be implemented (e.g. is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score
040	w.										
Avoid											
Managed Retreat	2	2	2	1	1	1	1	1	1	12	39
Accommodate										0	0
Protect	1	1	1	1	1	1	2	2	1	11	35
070											
Avoid										0	0
Managed Retreat	2	2	2	2	1	3	2	1	1	16	51
Accommodate										0	0
Protect	1	1	1	1	1	1	2	2	1	11	35
115											
Avoid										0	0
Managed Retreat	2	3	3	2	2	4	2	1	2	21	63
Accommodate										0	0
Protect	1	1	1	1	1	1	2	2	1	11	35

1

MCA completed by:

MI	J02	Yal	ling	run

MU02 Yallingup												
		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	Practicability – can a risk management option actually be implemented (e.g. is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040									^			
Avoid										0	0	fata
Managed Retreat	1	1	2	1	1	1	1	2	1	11	33	
Accommodate										0	0	1
Protect	1	2	2	1	3	2	3	3	1	18	56	1
070												1
Avoid										0	0	fata
Managed Retreat	3	2	2	2	3	3	3	2	2	22	69	
Accommodate										0	0	
Protect	1	2	2	1	3	2	3	3	1	18	56	
115			5									
Avoid										0	0	fat
Managed Retreat	3	2	2	2	3	3	3	2	2	22	69	
Accommodate										0	0]
Protect	1	3	2	1	4	2	4	4	1	22	70	1

Multi-criteria analysis

251

MCA completed by: MU03 Bunker

MU03 Bunker Bay												
	Acceptability Criteria				Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
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2040												
Avoid										0	0	fatal fla
Managed Retreat	1	1	1	1	1	1	1	1	1	9	28	
Accommodate										0	0	
Protect	1	1	1	1	2	1	2	1	1	11	36	
2070										,		
Avoid										0	0	fatal fla
Managed Retreat	2	2	1	2	2	2	2	1	1	15	50	
Accommodate										0	0	
Protect	1	1	1	1	2	1	2	2	1	12	38	
2115												1
Avoid										0	0	
Managed Retreat	2	2	3	2	3	3	3	1	2	21	66	
Accommodate										0	0	
Protect	1	1	1	1	2	1	2	3	1	13	40	

Protect

MCA completed by: **MU04 Eagle Bay** Acceptability Criteria Feasibility Criteria **Financial Criteria** Criteria weighting (1 – 5, 1 = least important 1 5 = most important . (is) - socially & environmentally acceptable, easily adaptable, long term effectiveness, low cost; 2. (may) - minor social & environment impacts, may be acceptable, partially adaptable, medium term effectiveness, acceptable cost (likely) – significant social & environmental impacts, difficult to adapt, limited or short term effectiveness, high cost; 4. (will) – unacceptable social & environmental impact, not adaptable, ineffective, cost prohibitive. Reversibility Ongoing Cost Ongoing Cost Lost Risk Management Option Practicability **Environmental Impact** Reduction Adaptability Implementation Maintenance Revenue Infrastructure Practicability -- can a Environmental Impact -Effectiveness in risk Reversibility / Ongoing cost Ongoing cost (lost Social Impact (propert Social Impact Cost (implementation) ossible damage or loss of the reduction - how effective & infrastructure) - loss (community use) adaptability - can it be evenue) - how much risk management cost to implement a (maintenance) - cost or damage to private ability to use a beach beach/foreshore, impact on the option is at managing option actually be reversed or adapted specific risk to keep maintaining a revenue (specifically coastal ecosystem (e.g. dune vulnerability and risk, how mplemented (e.g. is i management option risk management rates) would be jost property or privately and foreshore/public operated leasehold recreational vegetation, seagrass, fauna well tested the option is, 'do-(includes option due to a risk land, reticulated infrastructure (e.g. habitat), wetlands, Aboriginal how long the option may able'/workable/politic nodifying/relocating/vo nanagement option services, roads etc DUP) and European heritage be effective ally practicable?) untary acquisition costs) 2040 fatal flaw Avoid 0 0 Managed Retreat 2 2 1 11 37 Accommodate 0 0 Protect 11 35 2070 fatal flaw 0 Avoid 0 Managed Retreat 21 67 3 2 2 3 1 2 Accommodate 0 0 12 37 Protect 2115 Avoid 0 0 Managed Retreat 4 3 26 81 Accommodate 0 0

12

37

MU05 Old Dunsborough

vious ola bulisbo	nougn											
		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
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140		- 1										_
Avoid										0	0	fat
Managed Retreat	2	3	1	4	3	3	2	1	1	20	68	1
Accommodate										0	0	1
Protect	1	1	1	1	1	1	2	2	1	11	35	1
070												1
Avoid										0	0	1
Managed Retreat	3	4	2	4	4	4	3	1	2	27	89	1
Accommodate										0	0	
Protect	1	1	1	1	2	1	2	3	1	13	40	
115]
Avoid										0	0	
Managed Retreat	4	4	3	4	4	4	4	1	3	31	102	
Accommodate										0	0	
Protect	1	1	2	2	2	1	3	4	1	17	55	

MU06 Dunsborough Townsite	MU06	Dunshoroug	h Townsite
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	gn rownsite										
		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria			
Criteria weighting (1 – 5) 1 = least important 5 = most important		4	3	5	3	1	5	2	1		
			asily adaptable, long term effect pacts, difficult to adapt, limited								
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue		
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040											
Avoid										0	0
Managed Retreat	3	3	2	3	4	4	2	2	1	24	76
Accommodate										0	0
Protect	1	1	2	1	1	2	2	2	1	13	39
070											
Avoid										0	0
Managed Retreat	4	3	3	3	4	4	3	3	3	30	92
Accommodate										0	0
Protect	1	1	2	1	2	2	2	3	1	15	44
115											
Avoid										0	0
Managed Retreat	4	3	3	3	4	4	4	3	4	32	98
Accommodate										0	0
Protect	1	1	2	1	2	2	2	4	1	16	46

MILIOT	Quindalur	Pooch
WIUU/	Ouingaiur	Beach

		Acceptability Crit	orio		Feasibility Criteria			Financial Criteria			
		Acceptability Criti	eria		reasibility Criteria			Financial Criteria			
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1		
			asily adaptable, long term effect pacts, difficult to adapt, limited								
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue		
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040											
Avoid										0	0
Managed Retreat	2	3	3	3	3	3	1	1	1	20	64
Accommodate										0	0
Protect	1	1	2	1	2	1	2	2	1	13	41
070											
Avoid										0	0
Managed Retreat	4	4	4	4	4	4	3	2	2	31	101
Accommodate										0	0
Protect	1	1	2	2	2	1	3	3	1	16	53
115											
Avoid										0	0
Managed Retreat	4	4	4	4	4	4	4	2	3	33	107
Accommodate										0	0
Protect	1		3	2	3	2	4	3	1	20	65

MU08 Marybrook

MU08 Marybrook												
		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
· · · · · · · · · · · · · · · · · · ·			asily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	'do-	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vo untary acquisition costs)		Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total	Weighted Total Score	
40	4											
Avoid										0	0	fata
Managed Retreat	2	2	2	2	1	2	1	1	1	14	45	
Accommodate										0	0	
Protect	1	1	2	2	1	2	2	2	1	14	44	
070												
Avoid										0	0	
Managed Retreat	4	2	4	4	4	4	3	1	1	27	90	
Accommodate										0	0	
Protect	1	1	3	2	1	2	3	3	1	17	54	
115												
Avoid										0	0	
Managed Retreat	4	2	4	4	4	4	3	1	1	27	90	
Accommodate										0	0]
Protect	1	1	3	2	1	2	3	3	1	17	54	

8

Attachment C

N/	11 1	na	C	esta	Dar	b

MU09 Siesta Park												
		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
***			asily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing	Practicability – can a risk management option actually be implemented (e.g. is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040												
Avoid										0	0	fata
Managed Retreat	4	2	2	2	2	2	3	1	1	19	66	
Accommodate										0	0	
Protect	1	1	2	1	3	2	2	2	1	15	45	
070												
Avoid										0	0	fata
Managed Retreat	4	4	4	2	4	4	4	1	1	28	93	
Accommodate										0	0	
Protect	1	1	3	1	3	2	2	3	1	17	50	
115												
Avoid										0	0	fat
Managed Retreat	4	4	4	2	4	4	4	1	1	28	93	
Accommodate										0	0	
Protect	1	1	3	2	3	3	3	3	1	20	61	

MU10 Locke Estate

		A second billion Cult	!-		Familiation Colombia			Financial Criteria			
		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria			
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1		
· · · · · · · · · · · · · · · · · · ·			asily adaptable, long term effect pacts, difficult to adapt, limited								
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue		
	Social Impact (property & infrastructure) — loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	'do-	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score
040											
Avoid										0	0
Managed Retreat	1	2	2	2	2	2	1	1	1	14	44
Accommodate										0	0
Protect	1	1	2	1	1	2	1	2	1	12	34
070											
Avoid										0	0
Managed Retreat	3	4	4	4	4	4	3	1	1	28	94
Accommodate										0	0
Protect	1	1	3	1	1	2	2	2	1	14	42
115											
Avoid										0	0
Managed Retreat	3	4	4	4	4	4	3	1	1	28	94
Accommodate										0	0
Protect	1	1	3	2	1	2	3	3	1	17	54

MU11 Abbey

MU11 Abbey												
		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g., dune vegetation, seagrass, funa habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	'do-	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040												-
Avoid										0	0	fata
Managed Retreat	3	4	3	3	4	4	2	2	1	26	83	
Accommodate										0	0	1
Protect	1	1	2	1	1	2	1	2	1	12	34	1
070]
Avoid										0	0	
Managed Retreat	4	4	3	4	4	4	4	2	4	33	105	
Accommodate										0	0	
Protect	1	1	3	1	1	2	2	3	1	15	44	
115												
Avoid										0	0	
Managed Retreat	4	4	4	4	4	4	4	2	4	34	108	
Accommodate										0	0	1

MU12 Broadwater

VIU12 Broadwate	<u></u>											
		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
· · · · · · · · · · · · · · · · · · ·			asily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	implemented (e.g. is it 'do-	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vo untary acquisition costs)		Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total	Weighted Total Score	
40	4											
Avoid										0	0	fata
Managed Retreat	2	2	2	2	2	2	1	1	1	15	48	
Accommodate										0	0	1
Protect	1	1	2	1	1	2	2	1	1	12	37	1
070]
Avoid										0	0	
Managed Retreat	3	4	4	4	4	4	3	2	3	31	98	
Accommodate										0	0	
Protect	1	1	3	1	1	2	3	2	1	15	47	
115								_				
Avoid										0	0	
Managed Retreat	4	4	3	4	4	4	4	2	4	33	105	
Accommodate										0	0]
Protect	1	1	3	1	1	2	3	3	1	16	49	1

MU13 Busselton V	Vest (A)											
		Acceptability Crit	eria	i.	Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important		4	3	5	3	1	5	2	1			
			asily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	Practicability – can a risk management option actually be implemented (e.g. is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability — can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total	Weighted Total Score	
2040												1
Avoid										0	_	fatal fla
Managed Retreat	3	3	2	3	3	3	2	2	1	22	72	
Accommodate										0	0	
Protect	1	1	2	1	1	2	2	2	1	13	39	
2070												
Avoid										0	0	
Managed Retreat	4	4	3	3	4	3	3	2	3	29	93	
Accommodate										0	0	
Protect	1	1	2	1	2	2	2	3	1	15	44	
2115											_	
Avoid										0	0	
Managed Retreat	4	4	4	4	4	4	4	2	4	34	108	
Accommodate										0	0	
Protect	1	1	2	1	3	3	3	4	1	19	55	
Protect										0	0	

MU14 Busselton West (B)

VIU14 Busselton V	vest (B)						,			1	
		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria			
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1		
			asily adaptable, long term effect pacts, difficult to adapt, limited								
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue		
	Social impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	Practicability – can a risk management option actually be implemented (e.g. is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score
040											
Avoid										0	0
Managed Retreat	4	4	2	3	3	3	2	2	1	24	80
Accommodate										0	0
Protect	1	1	2	1	1	2	2	2	1	13	39
070											
Avoid										0	0
Managed Retreat	4	4	3	3	4	3	3	2	3	29	93
Accommodate										0	0
Protect	1	1	2	1	2	2	2	3	1	15	44
115			5								
Avoid										0	0
Managed Retreat	4	4	4	4	4	4	4	2	4	34	108
Accommodate										0	0
Protect	1	1	2	1	3	3	3	4	1	19	55

Acceptability Criteria

MU15	Busselton	Central
		-

MCA completed by:

Criteria weighting (1 – 5) 1 = least important 5 = most important L. (is) – socially & environmentally acceptable, easily adaptable, long term effectiveness, low cost; 2. (may) - minor social & environment impacts, may be acceptable, partially adaptable, medium term effectiveness, acceptable of 3. (likely) – significant social & environmental impact, not adaptable, ineffective, cost prohibitive.

Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) — loss or damage to private property or privately operated leasehold land, reticulated services, roads etc		Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	'do-		Cost (implementation) – cost to implement a specific risk rmanagement option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040												
Avoid										0	0	fatal flaw
Managed Retreat	4	4	4	3	4	4	3	2	2	30	96	
Accommodate										0	0	fatally flawed for e
Protect	1	1	2	1	1	2	1	2	1	12	34	
070												
Avoid										0	0	
Managed Retreat	4	4	4	4	4	4	4	2	3	33	107]
Accommodate										0	0	
Protect	1	1	2	1	2	2	2	3	1	15	44	
115												
Avoid										0	0	
Managed Retreat	4	4	4	4	4	4	4	2	4	34	108	
Accommodate										0	0	
Protect	1	1	2	1	3	3	3	4	1	19	55	

Feasibility Criteria

Financial Criteria

MU16 Busselton East

MOTO passeitou E	ası											
		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, Impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	Practicability – can a risk management option actually be implemented (e.g. is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040												_
Avoid										0	0	fat
Managed Retreat	3	3	2	2	3	3	2	1	1	20	65	1
Accommodate										0	0	1
Protect	1	1	1	1	1	2	2	1	1	11	34	1
070												1
Avoid										0	0	1
Managed Retreat	4	3	2	3	4	4	4	2	3	29	92	1
Accommodate										0	0	1
Protect	1	1	2	1	1	2	3	2	1	14	44	
115]
Avoid										0	0	
Managed Retreat	4	3	4	4	4	4	4	2	4	33	104	1
Accommodate										0	0]
Protect	1	1	3			2	3	3	1	16	49	7

NALI4	7 Dau	Geographe
IVILII	/ POR	Geographe

1											
		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria			
Criteria weighting (1 – 5) 1 = least important 5 = most important		4	3	5	3	1	5	2	1		
			asily adaptable, long term effect pacts, difficult to adapt, limited								
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue		
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040											
Avoid										0	0
Managed Retreat	3	2	2	4	4	4	3	2	2	26	83
Accommodate										0	0
Protect	1	1	1	2	1	2	1	2	1	12	36
070											
Avoid										0	0
Managed Retreat	4	4	4	4	4	4	4	2	3	33	107
Accommodate										0	0
Protect	1	1	2	2	3	4	4	3	1	21	64
115											
Avoid										0	0
Managed Retreat	4	4	4	4	4	4	4	2	4	34	108
Accommodate										0	0
			3							22	67

NAI	11 Q	M/on	nerun

MU18 Wonnerup												
		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	Practicability – can a risk management option actually be implemented (e.g. is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040												_
Avoid										0	0	fata
Managed Retreat	3	3	2	3	3	3	3	1	2	23	76	
Accommodate										0	0	
Protect	1	1	2	2	1	2	2	2	1	14	44	1
070]
Avoid										0	0	
Managed Retreat	4	4	4	4	4	4	3	1	3	31	100	
Accommodate										0	0	
Protect	1	1	2	2	1	3	3	2	1	16	50	
115												
Avoid										0	0	
Managed Retreat	4	4	4	4	4	4	3	2	3	32	102]
Accommodate										0	0]

MI	119	Forres	t Rea	ch

MU19 Forrest Bea	Cn						1			1	
		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria			
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1		
			asily adaptable, long term effect pacts, difficult to adapt, limited								
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue		
	Social Impact (property & infrastructure) — loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	Practicability – can a risk management option actually be implemented (e.g. is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score
040											
Avoid										0	0
Managed Retreat	2	1	2	1	2	1	2	1	1	13	43
Accommodate										0	0
Protect	1	1	2	2	2	1	3	2	1	15	51
070											
Avoid										0	0
Managed Retreat	3	2	4	3	4	4	3	1	1	25	81
Accommodate										0	0
Protect	1	1	2	2	3	3	4	2	1	19	61
115											
Avoid										0	0
Managed Retreat	3	2	4	3	4	4	3	1	1	25	81
Accommodate										0	0
Protect	1	1	2	2	3	4	4	2	1	20	62





DRAFT

City of Busselton

30/09/2020 301012-02572





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PROJECT 301012-02572 - 301012-02572-CS-REP-0007: Coastal Adaptation Strategy - DRAFT

Rev	Description	Author	Review	Advisian approval	Revision date	Client approval	Approval date
В	Full compilation for client comments	Various	MK	МК	30.09.20	Initial. Surname	Approval date
							-
			_				-



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Part 1: Synopsis of Existing Hazard Studies & Definition of Planning Units

City of Busselton

23/06/2020 301012-02572





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PROJECT 301012-02572 - 301012-02572-CS-REP-0001: Coastal Adaptation Strategy - Part 1: Synopsis of Existing Hazard Studies & Definition of Planning Units

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1 Introduction

The City of Busselton is preparing a Coastal Adaptation Strategy (CAS) to guide coastal risk management and adaptation planning over the next 100 years. In order to identify the present and future risk to coastal assets, there is a requirement to quantify the likelihood of assets being impacted by the coastal hazards of erosion and inundation. This is undertaken by evaluating coastal hazard mapping at different timeframes from present day to 100 years into the future.

A significant number of coastal studies have been undertaken covering the Busselton region. These vary from regional studies down to site specific assessments, undertaken for a variety of different purposes. This document provides a summary of the recent coastal hazard studies (Section 2) and their suitability for use in the CAS. The assessed studies are the following:

- Coastal Erosion Study Assessment of Climate Change Impacts (Damara WA 2011)
- Coastal Recession Risk in The Busselton-Rockingham Coastal Cell Due to Climate Change (University of Sydney 2012)
- Coastal Hazard Mapping for Economic Analysis of Climate Change Adaptation in The Peron-Naturaliste Region (Damara WA 2012)
- Coastal Inundation Modelling for Busselton, Western Australia, Under Current and Future Climate (Geoscience Australia 2014)
- Busselton Storm Surge Response Plan (Shore Coastal 2015)
- Busselton Coastal Management Program Coastal Flooding Risk, Response and Mitigation (Shore Coastal 2017)
- Cape Naturaliste Settlements Coastal Vulnerability Assessment (Damara WA 2017)

Recommendations on the selection of hazard lines for inclusion in the CAS are included in Section 3

1.1 State Planning Requirements

The State Coastal Planning Policy (SPP 2.6, WAPC 2013) clause 5.5 Coastal Hazard Risk Management and Adaptation Planning (CHRMAP)details the required process for the management of existing and future development in the coastal zone using the application of a CHRMAP risk management approach. The required process is consistent with other risk assessment guidelines, such as Australian Standards Risk Management – Principles & Guidelines (AS3100). As such, the coastal hazard assessments used in the CAS should meet the requirements of SPP 2.6 and be consistent with the SPP 2.6 Guidelines and the CHRMAP Guidelines.

The summary of coastal hazard studies also considers their compliance with SPP 2.6.





2 Synopsis of Hazard Studies

2.1 Coastal Erosion Study - Assessment of Climate Change Impacts

Year	2011
Prepared by	Damara WA Pty Ltd
Prepared for	City of Busselton
Revision	96-00-01, Final, August 2011
Study area	Point Daking (Dunsborough) to Eastern City Boundary (Forest Beach)

2.1.1 Summary

The study provides an estimate of the extent of erosion over a 100-year period (to 2100) under three climatic scenarios (low, medium, high) and two management scenarios:

- · existing coastal protections structures maintained but that no further structures are installed
- · existing coastal protection structures are removed.

A single set of erosion hazard lines are provided for the year 2100.

Table 1. Climatic Scenarios

Scenario	Wave	Storm Wave	Sea Level Rise	Extreme Water Level
Low		July 1996 storm	+0.4m	
Medium	+10%	July 1996 +10%	+0.9m	Existing +0.9m + (η _{wave} x10%)
High	+10%	July 1996 +10%	+1.1m	Existing +1.1m + (η _{wave} x10%)

The method for determining the extent of erosion as stated in the report was "...developed using the general principles of SPP 2.6...". Although in reference to the previous version of SPP 2.6, the study includes a sea level rise scenario of 0.9 m over 100 years equitant to the current policy requirements. The methodology examines the impacts of local coastal processes, in particular the onshore sediment feeds. A summary of the methodology and comparison to the current requirements of SPP 2.6 is as follows:

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- Allowance for the current risk of storm erosion (S1 Factor) Storm erosion was calculated
 using the SBEACH computer model, undertaken at 1 km intervals and applying the data of a
 major storm that occurred in July 1996. For the scenario of maintaining protection structures,
 consideration was given to the down drift shoreline rotation. The study adopts an allowance of
 20 m for the shoreline to the west of Siesta Park groyne, and 30 m to the east. This is a similar
 methodology to the current requirements of SPP 2.6.
- Allowance for historic shoreline movement trends (S2 Factor) The study identifies the
 importance of the on-shore sand feeds including: Dunn Bay Bar, Abbey Bar, Busselton Bar,
 Wonnerup Bar. The estimate of long-term historic change is based on changes to the sediment
 budget, taking into consideration the influence of a reduced sand supply, with sand feeds
 modified to account for the potential loss of wave energy under sea level rise scenarios. This is
 considered consistent with the current requirements of SPP 2.6.

Table 2. S2 Factor

	Climatic Scenario			
Location	Low	Medium	High	
Dunsborough-Quindalup	0m	11m	20m	
Locke Estate-Abbey	7m	12m	14m	
Geographe-Wonnerup	7m	19m	24m	

• Allowance for erosion caused by future sea level rise (S3 Factor) – The response to sea level rise has been derived from the calculation of sediment movement from the beach to the coastal barrier. The methodology considers the coastal geometry and the volume of sediment required in a barrier system to prevent overwash. The volume is then converted to an equivalent horizontal distance. The estimates contained are similar to an allowance of 50 times sea level rise. This method is not consistent with the current requirements of SPP 2.6, which require an allowance of 100 times the projected sea level rise.

Table 3. S3 Factor

Climatic Scenario		
Low	Medium	High
26 m	45m	51m





Allowance for uncertainty - The current SPP 2.6 requires the inclusion of a 0.2 m per year allowance for uncertainty. This has not been included in the estimation of the extent of erosion.

2.1.2 **Application to the Coastal Adaptation Strategy**

The report provides a detailed examination of the local coastal processes within the study area, highlighting the influence of existing coastal protection structures and importance of the onshore sand feeds. Although the methodology takes into consideration the components of SPP 2.6, as a whole the methodology is not considered consistent with the current policy requirements, in particular in regard to the consideration of coastal erosion due to sea level rise. It is expected that the recession rates estimated under the current version of SPP 2.6 would be significantly greater than identified within this report.





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2.2 Coastal Recession Risk in The Busselton-Rockingham Coastal Cell Due to Climate Change

Year	2011
Prepared by	P Cowell & S Barry, University of Sydney
Prepared for	Commonwealth Department of Climate Change and Energy Efficiency
Revision	Final Draft Revision 02 (10/07/11)
Study area	Point Daking (Dunsborough) to Point Perron (Rockingham)

2.2.1 Summary

Regional shoreline modelling to provide erosion hazard mapping for a range of probabilities at the timeframes 2030, 2070, 2100 and 2300. This includes the consideration of a range of sea level rise projections, from 0.5 m to 1.1 m at 2100.

The study does not follow the standard methodology set out in SPP 2.6. The model uses a sediment budget based analysis of shoreline change, incorporating storm erosion, estuary capture and onshore-offshore material transfer. The study examines the sensitivity of the coast to variations in alongshore transport rates and cross-shore sand transfer in response to sea level rise. As the study is undertaken at a regional scale it does not incorporate the local impacts of erosion resistant rock features.

The results of the study are a wider range of possible responses to sea level rise within the range of 263 m and 537 m respectively for a 50 % and 10 % probability of exceedance under a 1.1 m sea level rise scenario.

2.2.2 Application to the Coastal Adaptation Strategy

The hazard lines developed from the model are significantly different to those presented in similar studies covering the Busselton region, the predicted erosion distances in the study are significantly larger. The study is difficult to apply at a local level as it does not take into detailed consideration of local features. The work by Damara WA (2012), refer to next section, identified a number for limitations with the study and found that it does not provide a good representation of recession through the Busselton area. Based on the limitations to the study identified in Damara WA (2012) the hazard lines presented in this report are not recommended for use in the CAS.





2.3 Coastal Hazard Mapping for Economic Analysis of Climate Change Adaptation in the Peron-Naturaliste Region

Year	2012
Prepared by	Damara WA Pty Ltd
Prepared for	Peron Naturaliste Partnership
Revision	169-01-Rev 1, October 2012
Study area	Point Daking (Dunsborough) to Point Perron (Rockingham)

2.3.1 Summary

The report provides regional scale coastal hazard mapping (erosion and inundation) for the timeframes 2010, 2030, 2070 and 2110 and the likelihoods low, medium and high. The hazard mapping was developed for the Peron Naturaliste Partnership Coastal Adaptation Decision Pathways (PNP - CAPS) project to support the economic assessment of adaptation options. The report did not attempt to follow the requirements of SPP2.6, rather undertook the re-evaluation of existing reports and datasets.

- Erosion hazard mapping Erosion hazard mapping was derived from the downscaling of the regional recession study by University of Sydney (2012), through consideration of local geology, landforms, alongshore controls (i.e. headlands and groynes) and the reinterpretation of modelling assumptions. This included modification of the recession distances based on the geomorphic structure of the shoreline, for example, on a section of sandy coast with a headland, the recession distance was linearly increased.
- Inundation hazard mapping Coastal inundation mapping was developed through the estimation of extreme water levels from tide gauge data based on 12 different zones between Cape Naturaliste and Rockingham. Extreme water level estimates were added to the sea level rise projections to develop coastal inundation hazard levels. The present day (2010) scenarios were modified to allow for sea level rise to 2110 by adding 0.90 m respectively. Medium and high inundation scenarios were selected from extreme distributions. The 100-year average recurrence interval (ARI) water level used for the medium scenario and the upper 90% confidence limit 500-year ARI water level for the high scenario. Wave runup was not included in the analysis.

The extend of inundation was mapping using the Department of Water LiDAR data. Identified contours were modified to ensure that only those areas with a hydraulic connection to the ocean were included in the hazard zones.





Table 4. Present Day (2010) Inundation Scenarios

Location	Medium	High
Wonnerup	1.44 m AHD	1.70 m AHD
Busselton	1.39 m AHD	1.64 m AHD
Vasse/Broadwater	1.29 m AHD	1.54 m AHD
Quindalup	1.39 m AHD	1.48 m AHD

2.3.2 Application to the Coastal Adaptation Strategy

Erosion hazard mapping is presented for a range of likelihoods and timeframes, which facilitates a risk assessment as part of a CAS. The method utilised to determine the erosion hazard lines is not consistent with requirements of SPP 2.6. Although the erosion distances are a refinement of the earlier work by Sydney University (2011), the estimates are still greater than would be expected from a simplified assessment undertaken in accordance with SPP 2.6. However, as these estimates they are expected to be more conservative than required under SPP 2.6, they are a reasonable option for inclusion as upper bound estimates within the CAS.

Inundation mapping is only presented for two timeframes (2010, 2110), which restricts its use in the CAS. Although the study does not consider the added impacts of wave run-up the method applied is generally consistent with requirements of SPP 2.6, including a 500-year ARI scenario. However, the water identified used in the study are significantly lower than more recent studies including the recently released Department of Transport report *Design Storms for Western Australia* (Seashore Engineering 2018), which recommends preliminary design water levels of 2.9 m AHD for a 500-year AIR event at Busselton. This is more than 1 m above the selected design event in this study and would be expected to result in significantly greater impacted footprint.

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2.4 Coastal Inundation Modelling for Busselton, Western Australia, Under Current and Future Climate

Year	2014
Prepared by	Geoscience Australia
Prepared for	Department of Planning
Revision	2014/03
Study area	Dunsborough to Wonnerup

2.4.1 Summary

The report models the extent of inundation resulting from the storm scenarios of:

- Tropical Cyclone (TC) Alby based on the actual storm track which occurred in 1978 causing widespread damages throughout the southwest of WA
- a worst-case TC Alby the actual storm track and timing modified to direct maximum winds over Busselton with a coincident spring tide.

The extreme storm scenarios were combined with three sea level rise projections (0.4 m, 0.9 m and 1.1 m) and riverine flooding scenarios for the Vass Estuary (Vasse River Diversion Drain, Sabina River and Abba River) to provide hazard mapping for the following:

- TC Alby actual storm track model validation run validated against tide recordings at Busselton Jetty and debris line records
- Worst-case TC Alby
- Worst-case TC Alby + 25-year ARI Flood
- Worst-case TC Alby + 100-year ARI Flood
- Worst-case TC Alby + 0.4 m SLR
- Worst-case TC Alby + 0.4 m SLR + 100-year ARI Flood
- Worst-case TC Alby + 0.9 m SLR
- Worst-case TC Alby + 0.9 m SLR + 25-year ARI Flood
- Worst-case TC Alby + 0.9 m SLR + 100-year ARI Flood
- Worst-case TC Alby + 1.1 m SLR
- Worst-case TC Alby + 1.1 m SLR + 100-year ARI Flood



Ocean water levels were modelled by GEMS using the propriety software GEMS Coastal Ocean Model (GCOM2D). The extent of inundation was modelled using the open ANUGA software developed by the Australian National University (ANU) and Geoscience Australia (GA). Land elevations were based on topographic LiDAR captured by Fugro for the Department of Water in 2008.

The validation results against TC Alby showed a relatively good correlation, however the extent of inundation was difficult to accurately reproduce, due to the change in the coastal coastline position since the 1970's.

The results from the modelling highlight the relatively localised impact expected from a repeat TC Alby. However, this rapidly steps up to broad inundation and impact with higher level ARI events and increased sea level rise scenarios. The results of the modelling and local impacts are reviewed in detail in Shore Coastal (2015), refer to next section.

2.4.2 Application to the Coastal Adaptation Strategy

Since the preparation of this study there has been debate on the likelihood of the modelled 'worst case' TC Alby track occurring and improvements in our understanding of how these systems develop and change as they propagate southwards. The recently published report by Department of Transport (Seashore Engineering 2017), provides guidance on the selection of design storm events within WA. The design storm event for Busselton, representing a 1 in 500-year ARI event is a larger system, which does not cross the coast. So, although the modelling results contain scenarios which would be considered consistent with the requirements of SPP 2.6, and in principle suitable for use in a CAS, some caution should be applied when using the modelled events as they may not represent plausible storm scenarios.



Attachment D



2.5 Busselton Storm Surge Response Plan

Year	2015
Prepared by	Shore Coastal
Prepared for	City of Busselton
Revision	SCR1505, May 2015
Study area	Dunsborough to Wonnerup

2.5.1 Summary

The report considers the impacts of coastal inundation based on review of the storm surge modelling undertaken by Geoscience Australia (2014), refer to previous section. The report focuses on the short-term impacts and immediate management requirements. The impact to built infrastructure from different flood levels is reviewed using the GIS software QGIS to compare flood depths against cadastral information. The following impacts were identified from review of the GA modelling scenarios:

- Modelled Tropical Cyclone Alby assumed ocean water level is in the order of 1.8 m AHD.
 Coastal flooding of critical and non-critical public buildings was found to be limited. Minor inundation adjacent to buildings in Port Geographe. Some minor roads inundated up to 0.5 m.
 Damage to coastal infrastructure expected. More severe coastal flooding impacts would occur if dunes were breached during such an event.
- Mid-Level scenario based on interpreted of worst-case TC Alby levels less 0.8 m, assumed ocean water level is in the order of 2.6 m AHD. Coastal flooding of 6 critical and 13 non-critical public buildings was identified. The mapping indicates in the order of 1,000 buildings at risk of inundation, particularly in the Broadwater, West Busselton, Busselton and Geographe localities. A large number of minor roads along the foreshore and adjacent to watercourses may be subject to flooding.
- Worst case TC Alby (direct hit) assumed ocean water level is in the order of 3.4 m AHD.
 Coastal flooding of 6 critical and 194 non-critical public buildings is indicated. The mapping indicates in the order of 7,000 buildings at risk of inundation across the wider townsite with flood depths >1.5m in places. Minor and major roads would be severely flooded.

The report also identified opportunities for the improvements to existing warning systems and emergency response plans.





2.5.2 **Application to the Coastal Adaptation Strategy**

Although the study does not provide any coastal hazard mapping it provides a useful assessment of the impacts from inundation at different water levels.

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2.6 Busselton Coastal Management Program - Coastal Flooding Risk, Response and Mitigation

Year	2017
Prepared by	Shore Coastal
Prepared for	City of Busselton
Revision	SCR1605, Rev A, June 2017
Study area	Dunsborough to Wonnerup

2.6.1 Summary

The report seeks to address a number of the earlier recommendations of the Busselton Storm Surge Response Plan (Shore Coastal 2015), refer to previous section. The report primarily assesses the present-day risk of coastal inundation with a focus on informing current management and mitigation actions.

The report reviews the broad scale risk of coastal flooding throughout the study area by:

- Interpretation of contours to identify low points in the foreshore reserve that could provide
 flow paths. A qualitative summary is provided of areas currently at risk from inundation. To
 assess the potential transition between minor, moderate and major flooding, and to select sites
 for detailed numerical modelling, an initial flood risk evaluation was undertaken based on the
 2.0 m and 2.5 m AHD contours. (Nominally, this was considered indicative of potential flood
 extents during the 50-year ARI and 200-year ARI tropical cyclone events respectively.)
- Examination of the existing dune capacity for a variety of typical dune types within the study
 area to identify the likely threshold for dune overwash. Identifying that removal or deflation of
 the coastal dune of most of these sites is expected during the 100-year ARI tropical cyclone
 event (2.3 m AHD)

Based on the initial review three low lying sites were selected for more detailed inundation modelling West Busselton (Silverglen Ave), West Busselton (Vasse Diversion Drain) and East Busselton. Local numerical modelling was undertaken at each site for the scenarios:

- 2.3 m AHD ocean water level to represent a 100-year ARI tropical cyclone water level or a 50-year ARI non-cyclonic surge at highest astronomical tide
- 2.6 m AHD ocean water level to represent a potential 'major flooding' scenario

The results showed some areas of flooding at 2.3 m AHD and significant flooding at 2.6 m AHD. The extent of flooding significantly increased in areas where there is hydraulic connectivity through





the existing drainage network or following the erosion/ overwash of the dune barrier. The range of dune types was investigated and the potential for dune deflation. The study identified the importance of the existing dune barriers as a protective barrier to protect public and private infrastructure in many areas against coastal inundation from small more frequent events.

The study also identified the present-day risk to access roads, a review of finished floor levels and potential capital works option.

2.6.2 Application to the Coastal Adaptation Strategy

The study only undertakes coastal hazard mapping for three small study areas. So, although not sufficient for inclusion in the CAS, the study provides a very useful understanding of the present-day impact from inundation with recommendations on short-term management and adaptation requirements.





2.7 Cape Naturaliste Settlements - Coastal Vulnerability Assessment

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Year	2017
Prepared by	Damara WA Pty Ltd
Prepared for	City of Busselton
Revision	Report 256-01-Rev 0, Nov 2017
Study area	Smiths Beach, Yallingup, Bunker Bay and Eagle Bay

2.7.1 Summary

The study provides coastal hazard mapping for the town sites of Smiths Beach, Yallingup, Bunker Bay and Eagle Bay. The report focuses on the estimation of future erosion under a variety of different scenarios. With only qualitative consideration of inundation impacts. As noted in the report the methods used for determining the shoreline response to coastal erosion varies from the specific requirements of SPP 2.6.

The report provides erosion hazard lines based on the application of three different methods:

- Type 1 Application The method for hazard assessment outlined in the State Coastal Planning Policy has been broadly followed, using an estimate for S1 based on beach variability, and a 100:1 ratio of coastal response to sea level rise for S3. Progressive erosion allowances for S2 over 100 years have been included for the northern partitions of Smiths Beach (10 m) and for the northern sections of Yallingup (20 m and 15 m for the central and northern sections). No allowance for S2 has been included for Bunker Bay or Eagle Bay due to active sediment supply. Hazard lines are provided for the years 2040, 2070, 2115 incorporating 0.15 m, 0.4 m and 0.9 m sea level rise.
- Type 2 Application defines the shoreline conditions which could be expected to occur
 through the combined occurrence of both progressive and episodic erosion stresses. Hazard
 lines are recommended when coastal monitoring is used to characterise progressive behaviour
 and guide adaptive response. This application follows the approach used to derive hazard lines
 for the southern Geographe Bay coast (Damara WA 2011). Hazard lines are provided for a
 moderate and a high scenario at 2115.
- Type 3 Application describes the potential scope for coastal change if the nature of active
 processes is altered by climate change and sea level rise. Upper limit Type 3 estimates include
 areas with a remote likelihood of being affected by coastal processes, and therefore are
 appropriate to define observation zones (rather than stipulating engineering or planning
 criteria). An approach equivalent to that used to derive hazard lines along the PNP coast has





been used (Damara WA 2012). Hazard lines are provided for low, medium and high scenarios at 2115.

Inundation is not mapped in detail due to the absence of detailed topographic data. However, the areas currently potentially prone to coastal flooding have been estimated based upon landforms, photographs and site visits for present day based on a range of 100-year water level estimates.

2.7.2 **Application to the Coastal Adaptation Strategy**

The estimation of erosion hazards using the type 1 application generally follows the requirements of SPP 2.6 and are considered suitable for use in the CAS. Hazard mapping is presented for a range of likelihood and timeframes, which helps to facilitate a likelihood assessment. Insufficient inundation mapping is contained in the study to allow a detailed analysis within the CAS.

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Recommendations on the Selection and Application of Hazard Lines on the CAS

It is preferential for the CAS to be based on hazard mapping compliant with the requirements of SPP 2.6, to ensure the strategy's overall compliance with planning and regulatory requirements.

It is also necessary for the extent of hazards to be identified for a range of timeframes to allow the identification of trigger points and the development of short-term management actions and longer-term pathway. As a minimum, the following project timeframes are recommended:

- 2020 to represent present day
- 2030 to identify short-term management actions
- 2070 to identify long-term trigger points
- 2120 to identify long-term management strategies

Although there is some flexibility in the selection of project timeframes, it is essential sufficient hazard mapping is available to the representation the likelihood of hazard at 10 years and 100 years to inform short- and longer-term adaptation.

Although the existing hazard studies provide a sound understanding of the coastal dynamics within the study area, none of the hazard studies provides the ideal set of hazard lines, undertake in accordance with SPP 2.6 and for the full set of required project timeframes. However, to reduce the need for additional technical studies, the following sub-sections provide practical recommendations for the utilisation of the existing hazard studies within the CAS.

3.1 Cape Settlements (Smiths Beach, Yallingup, Bunker Bay and Eagle Bay)

3.1.1 Erosion Hazard

The recently completed study by Damara WA (2017) contains a set of erosion hazard maps generally consistent with the requirements of SPP 2.6. However, the study does not include a present day or short-term (2030) hazard scenario. In order to utilise the work contained in Damara WA (2017) in the CAS, the following is recommended:

- Use of the "Type 1 Application" erosion hazard lines presented in Damara WA (2017) for the years 2040, 2070, 2115 (only years contained in the study).
- Assume a present-day hazard line by removing the sea level rise component from the 2040
 erosion hazard line. The erosion hazard lines contained in Damara WA (2017) incorporate an
 allowance for sea level rise based on an assumed recession ratio of 1:100. A present-day
 erosion hazard line can be assumed by removing the sea level rise component and offsetting
 the 2040 hazard line by 15 m towards the ocean.
- Assume the 2040 erosion hazard line is a 'possible' likelihood scenario for informing adaptation at the year 2030.





As such the likelihood scales used in the study do not entail a consistent time difference to the Damara 2017 timeframes.

To incorporate the uncertainties associated with the occurrence of erosion at each specific project timeframe the likelihood scale presented in Table 5 is recommended. The use of the likelihood scale is also illustrated in Figure 1.

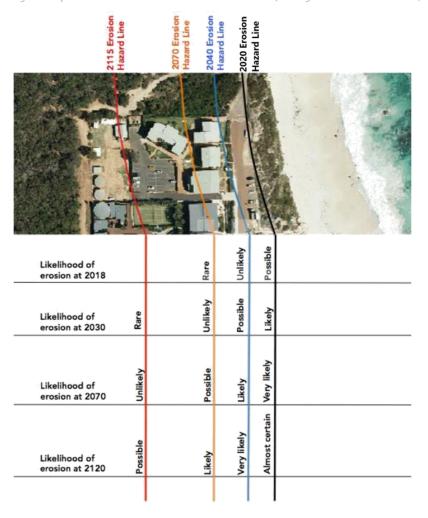
Table 5. Cape Settlements erosion likelihood scale (using the Damara 2017 hazard lines)

Likelihood Rating	2020	2030	2070	2120
Almost Certain	-	-	2020	2040
Likely	-	2020	2040	2070
Possible	2020	2040	2070	2115
Unlikely	2040	2070	2115	-
Rare	2070	2115	-	-





Figure 1. Cape Settlements erosion likelihood scale – visualisation (showing Damara 2017 hazard lines)



3.1.2 Inundation Hazard

Detailed inundation hazard mapping has not been undertaken for the Cape Settlements as detailed topographic information is not available. The work by Damara (2017) provides only a qualitative assessment of the present-day risk from a 100-year water level event. This work indicates only a small number of built assets are likely to be impacted in the short-term.





Given the relatively high topography of the coastal settlements, it is expected that the only built assets with potential to be impacted by inundation in the short-term are in Eagle Bay in the vicinity of the small coastal inlet/drain. A detailed hazard assessment of this area will not be possible without undertaking a detailed feature survey and may not be justified at this stage of the CAS.

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Given the relatively low impact of coastal inundation within the Cape Settlements it is expected that adaptation will be primarily led by the need to mitigate the risk of erosion. It is therefore recommended that the CAS for the Cape Settlements be primarily determined by evaluation of the risk of coastal erosion, with the risk of inundation at Eagle Bay only assessed in a qualitative manner to allow the evaluation of short-term management actions.

3.2 Geographe Bay (Dunsborough to Forest Beach)

3.2.1 Erosion Hazard

The collection of erosion studies provides an excellent source of information and a strong knowledge foundation for preparing the CAS. However, neither of the three studies containing erosion hazard lines are compliant with the current requirements of SPP 2.6. The existing studies are several years old and based on information which is approximately a decade old.

In theory, it would be preferred to undertake an updated simplified hazard assessment consistent with the requirement of SPP 2.6 and allowing the incorporation of the latest available datasets, in particular, the current shoreline position. It is however acknowledged that the focus of the CAS is on the development of adaptation and management actions. The update of the hazard studies, although beneficial for consistency with SPP 2.6, is not expected to change the selection of short-term adaptation options and management actions through the CAS. The existing hazard studies indicate the risk of erosion impacting assets throughout the study area and it is highly likely that updated hazard studies will also indicate similar impacts in the short-term. In conclusion, the CAS does not justify preparation of additional erosion hazard lines. Instead, the following recommendations are provided for the utilisation of the existing erosion hazard lines:

- The likelihood of erosion be based on the hazard lines contained in Damara WA (2012).
 Although the methodology used for this study differs from the requirements of SPP 2.6, the
 resulting hazard lines are expected to be more conservative and deemed appropriate for use in
 the development of the CAS. The study provides low, mid and high erosion hazard lines for the
 timeframes 2030, 2070, 2110.
- For the purpose of the CAS it is recommended to extend the Damara WA 2012 hazard lines
 end west towards Point Daking, to incorporate the full extent of the Dunsborough Townsite by
 assuming the same setback.
- Damara WA (2012) does not include an estimate of the present-day likelihood of erosion. To
 allow the inclusion of the current risk from coastal erosion it is recommended that the S1
 Factor erosion values presented in Damara WA (2011) is used in the CAS to evaluate the
 immediate risk to assets. Damara WA (2011) includes an assessment of the erosion expected
 from a severe storm event in accordance with SPP 2.6, predicting a recession distance of 20 m
 for the shoreline to the west of Siesta Park groyne, and 30 m to the east.

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It is recommended that these erosion hazard lines are incorporated in the CAS by using the following likelihood scale. The use of the likelihood scale is an efficient mechanism for incorporating the uncertainty associated with hazard predictions. To account for the identified conservativeness of the 2012 study, the relative likelihood of each scenario has been adjusted accordingly in the likelihood scale, so that a 'low' scenario represents a possible likelihood. For practical reasons the Damara hazard lines for 220 have been assumed to be the same as the CAS 2120 scenario.





Table 6. Recommended erosion likelihood scale Dunsborough to Forest Beach

Likelihood Rating	2020	2030	2070	2120
Almost Certain	-	-	Damara WA (2012) 2030 (mid)	Damara WA (2012) 2070 (low)
Likely	-	Damara WA (2011) S1 modelling	Damara WA (2012) 2030 (high)	Damara WA (2012) 2070 (mid)
Possible	Damara WA (2011) S1 modelling	Damara WA (2012) 2030 (low)	Damara WA (2012) 2070 (low)	Damara WA (2012) 2110 (low)
Unlikely	Damara WA (2012) 2030 (low)	Damara WA (2012) 2030 (mid)	Damara WA (2012) 2070 (mid)	Damara WA (2012) 2110 (mid)
Rare	Damara WA (2012) 2030 (mid)	Damara WA (2012) 2030 (high)	Damara WA (2012) 2070 (high)	Damara WA (2012) 2110 (high)

3.2.2 Inundation Hazard

Inundation hazard lines are contained within the collection of hazard studies for a number of scenarios. The work indicates that the extent of inundation is very sensitive to the selected water levels within each study, with a tipping point between minor localised impacts and wide spread flooding between 2.3 m and 2.6 m AHD.

SPP2.6 recommends the management of inundation risk up to a 1 in 500-year ARI event. However, due to the small number of extreme events in the recorded datasets, it is very difficult to accurately quantify the expected water levels during a 1 in 500-year event. The hazard lines contained within the Damara WA (2012) report adopted a level 1.48 to 1.70 m AHD, varying across Geographe Bay for a present day 1 in 500-year ARI event, and 2.38 to 2.60 m AHD (includes 0.9 m sea level rise) for a similar event at 2110.

The present-day event is comparable to the actual recorded peak water levels during Tropical Cyclone Alby in 1978 (1.76 m AHD in Geographe Bay). However, this level is still well below more recent estimates of a 1 in 500-year ARI. Current estimates categorise TC Alby at around a 1 in 200-year event. The recent study commissioned by Department of Transport (Seashore Engineering 2018) identifies 2.9 m AHD as a preliminary upper bound estimate of a 1 in 500-year ARI event in Busselton, which would give a 100-year water level in the order of 3.8 m AHD, allowing for 0.9 m sea level rise.





The existing hazard lines and studies indicate that at a 2.9 m AHD water elevation the vast majority of the study area is impacted by inundation, both directly from breaches in the dunes as well as from flooding of drainage channels. This does not take into consideration the added complexity of the expected combined impacts of flooding due to a rising groundwater table and rainfall surface run-off.

Given the extent of the areas potentially impacted by inundation over the short-term (0-10 years), due to the general low-lying topography of the study area, there is considered no benefit in undertaking additional hazard mapping to improve the definition of the extent of inundation at each of the project timeframes.

For the purpose of assessing the risk of inundation to allow the development of short-term management actions and longer-term adaptation pathways it is recommended that the CAS simply

- In the short-term (0-10 years) all areas below 2.9 m AHD are at risk from inundation. (Majority of the study area.)
- In the longer-term (up to 100 years) all areas below 3.8 m AHD are at risk from inundation. (Entire study area, with the exception of the western portion of Dunsborough.)

This will allow the broader identification and evaluation of management actions, without the need to undertake additional hazard mapping.

Evaluating the combined risk of erosion & inundation 3.3

Within the Geographe Bay (Dunsborough to Forest Beach) portion of the study area there is a risk of both erosion and inundation. Although SPP 2.6 requires the evaluation of these hazards independently, the evaluation of adaptation options will require an integrated approach. In particular the selection of erosion adaptation options can have a direct impact on the management of inundation. For example, the decision to maintain or abandon a foreshore reserve can have a direct impact on the ability to mitigate against inundation.

However, given the immediate and long-lasting impacts from erosion, it is recommended that the CAS first priority should be the evaluation of management actions to mitigate the risk of erosion. However, the multi-criteria analysis of erosion mitigation options will include the evaluation of their ability to also facilitate inundation mitigation.

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4 Planning Units and Assets

4.1 Introduction

As the outcome of the hazard risk assessment, analysis and evaluation can vary between locations and type of assets, the study area is broken down into planning units, which are subsequently further broken down into assets.

4.2 Planning Units

The study area has been broken down into planning units, defining sections of the coastline which share similar characteristics. These have been developed based on the evaluation of:

- existing hazard and coastal processes studies for the study area
- · sediment cell framework developed by the Department of Transport
- existing coastal facilities (groynes, drains, breakwaters, etc.)
- distribution and types of built assets impacted by coastal hazards

The planning units are expected to form the frame work for the evaluation of adaptation options and future monitoring and management. The proposed planning units are listed with a description of their characteristics in Table 7. Appendix A presents for each planning unit an aerial photo with erosion hazard lines superimposed as well as an indication of the various assets.

Table 7. Planning Units

A	Planning Unit	Boundaries	Description	
01	South: Start of rocky headland North: Start of Secondary headland		Southern portion of west facing embayment. Contains Yallingup River mouth.	
02	2 Yallingup South: Start of rocky headland North: Start of northern rock platform		Southern portion of west facing embayment. Mixture of sand with rock platforms.	
03	Bunker Bay	West: Rock headland East: Rock headland	North facing embayment in the lee of a rock headland. Contains Jingarmup Brook mouth.	
04	Eagle Bay	West: Rock outcrop East: Rock outcrop	Northwest facing embayment in the lee of a rock headland. Contains a series of rock outcrops.	

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ı	Planning Unit	Boundaries	Description
05	Old Dunsborough	West: Boundary to Regional Park East: Beach Road (Tertiary sediment cell boundary)	East facing mixed sandy/rocky shoreline containing Point Daking and Point Dalling
06	Dunsborough Townsite	West: Beach Road (Tertiary sediment cell boundary) East: Elmore Road	North East facing beach in the lee of the headlands. Protected by the Dun Bay Bar.
07	Quindalup Beach	West: Elmore Road East: Station Gully Drain	Point of land fall for the Dun Bay Bar. Thin coastal strip backed by Toby Inlet.
08	Marybrook	West: Station Gully Drain East: Lennox Drain (Tertiary sediment cell boundary)	Previously accreting shoreline. Includes Molloy Drain.
09	Siesta Park	West: Lennox Drain (Tertiary sediment cell boundary) East: Locke Swamp Drain	Shoreline significantly influenced by Siesta Park Groyne. Boundary extends to Locke Swamp Drain to capture vulnerable residential properties to west of Siesta Park groyne.
10	Locke Estate	West: Locke Swamp Drain East: Buyanup Drain	Portion of shoreline containing camp lease sites and existing groyne field.
11	Abbey	West: Buyanup Drain East: Holgate Road Groyne (Secondary Sediment Cell Boundary)	Contains a series of groynes
12	Broadwater	West: Holgate Road Groyne (Secondary Sediment Cell Boundary) East: Dolphin Road	Landfall for Abbey sand bar previous area of significant accretion
13	Busselton West (A)	West: Dolphin Road East: Vass River Diversion Drain	Contains existing protection structures. Minimal setback to built assets.
14	Busselton West (B)	West: Vass River Diversion Drain East: Gale Street	Minimal setback to built assets. Recent erosion concerns.

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ı	Planning Unit	Boundaries	Description
15	Busselton West: Gale Street Central East: Ford Road		Area contains Busselton Foreshore Precinct. Existing groynes and seawalls.
16	Busselton East	West: Ford Road East: Freycinet Drive	Land fall for Busselton Jetty sand bar. Previous accreting shoreline.
17	Port Geographe	West: Freycinet Drive East: Port Geographe breakwater (Tertiary sediment cell boundary)	Port Geographe Marina
18	Wonnerup	West: Port Geographe breakwater (Tertiary sediment cell boundary) East: Wonnerup Inlet	Thin coastal strip backed by the Vasse Estuary. Existing groynes and sea wall.
19	Forest Beach	West: Wonnerup Inlet East: LGA boundary with Shire of Capel (Tertiary sediment cell boundary)	Thin coastal strip backed by the Vasse Estuary.

4.3 Assets

This section describes the various types and grouping of the assets within each planning unit, potentially impacted by coastal hazards over the next 100 years. A list of assets per planning unit is presented in Appendix B.

Assets within the coastal zone have been identified based on review of the GIS datasets held by the City, aerial photography and site inspections. In addition, the zoning and approved land uses within the Town Planning Scheme (CoB LSP 21) was taken into consideration. The following types of assets types have been considered:

- Western Power assets streetlights, power poles, pits, overheads, transformers
- Water Corporation assets water pipes, sewage pipes, hydrants, pumping stations
- City of Busselton assets playgrounds, parks, community buildings, reticulation, reserves, toilets
- Transport networks local/major roads and bridges, parking bays, paths, trails
- Private land/property residential land and buildings
- Commercial land/property tourist accommodation, cafes/restaurants, shops

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- Assets with common values, or where adaptation is likely to consider a group of assets as a whole, have been grouped for simplicity. These include:
- Private property, or tourist adjacent private properties have been grouped based on their zoning and vulnerability to erosion. Similar for tourist developments.
- Local roads & utilities where utilities such as power, sewage, water exist within the road reserve these have been included in the grouping. (In many locations the viability of the adjacent private properties is linked to these assets and the ability to maintain legal access and utilities.)
- Roads & car parks some small car parks have been grouped with roads or foreshore reserve, depending on their location.
- Foreshore reserve community 'park' assets have been grouped as foreshore reserves: playgrounds, reticulated grassed areas, park furniture, BBQs, sun shelters, trees, shared footpaths and park lighting/water.





5 References

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Part 2: Risk Analysis and Evaluation

City of Busselton

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1 Introduction

This report is Part 2 of the coastal adaptation Strategy (CAS) for the City of Busselton and presents the Hazard Risk Analysis and Evaluation. The various sections in Part 2 will provide background explanation regarding the process, the assumptions made as well as a discussion of the results.

Results of the analysis and evaluation for each Planning Unit and Asset are presented as scoring tables in Appendix C.

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2 Risk Analysis

As defined in the Risk Management Framework of the City of Busselton (Dec 2017), risk is "the effect of uncertainty on objectives ... expressed in terms of a combination of the consequences of an event and the associated likelihood (AS/NZS ISO 31000: 2009)".

The risk level of an asset related to coastal hazards follows directly form the consequence of being affected by the hazards and the likelihood that the asset gets affected by the hazard.

This section provides details of the risk analysis of the individual assets, which is the process of evaluating the consequence and likelihood in order to obtain a risk rating. Where applicable, terminology and assessment methodology are aligned with the Risk Management Framework of the City of Busselton (Dec 2017).

The process of the risk analysis is explained in the sections below. The resulting risk scoring tables for each asset are presented in Appendix C.

2.1 Consequence of erosion & inundation

2.1.1 Definition

A consequence is defined as the outcome of an event or change in circumstances affecting the achievement of objectives (DLG 2013). Within the context of a vulnerability assessment it is used to consider the sensitivity of an asset to coastal hazards.

The consequences can be both immediate, with outcomes during a storm event, or knock-on with impacts only being realised into the future. In this context it is useful to understand if the consequence will be short-lived and how easily the impacts are reversible, verses persistent long-term impacts.

In order to consider a broad range of consequences, the impacts of erosion and inundation have been evaluated for each asset using the consequence scale shown in Table 1. The consequence scale is similar to the scale as per the Risk Management Framework of the City of Busselton (2017). The ratings are also similar to the ratings of the City's Risk management Framework, except that one category has been added as explained in the section below.

2.1.2 Social & Cultural Aspects

A category has been added for social & cultural aspects, to include key community values identified from previous studies. The PNP Coastal values report found that the most value the community puts on the coastal assets relates to recreation and public usage. This includes activities such as walking/running, swimming and spending time with family and friends.

The report states that the community feel that visiting the beach/foreshore provides numerous benefits to people's lifestyle, their physical, mental health and wellbeing. As well as being a place for spiritual / cultural connection, the physical environment including clean water, vegetated dunes, native trees and animals was of high importance.

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Private residence adjacent to the beach were not important to the majority. The surveys identified that the consequences of climate change would result in the loss of valuable assets and qualities and will have a negative impact on the uses and benefits.

Therefore, to manage the coastal hazards there was strong support for fencing dunes/revegetation, preventing further development in hazardous areas and planned retreats (C. Perry, 2018).

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Table	1 Consequence Scale					
Rating	Insignificant	Minor	Moderate	Major	Catastrophic	
Public Health / OSH	Minor injury or first aid treatment cases	Injury / disease causing medical treatment	Serious injury / disease causing hospitalisation	Death or life-threatening injury or multiple serious injuries causing hospitalisation	Multiple deaths or multiple life-threatening injuries or severe permanent disabilities	
Social & Cultural	Minimal or no loss/damage/interruption to services, recreational activities, employment, wellbeing, culture or heritage. Little or no disruption to the community. Less than 5% of community affected. Many alternative sites or facilities exist.	Short-term, temporary loss/damage/interruption to services, recreational activities, employment, wellbeing, culture or heritage. Minor disruption to the nearby community. 5 - 10% of community affected. Alternative sites or facilities exist.	Medium-term, temporary loss/damage/interruption to services, recreational activities, employment, wellbeing, culture or heritage. Significant disruption to the nearby community. 10 - 25% of community affected. Regional impact, limited alternative sites or facilities exist.	ss/damage/interruption to services, recreational activities, employment, llbeing, culture or heritage. gonificant disruption to the arby community affected. Regional impact, limited lternative sites or facilities loss/damage/interruption to services, recreational activities, employment, wellbeing, culture or heritage. Substantial disruption to services, recreational activities, employment, wellbeing, culture or heritage. Substantial disruption to services, recreational activities, employment, wellbeing, culture or heritage. Substantial disruption to services, recreational activities, employment, wellbeing, culture or heritage. Substantial disruption to services, recreational activities, employment, wellbeing, culture or heritage. Substantial disruption to services, recreational activities, employment, wellbeing, culture or heritage. Substantial disruption to widespread community 25 - 50% of community affected. Regional impact, very limited alternative sites or facilities		
Financial	< \$ 50k	\$ 50k to \$250k	\$ 250k to \$ 1m	\$ 1m to \$ 5m	> \$ 5m	
Operational	Negligible impact to service delivery	Inconvenient delays with recovery within acceptable timeframe	Significant delays service delivery with unacceptable recovery time or inconvenient delays to major deliverables	Substantial delays to service delivery or Non-achievement of major deliverables	Non-achievement of key objectives	
Reputational	Minor adverse local community comment or complaint	Minor media interest with low news profile, e.g. local paper	Public embarrassment, moderate news profile (including TV)	High news profile, third party action, Local Member inquiry	Widespread national news profile, formal government inquiry	
Environmental	Brief pollution but no environmental harm	Minor/ transient environmental harm	Significant environmental harm with midterm recovery	Significant long-term environmental harm	Catastrophic, long term environmental harm	

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From the assessment results, presented in Appendix C, it can be seen that 83% of the assets score high (major (81%) or catastrophic (2%) consequence rating) for one or more of the categories of consequence of coastal erosion. The main contributor to the high consequence scoring is the financial category, with 53% scoring major or catastrophic.

Assets that score lower (insignificant, minor or moderate rating) on the consequence of being affected by coastal hazards include undeveloped land, minor roads and less important parks.

2.2 Likelihood of erosion & inundation

The likelihood describes how likely it is that a risk will eventuate with the defined consequences. Likelihood can be defined in terms of probability or frequency, depending on the risk being considered.

Within the context of a vulnerability assessment, it is used to consider the exposure of an asset to coastal hazards. The likelihood scale is similar to the scale as per the Risk Management Framework of the City of Busselton (2017). As an exception a zero rating has been assigned to assets where there is no likelihood of erosion.

Table 2 presents the likelihood scale used in this study. The rating for each asset follows is derived from the erosion lines as previously discussed for the present day (2020), for 2030, 2070 and 2120 situations. Where the erosion lines for this year were not available an interpretation has been made based on the available erosion lines.

A distinction has been made for the situation with and without controls, such as groynes, which will be discussed in section 4. The results discussed in the current section are based on the situation without erosion control measures.

Table 2 Likelihood Scale (Risk Management Framework of the City of Busselton, 2017)

Rating	Description	Frequency
Rare	May occur but only in exceptional circumstances	1 in 10,000 - 100,000 Less than once in fifteen years
Unlikely	Could occur at some time	1 in 1,000 to 10,000 At least once in fifteen years
Possible	Should occur at some time in the future	1 in 100 - 1,000 At least once in five years
Likely	Will probably occur in most circumstances	1 in 10 - 100 At least once a year
Almost Certain	Is expected to occur in most circumstances	> 1 in 10 More than once a year

From the analysis as presented in Appendix C, it can be seen that at present (2020) 48% of all assets have a 'rare' score, 11% a 'unlikely' score and 41% have a 'possible' score. None of the assets have a 'likely' or 'almost certain' scoring at present.





In 2030 however, over 40% of all assets will be in the a 'likely' or 'almost certain' category according to the erosion hazard lines, and in 2070 this is expected to be the case for 70% of all assets.

2.3 Risk of erosion & inundation

The consequence and likelihood of the coastal hazards has been combined to identify the risk rating of each asset. The combination of consequence and likelihood was undertaken using the risk rating matrix shown in Table 3. The matrix is similar to the matrix in the City of Busselton's Risk Management Framework (2017). Typically, the higher the risk level, the more controls that are required to reduce the risk to an acceptable or tolerable level. For each asset the highest scoring consequence category has been used. Note that the table indicates that consequence is considered to be a higher risk modifier than likelihood (e.g. an unlikely, insignificant consequence gives a lower risk (L2) than a rare, minor consequence (L3).

Note that the resulting risk rating identified for each asset is the unmitigated risk level, as it does not take into consideration the existing control(s) that are already be in place.

Table 3 Risk Rating Matrix

lable 5 Risk Rating i							
	Consequence Rating						
Likelihood Rating	Insignificant	Minor	Moderate	Major	Catastrophi c		
Almost Certain	M11	H16	E20	E23	E25		
Likely	M7	M12	H17	E21	E24		
Possible	L4	M8	M13	H18	E22		
Unlikely	L2	L5	М9	H14	H19		
Rare	L1	L3	М6	M10	H15		

Where:

= Low Risk L (score 1 to 5) Μ = Medium Risk (score 6-13) Н (score 14-19) High Risk Ε = Extreme Risk (score 20-25)

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As per the assessment results presented in Appendix C, the unmitigated risk distribution of the coastal assets for coastal erosion is as follows:

Table 4 Unmitigated Risk Distribution

Year:	2020	2030	2070	2120
Assets at low risk	26%	17%	2%	0%
Assets at medium risk	30%	19%	11%	1%
Assets at high risk	43%	27%	20%	5%
Assets at extreme risk	1%	37%	67%	93%
All assets	100%	100%	100%	100%

It can be seen that the risk increases significantly over time. Whereas at present 44% of all assets fall into the high or extreme risk category, in 50 year this is almost double (87% of all assets).

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3 Vulnerability Analysis

This section provides details of the vulnerability analysis of individual assets, which is the process of evaluating the influence of each asset's adaptive capacity on its relative risk impact from coastal hazards. Resulting risk & vulnerability tables for each asset are presented in Appendix C. A summary of the % of assets in the various categories is presented in Table 8.

3.1 Adaptive Capacity

An asset's adaptive capacity defines its ability to accommodate the potential impacts of coastal hazards with minimum disruption or additional cost (OEH 2011).

The adaptive capacity of each asset has been evaluated using the scale shown in Table 5. The adaptive capacity scale has been adapted from the CHRMAP Guidelines and AS 5334 to increase its relevance to coastal assets within the project area. The scale takes into consideration the design and function or form of the assets.

Overall, most of the identified assets are manmade structures with a fixed footprint and therefore have a very low adaptive capacity, as potential impact would destroy the functionality. Natural assets, such as beaches and the foreshore, have a higher adaptive capacity as they are able to reshape and evolve under changing ocean conditions and follow the coastline, assuming there is sufficient free space to do so. In most cases however the adaptive capacity of natural assets is constrained, as they are often bounded by "manmade structures" such as roads and buildings.

Table 5 Adaptive capacity scale (adapted from CHRMAP Guidelines and AS 5334)

Rating	Adaptive Capacity
Very High	Impact of coastal hazard will cause minimal or no reduction in asset's function or performance.
High	Impact of coastal hazard will cause short-term or localized reduction in asset's function or performance. Minor modifications may be required but could be undertaken as part of routine maintenance. Early renewal of infrastructure by 10–20%.
Moderate	Impact of coastal hazard will cause medium-term or moderate reduction in asset's function or performance. Minor modifications will be required. Early renewal of infrastructure by 20–50%.
Low	Impact of coastal hazard will cause long-term or significant reduction in asset's function or performance. Major modifications will be required. Early renewal of infrastructure by 50–90%.
Very Low	Impact of coastal hazard will cause complete loss of asset's function or performance. Asset will require redesign, rebuilding and/or relocating. Early renewal of infrastructure by more than 90%.

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3.2 Asset Vulnerability

The vulnerability rating defines the degree to which an asset is susceptible to, and unable to cope with, adverse effects of coastal hazards. The vulnerability rating for each asset has been determined by combining the risk rating (to account for the potential impacts of the coastal hazards - refer to previous section) and the adaptive capacity rating. This has been done by factoring the risk rating based on the adaptive capacity as shown in Table 6. Note, similar to the risk assessment, the initial vulnerability rating describes the unmitigated vulnerability of each asset.

The vulnerability rating and tolerance scale (described in Table 7 and 8) shows the susceptibility of assets to the impacts of coastal hazards.

Assets with a high or extreme vulnerability rating are less able to cope with the impacts of coastal hazards without additional support. They have been considered a higher priority for future assessment through the subsequent stages of the CAS.

Assets with a lower vulnerability rating have a greater ability to adapt to the impacts of coastal hazards and will require less, or no, additional support. These assets are considered to be highly resilient and although they may require ongoing monitoring, can be considered a lower priority for additional assessment.

Table 6 Vulnerability Matrix (adapted from CHRMAP guidelines)

Adaptive	Risk Rating							
Capacity	Factor	Low	Medium		Medium		High	Extreme
Very Low	2	L	МН		E	E		
Low	1.5	L	М		н	E		
Moderate	1	L	L M		М	н		
High	0.5	L	L		L	М		
Very High	0.25	L	L		L	L		

L = Low Vulnerability (score 1 to 10)

M = Medium Vulnerability (score 11-20)

H = High Vulnerability (score 21-30)

E = Extreme Vulnerability (score above 30)

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Table 7 Vulnerability Tolerance Scale (adapted from CHRMAP guidelines)

Vulnerability Level	Prioritisation	Acceptance
Extreme	Asset has minimal ability to cope with the impacts of coastal hazards without additional support. Adaptation will need to be considered as a priority. Review of existing controls is required. Establishment and implementation of additional controls is likely to be required.	Unacceptable
High	Asset has limited ability to cope with the impacts of coastal hazards. Immediate to short-term adaptation is likely to be required to reduce risk to acceptable levels. Review of existing controls is required. Establishment and implementation of additional controls may be required.	Urgent action is required
Medium	Asset has some ability to cope with the impacts of coastal hazards. However short to medium term actions are likely to be required to reduce risk to acceptable levels. Observing, assessing and improving existing controls and procedures is likely to be required.	Monitor
Low	Asset has high resilience, it is able to cope with the impacts of coastal hazards without additional support. No immediate action required. Likely to be adequately managed by routine procedures.	Acceptable

This scale leads to the vulnerability scoring as presented in Appendix C. As a typical example, assets that are identified to have 'major' consequence (score 4) and a 'rare' likelihood (score 1) have a medium risk (score 10 as per Table 3). If this asset has a very low adaptive capacity (score 2), the resulting vulnerability is at the upper bound of 'medium' (score 20). This means that these assets would (just) not require urgent action.

From the assessment results presented in Appendix C it can be seen that presently 20% of all assets have a high or extreme vulnerability due to the low adaptative capacity. In 2030 this is expected to be the case for 50% of all assets and 70% of all assets in 2070. See Table 8 for all data.

Assets with low to medium vulnerability are the assets that are currently located outside of the erosion lines (rare likelihood) and assets with some adaptive capacity such as beaches, foreshore reserves and undeveloped land.



Table 8 Unmitigated Vulnerability

able o ominagated valiferability							
Year:	2020	2030	2070	2120			
Assets with low vulnerability	46%	32%	18%	15%			
Assets with medium vulnerability	34%	18%	13%	8%			
Assets with high vulnerability	9%	28%	20%	12%			
Assets with extreme vulnerability	11%	22%	50%	65%			
All assets	100%	100%	100%	100%			

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4 Existing Controls

As defined in the Risk Management Framework (2017), controls are the measures that reduce the likelihood and/or the consequence of the risk. The effectiveness of the controls is an assessment of their adequacy.

A distinction can be made between the following:

- · Physical controls: which include groynes, seawalls, sand nourishment schemes;
- Legislative / planning policies, management procedures

This section presents the controls that are currently in place. Additional controls will be discussed in Part C of the overall report as part of the adaptation options, pathways and scenarios.

4.1 Physical Controls

Appendix D presents a table of physical erosion controls, as presented in a condition assessment report of the coastal structures between Dunsborough and Wonnerup (GHC, 2015). Note that some of the controls listed were not designed to be erosion controls, but contribute to control erosion processes.

The erosion control structures consist of the following:

- Groynes Rock, Timber, Concrete and Geotextile Structures (GSC)
- Seawalls Rock, Concrete and Geotextile Structures (GSC)
- Training walls Rock
- Headlands
- Boat ramp
- · Perched Beach
- Untrained outlets

Although most of the structures are managed by the City of Busselton, a number of them are privately managed or managed by the Department of Water. As can be seen in the table of controls, the age of the structures varies as well as the functional and structural state. The table also provides an estimation of remaining useful life based on the current structural state, which has been used to determine the time these structures will provide erosion control for the assets.

If a control is in place, the likelihood score has been reduced to 1. It should be noted that this is a simplified method, to provide a consistent approach. The reduction of the erosion likelihood is based on protecting against long-term erosion. Although protection against short-term storm erosion will depend on the chosen solution, storms will only temporary flatten the beach profile by moving sand from the beach to the foreshore. If there is sufficient sand in the system this material will be migrate back to the beach during calmer periods, restoring a steeper beach profile.

Based on these controls, the residual risk and residual vulnerability are reduced as shown in Appendix C and summarised in Table 9 and

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Table 10.

Table 9 Residual Risk

Year:	2020	2030	2070	2120
Assets at low risk	26%	17%	2%	0%
Assets at medium risk	43%	25%	11%	1%
Assets at high risk	31%	28%	21%	6%
Assets at extreme risk	0%	30%	66%	93%
All assets	100%	100%	100%	100%

Table 10 Residual Vulnerability

Year:	2020	2030	2070	2120
Assets with low vulnerability	50%	34%	18%	15%
Assets with medium vulnerability	38%	21%	13%	8%
Assets with high vulnerability	7%	28%	20%	12%
Assets with extreme vulnerability	5%	17%	50%	65%
All assets	100%	100%	100%	100%

13.1

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4.2 Planning Controls

Controls in the context of planning relate to adaptation options and are guided by the Adaptation Hierarchy found in SPP2.6 in conjunction with the Planning and Development Act 2005 and the City of Busselton Local Planning Scheme No.21 to allow for the rolling change of land-use as land becomes affected by coastal hazards.

State Planning Policies (SPP) are planning instruments or tools that facilitate the coordination of planning throughout the state by local governments. Under the Planning and Development Act 2005, SPP's are given power to make provisions or laws for any matter which may be within a local planning scheme.

Particularly relevant is SPP 2.6 State Coastal Planning Policy, designed specifically to ensure that development and the location of coastal facilities takes into account coastal processes, landform stability, coastal hazards, climate change and biophysical criteria. The City of Busselton Local Planning Scheme No.21 brings SPP 2.6 into effect under clause 5.6.2 (a), requiring planning processes to include the objectives, policy and guidelines contained in SPP 2.6.

The scheme contains some other useful tools, such as Clause 3.9 which enables specific requirements for use and management of land within a Special Purpose Zone. This can be used to ensure appropriate planning provisions or laws for areas that require special attention, such as land facing coastal erosion.

Under clause 5.6.1, the Special Control Area on the scheme map known as a Coastal Management Area has provisions applying to it that are in addition to the scheme. The local authority must not approve development within coastal management areas unless the City has consulted the Department of Planning, Lands and Heritage.

The scheme also states under clause 5.6.2 (b) that the local authority must consider the likelihood of the proposed development adversely affecting, or being adversely affected by, coastal processes.

Details of these powers are presented in Appendix E, which demonstrate the City of Busselton have commenced addressing coastal adaption through the planning scheme.





5 Conclusion

5.1 Assets Requiring Adaptation

With the likelihood rating reduced for some of the assets due to the existing erosion controls, the risk rating will also be reduced for these assets for the time being. A number of assets will however still have a residual risk rating of high or extreme in the period until 2030, which is assumed to be unacceptable as per Table 7. These assets would require adaptation. This means in the scoring table of Appendix C, all assets with a vulnerability score above 20 will need urgent action at present, to reduce their risk to an acceptable level.

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As a result of the controls in place, at present the percentage of assets that fall in the high or extreme vulnerability category is 12% (21% without controls). Given the remaining lifetime of the physical controls in place, the vulnerability reducing effect of the groynes reduces over time, unless new erosion control measures are being implemented.

In 2030 it is estimated that 32% of all assets fall in the high or extreme category, in 2070 this is 57% and 2120 65%. Note that the vulnerability figures in 2030, 2070 and 2120 are similar for the situation with and without controls, as the existing controls will be outside of their functional lifetime.

Assets that currently have a high or extreme vulnerability require urgent adaptation. These assets are marked in the table in Appendix C as priority and are listed in Table 11 below.

Table 11 List of assets requiring urgent adaptation

ID	Planning unit	Asset	Current residual vulnerability
003	01. Smith Beach	Canal Rocks Beach Front Apartments	Extreme
004	01. Smith Beach	Smith Beach Resort	High
006	01. Smith Beach	Smith Beach Road	High
010	02. Yallingup	Yallingup Beach Road	High
019	03. Bunker Bay	Properties to the north of Farm Break Lane	Extreme
032	05. Old Dunsborough	Properties Bay View Crescent	High
042	06. Dunsborough Townsite	Properties on Vincent Rd	High

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06. Dunsborough Townsite	Tourist Accommodation	High
08. Marybrook	Properties north of Caves Rd	Extreme
09. Siesta Park	Properties north of Caves Road (west)	High
09. Siesta Park	Siesta Park Holiday Resort	Extreme
13. Busselton West (A)	Hospital	High
13. Busselton West (A)	Balance of development north of Busselton highway	High
13. Busselton West (A)	Geographe Bay Road	Extreme
14. Busselton West (B)	GBYC	High
14. Busselton West (B)	Balance of Development north of Busselton Highway	Extreme
14. Busselton West (B)	Geographe Bay Road	Extreme
15. Busselton Central	Busselton Foreshore	High
	Townsite 08. Marybrook 09. Siesta Park 09. Siesta Park 13. Busselton West (A) 13. Busselton West (A) 14. Busselton West (B) 14. Busselton West (B) 15. Busselton West (B)	Townsite 108. Marybrook Properties north of Caves Rd 109. Siesta Park Properties north of Caves Road (west) Siesta Park Holiday Resort 13. Busselton West (A) Balance of development north of Busselton highway Geographe Bay Road 14. Busselton West (B) Geographe Bay Road 14. Busselton West (B) Geographe Bay Road 14. Busselton West (B) Geographe Bay Road 15. Busselton Busselton Foreshore

5.2 Trigger Points

From the results table in Appendix C it can also be seen that for some assets the vulnerability will increase significantly over time. This occurs when the erosion hazard lines move over the boundaries of the assets or when existing controls have exceeded their functional lifetime.

Trigger points are discussed in more detail in Part 3 of the overall report.

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Part 3: Risk Management Options, Pathways and Scenarios

City of Busselton

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1 Introduction

This is Part 3 of the Coastal Adaptation Strategy (CAS) for the City of Busselton.

Following from the identified and analysed risks to the assets as presented in the Part 2, Part 3 presents the potential risk management categories and risk treatment options and pathways for the identified planning units.

A pathways approach to adaptation planning is about keeping options available to avoid path dependency and 'lock-in'. The following steps generally apply:

- Defining and scoping the areas of decision-making, including determining objectives, or a vision of the success criteria; with results able to be used to identify stakeholders and elicit their values.
- Determining thresholds and trigger points; where achieving these steps is likely to involve consulting stakeholders and/or interrogating projected coastal hazard change scenarios and projections.
- Determining the range of risk treatment options and their lead times, then evaluating each option in terms of criteria concerning cost, level of community acceptance, implementation periods, legal/statutory context and technical complexity.
- Undertaking Multi-Criteria Analysis (MCA) to evaluate each risk treatment option and eliminating options that are not feasible.
- Identifying potential pathways for adaptation for each planning unit in the short term (2030/2040) and longer term (2100/2115) that are informed by the values ascertained through community and stakeholder engagement.

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1.1 Criteria for Risk management Strategies

It is important to develop coastal hazard change risk management strategies capable of responding to the inherent uncertainties of coastal hazard change, favouring options that:

- produce no, or minimal, 'regrets';
- are reversible/flexible;
- have 'safety margins' built in to reduce vulnerability at null or low cost;
- · consider 'soft' strategies, such as institutional and financial tools;
- · reduce decision-making time horizons (where possible); and
- account for potential conflicts and synergies between strategies.





2 Pathways and Hierarchy of Risk Management Solutions

2.1 Adaptation Pathways

The beach and foreshore reserve are the first line of defense in responding to coastal hazards. Holding the coast where it is today and maintaining beach amenity and environmental values is derived from the community aspirations for most locations. Protection of the foreshore assists in protecting the broader public infrastructure assets and land use for a time. Subsequent options, whether short term or longer-term adaptation pathways, are essentially determined by implications of coastal erosion processes of dominant land use, existing development, land tenure, down-shore environmental impacts and the cost of implementing options.

Longer term adaptation pathways are to be identified that shift or modify the approach of coastal adaption pathways over time as determined by trigger points. Adaptation is defined as an adjustment in natural and human systems in response to the effects of actual or expected stimuli that moderates harm or exploits beneficial opportunities. Adaptation is the means for optimising gains and minimising losses associated with coastal hazards over the planning timeframe. Tipping points are changes in coastal processes in time when adaptation pathways change due to the impact of coastal processes induced by climate change. Refer to Figure 1. Significantly, another tipping point to modify the approach of costal adaption pathways is the financial cost of implementing actions.

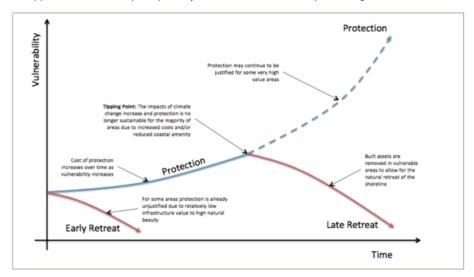


Figure 1. Adaptation pathways diagram (courtesy Evocoast)





The Busselton Coastal Adaptation Strategy calls for identification of adaptation pathways over planning timeframes. The planning timeframes have been derived from the Damara coastal assessments (2012 and 2017) namely, short term of 2030/2040 and longer term 2100/2015. In most of the developed areas, the favoured position would be to apply protection measures; managed retreat measures would be mostly phased in toward the longer term.

The Adaptation Pathways diagram illustrates the implications of increased coastal vulnerability due to an eroding coastline. Protection of coastal and built assets is the often-favoured pathway implemented during the early years of change. Seasonal sand nourishment continues, existing engineering structures are renovated and new protection measures such as groynes and (buried or exposed) sea wall structures are applied to protect natural and built assets. As the coastal processes impact increases with the passage of time, the financial cost of protecting coastal assets is subject to diminishing returns. Approaching 2100, a period of 80 years, there comes a time when protection of assets is no longer sustainable due to reduced coastal amenity and increased costs. At this point retreat phases in. A decision to retreat is guided by the values derived from the community coastal values survey as an input to the MCA. 1

Significant to this decision is the estimate of financial budget to support protection and the sources of funding. Accordingly, the financial modelling is a key factor in decision making as to when the trigger points apply. These triggers will vary for different Planning Units along the Busselton coast, dependent upon the significance of the assets and judgement of decision makers. Where significant high natural and high value man-made assets exists, financial expenditure for ongoing protection is likely to be favoured relative to funding sources. Protection may continue to be justified to ensure longevity of use and intensification of development to optimise the utility of land and infrastructure assets, for example in the Central Business District of Busselton. Where least assets occur, for example rural planning units, the trigger is likely to be brought forward. As time advances toward 2100 and coastal vulnerability increases, the natural retreat of the shoreline will unfold. As the expense of protecting necessary service infrastructure becomes increasingly unviable, man-made assets will be progressively removed (for example, decommissioning of unsafe sewers and electrical reticulation due to coastal hazards). 2 In the short term, while the cost of protection remains low relative to coastal erosion, down-shore environmental implications, infrastructure reinstatement and property values, there will come a tipping point when expense of protection in certain areas and decisions on equitable distribution of funding sources will change.

Therefore, the emphasis of adaptation pathways identified in this Busselton Adaptation Strategy is for decision makers to recognise likely tipping points that are brought about by changing coastal

¹ The MCA assists in establishing how pathway adaptation is applied from the short term to the long term. The Multi-Criteria Analysis identifies suitable short-term measures for the priority-listed assets. The results form the base for the identification of long term adaptation pathways.

² Another metric for the decision-making process is land rent. Land rent being the worth or value of property and service infrastructure necessary to make property functional. The value of land is relative to financial cost of continued protection as the impacts of sea level rise and inland inundation take effect and consequent depreciating value of land.





processes relative to down-shore environmental impact, land use and development intensity, funding sources to support continued protection and the implications for property values.

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2.2 **Overview of Risk management Options**

The Western Australian State Planning Policy No. 2.6: State Coastal Planning Policy (SPP2.6) and the supporting (updated) guidelines (WAPC, 2019) focuses on two timescales:

- the long-term strategic pathway over the next 100 years, and
- planning for implementation of management actions in the shorter term, to 2030, for priority planning units.

The guidelines set out four broad adaptation categories of potential risk management to respond to the challenges of coastal hazards change in the subject coastal zone. An explanation for, and hierarchy of, these risk management option categories is presented in Figure 2, with 'Avoid' being the preferred option and 'Protect' being the least preferred option.







Figure 2. Risk management Hierarchy (adapted from CoastAdapt guidelines)





In general, planning-based risk management options fall under the categories of 'avoid', 'managed retreat' and 'accommodate'. Engineering-based options are essentially man-made structures introduced to the coast under the category 'protect'. The State or local government has no obligation to protect private assets from coastal erosion and hence the State Planning Policy takes the view that 'protect' is deemed the least preferred option for implementation. However, consideration of protecting private assets may be supported by the State where is has been identified through this process as a suitable risk management option consistent with the Policy requirements in SPP 2.6, relating to protection structures and or where there are primary benefits for public access to the coast. Descriptions of the various options in each adaptation category are presented in the sections below and are based on the updated Western Australia's CHRMAP guidelines (WAPC, 2019).

All lots and parcels of land within the 2040 coastal erosion scenario have been assigned a range of planning controls that endeavour to optimise the benefit and land use and development prior to physical coastal triggers occurring and propose opportunities for action when these triggers occur. A number of adaptation options, addressed in the Multi-Criteria Analysis (MCA), will be further assessed as part of financial modelling that inform the City's long-term financial planning.

Therefore, within each planning unit, private and public assets will be considered in the context of:

- initial protection of those assets, or
- alternative measures of managed retreat; for example, attrition, acquisition or relocation, and/or
- temporal sequencing of asset relocation.

What follows is a summary of the existing adaptation planning controls and relevant empowerment clauses in Local Planning scheme 21.

Existing Adaptation Planning Controls 2.3

The City of Busselton Local Planning Scheme No.21 has three significant provisions that give the City and Department of Planning Lands and Heritage considerable determination powers in relation to proposed development on the coast:

In deciding whether to grant development approval for development referred in clause 5.6.1 (granting of approval in coastal management areas required referral to the Department) the local government must consider:

- (a) the provisions of SPP 2.6) including the objectives, policies and guidelines contained within);
- (b) the likelihood of proposed development adversely affecting, or being adversely affected by coastal processes;
- (c) the likelihood of any proposed development adversely affecting any dune or beach of the shoreline or foreshore.





The Scheme contains some other useful tools, such as Clause 5.1 that enables specific requirements for use and management of land within a Special Control Area. This clause is an example that could be enhanced and newly applied to ensure appropriate planning provisions are implemented in areas that require special attention, such as land threatened by, or undergoing, coastal erosion.

These planning controls are presented in greater detail in Appendix E and demonstrate that the City of Busselton has made in-roads to addressing land use management along the coastal margins and wetland areas of the City. While it is acknowledged many of these provisions may not adequately address coastal processes, they represent examples of planning tools or instruments that can be adapted and expanded with new provisions that implement managed retreat over the planning timeframe in areas subject to changing coastal processes and the hinterland, lowlands and wetlands.

The Scheme contains some other useful tools, such as Clause 3.9 that enables specific requirements for use and management of land within a 'Special Purpose' Zone. This clause can be used to ensure appropriate planning provisions or laws are applied for to areas that require special attention, such as land threatened by, or undergoing, facing coastal erosion.

Under Clause 5.6.1, the Special Control Area on the Scheme Map known as a 'Coastal Management Area' has provisions applying to it that are in addition to the scheme. whereby the local authority must not approve development within coastal management areas unless the City has first consulted the Department of Planning, Lands and Heritage.

The Scheme also states under Clause 5.6.2 (b) that the local authority must consider the likelihood of the proposed development adversely affecting, or being adversely affected by, coastal processes.

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3 Risk Treatment Options

The following sections present the various potential options for each of the risk management categories as discussed in the previous section. These risk treatment options have been synthesised from the SPP2.6 guidelines based on their effectiveness in reducing loss of value, their appropriateness in regard to land tenure, and their envisaged potential benefit to the land.

Multiple options may be applied to a planning unit, either sequentially or in combination. The goal of these risk treatment options is to enable opportunities for considered action, rather than restrict opportunities or options moving forward, to accommodate the continual, cyclical nature of coastal processes, and land-use management.

In Section 4 the presented risk treatment options will be assessed for suitability as solutions for the Busselton coastline.

3.1 Avoid

Table 1 shows a table with the (single) Avoid option. In this option assets will only be allowed to be located in areas that are not vulnerable to coastal hazards. For sections of the Busselton coast where nothing has been developed this option means to leave the area as it is, without any developments within the coastal hazard areas. Most of the Busselton coastline however has been developed over the years, with various assets in the coastal hazard areas. Therefore, except for coastal hazard areas without infrastructure and/or property the Avoid option is fatally flawed.

Table 1. Avoid

Avoid Options					
AV	Locating assets in areas that will not be vulnerable to coastal hazards.				

3.2 Managed Retreat

Options that fall in the category of Managed Retreat are presented in Table 2. Managed retreat assumes that all existing protection structures are removed, no new structures are installed and the coast is allowed to retreat.

Table 2. Managed Retreat

Retreat Options						
PMR1	PMR1 Leave land and resources unprotected.					
PMR2	Demolition and removal of infrastructure as risk becomes intolerable.					





Retreat O	Retreat Options						
PMR3	Prevention of further development/ prohibit expansion of existing use rights.						
PMR4	Voluntary land acquisition						
PMR5	Requirement for disclosure of hazards/vulnerability, e.g. notification on title.						
PMR6	Prohibit high value developments and infrastructure in 'at risk' areas in favour of low-cost activities; for example recreation and temporary uses until risk becomes intolerable and structures need to be removed.						
PMR7	Relocate roads and community infrastructure away from the coast.						

3.3 **Accommodate**

Options that fall in the category of Accommodate are presented in Table 3. They relate to adapt the existing assets to withstand the impacts. It should be noted that this risk management category is more effective to mitigate inundation risk than erosion related risks.

The Accommodate option is fatally flawed where erosion hazard lines intersect infrastructure and/or property.

Table 3. Accommodate

Accon	Accommodate Options					
AC1	Design assets to withstand impacts: Buildings and infrastructure prone to coastal erosion should be of low value, temporary or relocatable structures, with lower portions of structures to be made of flood resistant materials, be sufficiently elevated, and have utility connections that may be easily restored.					
AC2	Prepare emergency evacuation plans to reduce the human consequences of coastal hazards.					
AC3	Apply planning controls that enable sequential change of land use as it becomes affected by coastal hazards.					
AC4	Locate development on the least hazardous portion of the site.					
AC5	Combine lots or parcels, to enable relocation of assets within the parcel area.					





Accom	Accommodate Options					
AC6	Seek variances to lot line setbacks along the landward and side property lines in the case of development along a shoreline.					
AC7	Alter the site to reduce its risk to coastal hazards (e.g. elevate).					
AC8	Do not permit increases in development density.					
AC9	Do not permit development of high value community assets.					
AC10	Provide alternative routes or other emergency contingency plans for existing roads.					

3.4 Protect

3.4.1 Areas of Application

Risk treatment options related to 'protect' are focused on holding the coastal foreshore as best as feasibly possible for a specific timescale. The City is legally required to maintain all its existing protection works until the end of their design life. After this the City is free to reinstate or demolish the 'protection'.

SPP2.6 Clause (5.5 (iii)) states the following regarding the 'Protect' category:

"Where sufficient justification can be provided for not avoiding the use or development of land that is at risk from coastal hazards and accommodation measures alone cannot adequately address the risks from coastal hazards, then coastal Protection works may be proposed for areas where there is a need to preserve the foreshore reserve, public access and public safety, property and infrastructure that is not expendable."

3.4.2 Hard and Soft Options

In general, coastal protection works can be divided into 'hard' and 'soft' options. Hard options include structural solutions such as rigid, impermeable seawall structures. Although more flexible, the following solutions are normally also classified as hard options: groynes, detached breakwaters, or reef structures made of rock or geotextile. A typical example of a soft protection solution is sand nourishment, where large quantities of sand are placed on the beach or on the foreshore. This will create a buffer of sand to slow down erosion. This option is further described below.

The 'soft' solutions give only temporary protection and will need to be re-applied regularly; for example, beach nourishment, while the 'hard' solutions have a longer lifetime. It should be noted that 'hard' measures will also likely require repair or adaptations during their lifetimes.





It should be noted that in the updated CHRMAP quidelines (WA, 2019), beach nourishment is included under the Accommodate category. Sand and beach nourishment however protect the coastline by increasing the sand budget in the system. Furthermore, this solution is often combined with other protection options. The beach nourishment option has been discussed as part of the protection solutions.

3.4.3 Position in the hierarchy of risk management categories

As both 'soft' and 'hard' protection measures require ongoing costs and may not permanently mitigate future erosion risk, options focused on 'protecting' the coastline are least favourable in the hierarchy of risk management categories. However, protection measures are legitimate options once all other options have been assessed and not considered appropriate to achieve the City's and community values.

Most of the coastline within the City's boundary has been subject to protection works in the past and continues to be protected by various options, including buried seawalls, above ground seawalls, groynes and sand nourishment. A protection solution is therefore seen as an appropriate measure to preserve the beach foreshore and amenities.

3.4.4 **Description of protection measures**

Various commonly applied protection measures are described in the sections below. Apart from a general description of the options, the typical areas of application and the feasibility for use on the City's coastline is presented.

As presented in Part 2, a number of protection measures are in place. These consist mostly of groynes (Geotextile Structures (GSC), timber, and rock), a number of exposed rock seawalls/revetments as well as beach nourishment.

Protect options are summarised in Table 4 below and discussed in detail in the following sections.

Table 4. Protect

Prote	Protect Options					
PR1	Beach Nourishment or replenishment					
PR2	Construction of Groyne(s)					
PR3	Construction of an Exposed Seawall or Revetment					
PR4	Construction of a Buried Seawall					





Protect Options							
PR5	Construction of detached Breakwater(s) or Reefs						
PR6	Dune Stabilisation						

3.4.5 PR1 - Beach Nourishment

Beach nourishment is a suitable treatment for beaches that are used extensively as well as for foreshore reserves where retreat is not an option.

This option, also known as sand nourishment, concerns the placement of sand on or in front of the beach, to re-establish a sandy beach and to provide a surplus of sandy sediment to counterbalance future erosion. This option is often applied in combination with other protection measures.

The feasibility of this option is influenced by the availability of suitable sand sources. Where suitable sources are not readily available or a considerable distance away, costs are increased. In this case, the City's coast is part of Ngai Capes Marine Park, with ecologically important seagrass beds (which also contribute to natural sediment supply). Therefore, offshore sand supply is not available locally and onshore sand supply is also constrained. This measure is however one of the measures currently applied by the City.

When this measure is considered it should be noticed that if the placed sand is significantly finer than the existing beach sand, the placed sand will be lost quickly. The beneficial effect of the nourishment would therefore be limited and it would need to be repeated frequently, depending on rates of erosion and volumes of sand supplied.

3.4.6 PR2 - Construction of Groyne(s)

Groynes protecting beaches are structures made of wood, rock or geotextile and are placed perpendicular to the beach. They are normally constructed in groups and stop, or restrict, longshore sand movement, stabilising the coastline locally. They are most effective where there is longshore sand supply and are often accompanied by beach nourishment.

Groynes are not effective as a means of managing short-term storm erosion. Groynes can be expensive and change the nature and appearance of the coast. These factors need to be weighed against the value of the assets being protected. As a groyne traps sand, erosion usually appears at the down-drift side and therefore construction of multiple groynes may be needed along a coastline. If a groyne is correctly designed, then the amount of material drift it can impede will be limited, and excess sediment can move through the system. However, if a groyne is too large, or is poorly/incorrectly designed and/or constructed, it may trap too much sediment, which would potentially cause severe beach erosion on the down-drift side.





Construction of groynes is best suited for beaches that are used extensively as well as for foreshore reserves where retreat is not an option. Groynes are an option for planning units with high value assets and retreat is not an option. A number of separate groynes and groyne fields are currently in place along the City's coastline. Further details on location and current state are given in Part 2.

3.4.7 PR3 - Construction of an exposed Seawall or Revetment

An exposed seawall is a rigid structure, usually consisting of reinforced concrete, rock, geotextile and/or steel. This option has been applied at several locations along the city's shoreline.

Seawalls protect the land, not the beaches. Due to its static nature, a seawall can conflict with the dynamic nature of the coast as it impedes the exchange of sediment between land and sea. Furthermore, the wave reflective nature of a seawall may result in scour and subsequent lowering of the seabed level in front of the seawall. As seawalls may affect the littoral drift process, they may also accelerate erosion of adjacent, unprotected coastal areas. Where a beach is sought to be retained, this option should therefore generally be accompanied with large quantities of beach nourishment or replenishment.

Seawalls can be appropriate where protection of land (including infrastructure on or under the land) is important and other options are assessed to be unfeasible. A number of rock seawalls are currently in place along the city's coastline. Further details on location and current state are given in Part 2.

Although a sloped rock revetment is often categorised as a 'seawall', the more open rock structure compared to a more standard seawall construction results in this option having less wave reflection and therefore a less eroding effect on the seabed in front of the structure. Furthermore, a rock revetment is more flexible to settling of its foundation than a rigid concrete or masonry seawall, increasing its durability in a dynamic marine environment.

Seawalls are expensive and change the nature and appearance of the coast. Due to the accompanying need for greater beach nourishment/ replenishment, this further adds to the cost of the option. This needs to be weighed against the value of the assets being protected.

3.4.8 PR4 - Construction of a Buried Seawall

A buried seawall is a rock protection buried under the sand. The principle is that under normal circumstances this protection measure is invisible. However, when a storm occurs and the sand above the seawall is being washed away, the seawall become exposed will mitigate further erosion, protecting the hinterland.

Once exposed, the seawall will have similar behaviour as a normal seawall (described in the previous section). It is therefore essential that the sand protection is reapplied promptly after a storm, to mitigate erosion of the foreshore due to wave reflection off the seawall. Furthermore, to ensure

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sufficient sand cover is available under normal weather conditions sand nourishment may need to be carried out regularly in an eroding coast.

3.4.9 PR5 - Construction of Detached Breakwater(s) or Reefs

A detached breakwater is a structure, usually made of rock or geotextile (geobags, geocontainers or geotubes), constructed in front of the coast more or less parallel to the coastline. They are normally constructed in groups and reduce or stop longshore sand movement, helping to stabilise the coastline locally. They are primarily effective where there is erosion due to wave-induced currents and are often best accompanied by beach nourishment.

Detached breakwaters (or reefs) will provide shelter for beaches from waves, which will reduce the wave-induced longshore currents and related longshore sand transport. In time, a so-called tombolo can form, connecting the beach with the breakwater. As a reef structure will have its crest under water, its effectiveness to reduce incoming waves is less than a breakwater which has a crest located above water.

Detached breakwaters (or reefs) also provide limited protection against sudden and short-term events, such as storm erosion. They can be expensive and change the nature and appearance of the coast. This needs to be weighed against the value of the assets being protected. As a detached breakwater (or reef) traps sand, erosion usually appears at the down-drift side and the construction of multiple breakwaters (or reefs) along a coastline may therefore be required.

Construction of detached breakwaters and reefs is applicable for beaches that are used extensively as well as for foreshore reserves where retreat is not an option. Also, they are normally constructed in areas where nearby coastal asset values are high and relocation of the assets is not an option. Given the City's coast is part of Ngai Capes Marine Park, with ecologically important seagrass beds construction of detached breakwaters or reefs may not be feasible.

3.4.10 **PR6 - Dune Stabilisation**

Dune stabilisation is a risk treatment option applicable for all areas where dune systems are present.

Sand dunes can protect beaches from erosion and can act as a buffer of sand to naturally replenish eroded beaches. Dune vegetation can mitigate wind-driven erosion. Dunes can be damaged by human activity, both intentional and unintentional.

Dune stabilisation measures include protecting existing vegetation, revegetating dunes and constructing sand-catching fencing to mitigate wind-driven erosion of the dune system. This is a relatively low-cost option.

Furthermore, preventing access and constructing dedicated access paths to the beach assists in preventing random foot traffic and resulting damage to dune vegetation.





4 Assessment of Risk Treatment Options

The suitability of the risk treatment options presented in the previous section has been assessed for each Planning Units by means of a Multi-Criteria Analysis (MCA) subject to further refinement through the financial analysis. On basis of the MCA suitable short-term measures for the priority listed assets have been identified. The results form the base for the identification of long-term adaptation pathways.

Subsequently, a number of promising options have been assessed in a financial analysis, presented in Part 4. This combination of analysis tools is recommended in the CHRMAP guidelines (WA, 2019).

The Multi-Criteria Analysis has been guided by the findings of the community and stakeholder engagement process (described in Section 4.2) and in consultation with the City of Busselton and the Department of Planning, Lands and Heritage.

4.1 Key Assessment Criteria

In undertaking the Busselton Coastal Adaptation Strategy, key assessment criteria have been derived from criteria presented in the CHRMAP guidelines (WA, 2019) along with those values from the Community Values Survey to benchmark the Multi-Criteria Analysis and input from the City and steering committee for this project. The agreed key assessment criteria comprise:

Acceptability Criteria

- Social Impact (property): the possible impact, loss or damage to private property or privately-operated leasehold land
- Social Impact (infrastructure): the ability to use a beach and foreshore/public infrastructure
- Environmental Impact: the possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage

Feasibility Criteria

- Effectiveness in risk reduction: the ability to function and reduce the impact of coastal
 hazards. This relate to how effective the option is at managing vulnerability and risk, how well
 tested the option is, how long the option may be effective.
- Practicability: the ease of being implemented (e.g. is it 'do-able'/workable/politically practicable?)
- Reversibility/Adaptability: the flexibility to allow a broad range of future options in the context of the hierarchy of adaptation categories identified in SPP 2.6

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Financial Criteria

- Cost for Implementation: the cost to implement a specific risk management option (includes modifying/relocating/voluntary acquisition costs)
- Ongoing Cost Maintenance: the cost to keep maintaining the adaptation option.
- Ongoing Cost Lost revenue: the revenue (specifically rates) that would be lost due to a risk management option, eg. due to taxpayers moving away from the area.

4.2 **Community Coastal Values Survey**

The City of Busselton commissioned Research Solutions to undertake a representative survey of its community to determine what the community values about its coastline. The sample was divided into coastal and inland residents/property owners, with similarities to the actual distribution of population.

The survey intended to:

- · Establish how the coastline is used and compare this with the values that people espouse for the coastline.
- Establish the key values and what people feel should be preserved from future erosion.
- Establish whether the community understands the changes that are occurring on the coastline and awareness of the City's actions to reduce coastal erosion.
- Lastly the research explored who the community felt should pay for the work required to reduce the impact of coastal erosion.

4.2.1 Community's Values

Results have shown that the north facing beaches in the City are strongly valued by the community, with over half of the community feeling that uninterrupted stretches of sandy beaches are a vital part of the character of Busselton and social wellbeing. The community decided that the most important coastal value is:

Handing the coastal area on to our children and grandchildren in the same or a better state (than it is now).

This is followed by a second group of values:

- Knowing that there are places in the coastal area that feel natural.
- Natural vegetation/ habitat on the foreshore and beach.
- Uninterrupted stretches of sandy beach to walk along.
- Heritage -historical features such as the Pioneer Cemetery or the jetty.
- Safe swimming beaches.





Research Solutions stated a significant proportion of the community uses the beaches noting that over 50% of the community say that they jog/walk on the beach or foreshore at least once a week. Furthermore, 25 % of joggers/walkers only use the remotely located parts of the beach and a further 20% use both the busy areas and remote areas.

In relation to who pays, the community's view was divided: approximately one third (30%) of people who undertook the consultation survey thought the cost of reducing coastal erosion should be borne by the affected that private landholders and businesses compared to approximately one third (30%) of other respondents suggesting state tax payer and one third (30%) Busselton rate payers.

4.2.2 Values Input

The values of the community have been used as a benchmark for decision making in the Multi-Criteria Analysis; the community values are used to help determine the selection of the traffic light system of whether to apply a risk treatment option or not and to what degree the option is applied. For example, given the construction of groin to protect a road for public beach access is acceptable to the community, what are the implications for:

- down-shore environmental impacts
- · does the groyne effectively reduce coastal erosion risk and
- is groin construction reversible while
- noting the relative cost and potential for ongoing expenditure.

4.3 Multi-Criteria Analysis

4.3.1 General

As per the CHRMAP (2019) guidelines, the various potential solutions have been compared using a Multi-Criteria Analysis (MCA). This method has been successfully applied in various projects and involves the assessment and scoring of the various mitigating measures against a preselected set of criteria and weighing factors on these criteria. Using an MCA is beneficial when a project is evaluated by more than a single criterion, which is the case here.

The MCA reviews potential viable options as benchmarked by the community values research. No single option will be recommended at this stage, but unviable options can be eliminated from future pathways. A number of options that are viable are subject to trade-offs and will be analysed in the financial modelling. The approach is about enabling or keeping options open to avoid path dependency and applying appropriate sequence of actions in the short term potentially followed by a longer-term pathway.

4.3.2 Scoring method

The criteria used in the MCA, established together with the City and the Steering Committee, are discussed in Section 4.1. The options are scored based on the assessment against these criteria as

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presented in Table 5. The scoring is between 1 and 4, with 1 being the least negative impact against criteria and 4 being the highest negative impact against criteria..

Table 5. Definition for scoring of the options

Score	Keyword	Description			
1	ls	The option is meeting the criteria.			
2	May	The option partly meets the criteria with some trade-offs.			
3 Likely not The option will likely not meet the criteria.		The option will likely not meet the criteria.			
4	Will not	The option will not meet the criteria.			

Using this scoring system, the total score of a solution is simply the sum of the scores for each individual criterion. Solutions that have a low total score are the most favourable solutions, while options with a high score are least favourable.

This scoring method is chosen as the most effective and simple method of capturing and presenting the findings of the Community Coastal Values Survey, the City of Busselton and the Steering Committee. The scoring simplifies a complex series of elements in a matrix format. Being partly derived from the community coastal values survey, the MCA is by its nature a subjective representation of social and other values.

Applying this scoring definition to set of criteria as presented in Section 4.1 will lead to a more detailed scoring definition as per Table 6.





Table 6. Definition for scoring – detailed per criterion

	Acceptability Criteria			Feasibility Criteria			Financial Criteria		
Score	Social Impact (property)	Social Impact (infrastructure)		Effectiveness in Risk Reduction	Practicability	Reversibility/ Adaptability	Cost for Implementa- tion		Ongoing Cost (lost revenue)
1		Socially acceptable	Environmental ly acceptable	7.00	Easy to implement	Easily adapted, no restrictions in future options	Low cost	Low cost	No loss of income for the City
2	Minor social impact	Minor social impact	Minor environmental impact	Medium term effectiveness	Moderately easy to implement	Partially adaptable, some restrictions in future options	Acceptable costs	Acceptable costs	Some loss of income for the City
3	Significant social impact	Significant social impact	Significant environmental	Limited or short-term effectiveness	Difficult to implement	Difficult to adapt, significant restrictions in future options	High costs	High costs	Significant loss of income for the City
4	Unacceptable social impact	Unacceptable	Unacceptable environmental impact	Ineffective	Impractical	Not adaptable	Cost prohibitive	Cost prohibitive	Unacceptable loss of income for the City

4.3.3 Weighing

Applying the scoring system as above suggests that all criteria have an equal importance. As this is mostly not the case, an MCA uses weighing factors, indicating the differences in importance of the criteria. A low weighting factor (1) is used for criteria that are less important and a high weighting factor (5) for criteria that are very important. This results in a total weighed score, adding the scores of each criterion with their weighing factors. Criteria with a high weighing factor will have a significant influence on the result, while criteria with lower weighing factors have less influence on the result. Similar to the total score, the solutions with the **lowest total weighted score are favourable**.

In consultation with the City we have selected weighing factors as presented in Table 7.

Table 7. Selected weighing factors for the criteria

Acceptability Criteria			Feasibility Criteria			Financial Criteria		
Social Impact (property)	Social Impact (infrastructure)	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility/ Adaptability	Implementa-		Ongoing Cost (Lost revenue)
4	4	3	5	3	1	5	2	1

Note: 1 = least important, 5 = most important





4.3.4 MCA Scoring and results

Based on the assessment of the various options for each criterion, MCA scoring tables have been prepared for the various planning units. These are shown in Appendix F.

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Differences in scoring and thus results for the various Planning Units are mainly caused by the population density of the Planning Unit. As an example, in central highly populated areas the Managed Retreat option will affect more people and will be therefore less accepted by the inhabitants, less practicable and costlier to implement than for more rural areas. Also, the lost revenue is much higher for this option in highly populated areas.

The most favourable risk management options for each planning unit, following from the MCA assessment, are presented in Table 8.

Table 8. Favourable risk management options as per MCE assessment

Planning Unit		Most favourable risk management options as per MCA			
		2040	2070	2115	
1	Smiths Beach	Protect	Protect	Protect	
2	Yallingup	Avoid / Managed Retreat	Protect	Managed Retreat / Protect	
3	Bunker Bay	Avoid / Managed Retreat	Protect	Protect	
4	Eagle Bay	Avoid / Managed Retreat / Protect	Protect	Protect	
5	Old Dunsborough	Protect	Protect	Protect	
6	Dunsborough Townsite	Protect	Protect	Protect	
7	Quindalup Beach	Protect	Protect	Protect	
8	Marybrook	Protect / Managed Retreat	Protect	Protect	
9	Siesta Park	Protect	Protect	Protect	
10	Locke Estate	Protect	Protect	Protect	
11	Abbey	Protect	Protect	Protect	
12	Broadwater	Protect	Protect	Protect	

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Planning Unit		Most favourable risk management options as per MCA			
		2040	2070	2115	
13	Busselton West (A)	Protect	Protect	Protect	
14	Busselton West (B)	Protect	Protect	Protect	
15	Busselton Central	Protect	Protect	Protect	
16	Busselton East	Protect	Protect	Protect	
17	Port Geographe	Protect	Protect	Protect	
18	Wonnerup	Protect	Protect	Protect	
19	Forrest Beach	Managed Retreat / Protect	Protect	Protect	

It can be seen that overall the Protection option is considered most favourable, for the short, medium and the longterm. Only for a few more rural planning units Managed Retreat or Avoid is considered favourable, mostly limited to the short-term.

4.3.5 Triggers for Implementation

The adaptation pathways comprise a sequence of options and tipping points triggered by the impact of changing coastal processes over time. The approach is about enabling or keeping options open to avoid path dependency and applying appropriate sequence of actions in the short term potentially followed by a longer-term pathway.

Triggers for implementation are those that occur as a direct result of natural coastal processes, for example a severe storm at high tide causing coastal erosion. The proposed adaptation options are not effective until a coastal hazard trigger has occurred, as follows:

- As properties along the shoreline have already exceeded this trigger, retreat management options are required now and on an ongoing basis.
- Where the most landward part of the shoreline (Horizontal Shoreline Datum) is within 40
 metres of the most seaward part of a structure's lot boundary.
- Where a public road is no longer available or able to provide legal access to coastal asset.
- When water, sewage or electricity to the lot is no longer available or unsafe as they have been removed/decommissioned by the relevant authority due to coastal hazards.





• Assets are predicted to become highly vulnerable within the 2030 horizon.

4.3.6 Planning unit maps

Summary maps are presented in Appendix G for each planning unit, including a list of the valuable assets, the potential short-term and long-term management options, event triggers and trade-offs.





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Part 4: Financial modelling

City of Busselton

16/07/2020 301012-02572





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1 Introduction

This is the fourth chapter report as part of the Coastal Adaptation Strategy (CAS) for the City of Busselton (the City).

This Coastal Adaptation Strategy will have financial costs and benefits to the City of Busselton and its residents which will be addressed through a forecasted financial model. This financial model is prepared in the form of an easy to use Excel spreadsheet that will be provided to the City. This chapter summarises the methodology and outputs for the financial model which feeds into the overarching Coastal Adaptation Strategy.

Following from the assessment of potential adaptation options various planning units as presented in the previous chapter report, the present chapter report presents the financial model to estimate the financial costs and benefits of the coastal adaptation and funding options for coastal management, over a forecasted period of 100-years.

The three (3) coastal adaptation options assessed in this chapter are:

- · Coastal Protection through execution of sand/beach nourishment,
- Coastal Protection through construction of coastal structures including seawalls/raised bunds (parallel to the coastline) or groynes (perpendicular to the coastline), and
- · Managed Retreat of properties and assets as the coastline recedes over time.

Please refer to the previous chapter report for details of the various coastal adaptation options.

For the purposes of the strategy, the Study Area has been divided into 19 planning units. Financial modelling outputs for the selected adaptation options are provided for each of the planning unit so that the City can use this information at a localised level to inform decisions on where to protect and/or manage the retreat of coastal properties and assets as the coastline recedes over time. Future decisions regarding adaptation options shall however consider neighbouring planning units, as some of the adaptation options will have a greater impact on the (longshore) sediment transport regime along the coast than others. This will therefore require an integral approach.

Erosion hazard lines over a 100-year period have been forecast¹, indicating how much the coastline is expected to recede. Such forecast assumes there is no further investment in local measures (includes existing groynes and seawalls/bunds) to protect the hinterland by halting a receding coastline. The City has provided information on properties and assets that would be lost to coastal erosion within these three timed-horizons (2040, 2070 and 2115) in this 'Base Case' scenario. This information forms the basis of the estimated financial costs and benefits of the adaptation options.

¹ 2011 Damara WA – Busselton Erosion Study





2 Adaptation options and associated costs & benefits

Three adaptation options have been prescribed by the City for financial modelling. Descriptions of the options and the associated financial costs and benefits to be included in the financial modelling are outlined in this section. The financial costs and benefits of the respective options described in this report and the financial model represents incremental changes to the assumed Base Case - which assumes no further investment in current local protection measures and no managed acquisition or replacement of private or public assets as the coastline erodes/recedes over time.

Adaptation options modelled 2.1

A description of each adaptation option and the Base Case against which the financial costs and benefits are assessed are provided in Table 1. The Base Case assumes an unmanaged coastal erosion scenario, with properties and assets being lost to coastal recession and not being replaced or acquired in advance. Adaptation options such as Protection by Sand Nourishment and Protection by Coastal Structures assume the measures will be effective in halting coastline recession, ensuring no public or private properties are impacted. In the Managed Retreat option, the coastline is assumed to recede in the same way as the Base Case with public infrastructure being relocated and private properties being acquired in advance of the eroding coastline. The relocated public infrastructure will ensure continued amenities to the public while the acquired private properties will be demolished.

It should be noted that the financial modelling is part of a strategy document, whereby the assessed adaptation measures are groups of potential options, rather than specific or recommended options. For example, Protection by Beach Nourishment includes various sub-options focussed on bringing additional sand to the system such as sand placement on the beach as well as sand placement on the foreshore. Similarly, Protection by Coastal Structures include various sub-options focussed on protecting by coastal structures such as groynes (made of geotextile or rock - the latter in more exposed conditions), parallel breakwaters, submerged reefs, etc, plus the construction of a continuous seawall/bund along the foreshore to at least +3.8 m AHD (for instance a buried seawall made of rock or geotextile). The actual detailed choice of sub-option is outside the scope of this strategic study. Please refer to the previous chapter report for details of the various coastal adaptation options.

Table 1 Description of adaptation options and impacts

Adaptation Option	Description	Assumed impact
Base Case	No further investment in local protection measures Unmanaged retreat as coastline recedes: No acquisition of private properties impacted No replacement/relocation of public assets impacted	Properties and assets will be lost to the eroding coastline Loss of public beach amenity and environmental value Loss of public assets

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Adaptation Option	Description	Assumed impact
Protection by sand/beach nourishment	Protection of the whole of the Planning Unit to preserve beach amenities and environmental values by halting coastline recession through beach nourishment.	Protective measure will be effective to ensure no loss of property or assets over the 100-year time horizon.
Protection by coastal structures	Protection of the whole of the Planning Unit to preserve beach amenities and environmental values by halting coastline recession through provision of coastal structures including: raised bunds (including seawalls or – if space allows, dune construction) groynes (including building new and upgrading existing groynes) minor sand nourishment.	Protective measures will be effective to ensure no loss of property or assets over the 100-year time horizon.
Managed retreat	Public assets will be relocated in advance of the receding coastline to preserve beach amenities and environmental values. Private properties acquired in advance of the receding coastline	The coastline will continue to recede with staged management actions according to short term (2030/40) and long term (2100/15) management plans.

2.2 Financial costs and benefits modelled

Financial costs and benefits of both public and private sectors for each assessed adaptation option are summarised in Table 2.

It is important to note **that benefits mentioned**, throughout this report, **do not capture the full economic and social benefits of the options**. For example, all three adaptation options maintain a publicly accessible beach and other public amenities such as playgrounds, barbeque areas, gardens, jetties boat ramps, etc. The retention of these public assets has significant social and economic values that are not captured in this financial modelling exercise. The **financial modelling captures** key financial costs, as well as public and private sector financial benefits, **that affect cashflow or asset valuation gained** (or retained) arising from different adaption options across each planning unit.





Table 2 Financial costs, public and private financial benefits in modelling

	Financial Costs and benefits	Protection by beach nourishment	Protection by Coastal Structures	Managed Retreat
	Beach and foreshore facilities maintenance (3.3.1)	✓	✓	✓
	Ongoing cost of sand replacement (3.3.2)	✓	✓	
Costs (See Section 3.3)	Capital, maintenance and replacement costs of protection infrastructure (3.3.3)		✓	
Cos (See Sect	Demolition, relocation and/or replacement of public infrastructure (3.3.4.2 & 3.3.4.3)			✓
	Private property acquisition costs (3.3.4.1)			✓
	Private property demolition costs (3.3.4.4)			✓
efits	Avoided loss of public infrastructure (valued at replacement cost) (3.4.1)	✓	✓	
lic financial bene (See Section 3.4)	Replacement cost or public infrastructure (3.4.2)			✓
Public financial benefits (See Section 3.4)	Avoided loss of council rate revenue (valued at forecast rate revenue from properties lost in a Base Case scenario) * (3.4.3)	√	✓	
nancial its on 3.5)	Avoided loss of private property (measured by property GRV) (3.5.1)	✓	✓	
Private financial benefits (See Section 3.5)	Compensation for lost property (valued at unaffected market value of private property acquired) (3.5.2)			✓

^{*} It is noted that the public financial benefits of the adaptation options include an estimate of avoided loss of council revenue collection from properties that would otherwise have been lost to the receding coastline under a Base Case scenario or managed retreat option. Retention of revenue collection by the City is counted as a public benefit for this assessment as it recognises these funds for development and services will benefit residents. It has been advised by City that a percentage of the fund collected from the rates may be channelled into the Coastal Adaption option. This has been accounted for and reflected in the model and discussed further in the following sections of this report. Adaptions options such as Base Case and Managed Retreat assume that properties lost to the receding coastline would not be replaced by other properties. This is a simplified approach as it is extremely difficult to predict or forecast the retention of properties within the City's jurisdiction post acquiring and abandonment.





3 Methodology and assumptions

This chapter outlines the methodology for estimating financial costs and benefits discussed in the previous chapter. It is noted that this financial model is strategic in nature and aims to enable the City to make an informed decision around the financial cost and benefits of each adaptation options for each planning unit based on the 'Investment Pathway' (costal adaptation strategy) applied to each unit throughout the course of the 100-year forecast period. The model accounts for this by enabling different adaptation options to be adopted for each planning unit at different points in time.

The identification and estimation of financial costs and benefits outlined in this chapter should be considered as a starting point that can be progressed in more detail as the adaptation strategy develops over time, after the completion of this study. Given this context, the financial model has been set up to be flexible to changes in variables and assumptions, such as cost parameters and financial benefits, as more information becomes available and as refinements to options and adaptation strategies are made in future.

3.1 Price Base year

Price Base year is set at FY2018-19 dollars. All financial costs and benefits provided will be adjusted to FY2018-19. This enabled a synchronised cost and benefits for the 100-year time horizon financial modelling of adaptions options.

Costs and financial benefits provided by the City which are before FY2018-19 will be **escalated up to the price base year using Perth CPI values** as per published on Australia Bureau of Statistics.

3.2 Price indexation

The financial modelling assumes all financial costs and benefits will increase at **2.5% p.a**. This figure is assumed by taking the mid-point of the Reserve Bank of Australia's target inflation rate set at 2-3% p.a. This assumption has been adopted for simplicity, acknowledging the uncertainty of price movements over the 100-year time horizon modelled.

The outputs of the financial model are calculated and presented in both nominal terms (inclusive of 2.5% p.a. inflation) and real terms (exclusive of inflation). Presenting costs in real terms enable these costs and benefits to be viewed in relative to today's (FY 2018-19) dollars. This is particularly useful as the effect of inflation on nominal costs is significant over the very long term. For example, \$100,000 today would be equivalent to almost \$1.2 million in 100 years' time after accounting for 2.5% p.a. inflation.

3.2.1 Price Indexation for property price

Research has been carried out to understand the suitable price indexation for the property prices for use in the financial model. The following sites are visited:

- 1. Australia Bureau of Statistics
- 2. REIWA (Real Estate Portal in Western Australia)





The findings from the research shows that house prices in the City area has been on the downward trend for the last five (5) years. Furthermore, there are limited historical data available for free access. Based on the available information and discussions with the City, it was decided to use the midpoint of the inflationary target set by RBA for this analysis.

Advisian understands that land availability within the City is limited and potentially pushing the property price growth higher than 2.5% p.a. in the future. Hence, such condition is being captured in the model by considering the densification effect which will be further discussed in detail in Section 3.5.1.

Therefore, price indexation for property is set at 2.5% for this financial model. Flexibility is provided in the model to enable the City to update the indexation.

3.2.2 Price Indexation for sand

Sand supply for beach nourishment is becoming scarcer and the availability of supply to meet future demand is uncertain, especially locally. Given this inherent uncertainty, the following indexation for sand is used in the financial model:

- 1. Prior financial year 2023, the indexation is set at 2.5% p.a.
- 2. Post financial year 2023, the indexation is set at 5.0% p.a.

3.3 Cost assumptions

3.3.1 Beach and foreshore facilities maintenance cost

All three adaptation options are assumed to retain public beach and foreshore facilities which are expected to incur annual maintenance costs. As the Base Case scenario involved beach and foreshore facilities being lost to a receding coastline, the costs of maintaining these facilities in all three adaptation options are incremental to the maintenance costs incurred under the Base Case. The costs have been estimated using figures from The City's maintenance budget as per the following table.

Table 3 Beach and foreshore facilities maintenance costs from 2018-19 City budget

ltem	Annual Maintenance cost – per unit/annum (\$FY 2018-19)	
Jetties and Boat ramps	\$275,160	
Coastal protection	\$297,840	
Beach Access	\$26,828	
Coastal Fencing	\$5,165	
Total (for all 19 planning units)	\$604,993	

The total value shown in Table 3 captures the maintenance costs for the entire 19 planning units. As there is no further breakdown of costs according to each planning unit, it is assumed the maintenance cost will be equally distributed among the 19 planning units at **\$31,842** per unit.





3.3.2 Protection by Beach Nourishment capital and maintenance costs

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3.3.2.1 Capital Cost of Beach Nourishment

Beach nourishment will mitigate coastal erosion by supplying sand to the system. For the purposes of this assessment the estimated volumes for sand loss caused by erosion which is to be replaced are based on the *Shire of Busselton Coastal Erosion Study, Assessment of Climate Change Impacts;* Damara WA Pty Ltd (June 2011).

For the financial model, the 19 planning units were divided into two groups based on location. The first group, called "Geographe Bay", includes planning units 1 and 2. The rest of the planning units (PU3 to PU19) have been group together and are called "Open Coast Settlement." Table 4 summarises the rate of sand lost volume per year for both Geographe Bay and Open Coast Settlement. The amount of nourishment is in accordance to the cumulative years of sand lost until the year of intervention.

The cost of sand nourishment, including the cost of sand, transportation and works (labour) is assumed to be \$31.20 per m³ (FY2018-19). This value is an assumption based on similar work around the state and assumes having a suitable sand source locally.

Year	Geographe Bay - Volume of sand lost per year (m³ per m)	Open Coast Settlement- Volume of sand lost per year (m³ per m)
2020	0	0
2030	0.76	4.70
2040	0.94	5.80
2050	2.41	7.40
2060	2.93	9.00
2070	6.70	10.30
2080	7.34	11.30
2090	7.61	11.70
2100	7.67	11.80
2110	7.67	11.80
2120	6.50	10.00





3.3.2.2 Beach nourishment maintenance

Considering the process of coastal erosion continues over time, the beach nourishment options requires regular reapplication. For the purposes of this study, an annual maintenance is assumed in the financial model to capture costs associated with replenishing the beach regularly with additional sand.

In capturing the maintenance cost, the rate of sand lost as shown in Table 4 is used. This is assumed because the coastlines of the planning units are expected to be subjected to increasing degrees of sand loss over time. The cost of replenishing the sand is assumed to be \$31.20 per m³ (FY2018-19).

3.3.3 Protection by coastal structures - capital and maintenance costs

3.3.3.1 Capital cost of coastal structures

The capital cost related to coastal structures work encapsulates major upgrade work or construction of new groynes and/or bunds (including seawalls or – if space allows – 'natural' sand dunes) along selected planning units. The cost estimates and asset life assumptions for groynes and bunds are summarised in the following tables. The costs in the table represents the total cost of constructing the respective structures. Flexibility is built into the model to allow changes in the cost of building new structures and the cost to upgrade.

For the groynes we have made a distinction between rock groynes for the planning units which are more exposed to significant wave action and geotextile groynes for the more benign locations. This is reflected in the cost of the groynes (higher for rock) and the resulting lifetime of the structures.

Similarly, for the raised bund, the cost is based on the construction of a raised seawall bund for areas with little space available or a wider 'natural' sand dune where sufficient space available.

As there are existing groynes along the coast, it is assumed that the selection of the Protection by Coastal Structures option will trigger an upgrade to the existing structures. The cost to upgrade is assumed to be 10% of the capital cost and asset life similar to a new Groyne.

Table 5 Protection by coastal structures cost and asset life assumptions - Groyne option

	Planning Unit	Length of coast (m)	Number of existing groynes	Number of new groynes	Assumed material of new groynes	Asset Life of Groynes	Capital Cost (\$"000) per groyne
1	Smiths Beach	720	N/A	3	Rock	35	300
2	Yallingup	880	N/A	3	Rock	35	300
3	Bunker Bay	2,150	N/A	10	Rock	35	300
4	Eagle Bay	1,250	N/A	5	Geotextile	20	100
5	Old Dunsborough	1,100	N/A	4	Geotextile	20	100
6	Dunsborough Townsite	2,700	1	12	Geotextile	20	100

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	Planning Unit	Length of coast (m)	Number of existing groynes	Number of new groynes	Assumed material of new groynes	Asset Life of Groynes	Capital Cost (\$"000) per groyne
7	Quindalup Beach	5,620	1	26	Geotextile	20	100
8	Marybrook	2,390	N/A	11	Geotextile	20	100
9	Siesta Park	2,700	7	8	Geotextile	20	100
10	Locke Estate	1,450	6	0	Geotextile	20	100
11	Abbey	2,960	6	8	Geotextile	20	100
12	Broadwater	2,120	N/A	10	Geotextile	20	100
13	Busselton West (A)	2,040	5	4	Geotextile	20	100
14	Busselton West (B)	1,520	N/A	6	Geotextile	20	100
15	Busselton Central	1,970	8	1	Geotextile	20	100
16	Busselton East	2,910	5	9	Geotextile	20	100
17	Port Geographe	1,090	Breakwater	3	Geotextile	20	100
18	Wonnerup	2820	6	7	Geotextile	20	100
19	Forrest Beach	4540	N/A	22	Geotextile	20	100

Table 6 Protection by coastal structures cost and asset life assumptions - Bund option

	Planning Unit	Existing structures	Additional bund length required (m)	Assumed type of future bund	Cost of bund (\$/m)	Asset life of bund
1	Smiths Beach	N/A	0	N/A	N/A	N/A
2	Yallingup	N/A	0	N/A	N/A	N/A
3	Bunker Bay	N/A	0	N/A	N/A	N/A
4	Eagle Bay	N/A	1,000	Dune	3,000	40
5	Old Dunsborough	N/A	1,100	Seawall	5,000	40
6	Dunsborough Townsite	Buried Geotextile Seawall	2,700	Seawall & Dune	4,000	40

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T	Planning Unit	Existing structures	Additional bund length required (m)	Assumed type of future bund	Cost of bund (\$/m)	Asset life of bund
7	Quindalup Beach	Stone Revetment	5,620	Dune	3,000	40
8	Marybrook	N/A	2,390	Dune	3,000	40
9	Siesta Park	Rock Seawall	2,700	Dune	3,000	40
10	Locke Estate	N/A	1,450	Dune	3,000	40
11	Abbey	Boatramp Headland	2,960	Dune	3,000	40
12	Broadwater	N/A	2,120	Dune	3,000	40
13	Busselton West (A)	2 Seawalls	2,040	Seawall	5,000	40
14	Busselton West (B)	N/A	1,520	Seawall	5,000	40
15	Busselton Central	Rock Seawall & concrete/geofabric sand containers	1,970	Seawall & Dune	4,000	40
16	Busselton East	N/A	2,910	Dune	3,000	40
17	Port Geographe	Seawall	1,090	Seawall	5,000	40
18	Wonnerup	N/A	2,820	Dune	3,000	40
19	Forrest Beach	N/A	4,540	Dune	3,000	40
Tota	ı		38,930		-	-

3.3.3.2 Maintenance cost of protection by coastal structures

Any form of coastal structures development work will require costing of its annual maintenance. This is to ensure that adequate funding is allocated for works, thereby, ensuring the structures continues to serve its purpose properly. The annual maintenance cost for groynes and bunds is summarised in the following table.





Table 7 Maintenance cost of Protection by Coastal Structures

Coastal Structures	Maintenance Cost	Assumption
Groynes and bunds	3% of capital cost	Assume maintenance is a percentage of the capital cost. Assume maintenance cost includes all relevant cost in carrying out maintenance work.

3.3.3.3 Beach Nourishment cost

It should be noted that the adaptation option Protection by Coastal Structures will need some form of sand nourishment to feed sand into the system and optimise the protective function of these structures. We have therefore assumed:

- The approach and initial cost of sand replenishment is in accordance with the capital costs outlined in section 3.3.2.1
- The annual maintenance cost for sand replenishment is 20% of the quantities of the Protection by Sand/Beach Nourishment option that solely relies on sand nourishment.

3.3.4 Managed retreat option cost

The Managed Retreat option sees the City acquiring private property and relocating public infrastructure in accordance to the Erosion Hazard line as mention in 2.1. This section discusses the assumptions and methodology used in determining the cost of acquiring private property and relocating public infrastructure.

3.3.4.1 Cost of acquiring private property

The City has provided details of all properties that are in the erosion zone which includes parameters such as Goss Rental Value (GRV) and land area (Hectare). Market value of each property are estimated by dividing the GRV by an assumed rental yield for residential and commercial properties. The assumed yields are:

- Residential yield of 2.5%
- Commercial yield of 7.5%

Escalation for property price is assumed to follow the CPI-inflation target as set by RBA. This is because the property price trend analysis of Western Australia has been on a negative growth trajectory in the past few years. Furthermore, it may not be suitable for use in forecasting future price over the forecast period of 100 years as it is not representative of long-term trends.

Furthermore, the City has also indicated that there is a **possibility for future development** and **further densification to take place**. Such occurrence will increase the GRV of the property, and in turn, increase the property price. Presently, there is no information available from the City on future developments and densification changes over the next 100-years. To demonstrate the effect of densification on the price of property within a particular planning unit, the model uses a specified percentile of the GRV/ha for the planning unit. For example, if a property's GRV/ha is below the selected percentile of its planning unit, the GRV will be increased to the value of the specified GRV/ha percentile. If the property's GRV/ha is higher, then there will be





no increase or adjustment applied. The effect of densification will also affect the GRV and Council rate revenue. Refer to Figure 1 for a simple illustration of the approach.

Currently, the model assumes a 50% percentile for all the planning units. The model has been built to allow City to change the specified percentile for each planning unit. See Figure 2 for the function built into the model.

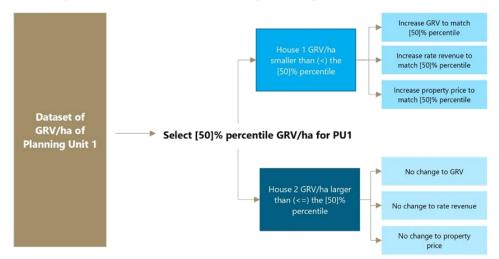


Figure 1 Illustration of the densification approach

Enable densification in model	Yes or No	Yes	Prop_dens
Percentile for PU1	%	50%	
100450401000004000000000000000000000000	96		
Percentile for PU2		50%	
Percentile for PU3	96	50%	
Percentile for PU4	%	50%	
Percentile for PUS	96	50%	
Percentile for PU6	96	50%	
Percentile for PU7	96	50%	
Percentile for PUS	96	50%	
Percentile for PU9	96	50%	
Percentile for PU10	%	50%	
Percentile for PU11	96	50%	
Percentile for PU12	96	50%	
Percentile for PU13	%	50%	
Percentile for PU14	%	50%	
Percentile for PU15	96	50%	
Percentile for PU16	96	50%	
Percentile for PU17	96	50%	
Percentile for PU18	96	50%	
Percentile for PU19	%	50%	

Figure 2 Percentile to be adopted for densification across each planning unit





In the development of the financial model, the maximum number of years to perform the property acquisition is as shown in the following table. This is to align with the hazard line dates (years) provided by the City. This is to ensure properties are purchase prior to the forecast erosion taking place. Such limit is imposed as the model will not consider the cost of acquiring the properties once it passed the maximum acquiring years as it assumed the erosion has destroyed the remaining properties. This is only indicative and not representative of the true outcome if the Managed Retreat option is adopted as the City will, in its best ability, acquire all the properties prior to the onset of erosion.

Table 8 Maximum acquiring years across each hazard line

Hazard Line	Maximum year of acquiring
2040 Hazard line	20
2070 Hazard line	30
2115 Hazard line	45

3.3.4.2 Relocation of public infrastructure- City Asset

The Managed Retreat option involves retention of functional and publicly accessible foreshore and facilities by relocating or replacing public infrastructure as the coastline recedes. The City has provided an estimate of the replacement costs for the assets it maintains from PU1 to PU19. The following table shows the replacement cost broken down by planning unit. Details of the cost for each asset type along each planning unit can be referred to in Appendix H.

Table 9 Cost for relocation of public infrastructure

	Planning Unit	Cost to replace all assets according to erosion zone			
		2040	2070	2115	
1	Smiths Beach	\$760,664	\$58,646	\$673,503	
2	Yallingup	\$2,238,144	\$1,097,088	\$1,797,559	
3	Bunker Bay	\$192,743	\$117,648	\$760,897	
4	Eagle Bay	\$151,068	\$871,450	\$514,585	
5	Old Dunsborough	\$2,736,111	\$1,843,797	\$981,843	
6	Dunsborough Townsite	\$1,517,229	\$3,496,453	\$1,043,952	
7	Quindalup Beach	\$3,935,943	\$4,068,757	\$699,511	
8	Marybrook	\$432,694	\$933,002	\$321,180	
9	Siesta Park	\$1,944,030	\$693,187	\$-	

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	Planning Unit	Cost to replace all assets according to erosion zone			
		2040	2070	2115	
10	Locke Estate	\$989,485	\$140,424	\$9,586	
11	Abbey	\$6,661,765	\$4,634,027	\$5,462,818	
12	Broadwater	\$1,781,451	\$4,131,939	\$5,591,077	
13	Busselton West (A)	\$3,748,971	\$5,414,963	\$4,180,868	
14	Busselton West (B)	\$3,320,109	\$4,501,685	\$3,037,760	
15	Busselton Central	\$52,648,633	\$16,747,327	\$19,250,993	
16	Busselton East	\$2,311,280	\$7,226,182	\$9,737,842	
17	Port Geographe	\$1,804,297	\$7,782,641	\$2,231,654	
18	Wonnerup	\$1,737,022	\$1,131,753	\$1,212,819	
19	Forrest Beach	\$1,354,457	\$1,792,558	\$329,538	
Total		\$90,266,095	\$66,683,526	\$57,060,315	

The Asset Replacement Costs assumptions tabled in worksheet "PubAsset Cost" of the financial model have been used to represent the total cost of relocating or replacing an asset, including the cost of demolition. This may overestimate the cost for some assets (e.g. fencing that could be salvaged and moved) and underestimate it for others (e.g. buildings as demolition costs would be incurred but not included in estimated replacement values).

3.3.4.3 Relocation of public infrastructure- State Asset

The Managed Retreat option involves retention or removal of state assets as the coastline recedes. The following agencies have provided financial information on which the replacement costs for the assets it operates/maintains have been estimated for PU1 to PU19:

- 1. Busselton Water (Water Lines)
- 2. Main Road (Roads)
- 3. ATCO (Gas)
- 4. WaterCorp (Sewer)





No information was available from Western Power (electricity). However, based on cost indications from an electrical engineer for light poles, a high-level cost estimate for removal of light poles has been prepared, noting other electrical infrastructure is not included in the state asset costs.

Refer to the following table for the summary of the replacement cost for all state/utility assets across each planning unit.

Table 10 Summary of replacement cost of state and utility asset across each planning unit

		Total repla	acement cost of state/u	utility asset
	Planning Unit	Short Term (2040)	Medium Term (2070)	Long Term (2115)
1	Smiths Beach	\$-	\$1,000	\$2,193,738
2	Yallingup	\$42,000	\$-	\$10,000
3	Bunker Bay	\$-	\$-	\$2,196,238
4	Eagle Bay	\$-	\$-	\$22,500
5	Old Dunsborough	\$5,241,430	\$5,303,930	\$5,281,430
6	Dunsborough Townsite	\$4,431,924	\$5,897,798	\$12,822,702
7	Quindalup Beach	\$46,998	\$1,717,284	\$2,972,594
8	Marybrook	\$-	\$7,891,900	\$4,602,174
9	Siesta Park	\$35,000	\$2,642,912	\$5,000
10	Locke Estate	\$-	\$920,527	\$406,562
11	Abbey	\$1,424,042	\$21,965,469	\$37,264,829
12	Broadwater	\$10,000	\$5,505,121	\$27,787,896
13	Busselton West (A)	\$1,142,002	\$17,016,085	\$24,851,146
14	Busselton West (B)	\$1,286,973	\$16,218,056	\$21,018,433
15	Busselton Central	\$604,482	\$3,704,092	\$15,851,633
16	Busselton East	\$216,726	\$23,354,566	\$46,283,385
17	Port Geographe	\$375,211	\$2,889,917	\$5,699,653
18	Wonnerup	\$20,000	\$2,990,328	\$227,942





Planning Unit		Total replacement cost of state/utility asset			
		Short Term (2040)	Medium Term (2070)	Long Term (2115)	
19 Forrest Beach		\$-	\$-	\$117,247	
Total		\$14,876,788	\$118,018,984	\$209,615,101	

Details of the cost for each asset type along each planning unit can be referred to in Appendix I.

3.3.4.4 Demolition cost of private property

Upon acquiring properties, the City is assumed to demolish the properties as part of the Managed Retreat option. The City has provided the estimated demolition cost for different type of properties as shown in the following table.

Table 11 Demolition cost for different types of property

Type of properties	Demolishment cost
Single storey homes	\$ 20,614
Two storey homes	\$ 33,498
2 storey commercial building	\$64,420
Multistorey integrated tourist resort	\$515,357

3.4 Public financial benefits

As per Table 2, each adaptation option will yield respective public financial benefits in the form of the following:

- Avoided loss of public infrastructure (for the protection options);
- · Value of relocated public infrastructure (for the managed retreat option); or
- · Avoided loss of the City's rate revenue (for the protection options)

3.4.1 Avoided loss of public infrastructure

For the adaptation options Protection by Beach Nourishment and Coastal Structures, **the City will not need to incur expenses to replace public infrastructure relative to the Base Case**. The savings achieved from these adaptation options are considered a financial benefit as the funds are not used, it is an additional cashflow to the City.

The avoided loss of public infrastructure is a **one-off benefit** and is in accordance to the erosion hazard area in which the public infrastructure is located. This is because the erosion will not reach the erosion line used in the study due to the protection measures in place, hence avoiding the cost needed to relocate it.





The avoided loss of public infrastructure is determined by using the value of replacing public infrastructure as shown in Table 11. For simplicity, it is assumed that there is no depreciation of asset value across the planning units.

3.4.2 Value of relocated public infrastructure

Under the Managed Retreat option, public infrastructure will be relocated to enable continuity in the availability of public infrastructure for residents. While it does incur expenses as discussed in 3.3.4.2 to relocate, these expenses add to the City's book value of asset. Relative to the Base Case, the City will have to write-down the asset values of the public infrastructure as it will be destroyed by the receding coastline.

Financial benefits of the relocated public infrastructure are a **one-off benefit** and in accordance to the managed retreat option as determined by the City. The model is set up to give flexibility to the City in determining the year in which the relocation is expected to happen.

Financial benefits of the relocated public infrastructures are the same as the value shown in Table 9. This assumes the asset value for these public infrastructures are equivalent to the cost of replacing it. While it does not necessary reflect the actual value of the asset, it provides a simplified approach in determining the financial benefits.

3.4.3 Avoided loss of council rate revenue

The adaptation options, Protection by Beach Nourishment and Coastal Structures, will avoid the potential loss of Council rate revenue relative to the Base Case. This continued rate revenue collection to the City is considered a financial benefit. Upon consultation with the City, the City recommends that the benefits should be limit to 2% as this is the portion of the rate revenue which the City plans to use for the adaptation option.

The City has provided the Council payment fee for each property which represents the City's rate revenue. The benefits of the avoided loss will be calculated only when the property is located seawards of the erosion hazard line. This is because the City will continue to collect their rate revenue from each property while not for the Base Case as properties are destroyed by the eroding coast.

The increase in rate revenue of City due to future development or densification is also build into the model. The approach and assumption in determining the increase in rate revenue is similar to 3.3.4.1.

It is worth noting that the land in PU10, Locke Estate, are all Crown Lands and is currently managed by the City. Currently, the land is occupied by charity organisation which the City does not receive Council rate revenue, Therefore, avoided loss of council rate revenue will not be considered for PU10.

3.5 Private financial benefits

As per Table 2, each adaptation option will yield respective private financial benefits in the form of the following:

- Avoided loss of private property (for the protection options);
- Compensation for lost property (for the managed retreat option)





3.5.1 Avoided loss of private property

The adaptation options Protection by Beach Nourishment and Protection by Coastal Structures would benefit private residents or commercial property owners whose properties would otherwise be lost to the receding coastline. The GRV, as provided by the City, will be used as the measure rather than the property price. This is because these adaptation options (Beach Nourishment and Coastal Structures) will result in the retention of properties relative to the Base Case. This measure paints the picture of the properties availability to increase in value (due to inflation) rather than a one-off assessment of the property value at a point in time which may not be representative. The use of GRV also enables consideration of future development and densification as discussed in 3.3.4.1 to be included in the valuation.

The financial benefits of this measure will be calculated when the property is affected by the erosion line as modelled. This is because the property owned by the residents and business owners will continue to attract rent value while this will not be the case under the Base Case as properties are destroyed by the receding coastline.

It should be noted that PU19 (Forrest Beach) and PU 10 (Locke estate) does not have a GRV assigned to each property because:

- 1. Properties in PU19 is not GRV rated by the State yet; and
- 2. Properties in PU10 are owned by the Crown and hence does not have a GRV associated to it.

3.5.2 Compensation of lost property

Under the Managed Retreat option, private properties that would be claimed by the receding coastline will be acquired in advance. This represents a financial benefit to the owners of those properties relative to the Base Case scenario in which an unmanaged receding coastline would result in their properties being destroyed.

The value of the financial benefit for displaced residents and business is assumed to be the forecast market value of affected properties at the time it is acquired. The value aligns with the estimation methodology and assumptions as mentioned in 3.3.4.1.





4 Outputs of financial model

The following outputs from the financial model are provided:

- Financial Cost of adaptation options
- Public financial benefit of adaptation option
- · Private financial benefit of adaptation option

The financial modelling spreadsheet developed allow the City to have two types of Scenario Settings which consist of:

- 1. Investment Pathway Option; and
- 2. Single Adaptation Option.

The aim of establishing the two "Scenario Settings" is to allow a comparison of the scenarios so that the City can understand the efficiency of the adaptations options that are considered.

4.1 Investment Pathway Option

Under the Investment Pathway Options, the City will have ability to stage the adaptation strategy (up to 5) for a planning unit across five stages over the course of the 100-year forecast period defined in the model. With each stage, the City is able to select different adaptation options, its start and end year as well as the time to acquire property for each planning unit (if applicable). This pathway approach is likely to present a better representation of forecasted costs compared to a single adaptation option approach being used for the entire 100-year. The Investment Pathway Option approach also allows the City to have different adaption options to be adopted in overlapping periods which may be representative of the approach the City could take.

While the Investment Pathway Option approach aims to provide a more realistic depiction of the real-world scenario, the following assumptions have been considered:

- Once the Managed Retreat is applied to a planning unit, Sand Nourishment or Coastal Structure adaptation options cannot be applied in the subsequent stages. This is due to:
 - a. The extend of the sand volume on the new area is not known;
 - The extend of the length, depth and width of the groynes/bunds for the new area is not known.
- Once the user selects a later Managed Retreat Option (E.g. Managed Retreat 2070), the user cannot select an earlier Managed Retreat Option (E.g. Managed Retreat 2040).
- If a Managed Retreat Options is chosen for a stage after either Sand Nourishment or Coastal Structure, the erosion period will follow the initial Damara Model (e.g. 30 years to reach the second layer of erosion).





4. Should a Managed Retreat option be chosen, the end date should always be set at 2120.

4.2 Single Adaptation Option

The Single Adaptation options refers to the scenario where a single adaptation option is applied for all planning units. The only variable that will require input will be the start year of the adaptation options.

4.3 Output of the financial model

The estimated outcome of the Investment Pathway Option and Single Adaptation Option for each of the planning unit are outline below.

Please note that the financial costs and benefits shown in the output does not represent the recommended adaptation options. The financial costs and benefits shown below are only to demonstrate the outputs from the financial model.

The following tables and figures show the output which the model will produce upon inputting all the relevant parameters and adaptation option choice for each planning unit.

Table 12 and Figure 3 shows the presentation of results from the financial model in nominal terms.

Table 12 Summary of outputs of the adaptation options, assuming a similar adaptation option applied for all planning units

Adaptation option	Financial Cost	Public benefit	Private benefit
Tailored	\$42,968,486,036	\$719,070,911	\$39,467,309,792
Protection – Beach Nourishment	\$25,581,025,597	\$1,198,687,734	\$82,797,623,865
Protection – Coastal Structure	\$9,743,672,446	\$1,198,687,734	\$82,797,623,865
Managed Retreat	\$46,263,365,006	\$694,302,581	\$42,433,398,977

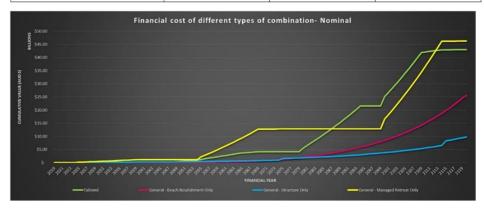


Figure 3 Plot of financial cost of different types of combination

Attachment D







*The relatively high cost for the Managed Retreat option curve is due to the high cost in acquiring properties. The sharp transitions in the curve is due to the staged approach (upon anticipated reaching the erosion hazard line) in acquiring across the 100-year period.

The following table shows the financial cost for each planning unit.

Table 13 Financial Cost for each planning unit

Planning Units	Tailored	Protection - Beach Nourishment	Protection – Coastal Structure	Managed Retreat
PU01	\$175,155,268	\$668,590,289	\$163,763,330	\$252,414,067
PU02	\$113,198,790	\$815,177,638	\$193,975,918	\$146,392,423
PU03	\$67,422,421	\$1,254,671,210	\$336,827,963	\$69,794,606
PU04	\$257,791,629	\$733,528,450	\$259,560,042	\$371,105,537
PU05	\$1,139,644,522	\$646,671,323	\$310,449,247	\$1,186,484,634
PU06	\$724,973,278	\$1,573,147,341	\$678,668,988	\$2,298,280,987
PU07	\$4,737,549,154	\$3,263,966,073	\$1,243,693,498	\$6,173,471,797
PU08	\$7,020,423,214	\$1,393,642,613	\$534,114,593	\$4,860,886,465
PU09	\$1,433,584,671	\$1,573,147,341	\$588,158,567	\$1,296,821,312
PU10	\$32,153,340	\$849,337,952	\$305,093,372	\$18,957,934
PU11	\$4,111,686,205	\$1,723,699,694	\$640,343,875	\$4,111,686,205
PU12	\$2,754,751,266	\$1,237,299,785	\$475,783,197	\$3,287,404,740
PU13	\$3,830,390,123	\$1,190,975,984	\$556,494,902	\$4,216,380,620
PU14	\$3,815,323,446	\$889,871,278	\$427,046,030	\$4,010,693,699
PU15	\$3,504,726,996	\$1,150,442,658	\$471,450,749	\$4,283,020,848
PU16	\$5,437,195,289	\$1,694,747,318	\$633,610,754	\$5,694,332,102
PU17	\$2,335,128,594	\$640,880,848	\$304,102,104	\$2,587,135,089
PU18	\$1,417,581,624	\$1,642,633,042	\$608,292,612	\$1,375,912,706
PU19	\$59,806,206	\$2,638,594,761	\$1,012,242,705	\$22,189,236

As mention in 3.2, the real value of the outputs for the four (4) different combination of adaptation options will be presented. Table 14 and Figure 4 shows the presentation of results from the financial model.

Table 14 Summary of outputs of the adaptation options, assuming a similar adaptation options for all planning units (Real)





Adaptation option	Financial Cost	Public benefit	Private benefit
Tailored	\$7,488,985,923	\$170,798,662	\$6,950,307,109
Protection – Beach Nourishment	\$3,398,869,902	\$239,577,039	\$10,657,139,326
Protection – Coastal Structure	\$1,563,879,138	\$239,577,039	\$10,657,139,326
Managed Retreat	\$8,712,228,805	\$214,787,607	\$7,899,194,684

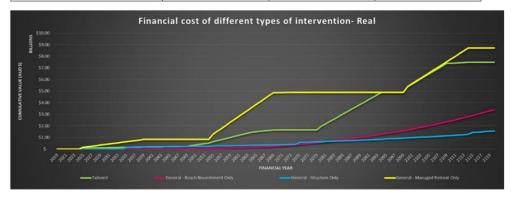


Figure 4 Plot of financial cost of different types of combination (Real)



Part 5: Funding Options

City of Busselton

25/09/2020 301012-02572





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PROJECT 301012-02572 - 301012-02572-CS-REP-0005: Coastal Adaptation Strategy - Part 5: Funding Options

Rev	Description	Author	Review	Advisian approval	Revision date	Client approval	Approval date
A Internal review					10.09.20		Approval date
		MK/YC	MK	MK		Initial. Surname	
В	Draft for client comments				25.09.20		
		MK/YC	MK	MK			

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1 Introduction

1.1 General

This report is Part 5 of the coastal adaptation Strategy (CAS) for the City of Busselton and presents the various funding options related to the implementation of the adaptation measures as defined in Part 4 of the study report. This report does not include specific recommendations.

This report presents the potential funding options for coastal management in the short term (2030).

1.2 Current funding

Currently the City of Busselton raises a flat rate of 1% as part of the council rates from its inhabitants to funding ongoing adaptation options, such as the beach nourishments and maintenance of the coastal structures.

The cost for future coastal management will however be considerably greater than the City's current expenditure on coastal management. Additional funding of the coastal management will therefore be essential to implement any required measures as part of the coastal management.

Furthermore, the costs to be spent on coastal management is expected to accelerate, due to the accelerating sea level rise which results in an increasing number of assets becoming vulnerable and in need of measures.

1.3 Funding principles

A key principle is that the ones who benefit from coastal adaptation should also be responsible for paying for it. These beneficiaries include owners whose land and assets are within the coastal hazard zone as well as users of the coastal areas.

Public funds can only be used if there is a benefit for the public and legally the government is not obliged to provide protection of assets, whether these are private or public assets. Also, the government is not obliged to provide any compensation for any damage or loss of assets caused by coastal hazards.

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2 Short-term funding options for the City.

2.1 Overview of options

To ensure a cash reserve is built-up in the short-term (2030), the following potential funding options are available to the City:

- · Funding from the State and Federal Government
 - o Coastal Adaptation and Protection (CAP) grants through DoT
 - Coastal Management Plan Assistance Program through the Department of Planning, Lands and Heritage;
- · Funding through City's Council rates
 - o Application of a flat rate for all city's inhabitants
 - Application of specified area rates (suitable for areas benefitting from protection option)
- Funding from private contributions for affected owners (suitable for protection option)
- Funding through contributions from developers who have a benefit from being near the coast
- Funding through contributions from users of the beach and foreshore users (eg. through parking fees, entrance fees).

2.2 Funding by state and federal government

Funding from the WA state government is available in the form of Coastal Adaptation and Protection (CAP) grants, which can be applied from the Department of Transport. These grants have the purpose to provide financial assistance for local projects that identify and manage coastal hazards. Under the current CAP grant scheme in WA 50% of a coastal adaptation expense can be applied for by the WA government, the remaining 50% should be funded by the local governments. CAP can therefore be used to help in funding adaptation options.

In the CHRMAP Guidelines (WAPC, 2019) it is advised that managed retreat option should include some form of compensation. However, unless the State or Commonwealth governments provide the majority of funding to acquire property, this is unlikely to be financially feasible in short term.

As a result, due to a lack of funding from state or federal government funding for a managed retreat option, cost for this are in general too high to be carried by a local government. In practice it can therefore be concluded that funding assistance by the WA government is limited to protection and accommodation solutions.

The City of Busselton will continue to advocate for part funding from the Federal and State Governments, especially as state infrastructure is located in the coastal hazard zone that would be affected over time if no measures would be taken.

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2.3 Funding through City's Council rates

The current 1% rate revenue that is being raised though council taxes could be increased for all inhabitants of the City, based on the justification that management of the coastline is beneficial for all inhabitants of the City and not only for those who live in close proximity to the coast.

Another approach would be to apply specified area rates, where higher tax rates will be applied to areas where the inhabitants benefit more from management of the coastline and lesser tax rates will be applied for areas which inhabitants are less affected by management of the coastline. Such specified area rates could be linked to TPS2 zoning and land use.

2.4 Other funding options

An approach for funding of protection options could be to get funding from the inhabitants that would benefit directly from the protection, or, in other words, that would be affected directly over time if the protection would not be in place.

Funding could also be obtained by requiring developers to provide contributions. Such contributions would apply to developments that benefit from being located close to the coastline and therefore would benefit from management of the coastal area.

Lastly, funding could be required from contributions from users of the coastal area, where a higher parking fee is applied for parking areas near the coast or through an entrance fee for a particular coastal zone of interest, similar to the concept of paying a fee to enter a national parc. The latter would however restrict the available of that zone for all members of the public, which may not be acceptable.

2.5 Suitability of the funding options for coastal adaptation measures

The various options described above have been assesses for suitability to fund coastal adaptation measures.

Funding by state government can be obtained for funding of coastal protection options using CAP grants. In theory, the City therefore only has to acquire the 50% of expected expense of the coastal management option by 2030. This is however not be a realistic scenario, as there is no guarantee the application for this state funding will be granted due to the high number of interested parties in the grants.

Regarding sourcing though City's taxes, the most straightforward way of funding adaptation options would be the escalation of the percentage of rate revenue by a flat rate. In that case the contribution would be obtained through a large number of people, limiting the individual rate increase.

Taking into account that the inhabitants closer to the coast would benefit more from coastal management, the rate can be varied. The City however considers funding through specified area rates (SAR's) as too restrictive and quite difficult to implement.





A relatively simple and justifiable model could be to evenly split the contributions of adaptation measures by the various stakeholders as follows:

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- 33% funding though grants from state government
- 33% funding through rate revenue of city council taxes
- 33% funding through contributions from the inhabitants living in the coastal hazard zone

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Financial assessment of rate increase to fund coastal adaptation

Based on the assumption that part of the contribution to future coastal adaptation measures will be obtained from an increased rate revenue, the escalation of the flat rate has been worked out in a financial model.

The built-up fund amounts presented in Table 3-1 can be used by the City to define the appropriate % of council tax revenue to suit the amount of funding required based on the financial model (presented in Chapter Report 4) taking into account a potential split in contributions.

The values in the table are based on the following key assumptions:

- Council rate applied is consistent with 2019 council rates
- No change from the 2019 council rates have been assumed
- No densification or change in the number and nature of properties have been assumed
- Starting year for accumulation of funding and interest is 2021
- Interest of funds held is assumed to be 3% per annum

Table 3-1 Obtained funding through increasing flat rate

Year	% of Council Rate Allocated to Coastal Adaptation (\$'000)					
Tear	1%	2%	3%	4%	5%	10%
2021	194	388	583	777	971	1,942
2022	394	788	1,183	1,577	1,971	3,942
2023	600	1,201	1,801	2,401	3,001	6,003
2024	813	1,625	2,438	3,250	4,063	8,125
2025	1,031	2,062	3,093	4,124	5,155	10,311
2026	1,256	2,512	3,769	5,025	6,281	12,562
2027	1,488	2,976	4,464	5,953	7,441	14,881
2028	1,727	3,454	5,181	6,908	8,635	17,270
2029	1,973	3,946	5,919	7,892	9,865	19,730
2030	2,226	4,453	6,679	8,906	11,132	22,264

Attachment D





4 Short-term implementation plan

An implementation plan is presented in Table 4-1 for the short-term (2030) showing the recommendations presented in City's 2018-2028 Coastal Management Programme (ShoreCoastal, 2018). The budget estimate is also based on the 2018-2028 Coastal Management Programme.

Although various adaptation measures are discussed in Chapter Report 3, the implementation plan shows the continuation of the current measures (maintenance of groynes and seawalls supported by sand nourishment) plus additional sand nourishment where required. The latter serves to mitigate long-term depletion of the sand volume in the system. Overall, sand nourishment is considered the primary management response to coastal erosion.

The required yearly sand volumes for the continuation of the sand nourishment program depends on the winter storm season and are anticipated to be between 5,000 and 8,000 m3 according to the ShoreCoastal report (2018). Details of quantities for the various locations are presented as well. Volumes for the additional sand nourishment are reported to be around 25,000 to 40,000 m3 every 5 years. The required sand volumes and frequency will be informed from monitoring and investigations as presented in Section 5.

Table 4-1 Short term implementation plan

Description	Timeframe	Effort	Budget estimate
Continuation of currently applied measures current sand nourishment program maintenance / renewal of coastal protection structures	Annually Annually	Continuous 12 weeks	\$ 100,000 /year \$ 200,000 / year (on average)
Coastal Adaptation option – sand nourishment Additional sand nourishment to address long-term depletion	5-yearly	12 weeks	\$ 500,000 each





Monitoring plan 5

Due to the long timeframe of the coastal processes and developments in the coastal zone, risks arising from coastal hazards may change over time. It is therefore essential to implement monitoring and review to ensure that the management and adaptation pathway actions identified in the implementation plan remain contemporary and relevant. Coastal monitoring and investigations are presented in Table 5-1, based on the recommendations included in the City's 2018-2028 Coastal Management Programme (ShoreCoastal, 2018) and the Peron Naturaliste Partnership Regional Coastal Monitoring Program.

Table 5-1Monitoring and investigations plan

Description	Timeframe	Effort	Budget estimate
Coastal monitoring			
Beach monitoring:		Continuous	\$ 40,000 / year
- beach width measurement - land photo surveys - dune migration rates - oblique aerial photos - flood frequency - Inundation extent Develop GIS interface for monitoring data Detailed beach survey Detailed hydro survey	monthly monthly Bi-annual At event At event 2021 Bi-annual Every 10 years	3 months 4 weeks 4 weeks	\$ 20,000 \$ 50,000 each \$ 100,000 each
Install real time wave monitoring at Busselton jetty	2021	3 months	\$ 60,000
Coastal investigations			
Research of Geographe Bay sediment dynamics.	2023	1 year	\$ 90,000
Coastal stratigraphy.	2023	6 months	\$ 60,000
Coastal inlet dynamics.	2021	6 months	\$ 20,000
Modification of long groynes to improve bypassing	5-yearly	6 months	\$ 40,000 each
Numerical modelling of coastal flooding	5-yearly	6 months	\$ 60,000
Coastal structures Inspections	5-yearly	3 months	\$ 20,000
Review of sand and rock sources.	5-yearly	3 months	\$ 10,000

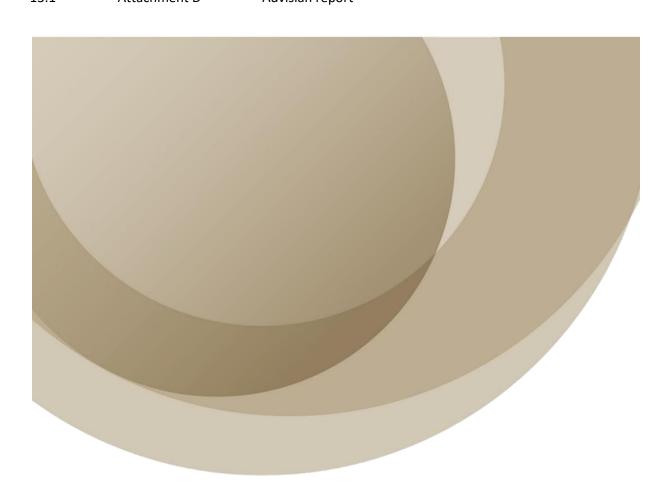
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6 References

- Shorecoastal (2018) Busselton Coastal Management Program 2018 to 2028
- https://www.peronnaturaliste.org.au/projects/monitoring-project/

13.1 Attachment D Advisian report



Appendix A Planning Units (PU) Overview

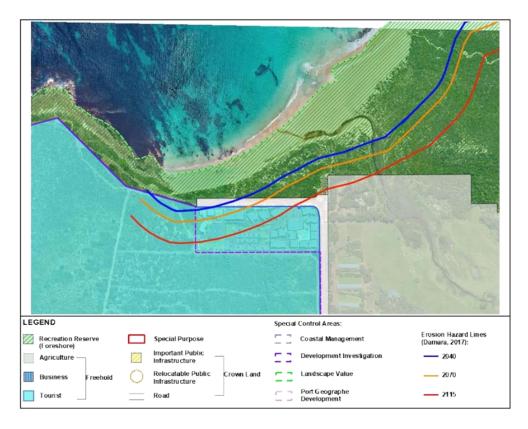








PU01 – SMITH'S BEACH



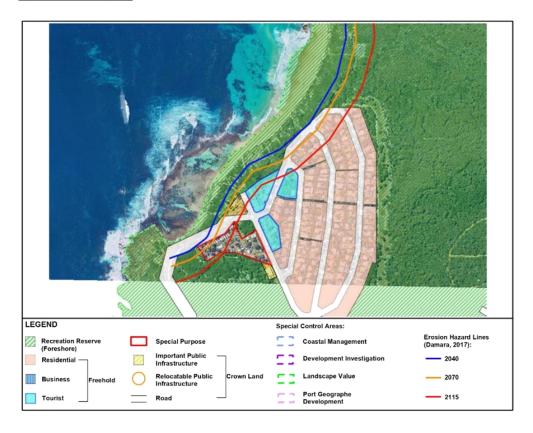








PU02 - YALLINGUP



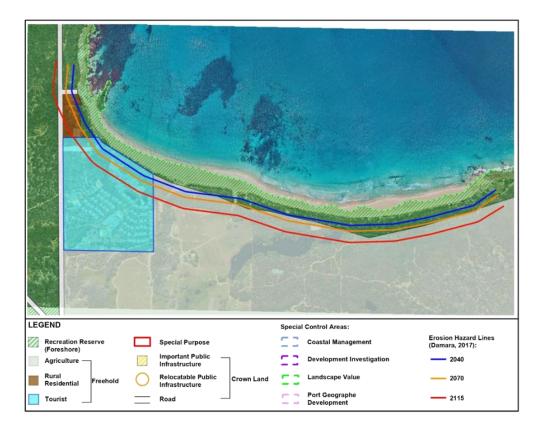








PU03 – BUNKER BAY



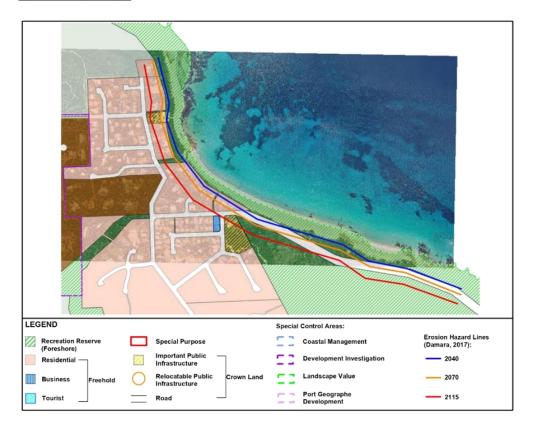








PU04 – EAGLE BAY











PU05 – OLD DUNSBOROUGH



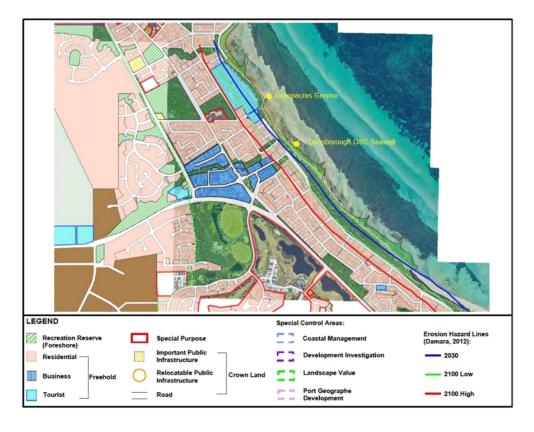








PU06 – DUNSBOROUGH TOWNSITE



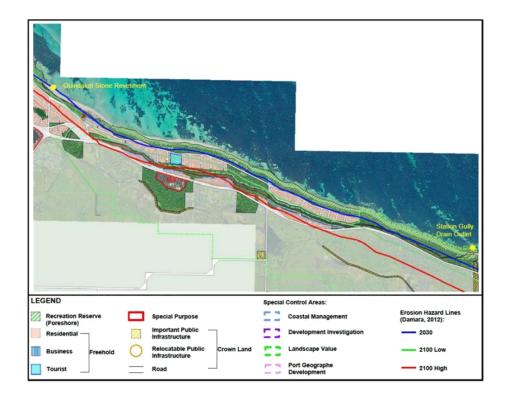








PU07 – QUINDALUP BEACH



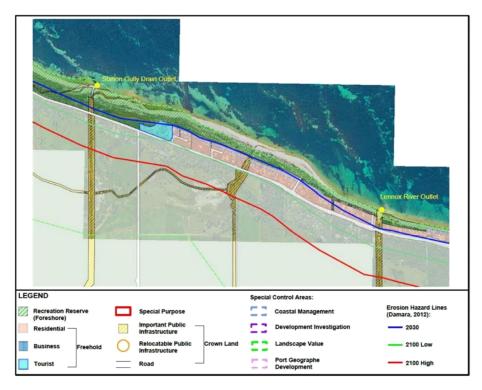








PU08 – MARYBROOK







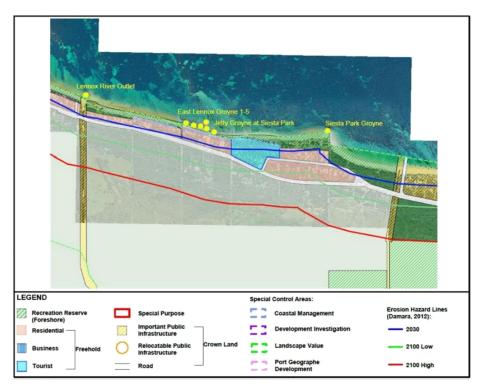






24 February 2021

PU09 – SIESTA PARK



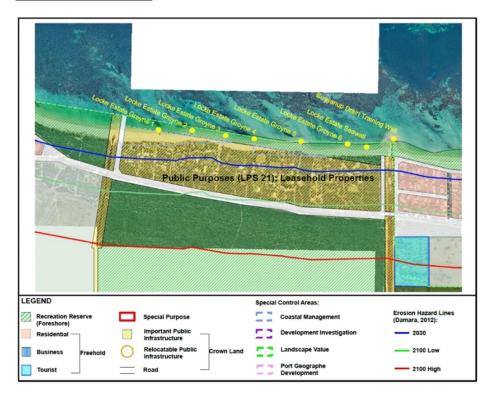








PU10 – LOCKE ESTATE



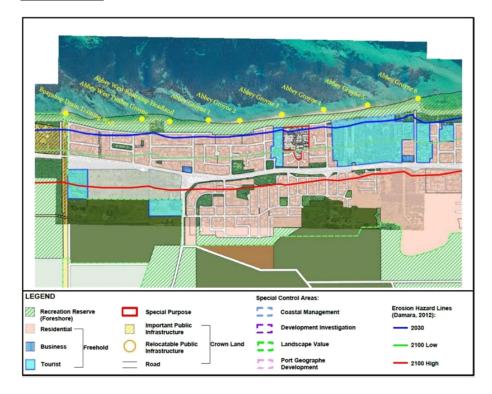








PU11 – ABBEY



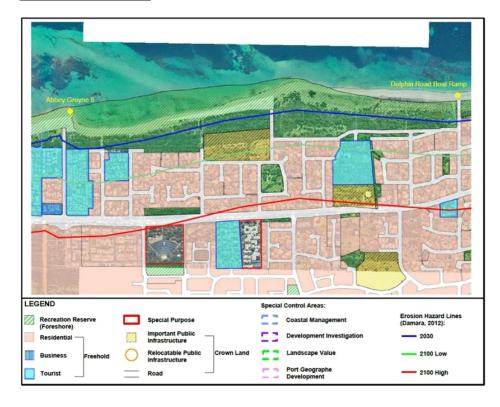








PU12 – BROADWATER



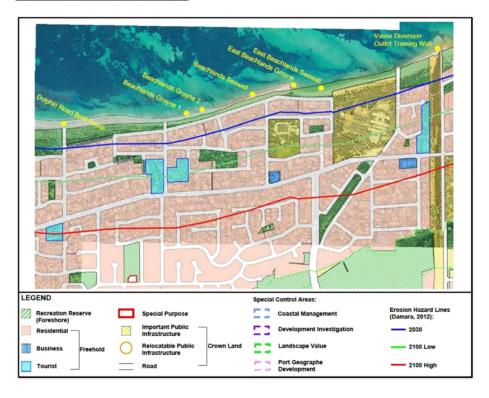








PU13 – BUSSELTON WEST (A)



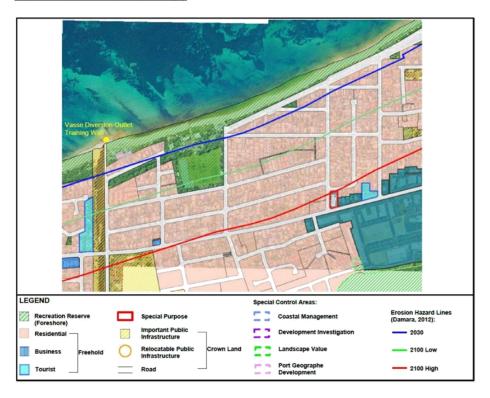








PU14 - BUSSELTON WEST (B)











PU15 - BUSSELTON CENTRAL



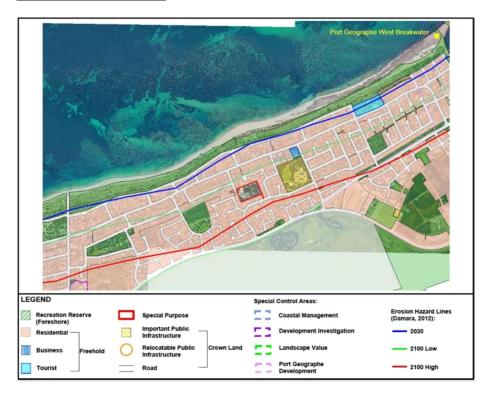








PU16 – BUSSELTON EAST





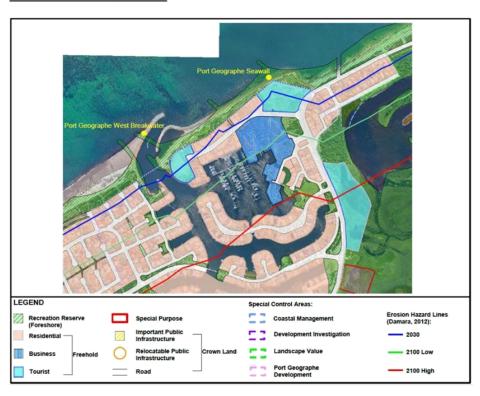
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PU17 – PORT GEOGRAPHE

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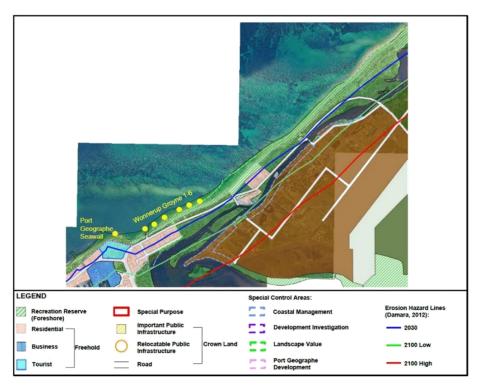








PU18 – WONNERUP



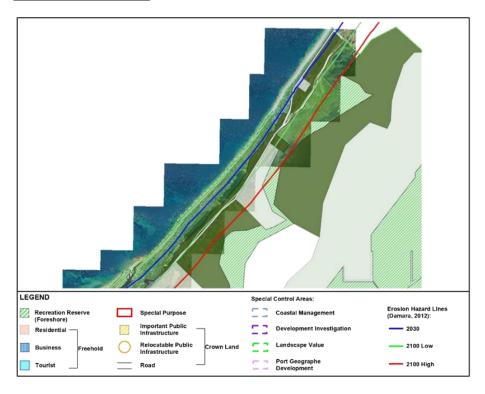


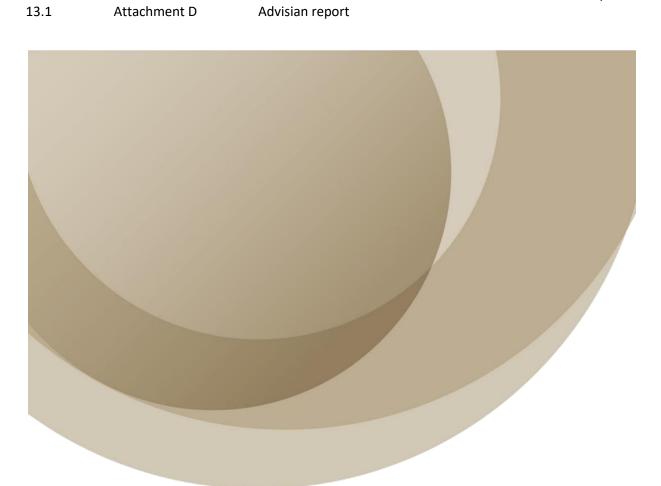






PU19 – FOREST BEACH





Appendix B List of Assets

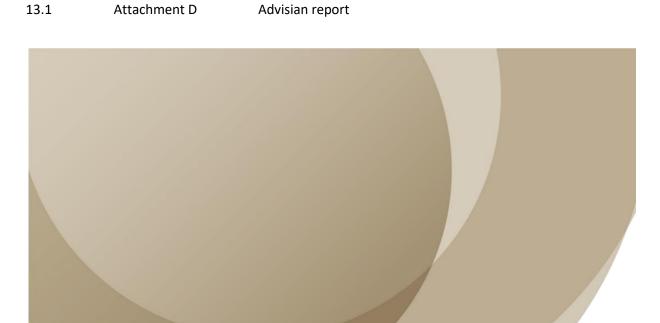
ID	Planning Unit (PU)	Asset	Description	LPS21	Tenure
001	1. Smiths Beach	Beach		Recreation	Reserve
002	1. Smiths Beach	Foreshore Reserve	Includes, car parking within the foreshore reserve, beach access tracks and steps,	Recreation	Reserve
003	1. Smiths Beach	Canal Rocks Beach Front Apartments	Holiday accommodation	Tourist	Freehold
004	1. Smiths Beach	Smiths Beach Resort	Holiday accommodation	Tourist	Strata
005	1. Smiths Beach	Undeveloped Land	Undeveloped private lot	Tourist	Freehold
006	1. Smiths Beach	Smith Beach Road	Road, includes car parking within the road reserve, power utilities	No Zone	Road Reserve
007	1. Smiths Beach	Private Lot	Private property	Agriculture	Freehold
008	02. Yallingup	Beach		Recreation	Reserve
009	02. Yallingup	Foreshore Reserve	Includes, car parking, play ground, toilets, beach access tracks and steps, Cape to	Recreation & Public Purpose	Reserve
010	02. Yallingup	Yallingup Beach Road	Includes parking within the road reserve	No Zone	Road Reserve
011	02. Yallingup	Dawson Drive	Includes parking within the road reserve	No Zone	Road Reserve
012	02. Yallingup	Yallingup Beach Holiday Park	Caravan Park - Freehold	Special Purpose : Caravan Park	Leasehold
013	02. Yallingup	Properties west of Dawson Drive		Tourist	
014	02. Yallingup	Properties east of Dawson Drive	Includes local roads & utilities	R10 & Tourist	
015	03. Bunker Bay	Beach		Recreation	
016	03. Bunker Bay	Foreshore Reserve	Includes dunes, access tracks, toilets	Recreation	
017	03. Bunker Bay	Bunker Bay Road		No Zone	
018	03. Bunker Bay	Farm Break Lane	Includes road and car parking	Tourism	
019	03. Bunker Bay	Properties to the north of Farm Break Lane		Rural Residential	Crown
020	03. Bunker Bay	Bunker Bay Café		Tourism A45	Freehold
021	03. Bunker Bay	Bunker Bay Resort		Tourism A45	Freehold
022	03. Bunker Bay	Private Rural Land	Private land to the east of Bunker Bay Resort	Agriculture DCA1	
023	04. Eagle Bay	Beach	Includes dunes, access tracks	Recreation	
024	04. Eagle Bay	Foreshore Reserve		Recreation	
025	04. Eagle Bay	Properties on the east of Fern Road		R5	Freehold
026	04. Eagle Bay	Eagle Bay Fire Station		Public Purposes : Community Purposes	Crown
027	04. Eagle Bay	Eagle Bay Community Hall	Includes parking area	Public Purposes : Community Purposes	Freehold
028	04. Eagle Bay	Meelup Beach Road		No Zone	Road Reserve
029	05. Old Dunsborough	Beach		Recreation	
030	05. Old Dunsborough	Foreshore Reserve	Dunes, beach access paths	Recreation	
031	05. Old Dunsborough	Bay View Cres & Hufford St	Local Road provides sole access to local properties. Incl power, water, sewer	No Zone	Road Reserve
032	05. Old Dunsborough	Properties Bay View Crescent		R15	Road Reserve
033	05. Old Dunsborough	Boat ramp	Boat launching facility, car park		
034	05. Old Dunsborough	Properties East of North street		R15	Freehold
035	05. Old Dunsborough	North Street	Includes power, water, sewer		Road Reserve
036	05. Old Dunsborough	Properties West of North Street		R15, R30	Freehold
037	05. Old Dunsborough	Properties West of Gifford Street		R15	Freehold

ID	Planning Unit (PU)	Asset	Description	LPS21	Tenure
<u> </u>	. ,		Description		Tenure
038	06. Dunsborough Townsite	Beach		Recreation	
039	06. Dunsborough Townsite	Foreshore Reserve	Includes dunes, parks, grassed areas, shared pathway, play grounds, toilets,	Recreation	
040	06. Dunsborough Townsite	Vincent Street	Local Road provides sole access to local properties. Includes power, water.	No Zone	Road Reserve
041	06. Dunsborough Townsite	Vincent Street Culvert Bridge	Culvert / Bridge	No Zone	
042	06. Dunsborough Townsite	Properties on Vincent Rd		R15	Freehold
043	06. Dunsborough Townsite	Tourist Accommodation	Includes: Regency Beach Club, Catalpha Whalers Cove, Dunsborough Beach	Tourist	Freehold
044	06. Dunsborough Townsite	Geographe Bay Road	Includes power, water	No Zone	Road Reserve
045	06. Dunsborough Townsite	Properties along Geographe Bay Road (east of Chester Way)	Town centre	R15, R30, R80, A74	
046	06. Dunsborough Townsite	Properties along Geographe Bay Road (west of Chester Way)	Private properties	R15, R30, R80, A74, SP24	
047	07. Quindalup Beach	Beach		Recreation	
048	07. Quindalup Beach	Foreshore Reserve	Dunes, beach access paths	Recreation	
049	07. Quindalup Beach	Quindalup Pro Boat Ramp /Duns Yacht Club	Boat ramp and associated facilities car park and building	Recreation	Leasehold
050	07. Quindalup Beach	Quindalup Boat Ramp/Sea Rescue	Boat ramp and associated facilities car park and building	Recreation	Leasehold
051	07. Quindalup Beach	Geographe Bay Road	Includes , power & water	No zone	Road Reserve
052	07. Quindalup Beach	Caves Road	Includes power	No zone	
053	07. Quindalup Beach	Properties on the ocean side of Geographe Bay Road		R12.5	Freehold
054	07. Quindalup Beach	Properties Wilson Ave to Elmore Road		R12.5, Tourist	
055	07. Quindalup Beach	Properties Toby's Inlet west	Includes local roads	R12.5	
056	07. Quindalup Beach	Properties Toby's Inlet east	Includes local roads, power & water. One property on ocean side of road.	R12.5	
057	07. Quindalup Beach	Properties south of Toby's Inlet	Includes local roads, power & water	R2.5	
058	08. Marybrook	Caves Road		No Zone	
059	08. Marybrook	Gully Drain Bridge	Part of Caves Road	No Zone	
060	08. Marybrook	Molloy Drain Bridge	Part of Caves Road	No Zone	
061	08. Marybrook	Beach		Recreation	
062	08. Marybrook	Foreshore Reserve	Dunes, shared pathway	Recreation	
063	08. Marybrook	Escape Day Spa	Tourist resort	Tourist, SP58	Freehold
064	08. Marybrook	Properties north of Caves Rd	Includes local roads and utilities	R5, R2.5	Freehold
065	08. Marybrook	Properties south of Caves Rd / Agriculture Properties	Includes local roads and utilities	Agriculture	
066	09. Siesta Park	Lennox Drain Bridge	Part of Caves Road	No Zone	
067	09. Siesta Park	Beach		Recreation	
068	09. Siesta Park	Foreshore Reserve	Includes reserve west of Siesta Park Groyne	Recreation	
069	09. Siesta Park	Properties north of Caves Road (west)	Includes local roads and utilities	R2.5	Freehold
070	09. Siesta Park	Siesta Park Holiday Resort		Tourist	Freehold
071	09. Siesta Park	Properties north of Caves Road (east)	Includes local roads and utilities	R2.5	Freehold
072	09. Siesta Park	Properties south of Caves Road	Includes local roads and utilities	Agriculture	
073	09. Siesta Park	Caves Road	Includes power	No Zone	Road Reserve

ID	Planning Unit (PU)	Asset	Description	LPS21	Tenure
074	10. Locke Estate	Locke Swamp Drain Bridge	Part of Caves Road	No Zone	
075	10. Locke Estate	Beach		Recreation	
076	10. Locke Estate	Locke Estate Camps		Recreation	Crown Reserve
077	10. Locke Estate	Caves Road	Includes power	No Zone	
078	11. Abbey	Buayanup Drain Bridge	Part of Caves Road	No Zone	
079	11. Abbey	Beach		Recreation	
080	11. Abbey	Foreshore Reserve	Includes Holgate Road Reserve (Tourist courts, play ground), shared pathway,	Recreation	
081	11. Abbey	Abbey Boat Ramp	Boat launching facility, car park, toilets	Recreation	Crown Reserve
082	11. Abbey	Property Forth St to Harnett St	Includes local roads and utilities	R20	Freehold
083	11. Abbey	Cape View Beach Resort	Short stay accommodation	Tourist	Freehold
084	11. Abbey	Baptist Care	Aged care facility	Special Purpose : Aged Person Housing	Freehold
085	11. Abbey	Properties Harvest Road	Includes local roads and utilities	R15, R20	Freehold
086	11. Abbey	Tourist Accommodation	Includes: Aqua Resort, Abby Beach Resort, Amblin Holiday Park, Bayview	Tourist	Freehold
087	11. Abbey	Tourist Accommodation	Includes: The Sebel Busselton, Broadwater Beach Resort	Tourist	Freehold
088	11. Abbey	Broadwater Executive Villas	Private properties	R30	Freehold
089	11. Abbey	Shopping Centre		Commercial	
090	11. Abbey	Caves Roads/Busselton Highway	Includes power	No zone	
091	11. Abbey	Properties on the south side of Caves Road/Busselton Highway		R5, 520	
092	12. Broadwater	Beach		Recreation	
093	12. Broadwater	Foreshore Reserve		Recreation	
094	12. Broadwater	Dolphin Road Boat Ramp	Includes car park	Recreation	Crown Reserve
095	12. Broadwater	Aged Care Facility	Portion aged care facility, portion undeveloped, Includes seaward portion of	Recreation, SP 9 APH	Crown Reserve
096	12. Broadwater	Balance of development north side of Caves Road	Private properties and tourism accommodation. Includes Sandy Bay	Tourism, R15	
097	12. Broadwater	Caves Road	Includes power		
098	12. Broadwater	Development south of Busselton Highway	Predominantly private properties	R40	
099	13. Busselton West A	Beach		Recreation	
100	13. Busselton West A	Foreshore Reserve	Includes shared pathway	Recreation	
101	13. Busselton West A	Hospital		Public Purposes : Hospital Site	Crown Reserve
102	13. Busselton West A	School		Public Purposes : School Site	
103	13. Busselton West A	Balance of development north of Busselton highway	Predominantly private properties, includes local roads and utilities	Mainly R15 & Tourist	Freehold
104	13. Busselton West A	Busselton Highway	Includes power	No Zone	
105	13. Busselton West A	Development south of Busselton Highway	Predominantly private properties, includes local roads and utilities		
106	13. Busselton West A	Geographe Bay Road	Includes power, water, sewer	No Zone	Road reserve

ID Planning Uni	West B Central Central Central	Asset Beach Foreshore Reserve Bicycle Bridge Properties north of Margaret Street GBYC Lou Western Oval Balance of Development north of Busselton Highway Busselton Highway Busselton Highway Busselton Highway Busselton Foreshore Properties west of West St	Private Property Includes power Includes swimming enclosure, swimming jetty, Busselton Jetty. Includes: all areas zoned Busselton Foreshore, car park	Recreation Recreation Recreation Recreation Recreation R15, R30 No Zone No Zone Special Purpose: Busselton Foreshore	Freehold Freehold Freehold Road Reserve
108 14. Busselton 109 14. Busselton 110 14. Busselton 111 14. Busselton 112 14. Busselton 113 14. Busselton 114 14. Busselton 115 14. Busselton 116 14. Busselton 117 15. Busselton 118 15. Busselton 120 15. Busselton 121 15. Busselton 121 15. Busselton	West B Central Central Central	Foreshore Reserve Bicycle Bridge Properties north of Margaret Street GBYC Lou Western Oval Balance of Development north of Busselton Highway Busselton Highway Busselton Highway Bridge Geographe Bay Road Beach Busselton Foreshore	Private properties Yacht club Private Property Includes power Includes swimming enclosure, swimming elty, Busselton Jetty. Includes: all areas zoned Busselton	Recreation Recreation Retreation R15, R30 No Zone No Zone No Zone Special Purpose :	Freehold Freehold Road Reserve
109 14. Busselton 110 14. Busselton 111 14. Busselton 112 14. Busselton 113 14. Busselton 114 14. Busselton 115 14. Busselton 116 14. Busselton 117 15. Busselton 118 15. Busselton 120 15. Busselton 121 15. Busselton 121 15. Busselton	West B Central Central Central Central	Bicycle Bridge Properties north of Margaret Street GBYC Lou Western Oval Balance of Development north of Busselton Highway Busselton Highway Busselton Highway Bridge Geographe Bay Road Beach Busselton Foreshore	Private properties Yacht club Private Property Includes power Includes swimming enclosure, swimming elty, Busselton Jetty. Includes: all areas zoned Busselton	Recreation Recreation R15, R30 No Zone No Zone No Zone Special Purpose :	Freehold Freehold Road Reserve
110 14. Busselton 111 14. Busselton 112 14. Busselton 113 14. Busselton 114 14. Busselton 115 14. Busselton 116 14. Busselton 117 15. Busselton 118 15. Busselton 119 15. Busselton 120 15. Busselton 121 15. Busselton	West B Central Central Central	Properties north of Margaret Street GBYC Lou Western Oval Balance of Development north of Busselton Highway Busselton Highway Busselton Highway Bridge Geographe Bay Road Beach Busselton Foreshore	Yacht club Private Property Includes power Includes swimming enclosure, swimming jetty, Busselton Jetty.	Recreation R15, R30 No Zone No Zone No Zone Special Purpose :	Freehold Freehold Road Reserve
111 14. Busselton 112 14. Busselton 113 14. Busselton 114 14. Busselton 115 14. Busselton 116 14. Busselton 117 15. Busselton 118 15. Busselton 119 15. Busselton 120 15. Busselton 121 15. Busselton	West B West B West B West B West B West B Central Central Central	Street GBYC Lou Western Oval Balance of Development north of Busselton Highway Busselton Highway Busselton Highway Bridge Geographe Bay Road Beach Busselton Foreshore	Yacht club Private Property Includes power Includes swimming enclosure, swimming jetty, Busselton Jetty.	Recreation R15, R30 No Zone No Zone No Zone Special Purpose :	Freehold Freehold Road Reserve
112 14. Busselton 113 14. Busselton 114 14. Busselton 115 14. Busselton 116 14. Busselton 117 15. Busselton 118 15. Busselton 119 15. Busselton 120 15. Busselton 121 15. Busselton	West B West B West B West B West B Central Central Central	Lou Western Oval Balance of Development north of Busselton Highway Busselton Highway Busselton Highway Bridge Geographe Bay Road Beach Busselton Foreshore	Private Property Includes power Includes swimming enclosure, swimming jetty, Busselton Jetty. Includes: all areas zoned Busselton	Recreation R15, R30 No Zone No Zone No Zone Special Purpose :	Freehold Road Reserve
113 14. Busselton 114 14. Busselton 115 14. Busselton 116 14. Busselton 117 15. Busselton 118 15. Busselton 119 15. Busselton 120 15. Busselton 121 15. Busselton	West B West B West B West B Central Central Central	Balance of Development north of Busselton Highway Busselton Highway Busselton Highway Bridge Geographe Bay Road Beach Busselton Foreshore	Includes power Includes swimming enclosure, swimming jetty, Busselton Jetty. Includes: all areas zoned Busselton	R15, R30 No Zone No Zone No Zone Special Purpose :	Road Reserve
114 14. Busselton 115 14. Busselton 116 14. Busselton 117 15. Busselton 118 15. Busselton 119 15. Busselton 120 15. Busselton 121 15. Busselton	West B West B West B Central Central Central	Busselton Highway Busselton Highway Busselton Highway Bridge Geographe Bay Road Beach Busselton Foreshore	Includes power Includes swimming enclosure, swimming jetty, Busselton Jetty. Includes: all areas zoned Busselton	No Zone No Zone No Zone Special Purpose :	Road Reserve
115 14. Busselton 116 14. Busselton 117 15. Busselton 118 15. Busselton 119 15. Busselton 120 15. Busselton 121 15. Busselton	West B West B Central Central Central Central	Busselton Highway Bridge Geographe Bay Road Beach Busselton Foreshore	Includes swimming enclosure, swimming jetty, Busselton Jetty. Includes: all areas zoned Busselton	No Zone No Zone Special Purpose :	
116 14. Busselton 117 15. Busselton 118 15. Busselton 119 15. Busselton 120 15. Busselton 121 15. Busselton	West B Central Central Central Central	Geographe Bay Road Beach Busselton Foreshore	Includes swimming enclosure, swimming jetty, Busselton Jetty. Includes: all areas zoned Busselton	No Zone Special Purpose :	
117 15. Busselton 118 15. Busselton 119 15. Busselton 120 15. Busselton 121 15. Busselton	Central Central Central Central	Beach Busselton Foreshore	Includes swimming enclosure, swimming jetty, Busselton Jetty. Includes: all areas zoned Busselton	Special Purpose :	
118 15. Busselton 119 15. Busselton 120 15. Busselton 121 15. Busselton	Central Central	Busselton Foreshore	jetty, Busselton Jetty. Includes: all areas zoned Busselton		Mix of Crown Reserve,
119 15. Busselton 120 15. Busselton 121 15. Busselton	Central Central		Includes: all areas zoned Busselton		Mix of Crown Reserve,
120 15. Busselton 121 15. Busselton	Central	Properties west of West St	rolestore, car park		Leasehold and
121 15. Busselton			Predominantly private properties	R30, Public Purposes : Community Purposes	Freehold
	Control	Development landward of SP BF	Predominantly commercial and tourist	Community Purposes	
122 15 Russelton	Central	Zone Sea Rescue		Recreation	Crown Reserve
122 13. Dussellon	Central	Barnard Park		Recreation	Crown Reserve
123 15. Busselton	Central	Churchill Park		Recreation	
124 15. Busselton	Central	Development south of Barnard Park	Mixture of private property and tourist	R30, Tourist	
125 16. Busselton	East	Beach		Recreation	
126 16. Busselton	East	Foreshore Reserve		Recreation	
127 16. Busselton	East	Properties ocean side of Marine Terrace (west)	Includes local roads and utilities	R15	Freehold
128 16. Busselton	East	Busselton Beach Resort	Tourist accommodation	Tourist	Freehold
129 16. Busselton	East	Properties ocean side of Marine Terrace (east)	Includes local roads and utilities	R15	Freehold
130 16. Busselton	East	Properties on the south side of Marine Terrace	Includes local roads and utilities	R15	
131 16. Busselton	East	Geographe Bay Road	Includes power	No Zone	Road Reserve
132 16. Busselton	East	Marine Terrace	Includes power, water, sewer	No Zone	
133 17. Port Geog	raphe	Foreshore Reserve	Includes park, beach and lagoon	Recreational	
134 17. Port Geog	raphe	Mixture of private and commercial developments and	Incudes marina and canals	R15, R40, Tourist, Commercial	Freehold
135 18. Wonnerup)	Beach		Recreational	
136 18. Wonnerup)	Foreshore Reserve		Recreational	
137 18. Wonnerup)	Layman Road	Includes power	No zone	Road Reserve
138 18. Wonnerup)	Bridge	Bridge perpendicular to Layman Road	No zone	
139 18. Wonnerup)	Layman Road Bridge		No zone	
140 18. Wonnerup)	Properties adjacent to Port Geographe		R15	Freehold
141 18. Wonnerup)	Properties adjacent to Layman Road (central)		R5, R2	Freehold
142 18. Wonnerup)	Properties south of Vasse Inlet		Rural Residential	

ID	Planning Unit (PU)	Asset	Description	LPS21	Tenure
143	19. Forest Beach	Beach		Recreational	
144	19. Forest Beach	Foreshore Reserve		Recreational	
145	19. Forest Beach	Coast Road		No zone	Road Reserve
146	19. Forest Beach	Coast Road Bridge	near inlet	No zone	
147	19. Forest Beach	Properties west of Coast Road (northern section)		Rural Residential, SP54	Freehold
148	19. Forest Beach	Properties east/west of Coast		Rural Residential,	

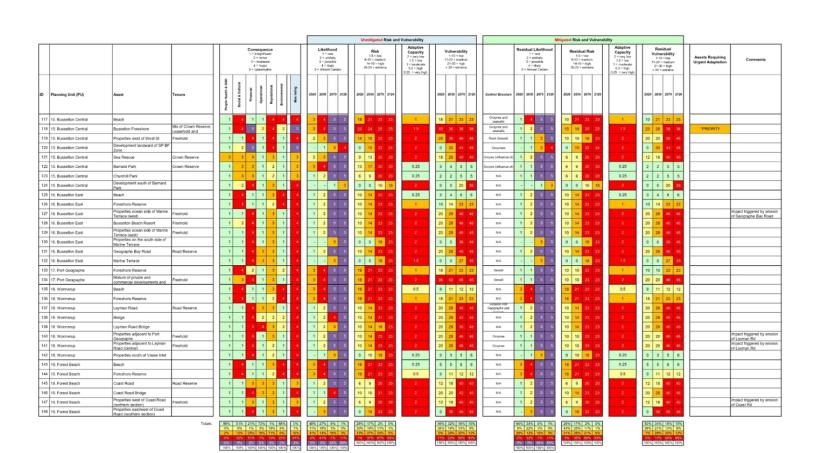


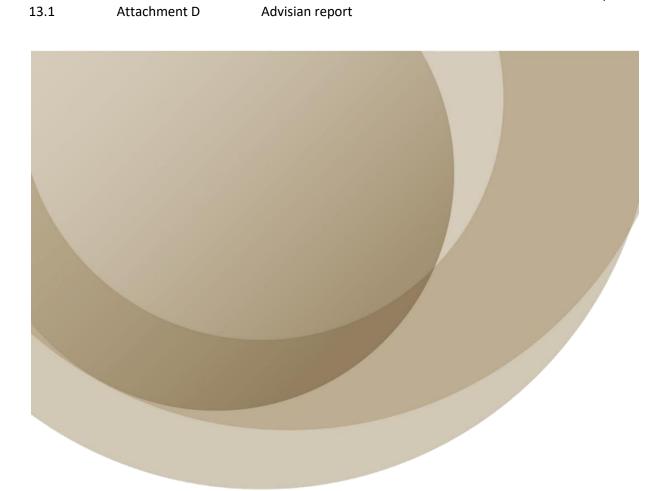


					Unmitigated Risk and			N	Inigated Risk and Vulnerab				
			Consequence 1 = indignificant 2 = minor 3 = moderate 4 = naight 5 = catastrophic	Likelihood 1 - raxe 2 c unikely 3 - possible 4 = likely 5 ~ Amost Cartain	Rink 1-5 ≈ too 6-13 = condum 16-19 = high 20-25 = autrims	Adaptive Capacity 2 = very low 1.5 = low 1 = moderate 0.5 = high 0.25 = very ligh	Vulnerability 1-20 = low 11-20 = enalture 21-35 = regh > 30 = extreme	Residual Likelihood 0 = num 2 melikely 3 melikely 4 = (Rely 5 = Almost Cetain	Residual Risk 1-5 = four 6-13 = coedien 14-19 = high 20-25 = setrome	Adaptive Capacity 2 = very law 1,5 = lee 1 = moderate 0.5 = kign 0.25 = very high	Residual Vulnerability 1-10 = 10w 11-20 = medium 21-30 = high > 30 = astrema	Assets Requiring Urgent Adaptation	Comments
3D Planning Unit (PU)	Asset	Tenure	Propin Heath & Other Boots & Coheral Prescise Operational Repositional Environmental	2020 2030 2070 2120	2020 2830 2670 2120		2626 2030 2676 2120	Confinal Structure 2020 2030 2070 2120	2020 2000 2070 2120		2020 2030 2070 2120		
001 1. Smiths Beach	Beach	Reserve	1 4 1 1 3 4 4	3 4 5 5	18 21 23 23	0.25	5 5 6 6	NA 3 4 5 5	18 21 23 23	0.25	5 5 6 6		
002 1. Smiths Beach	Foreshore Reserve	Reserve	1 4 1 1 2 4 4	3 4 5 5	18 21 23 23	1	18 21 23 23	NA 3 4 5 5	18 21 23 23	1	18 21 23 23		
003 1. Smiths Beach	Canal Rocks Beach Front Apartments	Freehold	1 3 4 1 3 1 4	3 4 5 5	18 21 23 23	2	36 42 46 46	NA 3 4 5 5	18 21 23 23	2	36 42 46 46	THEORY?	
004 1. Smiths Beach	Smiths Beach Resort	Strata	1 3 4 1 3 1 4	2 3 4 5	14 18 21 23	#	28 35 42 46	NA 2 3 4 5	14 18 (21 23	2	28 38 42 46	*PRIORITY	
005 1. Smiths Beach	Undeveloped Land	Freehold	1 1 1 1 2 2 2	3 4 5 5	8 12 16 16	0.5	4 6 8 8	NA 3 4 5 5	8 12 16 16	0.5	4 6 8 8		
006 1. Smiths Beach	Smith Beach Road	Road Reserve	1 1 3 1 3 1 3	3 4 5 5	13 17 20 20	2	26 34 40 40	NA 3 4 5 5	13 17 20 20	. 2	26 34 40 40	PRIORITY	
007 1. Smiths Beach	Private Lot	Freehold	1 1 3 1 2 1 3	- 1 2 3	0 5 9 13	0.5	0 3 5 7	NA - 1 2 3	0 6 9 13	0.5	0 3 5 7		
008 02. Yallingup	Beach	Reserve	1 4 1 1 3 4 4	3 4 5 5	18 21 23 23	0.25	5 5 6 6	NA 3 4 5 5	18 21 23 23	0.25	5 5 6 6		
009 02. Yallingup	Foreshore Reserve	Reserve	1 4 3 1 2 4	3 4 5 5	18 21 23 23	1	18 21 23 23	NA 3 4 5 5	18 21 23 23	- 0	18 21 23 23		
010 G2. Yaltingup	Yallingup Beach Road	Road Reserve	1 1 3 3 3 1 3	3 4 5 5	13 17 20 20	2:	26 34 40 40	NA 3 4 5 5	13 17 20 20	2:	26 34 40 40	PRIORITY	
011 02. Yallingup	Dawson Drive	Road Reserve	1 1 3 3 3 1 3	1 2 3 4	6 9 13 17	20	12 18 26 34	NA 1 2 3 4	6 9 13 17	() ()	12 18 26 34		
012 02. Yallingup	Yallingup Beach Holiday Park	Leasehold	1 3 4 1 2 1	1 2 3 4	10 14 18 21	0.5	5 7 9 11	NA 1 2 3 4	10 14 18 21	0.5	5 7 9 11		
013 02. Yallingup	Properties west of Dawson Drive		1 2 4 1 3 1	1 2 3 4	10 14 18 21	2	20 28 35 42	NA 1 2 3 4	10 14 18 21	2	20 28 36 42		
014 02, Yallingup	Properties east of Dawson Drive		1 2 4 1 3 1	1 2 3 4	10 14 18 21	2:	20 28 36 42	NA 1 2 3 4	10 14 18 21	2,	20 28 36 42		
015 03, Bunker Bay	Beach		1 4 1 1 3 4	3 4 5 5	18 21 23 23	0.25	5 5 6 6	NA 3 4 5 5	18 21 23 23	0.25	5 5 6 6		Very high adaptive capacity due to rural land
016 03. Bunker Bay	Foreshore Reserve		1 4 1 1 2 4 4	3 4 5 5	18 21 23 23	0.5	9 11 12 12	NA 3 4 5 5	18 21 23 23	0.5	9 11 12 12		
017 03, Bunker Bay	Bunker Bay Road		1 1 3 3 2 1 3	1 2 3 1	6 9 13 17	2	12 18 26 34	NA 1 2 3 4	6 9 13 17	2	12 18 26 84		
018 C3. Bunker Bay	Farm Break Lane		1 2 2 2 2 1 2	3 4 5 5	8 12 16 16	1	8 12 16 16	NA 3 4 5 5	8 12 16 16	1	8 12 16 16		
019 03. Bunker Bay	Properties to the north of Farm Break Lane	Crown	1 1 4 1 2 1	3 4 5 5	18 21 23 23	9	36 42 46 46	NA 3 4 5 5	18 21 20 20	2/	36 42 46 46	THORITY	
020 03. Bunker Bay	Bunker Bay Café	Freehold	1 3 3 1 3 1 3	2 3 4 5	9 13 17 20	25	18 26 34 40	NA 2 3 4 5	9 .13 .17 20	2	18 26 34 40		
021 03. Bunker Bay	Bunker Bay Resort	Freehold	1 3 4 1 3 1 4	1 2 3 4	10 14 18 21	*	20 28 35 12	NA 1 2 3 4	10 14 18 21	2	20 28 88 42		
022 03. Bunker Bay	Private Rural Land		1 1 4 1 1 1	3 4 5 5	18 21 23 23	0.25	5 5 6 6	NA 3 4 5 5	18 21 25 23	0.25	5 5 6 6		
023 04, Eagle Bay	Beach		1 4 1 1 3 4 4	3 4 5 5	18 21 23 23	0.25	5 5 6 6	NA 3 4 5 5	18 21 23 23	0.25	5 5 6 6		
024 04. Eagle Bay	Foreshore Reserve		1 4 1 1 2 4	3 4 5 5	18 21 23 23	1	18 21 23 23	NA 3 4 5 5	18 21 20 23	1	18 21 23 23		
025 04. Eagle Bay	Properties on the east of Fern Road	Freehold	1 1 1 1 3 1	1 3 5 5	10 18 20 23	2	20 35 46 46	NA 1 3 5 5	10 18 23 23	2	20 35 46 46		
026 04. Eagle Bay	Eagle Bay Fire Station	Grown	3 1 3 3 4 1	1 1 2 3	10 10 14 18	2:	20 20 28 -36	NA 1 1 2 3	10 10 14 18	2	20 20 28 36		
027 04. Eagle Bay	Eagle Bay Community Hall	Freehold	1 1 3 3 1 1	1 2 3 4	10 14 18 21	2.	20 28 35 42	NA 1 2 3	10 14 18 21	2	20 28 36 42		
028 G4. Eagle Bay	Meelup Beach Road	Road Reserve	1 1 3 1 3 1 3	2 3 5 5	9 13 20 20	2	18 26 40 40	NA 2 3 5 5	9 13 20 20	2	18 26 40 40		
029 05. Old Dunsborough	Beach		1 4 1 1 3 4 4	3 4 5 5	18 21 23 23	0.25	5 5 6 6	NA 3 4 5 5	18 21 23 23	0.25	5 5 6 6		
030 05, Old Dunsborough	Foreshore Reserve		1 1 1 2	3 5 5	18 21 23 23	1	18 21 23 23	NA 3 6 5	18 21 29 23	1	18 21 23 23		
031 05. Old Dunsborough	Bay View Cres & Hufford St	Road Reserve	1 1 3 3 3 1 3	2 3 5 5	9 13 20 20	2:	18 26 40 40	NA 2 3 5 5	9 13 20 20	2:	18 26 40 40		
032 05, Old Dunsborough	Properties Bay View Crescent	Road Reserve	1 1 4 1 3 1 4	2 3 5 5	14 18 23 23	集	28 36 46 46	NA 2 3 5 5	14 18 23 23	20	28 38 46 46	PRORITY	
033 05. Old Dunsborough	Boat ramp		1 3 1 3 1	3 4 5 5	18 21 23 23	1	18 21 23 23	NA 3 5 5	18 21 23 23	1	18 21 23 23		
034 05. Old Dunsborough	Properties East of North street	Freehold	1 1 4 1 3 1 4	1 2 4 5	10 14 21 23	27	20 28 42 46	NA 1 2 4 5	10 14 21 23	- 8	20 28 42 46		
035 05. Old Dunsborough	North Street	Road Reserve	1 1 3 3 3 1 3	1 2 4 5	6 9 17 20	1	6 9 17 20	NA 1 2 6 5	6 9 17 20	1	6 9 17 20		
036 05, Old Dunsborough	Properties West of North Street	Freehold	1 1 1 4 1 3 1 4	1 2 3 4	10 14 18 21	2.	20 28 35 42	NA 1 2 3 4	10 14 18 21	2	20 28 36 42		
037 05, Old Dunsborough	Properties West of Gifford Street	Freehold	MA MI 4 MI 3 MI 4	2 4	10 10 14 21	2	20 20 28 42	NA 1 1 2	10 10 14 21	2.	20 20 28 42		

	,				Unmitigated Risk and V				M	Itigated Risk and Vulnerat				
			Consequence 1 = indignificant 2 = ninion 3 = moderate 4 = ninipr 5 = catastrophic	Likelihood 1 = rare 2 = unikely 3 = possible 4 = likely 5 = Almost Cartain	Rink 1-5 = too 6-13 = medium 16-19 = high 20-25 + setneme	Adaptive Capacity 2 = very low 1.5 = low 1 = moderate 0.5 = high 0.25 = very high	Vulnerability 11-20 < law 11-20 = enotion 21-35 = regh > 30 = economic	F	Residual Likelihood 1 = rare 2 = unlikely 3 = possible 4 = (Muly 5 = Almost Cetain	Residual Risk 1-5 = four 6-13 = credien 14-19 = high 20-25 = admens	Adaptive Capacity 2 = very tax 1,5 = see 1 = moderate 0.5 = high 0.25 = very high	Residual Vulnerability 1-10 = 10w 15-20 = nedum 21-30 = high > 30 = scheme	Assets Requiring Urgent Adaptation	Comments
ID Planning Unit (PU)	Asset	Tenure	Propin Health & OBN Boold & Cotheral Physicial Operational Repotational Benicomental	2020 2050 2070 2120	2020 2030 2070 2120		2020 2030 2070 2120	Control Structure 26	020 2030 2070 2120	2020 2000 2070 2120		2020 2050 2070 2120		
038 06. Dunsborough Townsite	Beach		1 4 1 1 3 4 4	3 4 5 5	18 21 23 23	0.25	5 5 6 6	Greenscree Groyne	3 4 5 5	18 21 20 23	0.25	5 5 6 6		
039 06. Dunsborough Townsite	Foreshore Reserve		1 4 3 1 2 4 4	3 4 5 5	18 21 23 23	1	18 21 23 23	Greenistres Groyne	3 4 5 5	18 21 20 23	1	18 21 23 23		
040 06. Dunsborough Townsite	Vincent Street	Road Reserve	1 1 3 3 3 1 3	2 3 5 5	9 13 20 20	2:	18 26 40 40	Greenacres Groyne	2 3 5 5	9 13 20 20	2:	18 26 40 40		
041 06. Dunsborough Townsite	Vincent Street Culvert Bridge		1 1 3 2 3 2 3	2 3 5 5	9 13 20 20	2:	18 26 40 40	Greenaures Groyne	2 3 5 5	9 13 20 20	2	18 26 40 40		
042 06. Dunsborough Townsite	Properties on Vincent Rd	Freehold	1 1 4 1 3 1 4	2 3 5 5	14 18 23 23	2:	28 36 46 46	Greenactes Greyne	2 3 5 5	14 18 23 23	2	28 36 46 46	*PRIORITY Impact triggered by	
943 06. Dunsborough Townsite	Tourist Accommodation	Freehold	1 3 4 1 3 1 4	2 3 5 5	14 18 23 23	2	28 36 46 46	Greenacres Groyne	2 3 5 5	14 18 23 23	2	28 38 48 48	*PRIORITY	
044 06. Dunsborough Townsite	Geographe Bay Road	Road Reserve	1 1 4 3 3 1 4	2 3 5 5	14 18 23 23	2	28 36 45 46	GSCSeawall	1 3 5 5	10 18 23 23	2	20 36 46 45		
D45 06, Dunsborough Townsite	Properties along Geographe Bay Road (east of Chester Way)		3 3 4 3 3 3 4	2 3 5 5	14 18 23 23	2.	28 38 46 46	GSCSeawait	1 1 3 4	10 10 18 21	2	20 20 38 42		
048 06. Dunsborough Townsite	Properties along Geographe Bay Road (west of Chester Way)		1 1 4 1 3 1 4	1 1 2 4	10 10 14 21	2:	20 20 28 42	N/A	1 1 2 4	10 10 14 21	2	20 20 28 42		Impact triggered by erosion of Geographe Bay Rd
047 07, Quindalup Beach	Beach		81 4 1 1 2 4 4	3 4 5 5	18 21 23 23	0.25	5 5 6 6	N/A	3 5 5	18 21 23 23	0.25	5 5 6 6		or Geographie day ros
048 07. Quindalup Beach	Foreshore Reserve		1 4 1 1 2 4 4	3 4 5 5	18 21 23 23	0.5	9 11 12 12	NA.	3 4 5 5	18 21 23 23	0.5	9 11 12 12		
049 07. Quindalup Beach	Quindalup Pro Boat Ramp /Duns Yacht Club	Leasehold	1 4 3 1 3 1 4	3 4 5 5	18 21 -23 23	1	18 21 23 23	NA.	3 4 5 5	18 21 23 23	1	18 21 23 23		
050 07, Quindalup Beach	Quindalup Boat Ramp/Sea Rescue	Leasehold	3 1 3 1 4	3 4 5 5	18 21 23 23	1	18 21 23 23	N/A	3 4 5 5	18 21 20 20	1	18 21 23 23		
051 07, Quindalup Beach	Geographe Bay Road	Road Reserve	1 1 3 3 3 1 3	- 1 4 5	0 6 17 20	2:	0 12 34 40	NA.	- 1 4 5	0 6 17 20	2	0 12 34 40		
052 07. Quindalup Beach	Caves Road		1 1 3 3 3 1 3	3 5	0 0 13 20	27	0 0 26 40	N/A	3 5	0 0 13 20	2:	0 0 26 40		
053 07, Quindalup Beach	Properties on the ocean side of Geographie Bay Road	Freehold	1 1 4 1 3 1 4	- 1 4 5	0 10 21 23	2.	0 20 42 46	NA.	- 1 4 5	0 10 21 20	2	0 20 42 46		
054 07. Quindatup Beach	Properties Wilson Ave to Elerone Road		1 1 4 1 3 1 4	2 4	0 0 14 21	2	0 0 28 42	Oxincialup Stone Revetment	2 4	0 0 14 21	2	0 0 28 42		
055 07. Quindalup Beach	Properties Toby's Inlet west		1 1 4 1 3 1 4	- 1 4 5	0 10 21 23	- 1	0 20 42 46	N/A	- 1 4 5	0 10 21 23	2.	0 20 42 46		Impact triggered by erosion of Geographe Bay Rd
056 07, Quindalup Beach	Properties Toby's Inlet east		3 11 4 11 3 1 4	- 1 4 6	0 10 21 23	2	0 20 42 46	NA.	- 1 4 5	0 10 21 28	9/	0 20 42 46		Impact triggered by erosion of Geographe Bay Rd
057 07. Quindalup Beach	Properties south of Toby's Inlet		1 1 4 1 3 1 4	1	0 0 0 10	#.	0 0 0 20	NA.	1	0 0 0 10	2	0 0 0 20		or Oscorabile Day 110
058 08. Marybrook	Caves Road		1 1 3 3 3 1 3	3 5	0 0 13 20	2	0 0 26 40	N/A	3 5	0 0 13 20	2	0 0 26 40		
059 08. Marybrook	Gully Drain Bridge		1 1 4 4 3 2 4	3 5	0 D 18 23	2.	0 0 38 48	NA.	3 5	0 0 18 23	2	0 0 38 46		
060 G8. Marybrock	Molloy Drain Bridge		1 1 4 4 3 2 4	3 5	0 D 18 23	2	0 0 35 45	NA.	3 5	0 0 18 28	2	0 0 35 45		
061 08. Marybrook	Beach		1 4 1 1 3 4	3 4 5 5	18 21 23 23	0.25	5 5 6 6	N/A	3 4 5 5	18 21 23 23	0.25	5 5 6 6		
062 08. Marybrook	Foreshore Reserve		1 4 1 1 2 4 4	3 4 5 5	18 21 23 23	10	18 21 23 23	NA.	3 4 5 5	18 21 20 23	1.	18 21 23 23		
063 08, Marybrook	Escape Day Spa	Freehold	1 3 4 1 3 1 4	1 2 5 5	10 14 23 23	2:	20 28 46 46	N/A	1 2 5 5	10 14 23 23	2	20 28 46 46		
064 08, Marybrook	Properties north of Caves Rd	Freehold	1 1 4 1 3 1	3 4 5 5	18 21 23 23	2	36 42 46 46	NA.	3 4 5 5	18 21 29 23	2	36 42 46 46	TRIORITY	
065 08. Marybrook	Properties south of Caves Rd / Agriculture Properties		1 1 4 1 3 1 4	3 5	0 0 18 23	2	0 0 35 46	N/A	3 5	0 0 18 23	2	0 0 35 45		impact triggered by erosion of Caves Road
096 09. Siesta Park	Lennox Orain Bridge		1 1 4 4 3 2 4	3	0 0 18 21	2	0 0 36 42	N/A	(= = <mark>3</mark> 5	0 0 18 23	2.	0 0 36 46		
067 09. Siesta Park	Beach		1 4 1 1 3 4 4	3 5	0 0 18 23	0.25	0 0 5 6	NA.	3 5	0 0 18 20	0.25	0 0 5 6		
068 09, Siesta Park	Foreshore Reserve		1 1 1 3 4	3 4 5 5	18 21 23 23	0.5	9 11 12 12	NA.	3 4 5 5	18 21 23 23	0.5	9 11 12 12		
069 09. Siesta Park	Properties north of Caves Road (west)	Freehold	1 1 4 1 3 1 4	3 4 5 6	18 21 23 23	\$	36 42 46 46	East Larress Greynes & Geolog someons	2 5 5	14 21 23 23	2	28 42 46 46	*PRIORITY	
070 09. Siesta Park	Siesta Park Holiday Resort	Freehold	1 3 4 1 3 1 4	3 4 5 5	18 21 23 23	2	36 42 46 46	NA	3 4 5 5	18 21 23 23	2	36 42 46 46	HERMITY	
071 09. Siesta Park	Properties north of Caves Road (east)	Freehold	1 1 4 1 3 1 4	3 4 5 5	18 21 23 23	2.	36 42 46 46	Siesta Park Groyne	1 4 5 5	10 21 23 23	2.	20 42 46 46		
072 09. Siesta Park	Properties south of Caves Road		1 1 4 1 2 1	3 4	0 0 18 21	2.	0 0 36 42	N/A	3 4	0 0 18 21	2.	0 0 36 42		Impact friggered by erosion of Caves Road
073 09. Siesta Park	Caves Road	Road Reserve	1 1 3 3 3 1 3	3 4	0 0 13 17	20	0 0 26 54	N/A	3 4	0 0 13 17	2	0 0 26 34		
074 10. Locke Estate	Locke Swamp Drain Bridge		1 1 4 4 4 2 4	1 2 3 5	10 14 18 23	2	20 28 36 46	N/A	1 2 3 5	10 14 18 23	2	20 28 56 46		
075 10. Locke Estate	Beach		1 4 1 1 3 4 4	3 4 5 5	18 21 23 23	0.25	5 5 6 6	Graynes and	1 1 5 5	10 10 23 23	0.25	3 3 6 6		
076 10. Locke Estate	Locke Estate Camps	Crown Reserve	1 3 3 1 3 1 3	3 4 5 5	13 17 20 20	1	13 17 20 20	Groynes and	1 1 5 5	6 6 20 20	1	6 6 20 20		
077 10. Locke Estate	Caves Road		1 1 3 3 3 1 3	- 1 3 5	0 6 13 20	2	0 12 26 40	Groynes and Second	- 1 3 4	0 6 13 17	2	0 12 26 04		

								Unmitigated Risk an	d Madagash Mha				Market Blok and Malanca	. The control of the			
			_			T .	h-thd		d Vulnerability Adaptive				Itigated Risk and Vulneral	Adaptive	Residual	T	
				Conseque 1 = knolpsi 2 = min 3 = mode 4 = mai 5 = cataste	icant. or orio or		ikelihood 1 = rare 1 = unlikely = possible 4 = likely Nexost Cartain	Rink 1-5 = tox 6-13 = medium 54-19 = 64gh 20-25 = astrona	Capacity 2 = sery los 1.5 = km 1 = moderate 0.5 = Nigh 0.25 = very high	Vulnerability 1:30 < Rev 11:20 = Rev 11:20 = Reviews 21:30 = Regis > 30 = extrurre		Residual Likelihood 1 = zare 2 = unlikely 3 = possizie 4 = (kely 5 = Almost Catain	Residual Risk 1-5 = foor 9-13 = crestion 14-19 = high 20-25 = advance	Cepacity 2 = very tox 1,5 = toe 1 = moderate 0.5 = tigh 0.25 = very high	Residual Vulnerability 1-10 = low 11-20 = medium 21-30 = high > 30 = enhance	Assets Requiring Urgent Adaptation	Comments
ID Planning Unit (PU) Asset	Te	enure	People Health & OSH Social & Collocal	Pinancial	Reputational Environmental	2020 1	1930 2070 2120	2020 2000 2070 2120		2820 2000 2870 2120	Control Structure	2020 2030 2070 2120	2026 2030 2070 2120		2020 2030 2070 2120		
078 11. Abbey Buayanup Orali	ain Bridge		1	1 4 4	4 2		1 3 5	0 10 18 23	2	0 20 35 45	Buayanup Training Wall	- 1 3 5	0 10 18 23	2	0 20 55 45		
079 11. Abbey Beach			1	4 1 1	3 4	3	4 5 5	18 21 23 23	0.25	5 5 6 6	Althey Groynes	1 2 5 5	10 14 23 23	0.25	3 4 6 6		
080 11. Abbey Foreshore Res	serve		- 1	4 3 1	2 4	3	4 5 5	18 21 20 23	20	35 42 46 46	Abbey Geoynes	1 2 5 5	10 14 23 23	2	20 28 46 46		
081 11. Abbey Boat Ra	Ramp Cr	rown Reserve	- 1	4 3 1	3 1	3	4 5 5	18 21 23 25	1	18 21 23 23	Abbey Groynes	3 1 4 5	10 10 21 23	1/	10 10 21 23		
082 11, Abbey Property Forth:	h St to Harnett St Fr	reehold	1	1 4 1	3 1	3	4 5 5	18 21 23 23	2	36 42 46 46	Abbey Groynes	1 3 5 5	10 18 23 23	2	20 36 46 46		
083 11. Abbey Cape View Bea	each Resort Fr	reehold	-1	2 4 1	3 1	- 1	2 5 5	10 14 23 23	2	20 28 46 46	Abbey Groynes	1 2 5 5	10 14 23 23	2	20 28 45 45		
094 11. Abbey Baptist Care	Fr	reehold	1	4 4 1	3 1	2	3 5 5	14 18 25 23		28 36 46 46	Abbey Groynea	1 2 5 5	10 14 23 23	2	20 28 16 66		
085 11. Abbey Properties Han	rvest Road Fr	reehold	1	1 4 3	3 1	2	3 5 5	14 18 23 23	2	28 36 46 46	Abbey Grayres	1 3 5 5	10 18 20 23	2:	20 36 46 46		
095 11. Abbey Yourst Accomm	emodation Fr	reehold	1	3 4 1	3 1	2	3 5 5	14 18 20 23	20	28 38 46 46	Abouy Groynes	1 3 5 5	10 18 23 23	2)	20 35 46 45		
087 11. Abbey Tourist Accomm	nmodation Fr	reehold	11	3 4 1	3 1	100	1 3 6	0 10 18 23	25	0 20 25 46	Abbay Groynes	- 1 3 5	0 10 18 23	2)	0 20 36 46		
088 11, Abbey Broadwater Ex	xecutive Villas Fr	reehold	1	1 4 1	3 1	372	- 1 3	0 D 10 18	2	0 0 20 36	Abbey Geoynes	1 3	0 0 10 18	2	0 0 20 38		
089 11. Abbby Shopping Certi	rtro		1	3 4 1	3 1	100	- 1 4	0 0 10 21	2	0 0 20 42	Abbey Groynes	1 4	0 0 10 21	2	0 0 20 42		
	Busselton Highway		1	1 4 4	100	100	- 1 5	0 0 10 23	*	0 0 20 46	Abbey Groynes	1 5	0 0 10 20	3	0 0 20 46		
	the south side of Busselton Highway		-1	1 4 1	3 1	-	- 1 5	0 0 10 23	25	0 0 20 46	Abbey Geoynes	1 5	0 .0 10 23	2.	0 0 20 46		
092 12. Broadwater Beach			1	4 1 1	3 4	3	4 5 5	18 21 23 23	0.25	5 5 6 6	N/A	3 4 5 5	18 21 23 23	0.25	5 5 6 6		
093 12. Broadwater Foreshore Resi	serve		1	1 1	2 4	3	4 5 5	18 21 23 23	1	18 21 23 23	N/A	3 4 5 5	18 21 23 23	1	18 21 23 23		
094 12. Broadwater Dolphin Road E	Boat Ramp Cr	rown Reserve	1	4 3 1	3 1	3	4 5 5	18 21 23 23	1	18 21 23 23	NA	3 4 5 5	18 21 23 23	1	18 21 23 23		
095 12. Broadwater Aged Care Fac		rown Reserve	1	4 4 3	3 1	3	4 5 5	18 21 23 23	0.25	5 5 6 6	NA	3 4 5 5	18 21 20 23	0.25	5 5 6 6		Very high adaptive capacity due to reserve on ocean
096 12. Broadwater Balance of devi side of Caves F	evelopment north Road		1	3 4 1	3 1		1 3 5	0 10 18 23	2	0 20 26 46	NA.	- 1 3 5	0 10 18 23	*	0 20 36 46		Aged care facility on reserve
097 12. Broadwater Caves Road			-1	1 4 3	4 1	-	- 1 -5	0 0 10 23	2):	0 0 20 45	N/A	1 5	0 0 10 23	2/	0 0 20 46		
098 12. Broadwater Development s Highway	south of Busselton		1	1 4 1	3 1	-	- 1 5	0 0 10 23	2.	0 0 20 45	NA	- 1 5	0 0 10 20	2	0 0 20 46		
099 13. Bussetton West A Beach			1	1 1	3	3	4 5 5	18 21 23 23	0.5	9 11 12 12	Groynes	1 4 5 5	10 21 23 23	0.5	5 11 12 12		
100 13. Busselton West A Foreshore Res	rserve		1	4 1 1	2	3	4 5 5	18 21 23 23	1	18 21 23 23	Training Wall	1 4 5 5	10 21 23 23	1	10 21 23 23		
101 13. Busselton West A Hospital	o	rown Reserve	3	4 5 3	1 1	2	4 5 5	19 24 25 25	1.5	29 36 38 38	NA.	2 5 5	19 24 25 25	1,5	29 36 38 38	*PRIORITY	
102 13. Busselton West A School			- 1	4 4 3	3 1		3 5 5	0 18 20 23	2:	0 36 40 40	NA.	- 3 5 5	0 18 20 23	2)	0 38 46 46		
103 13, Bussetton West A. Bussetton high	evelopment north of hway	reehold	1	2 4 1		3	4 5 5	18 21 25 23	2:	36 42 46 46	Groyens	2 4 5 5	14 21 23 23	2	28 42 46 46	*PRIORITY Impacted triggered by	
104 13. Busselton West A Busselton High			1	1 4 4	4 11		5	0 0 0 23		0 0 0 46	N/A	5	0 0 0 23	2	0 0 0 66		
100 13. Bullotituti Hescal Highway	south of Bussetton		1	1 4 1		117	1 1 3	0 0 0 23	- 8	0 0 0 46	N/A		0 0 0 23	- 8	0 0 0 46		
106 13, Busselton West A Geographe Bay	ay Road Ro	oad reserve	1	1 4 3	3 1	3	4 5 5	18 21 23 23	*	36 42 46 46	N/A	3 4 5 5	18 21 23 23	35	36 42 46 46	PROBITY	
107 14. Busselton West B Beach			- 1	1 1	3	3	4 5 5	18 21 23 23	0.5	9 11 12 12	NA.	3 4 5 5	18 21 23 23	0.5	9 11 12 12		
108 14. Bussetton West B Foreshore Res	eserve		1	3 1	2	3	4 5 5	18 21 23 23	1.	18 21 23 23	Training Wall	1 2 5 5	10 14 23 23	1	10 14 23 23		
109 14. Busselton West 8 Bicycle Bridge	oth of 1 formation		1	3 3 1	2 2		- 4 6	0 0 17 20	2	0 0 34 40	Training Wall	- 4 5	0 0 17 20	2	0 0 34 40		
Tro 14. Bussellor West B Street	rth of Margaret Fr	reehold	1	1 4 1	3 1	3	4 5 5	18 21 23 23	2	36 42 46 46	Training Wall	1 2 5 5	10 14 23 23	2	20 28 46 46	***************************************	
111 14 Busselton West 8 GBYC	Fr	reehold	1	3 1	3 1	3	4 5 5	18 21 23 23	2.	36 42 46 46	Training Wall	2 3 5 5	14 18 23 23	2	28 36 46 46	*PRIORITY Impacted triggered by	
112 14. Busselton West B Lou Western O			1	3 1	3 1		3 5 5	0 18 23 23	0.25	0 5 6 6	Training Wall	- 3 5 5	0 18 23 23	0.25	0 5 6 6		
113 14, Bussetton West B Bussetton High	21W31	reehold	1.	1 4 1	3 1	3	4 5 5	18 21 20 23	2:	36 42 46 46	N/A	3 4 5 5	18 21 23 23	2	36 42 46 46	- Impact Inggered by	
114 14. Busselton West B Busselton High	риму		1	1 4 4	4 1	-	- 1 5	0 0 10 23	2:	0 0 20 46	NA	- 1 5	0 0 10 23	2.	0 0 20 45		
115 14. Busselton West B Busselton High			1	1 4 4	1 2	- 1	- 1 5	0 0 10 23	2	0 0 20 40	N/A	- 1 5	0 0 10 23	3	0 0 20 46		
116 14. Busselton West B Geographie Bay	ay Road Ro	oad Reserve	1	1 3 3	1 1	3	4 5 5	18 21 23 23	2	36 42 46 46	N/A	3 4 5 5	18 21 23 23	3	36 42 46 48	198009117	





Appendix D Physical Controls

Existing Physical Erosion Controls (Source: Condition Assessment Report – GHD, 2015)

										Predicted Original/	Theoretical Remaining	Estimate of Actual			
Vo.	ID III	Structure Description	Type	Materials	Length (m)	Year of	Assumed Management A	ut Structural Rating	Function Rating	Refurbished Design Life	Deign Life	Remaining Useful Life	Suggested Actions	Structure Importance	Maintenance Priority
1	1.1	Old Dunsborough - Greenacres Groyne	Groyne	Rock		N/A		Very Poor	Marginal	-		-	N/A	LOW	N/A
2	1.2	Dunsborough Buried GSC Seawall	Seawall	GSC		2012	City of Busselton	Good	Good	30	28	>20	Montton and Maintain	Hath	Med
3	2.1	Quindalup stone revetment	Seawall	Rock - Lateritic Ironstone	-	1973	City of Busselton		-	9	177		N/A	Low	N/A
4	3.1	Qualidatup timber groynes	Groyne	Timber		1982	City of Busselton						N/A	N/A	N/A
5	4.1	Station Gulley drain outlet	Untrained Outlet	Sand		1930s?	Department of Water		Very poor			-	Action Required	1985	1945
6	5.1	Lennox River outlet East	Untrained Outlet	Sand		N/A	Department of Water		Marginal				Action Required	9969	
7	6.1	Lennox Groyne 1	Groyne Groyne	Timber		1960s	Private	Poor	Marginal			<2	Action Required	Med	Med
8	6.2	East Lennox Groyne 2	Groyne	Timber		1960s	Private	Very Poor	Poor	-		- 2	Action Required	Med	Med
9	6.3	East Lennox Groyne 3	Groyne	Timber		1960s	Private	Marginal	Marginal			a	Action Required	Med	Med
10	6.4	East Lennox Groyne 4	Groyne	Timber		1960s	Private	Poor	Poor			<2	Action Required	Med	Med
21	6.5	East Lennox Groyne 5 Jetty	Groyne	Timber		1960s	Private	Very Poor	Marginal			+2	Action Required	Med	Med
12	7.1	Groyne at "Serena" (Siesta Park)	Groyne	Concrete		1950s	Private	Poor Poor	Fair			4	Action Required	Med	Med
13	8.1	Siesta Park Groyne	Groyne	Rock - Lateritic Ironstone		1965-1967	City of Busselton	Poor Fair	Marginal	50	3	4	Action Required	Her	THE STATE OF THE S
14	9.1	Locke Estate Groyne 1	Groyne	Timber		1988-1992	City of Busselton	Good	Fair Fair			42	Action Required	Med	Med
15	9.2	Locke Estate Groyne 2	Groyne	Timber		1988-1992	City of Busselton	Good	Good			-2	Action Required	Med	Med
16	9.3	Locke Estate Groyne 3	Groyne	GSC		2014	City of Busselton	Poor	Good Fair	20	20	<20	Monitor and Maintain	Med	Low
17	9.4	Locke Estate Groyne 4	Groyne	GSC		2014	City of Busselton	Good	Good Fair	20	20	<20	Monitor and Maintain	Med	LOW
18	9.5	Locke Estate Groyne 5	Groyne	Timber		1988-1992	City of Busselton	Marginal	Fair	20	20	<2	Action Required	Med	Med
19	9.6	Locke Estate Groyne 6	Seawall Training	GSC		2014	City of Busselton	Fair		20	20	<20	Monitor and Maintain	Med	Low
20	9.7	Locke Estate Seawall	Wali	Rock - Lateritic Ironstone		Refurb. 2014	Private Department		Good	20	20		Monitor and Maintain	Med	Low
21				Rock - Granite		1985	of Water	Good	Good			<10	Action Required	Med	LOW
	10_1	Buayanup Drain Training Wall	Groyne					Good	Good						1001
22	11_1	Abbey West Timber Groyne	Headland	Timber		Refurb. (2012/2013)	City of Busselton	Good	Good	10	8	<10	Monitor and Maintain	Med	LOW
23	12_1	Abbey Boat Ramp Headland	Groyne	Rock - Lateritic Ironstone		1978 (Refurb. 2011)	City of Busselton	Fair Fair	Good	50	47	>20	Monitor and Maintain	Hem	rned
24	13_1	Abbey Groyne 1 Abbey	Groyne	Timber		1990s Refurb (2012/2013)		Gond	Good	10	8	<10	Monitor and Maintain	Med	Low
25	13_2	Groyne 2 Abbey	Groyne	Timber		1990s	City of Busselton	Fair	Good	20	1	<5	Action Required	Med	Med
26	13_3	Groyne 3 Abbey	Groyne	Rock - Lateritic Ironstone		1990s	City of Busselton	Marginal	Fair	25	6	<10	Monitor and Maintain	Med	Low
27	13_4	Groyne 4 Abbey	Groyne	Rock - Lateritic Ironstone		1990s (Refurb. 2011)	City of Busselton			20	17	<15	Monitor and Maintain	Med	Low
28	13_5	Groyne 5 Abbey	Groyne	Rock - Lateritic Ironstone		1990s	City of Busselton			25	6	<10	Monitor and Maintain	Med	Low
29	13_6	Groyne 6		Rock - Lateritic Ironstone		1990s	City of Busselton			25	6	<5	Action Required	190	High
30	14.1	Dolphin Rd. boat Ramp	Boat Ramp	Timber		1960s	City of Busselton					State of the state of	N/A	N/A	N/A
31	15_1	Beachlands Groyne 1	Groyne	Timber		40 1995	City of Busselton	Poor	Good	20	1	<2	Action Required	Med	Med
32	15_2	Beachlands Groyne 2	Groyne	Timber		40 1995	City of Busselton	Very Poor	Good	20	1	<2	Immediate Action Required	Med	1100
33	15.3	Beachlands Misc Groynes (3)	Groyne	Timber		1980s	City of Busselton						N/A	N/A	N/A
34	15_4	Beachlands Seawall	Seawall	Rock - Lateritic Ironstone	6	00 1970s	City of Busselton	Fair	Fair	50	11	<10	Monitor and Maintain	THE .	Med
35	15.5	Beachlands 'Longard Tubes'	Perched Beach	Geotextiles		1977	City of Busselton					4	N/A	N/A	N/A
36	16_1	East Beachlands Groyne	Groyne	Rock - Lateritic Ironstone		50 1999	City of Busselton	Fair	Fair	25	10	<10	Monitor and Maintain	1140	Med
37	16_2	East Beachlands Seawall	Seawall	Rock - Lateritic Ironstone	2	00 1970s	City of Busselton	Fair	Fair	50	11	<10	Monitor and Maintain	1666	Med
.38	17_1	Vasse Diversion Outlet Training Wall	Training Wall	Rock - Granite		00 1983	Department of Water	Fair	Good			<15	Monitor and Maintain	Hen	Med
39	18_1_1	Busselton Jetty GSC Groynes (1 of 3)	Groyne	GSC		50 2008	City of Busselton	Good	Good	20	14	<15	Monitor and Maintain	Med	Low
40	18_1_2	Busselton Jetty GSC Groynes (2 of 3)	Groyne	GSC		50 2008	City of Busselton	Good	Good	20	14	<15	Monitor and Maintain	Med	Low
41	18_1_3	Busselton Jetty GSC Groynes (3 of 3)	Groyne	csc		50 2008	City of Busselton	Good	Good	20	14	<15	Monitor and Maintain	Med	Low
42	18.2	Busselton Jetty Concrete Seawall	Seawall	Concrete		50 1960s or 1970s	City of Busselton	Poor	Marginal	50	6	<5	Action Required	1666	High
43	18.3	Busselton Jetty Rock Seawall	Seawall	Rock - Granite		00 Refurb. 2011	City of Busselton	Good	Good	50	47	>20	Monitor and Maintain	1000	Med
44	18.4	Scout Road Groyne 1	Groyne	GSC		50 2013	City of Busselton	Good	Good	20	19	<20	Monitor and Maintain	Med	Low
45	18.5	Scout Road Groyne 2	Groyne	GSC		50 2013	City of Busselton	Good	Good	20	19	<20	Monitor and Maintain	Med	Low
46	18 6	Scout Road Groyne 3	Groyne	GSC		50 2013	City of Busselton	Good	Good	20	19	<20	Monitor and Maintain	Med	Low
47	18 7	Scout Road Groyne 4	Groyne	GSC		50 2013	City of Busselton	Good	Good	20	19	<20	Monitor and Maintain	Med	772
48	19_1	East Busselton Groyne Field	Groyne	Rock - Lateritic Ironstone and		1970's	City of Busselton	0000	0000	20		120	N/A	N/A	N/A
49	20_1	Guerin St Groyne (removed)	1000000		0.000000	1974							N/A	N/A	N/A
											1000		Monitor and Maintain	Med	10W
50	21_1	Wonnerup Groyne 1	Groyne	Rock - Lateritic Ironstone	44	2006	City of Busselton	Fair	Fair	20	12	<10	Monitor and Maintain	Med	Low
51	21.2	Wonnerup Groyne 2	Groyne	Rock - Lateritic Ironstone	40	2006	City of Busselton	Fair	Fair	20	12	<10	Monitor and Maintain	Med	Low
													Monitor and Maintain	Med	Low
52	21_3	Wonnerup Groyne 3	Groyne	Rock - Lateritic Ironstone	40	2004?	City of Busselton	Fair	Fair	15	5	- 6	Action Required	Med	Med
53	21_4	Wonnerup Groyne 4	Groyne	Rock - Lateritic Ironstone	40	2004? (Refurb. 2011)	City of Busselton	Good	Good	20	17	<15	Action Required	Med	Med
	-												Action Required	Med	4 Med

Council 421
13.1 Attachment D Advisian report



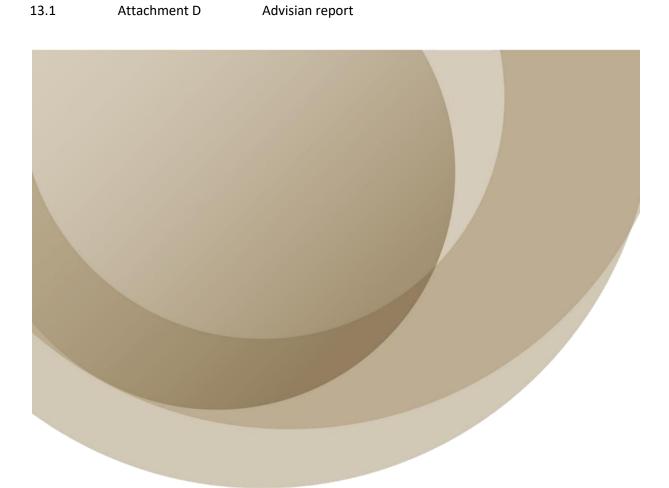
Appendix E Planning Controls

Instrument	<u>Clause</u>	<u>Function</u>
P & D Act 2005	25. Effect of statements of planning policy under repealed Act.	Here, State Planning Policies (SPP) come in to effect under this section.
	26. State planning policies, preparation and content of (3).	Further, an SPP can make provision for any matter which may be the subject of a local planning scheme.
	26. State planning policies, preparation and content of (4).	For these local matters, SPPs can be prepared to guide planning processes in regard to a specific or general matter anywhere in the state.
	68. Effect of town planning schemes under repealed Act.	Local Planning Schemes (LPS) come in to effect under this section.
	77A. Minister may order local government to amend scheme to be consistent with State planning policy (1).	If it is believed that an area of importance is not being addressed by a local authority through its LPS, the minister may order the local government to prepare and submit a scheme amendment in regard to a specific SPP.
	77. State planning policies effect of on scheme (1a).	Due regard is to be given to State planning policies that apply to the area of a local planning scheme (SPP2.6 is of particular relevance to coastal management) and should inform the LPS amendment process.
	112. Declaration of planning control area.	For land that is deemed potentially strategic or requiring particular attention, the act gives LA's power to protect this land from inappropriate development through planning control areas.
	190. Land for planning scheme, responsible authority may purchase.	For reasons that the local authority deem important, the responsible authority may purchase any land comprised in the planning scheme from any person who may be willing to sell.
	191. Compulsory acquisition of land in scheme area.	As an extreme measure, this section allows for the compulsory taking by the responsible authority without agreement and with the approval of the Governor.

SPP 2.6	2.4. The policy purpose.	The purpose of this Policy is to provide guidance for decision-making within the coastal zone including managing development and land use change.
	4. Policy Objectives.	One of the main objectives is to ensure that development and the location of coastal facilities takes into account coastal processes, landform stability, coastal hazards, climate change and biophysical criteria.
	5.1 General measures	This section sets out the <u>policy measures</u> (the most relevant of which are outlined in 5.5) that all local and regional planning strategies, structure plans, schemes, subdivisions, strata subdivision, development applications, coastal planning strategies and foreshore management plans, as well as other planning decisions and instruments relating to the coast should comply with.
	5.5 Coastal hazard risk management and adaptation planning.(i)	Firstly, it sets out that adequate coastal hazard risk management and adaptation planning should be undertaken by the responsible management authority.
	(ii)	Where a coastal hazard risk is identified it should be disclosed to those likely to be affected, current and future by providing notification on the <u>certificate of title</u> .
	(iii)	Where risk assessments identify a level of risk that is unacceptable to the affected community or proposed development, adaptation measures need to be prepared, using the hierarchy of Avoid, Planned/Managed Retreat, Accomodation, Protection.
	5.7 Coastal protection works (i)	New coastal protection works are not permitted, except where such works are considered only after all other options for avoiding and adapting to coastal hazards have been fully explored, as part of a comprehensive coastal hazard risk management process.
	6. Implimentation	It is recommended that the LPS be amended so as to include the objectives, policy and guidelines contained in this Policy. Further, this also applies to all strategies and day to day planning processes relevant to coastal management and development.

City of Busselton Local Planning Scheme No.21	3.9 Special purpose zone.	The <u>scheme enables</u> specific requirements for use/management of the land within a special purpose zone. Land facing coastal erosion may be made as a special purpose zone.
	5.1 Operation of special control areas.	Another method to enable specific controls of land, is to declare land a special control area. The provisions applying to the special control area apply in addition to the scheme. Control areas that are most relevant (and further outlined below): Development Investigation, Wetland, Coastal Management, Floodway.
	5.2 Development investigation area	
	5.2.1	A development investigation area enables the planned and progressive development of the land for other purposes in a manner and at a time appropriate.
	5.2.2 (b)	The preparation of a comprehensive Structure Plan is required for development investigation areas.
	5.3 Special provision area	Provisions for a special provision area are listed within Schedule 3 and are specific to the land, in addition to the scheme.
	5.5 Wetland area	
	5.5.1	The local authority should not approve development applications in Wetland areas identified by scheme, wherever possible.
	5.5.4	Development should not be approved unless deemed necessary for economic use of the land, for the provision of utility services or to reduce the risk of bushfires.
	5.5.5	If the above is the case, a proposed development that contains a wetland area should be required to prepare a statement of environmental effects in accordance with Schedule 5.

	.6 Coastal Management reas	
5.	.6.1	This clause is particularly relevant as the local authority must not approve development within coastal management areas unless they've consulted the Department of Planning, Lands and Heritage.
5.	.6.2 (a)	This section brings in to effect the State Planning Policy No. 2.6 - State Coastal Planning. Busselton shire must follow its guidelines.
5.	.6.2 (b)	In addition to the measures and guidelines of SPP. 2.6, the local authority must consider the likelihood of the proposed development adversely affecting, or being adversely affected by, coastal processes.
1	.11 Floodway area and ther flood prone land.	
5.	.11.1	This clause applies to all land identified within a Floodway area on the scheme map or land identified on other map produced by the LA or of their opinion.
5.	.11.2 a)	Prior to granting development approval on flood prone land, the local government is to carry out an assessment of the efficiency and capacity of the floodway to carry and discharge floodwaters, the safety of the proposed development during flood events, the possible risk to life, human safety, or private property in time of flood.
b))	Prior to granting development approval on flood prone land, plans must show evidence of raising housing 500 millimetres above the 1 in 100 year flood level.
1	.12 Development ontribution areas	
5.	.12.14	Development contribution Areas are designed to provide for the equitable sharing of the costs of infrastructure and administrative costs between owners and coordinate the timely provision of infrastructure.



Appendix F MCA Result Tables

Advisian report

PU01 - Smith's Beach

		Acceptability Criteria Feasibility Criteria Financial Criteria										
Criteria weighting (1 – S) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect al impacts, difficult to adapt, li									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune wegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	Practicability – can a risk management option actually be implemented (e.g. is it 'do-able'/workable/politic ally practicable?)	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040												
Avoid												fa
Managed Retreat	2	2	2	1	1	1	1	1	1	12	39	1
Accommodate										0	0	1
Protect	1	1	1	1	1	1	2	2	1	11	35	1
2070]
Avoid										0	0]
Managed Retreat	2	2	2	2	1	3	2	1	1	16	51	
Accommodate										0	0	
Protect	1	1	1	1	1	1	2	2	1	11	35	
2115											,	
Avoid										0	0	
Managed Retreat	2	3	3	2	2	4	2	1	2	21	63	
Accommodate										0	0	1
Protect	1	1	1	1	1	1	2	2	1	11	35	

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PU02 - Yallingup

		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – S) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect tal impacts, difficult to adapt, lin									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact {community use} - ability to use a beach and foreshore/public recreational infrastructure {e.g. DUP}	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitati, wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	Practicability – can a risk management option actually be implemented (e.g., is it 'do-able'/workable/politic ally practicable?)	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/voi untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total	Weighted Total Score	
1040												_
Avoid	1	1	2	1	1	1	1	2	1	11	33	
Managed Retreat	1	1	2	1	1	1	1	2	1	11	33	1
Accommodate										0	0	1
Protect	1	2	2	1	3	2	3	3	1	18	56	1
1070												1
Avoid										0	0	fata
Managed Retreat	3	2	2	2	3	3	3	2	2	22	69	
Accommodate										0	0	
Protect	1	2	2	1	3	2	3	3	1	18	56]
2115												
Avoid										0	0	fata
Managed Retreat	3	2	2	2	3	3	3	2	2	22	69	
Accommodate										0	0	
Protect	1	3	2	1	4	2	4	4	1	22	70	1

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PU03 - Bunker Bay

		Acceptability Crite	eria	Feasibility Criteria			Financial Criteria					
Criteria weighting (1 – S) 1 = Icost important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect tal impacts, difficult to adapt, lin									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	'do-	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) - cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
2040									***************************************			
Avoid	1	1	1	1	1	1	1	1	1	9	28	
Managed Retreat	1	1	1	1	1	1	1	1	1	9	28	
Accommodate										0	0	
Protect	1	1	1	1	2	1	2	1	1	11	36	
2070												
Avoid										0	0	fatal
Managed Retreat	2	2	1	2	2	2	2	1	1	15	50	
Accommodate										0	0	
Protect	1	1	1	1	2	1	2	2	1	12	38	
2115												
Avoid										0	0	
Managed Retreat	2	2	3	2	3	3	3	1	2	21	66	
Accommodate										0	0	
Protect	1	1	1	1	2	1	2	3	1	13	40	

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PU04 - Eagle Bay

		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 - 5) 1 = least important 5 = mast important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect tal impacts, difficult to adapt, li									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	'do-	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040						Account	A.o.					
Avoid	1	2	1	2	1	1	1	1	1	11	37	
Managed Retreat	1	2	1	2	1	1	1	1	1	11	37	1
Accommodate										0	0	1
Protect	1	1	1	1	1	1	2	2	1	11	35	1
2070	-											
Avoid										0	0	fa
Managed Retreat	2	3	2	2	3	3	3	1	2	21	67]
Accommodate										0	0]
Protect	1	1	1	1	1	1	2	3	1	12	37]
2115												
Avoid										0	0	
Managed Retreat	3	3	3	2	3	4	4	1	3	26	81	1
Accommodate										0	0	1
Protect	1	1	1	1	1	1	2	3	1	12	37	

PU05 - Old Dunsborough

		Acceptability Crit	eria	Feasibility Criteria			Financial Criteria					
Criteria weighting (1 - 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect tal impacts, difficult to adapt, lir									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	'do-	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total	Weighted Total Score	
040						2						
Avoid										0	0	fa
Managed Retreat	2	3	1	4	3	3	2	1	1	20	68	
Accommodate										0	0	1
Protect	1	1	1	1	1	1	2	2	1	11	35	1
070												1
Avoid										0	0	1
Managed Retreat	3	4	2	4	4	4	3	1	2	27	89	1
Accommodate										0	0	
Protect	1	1	1	1	2	1	2	3	1	13	40	
115												
Avoid										0	0	
Managed Retreat	4	4	3	4	4	4	4	1	3	31	102	
Accommodate										0	0	
Protect	1	1	2	2	2	1	3	4	1	17	55	1

PU06 - Dunsborough Townsite

		Acceptability Crite	eria	Feasibility Criteria			Financial Criteria					
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect al impacts, difficult to adapt, li									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) — loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the bosach/foreshore, impact on coastal ecosystem (e.g. dune wegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	Practicability — can a risk management option actually be implemented (e.g. is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/voi untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) — how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040				7				,				
Avoid										0	0	fat
Managed Retreat	3	3	2	3	4	4	2	2	1	24	76	1
Accommodate										0	0	1
Protect	1	1	2	1	1	2	2	2	1	13	39	1
070												1
Avoid										0	0	
Managed Retreat	4	3	3	3	4	4	3	3	3	30	92	
Accommodate										0	0	
Protect	1	1	2	1	2	2	2	3	1	15	44	
115												
Avoid										0	0	
Managed Retreat	4	3	3	3	4	4	4	3	4	32	98	
Accommodate										0	0	
Protect	1	1	2	1	2	2	2	4	1	16	46	1

24 February 2021

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PU07 - Quindalup Beach

		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effe tal impacts, difficult to adapt, I									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	Practicability – can a risk management option actually be implemented (e.g., is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability — can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vo Juntary acquisition costs)	Ongoing cost (maintenance) — cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040												_
Avoid										0	0	fata
Managed Retreat	2	3	3	3	3	3	1	1	1	20	64	1
Accommodate										0	0	1
Protect	1	1	2	1	2	1	2	2	1	13	41	1
070]
Avoid										0	0	1
Managed Retreat	4	4	4	4	4	4	3	2	2	31	101	
Accommodate										0	0]
Protect	1	1	2	2	2	1	3	3	1	16	53	
115												
Avoid										0	0]
Managed Retreat	4	4	4	4	4	4	4	2	3	33	107	
Accommodate										0	0	
Protect	1	1	3	2	3	2	4	3	1	20	65	

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PU08 - Marybrook

		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			easily adaptable, long term effe tal impacts, difficult to adapt, i									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	Practicability – can a risk management option actually be implemented (e.g., is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability — can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vo luntary acquisition costs)	Ongoing cost (maintenance) — cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040												_
Avoid										0	0	fa
Managed Retreat	2	2	2	2	1	2	1	1	1	14	45	1
Accommodate										0	0	1
Protect	1	1	2	2	1	2	2	2	1	14	44	1
070]
Avoid										0	0	
Managed Retreat	4	2	4	4	4	4	3	1	1	27	90]
Accommodate										0	0	
Protect	1	1	3	2	1	2	3	3	1	17	54	1
115												
Avoid										0	0	j
Managed Retreat	4	2	4	4	4	4	3	1	1	27	90	
Accommodate										0	0	
Protect	1	1	3	2	1	2	3	3	1	17	54	

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PU09 - Siesta Park

		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria				
Criteria welghting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social impact (property & infrastructure) — loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	'do-	Reversibility / adaptability — can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
2040											_	
Avoid								1111		0	0	fatal flav
Managed Retreat	4	2	2	2	2	2	3	1	1	19	66	1
Accommodate										0	0	1
Protect	1	1	2	1	3	2	2	2	1	15	45	1
2070												
Avoid										0	0	fatal flaw
Managed Retreat	4	4	4	2	4	4	4	1	1	28	93	
Accommodate										0	0	
Protect	1	1	3	1	3	2	2	3	1	17	50	1
2115												
Avoid										0	0	fatal flaw
Managed Retreat	4	4	4	2	4	4	4	1	1	28	93	
Accommodate										0	0	1
Protect	1	1	3	2	3	3	3	3	1	20	61	

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PU10 - Locke Estate

FOID - LOCKE Estate											
		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria			
Criteria weighting (1 – 5) 1 = least important 5 = most important		4	3	5	3	1	5	2	1		
			asily adaptable, long term effect tal impacts, difficult to adapt, lir								
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue		
	Social Impact {property & infrastructure} - loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	'do-	Reversibility / adaptability - can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vo luntary acquisition costs)	Ongoing cost {maintenance} - cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue {specifically rates} would be lost due to a risk management option		Weighted Total Score
2040											
Avoid										.0	0
Managed Retreat	1	2	2	2	2	2	1	1	1	14	44
Accommodate										0	0
Protect	1	1	2	1	1	2	1	2	1	12	34
2070											
Avoid										0	0
Managed Retreat	3	4	4	4	4	4	3	1	1	28	94
Accommodate										0	0
Protect	1	1	3	1	1	2	2	2	1	14	42
2115											
Avoid										0	0
Managed Retreat	3	4	4	4	4	4	3	1	1	28	94
Accommodate										0	0
Protect	1	1	3	2	1	2	3	3	1	17	54

PU11 - Abbev

POII - Abbey											
		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria			
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1		
			asily adaptable, long term effec tal impacts, difficult to adapt, lir								
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue		
	Social Impact (property & infrastructure) — loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g., dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	'do-	Reversibility / adaptability - can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vo luntary acquisition costs)	Ongoing cost {maintenance}- cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score
2040											
Avoid										0	0
Managed Retreat	3	4	3	3	4	4	2	2	1	26	83
Accommodate										0	0
Protect	1	1	2	1	1	2	1	2	1	12	34
2070											
Avoid										0	0
Managed Retreat	4	4	3	4	4	4	4	2	4	33	105
Accommodate										0	0
Protect	1	1	3	1	1	2	2	3	1	15	44
2115										-	-
Avoid										0	0
Managed Retreat	4	4	4	4	4	4	4	2	4	34	108
Accommodate										0	0
Protect	1	1	3	1	1	2	3	3	1	16	49

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PU12 - Broadwater

		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			easily adaptable, long term effe stal impacts, difficult to adapt, i									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	Practicability – can a risk management option actually be implemented (e.g., is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability — can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vo Juntary acquisition costs)	Ongoing cost (maintenance) — cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
2040												_
Avoid										0	0	fatal
Managed Retreat	2	2	2	2	2	2	1	1	1	15	48	1
Accommodate										0	0	1
Protect	1	1	2	1	1	2	2	1	1	12	37	1
2070												1
Avoid										0	0	1
Managed Retreat	3	4	4	4	4	4	3	2	3	31	98	
Accommodate										0	0	
Protect	1	1	3	1	1	2	3	2	1	15	47	
2115												
Avoid										0	0	
Managed Retreat	4	4	3	4	4	4	4	2	4	33	105	
Accommodate										0	0	
Protect	1	1	3	1	1	2	3	3	1	16	49	

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PU13 - Busselton West (A)

		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			easily adaptable, long term effe tal impacts, difficult to adapt,									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	Practicability – can a risk management option actually be implemented (e.g. is it 'do-able'/workable/politic ally practicable?)	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vo Juntary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
2040												
Avoid										0	0	fata
Managed Retreat	3	3	2	3	3	3	2	2	1	22	72	1
Accommodate										0	0	
Protect	1	1	2	1	1	2	2	2	1	13	39	
2070												1
Avoid										0	0	
Managed Retreat	4	4	3	3	4	3	3	2	3	29	93	
Accommodate										0	0	
Protect	1	1	2	1	2	2	2	3	1	15	44	
2115												
Avoid										0	0	
Managed Retreat	4	4	4	4	4	4	4	2	4	34	108	
Accommodate										0	0	
Protect	1	1	2	1	3	3	3	4	1	19	55	

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PU14 - Busselton West (B)

		Acceptability Crit	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = Icast important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effect tal impacts, difficult to adapt, li									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) — loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) — ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g., dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	Practicability — can a risk management option actually be implemented (e.g. is it 'do- able'/workable/politic ally practicable?)	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/voi untary acquisition costs)	Ongoing cost (maintenance) - cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total	Weighted Total Score	
2040					,							
Avoid										0	0	fata
Managed Retreat	4	4	2	3	3	3	2	2	1	24	80	1
Accommodate										0	0	1
Protect	1	1	2	1	1	2	2	2	1	13	39	1
2070												
Avoid										0	0	
Managed Retreat	4	4	3	3	4	3	3	2	3	29	93	
Accommodate										0	0	
Protect	1	1	2	1	2	2	2	3	1	15	44	
2115												
Avoid										0	0	
Managed Retreat	4	4	4	4	4	4	4	2	4	34	108	
Accommodate										0	0	
Protect	1	1	2	1	3	3	3	4	1	19	55	

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PU15 - Busselton Central

1 015 Dusselton eel					Feasibility Criteria			mt		1		
		Acceptability Crit	eria		reasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			ssily adaptable, long term effect pacts, difficult to adapt, limited									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social impact (property & infrastructure) — loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	implemented (e.g. is it 'do-	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)		Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total	Weighted Total Score	
2040									-,-			
Avoid								100		0	0	fatally flawed
Managed Retreat	4	4	4	3	4	4	3	2	2	30	96	
Accommodate										0	0	fatally flawed (erosic
Protect	1	1	2	1	1	2	1	2	1	12	34	1
2070												
Avoid										0	0	
Managed Retreat	4	4	4	4	4	4	4	2	3	33	107	
Accommodate										0	0	
Protect	1	1	2	1	2	2	2	3	1	15	44	
2115												
Avoid										0	0	
Managed Retreat	4	4	4	4	4	4	4	2	4	34	108	
Accommodate										0	0	
Protect	1	1	2	1	3	3	3	4	1	19	55	

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PU16 - Busselton East

							T				
		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria			
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1		
			asily adaptable, long term effe tal impacts, difficult to adapt, l								
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue		
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	Practicability – can a risk management option actually be implemented (e.g. is it 'do-able'/workable/politic ally practicable?)	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vo luntary acquisition costs)	to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score
140											
Avoid										0	0
Managed Retreat	3	3	2	2	3	3	2	1	1	20	65
Accommodate										0	0
Protect	1	1	1	1	1	2	2	1	1	11	34
070											
Avoid										0	0
Managed Retreat	4	3	2	3	4	4	4	2	3	29	92
Accommodate										0	0
Protect	1	1	2	1	1	2	3	2	1	14	44
115											
Avoid										0	0
Managed Retreat	4	3	4	4	4	4	4	2	4	33	104
Accommodate										0	0
Protect	1	1	3	1	1	2	3	3	1	16	49

PU17 - Port Geographe

		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important		4	3	5	3	1	5	2	1			
			easily adaptable, long term effe tal impacts, difficult to adapt,									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	Practicability – can a risk management option actually be implemented (e.g. is it 'do-able'/workable/politic ally practicable?)	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vo Juntary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
040	0,0							A				
Avoid										0	0	fa
Managed Retreat	3	2	2	4	4	4	3	2	2	26	83	1
Accommodate										0	0	1
Protect	1	1	1	2	1	2	1	2	1	12	36	1
070												1
Avoid										0	0	1
Managed Retreat	4	4	4	4	4	4	4	2	3	33	107	
Accommodate										0	0	
Protect	1	1	2	2	3	4	4	3	1	21	64	
115												
Avoid										0	0	j
Managed Retreat	4	4	4	4	4	4	4	2	4	34	108	
Accommodate										0	0	
Protect	1	1	3	2	3	4	4	3	1	22	67	

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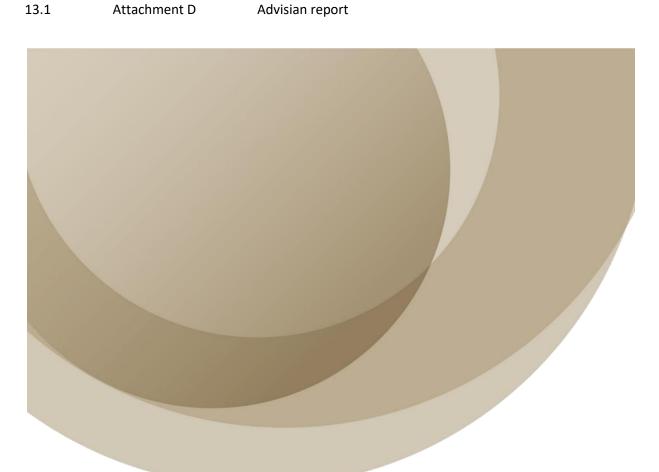
MU18 - Wonnerup

WOTO - WOIMEI up												
		Acceptability Crite	eria		Feasibility Criteria			Financial Criteria				
Criteria weighting (1 – 5) 1 = least important 5 = most important	4	4	3	5	3	1	5	2	1			
			asily adaptable, long term effe tal impacts, difficult to adapt, l									
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g. dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	Effectiveness in risk reduction – how effective the option is at managing vulnerability and risk, how well tested the option is, how long the option may be effective	Practicability – can a risk management option actually be implemented (e.g., is it 'do-able'/workable/politic ally practicable?)	Reversibility / adaptability – can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vo luntary acquisition costs)	Ongoing cost (maintenance) – cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
140												
Avoid										0	0	fat
Managed Retreat	3	3	2	3	3	3	3	1	2	23	76	1
Accommodate										0	0	1
Protect	1	1	2	2	1	2	2	2	1	14	44	1
070												1
Avoid										0	0	1
Managed Retreat	4	4	4	4	4	4	3	1	3	31	100	
Accommodate										0	0	
Protect	1	1	2	2	1	3	3	2	1	16	50	
115												
Avoid										0	0	
Managed Retreat	4	4	4	4	4	4	3	2	3	32	102	
Accommodate										0	0	
Protect	1	1	3	2	1	4	4	3	1	20	61	

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PU19 - Forrest Beach

	Acceptability Criteria			Feasibility Criteria		Financial Criteria						
Criteria weighting (1 – 5) 1 = least important 5 = most important		4	3	5	3	1	5	2	1			
		(is) – socially & environmentally acceptable, easily adaptable, long term effectiveness, low cost; 2. (may) - minor social & environment impacts, may be acceptable, partially adaptable, medium term effectiveness, acceptable ost; 3. (likely) – significant social & environmental impact, not adaptable, ineffective, cost prohibitive.										
Risk Management Option	Social Impact - Property & Infrastructure	Social Impact - Community use	Environmental Impact	Effectiveness in Risk Reduction	Practicability	Reversibility Adaptability	Cost Implementation	Ongoing Cost Maintenance	Ongoing Cost Lost Revenue			
	Social Impact (property & infrastructure) – loss or damage to private property or privately operated leasehold land, reticulated services, roads etc	Social Impact (community use) – ability to use a beach and foreshore/public recreational infrastructure (e.g. DUP)	Environmental Impact – possible damage or loss of the beach/foreshore, impact on coastal ecosystem (e.g., dune vegetation, seagrass, fauna habitat), wetlands, Aboriginal and European heritage	the option is at managing vulnerability and risk, how well tested the option is,	Practicability — can a risk management option actually be implemented (e.g. is it 'do-able'/workable/politic ally practicable?)	Reversibility / adaptability can it be reversed or adapted	Cost (implementation) – cost to implement a specific risk management option (includes modifying/relocating/vol untary acquisition costs)	Ongoing cost (maintenance) - cost to keep maintaining a risk management option	Ongoing cost (lost revenue) – how much revenue (specifically rates) would be lost due to a risk management option	Total Score	Weighted Total Score	
2040												
Avoid										0	0	fatal fla
Managed Retreat	2	1	2	1	2	1	2	1	1	13	43	
Accommodate										0	0	
Protect	1	1	2	2	2	1	3	2	1	15	51	
2070												
Avoid										0	0	
Managed Retreat	3	2	4	3	4	4	3	1	1	25	81	
Accommodate										0	0	
Protect	1	1	2	2	3	3	4	2	1	19	61	1
2115											,	1
Avoid										0	0	1
Managed Retreat	3	2	4	3	4	4	3	1	1	25	81	
Accommodate										0	0	1
Protect	1	1	2	2	3	4	4	2	1	20	62	



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Appendix G
Planning Units with Potential Options

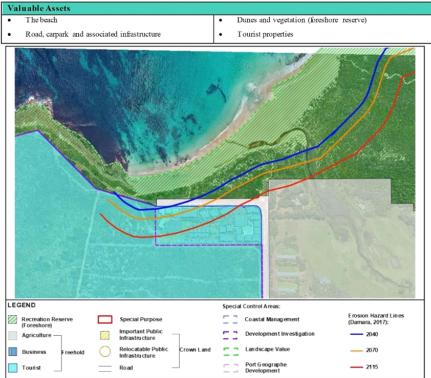








PU01 - SMITH'S BEACH



2040 Short-Term Management	2115 Long-Term Pathways			
Engineering Options	Engineering Options			
PR6 - Dune stabilisation. PR1 - Beach Nourishment. PR2 - Construction of groynes	PR1 – Beach Nourishment. PR2 – Construction of groynes PR6 – Dune stabilisation. PR4 – Construction of a buried seawall.			
Planning Options	Planning Options			
PMR5 - Requirement for disclosure of hazards/utheratability, e.g. notification on title. PMR1 - Leave land and resources unprotected, shoretine and foreshore in natural state. PMR6 - Prohibit high value developments and infrastructure in at risk areas in favour of low cost activities for example recreation and temporary uses. PMR7 - Re locate public assets within the foreshore reserve landwards as they reach the end of their design life. Event Trieger	PMR2- Demolition and removal of infrastructure as they become at risk by coastd hazards. AC8 - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7- Relocate public assets within the foreshore reserve landwards as they reach the end of their design life.			
Event Irigger	Event Trigger			
Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. This applies where there is a large foreshore reserve in the eastern portion. Properties in the western portion have already exceeded and require implementation of the above engineering and/or planning options. Where a public road is no longer available or able to provide legal access to coastal asset.	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.			
Trade-offs	Notes			
Loss of rates revenue, loss of business revenue, loss of facility. Monitoring Requirements Beach profile at the western end of the beach to monitor shoreline recession.	Large stretches of rugged coastline directly exposed to oceanic processes. Highly valued coastline without any existing coastal intervention. Any engineering actions may exacerbate oceanic processes. With reference to the CCVS, physical interventions will have implications for long stretches of natural coastline.			



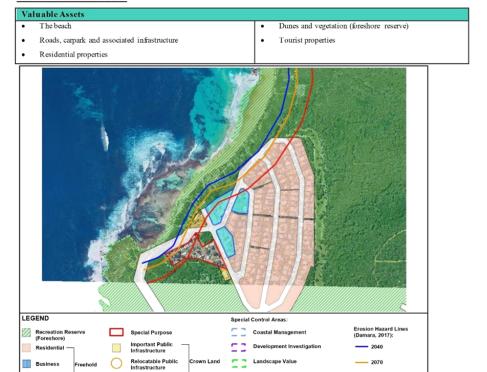
Road







PU02 - YALLINGUP



2040 Short-Term Management	2115 Long-Term Pathways			
Engineering Options	Engineering Options			
PR6 - Dune stabilisation. PR1 - Beach Nourishment. PR8 - Construction of a buried seawall. PR2 - Construction of a buried seawall. PR2 - Construction of groynes Planning Options PMR5 - Requirement for disclosure of hazards/vulnerability, eg. notification on title. PMR8 - Prevent further development (Avoid). PMR8 - Prevent further development (Avoid). PMR8 - Prohibit high value developments and infrastructure in at risk areas in favour of low-cost activities for example recreation and temporary uses. PMR7 - Relocate public assets within the foreshore reserve landwards as they reach the end of their design life.	PRI Beach Nourishment. PR2 - Construction of groynes PR6 - Dune stabilisation. PR4 - Construction of a buried seawall. Planning Options PRM2 - Demolition and removal of infrastructure as they become at risk by coast hazards. AC8 - Demolition and removal of infrastructure as they become at risk by coast hazards. AC8 - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7 - Relocate public assets within the foreshore reserve landwards as they reach the end of their design life.			
Event Trigger	Event Trigger			
Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward pant of a lot boundary. Where a public road is no longer available or able to provide legal access to coast asset.			
Trade-offs	Notes			
Loss of rates revenue, loss of business revenue, loss of facility. Monitoring Requirements Beach profile at the southern end of the beach to monitor shoreline recession.	Large stretches of rugged coastline directly exposed to oceanic processes. Highly valued coastline without any existing coastal intervention. Any engineering actions may exacerbate oceanic processes. With reference to the CCVS, physical interventions will have implications for long stretches of natural coastline.			

Port Geographe Development ____ 2115







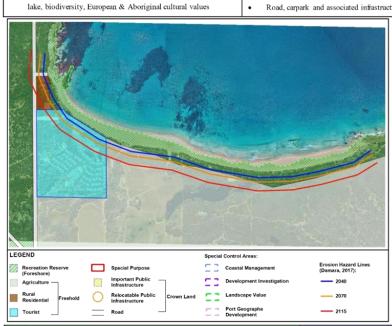


PU03 – BUNKER BAY

Valuable Assets The beach

Lake Jingie - significant environmental values (rare freshwater

- Dunes and vegetation (foreshore reserve)
- Tourist properties
- Road, carpark and associated infrastructure



2040 Short-Term Management	2115 Long-Term Pathways		
Engineering Options	Engineering Options		
PR6 - Dune stabilisation. PR1 - Beach Nourishment. PR2 - Construction of groynes	PR1 – Beach Nourishment. PR2 – Construction of groynes PR6 - Dune stabilisation. PR4 – Construction of a buried seawall.		
Planning Options	Planning Options		
PMR7 - Requirement for disclosure of hazards/vulnerability, eg. notification on title. PMR3 - Prevent further development (Avoid). PMR1 - Leave land and resources unprotected, shoreline and foreshore in natural state. PMR6 - Prohibit high value developments and infrastructure in at risk areas in favour of low-cost activities for example recreation and temporary uses.	PMR2 - Demolition and removal of infrastructure as they become at risk by coastal hazards. AC8 - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7 - Relocate public assets within the foreshore reserve landwards as they reach the end of their design life.		
Event Trigger	Event Trigger		
Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of te most seaward part of a lot boundary. This applies where there is a large foreshore reserve in the eastem portion. Some properties have already exceeded and require implementation of the above engineering and/or planning options. Where a public road is no longer available or able to provide legal access to coastal asset.	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.		
Trade-offs	Notes		
Loss of rates revenue, loss of business revenue, loss of facility. Monitoring Requirements	Large stretches of rugged coastline directly exposed to oceanic processes.		
Beach profile at the western end of the beach to monitor shoreline recession.	Highly valued coastline without any existing coastal intervention. Any engineering actions may exacerbate oceanic processes. With reference to the CCVS, physical interventions will have implications for long stretches of natural coastline.		



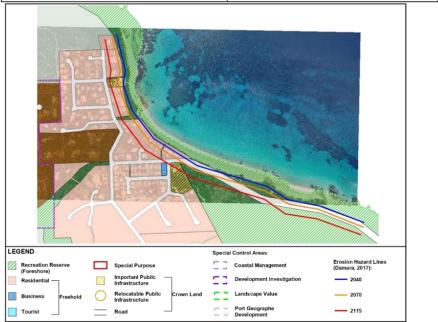






PU04 - EAGLE BAY

Valuable Assets Dunes and vegetation (foreshore reserve) • Roads, carpark and associated infastructure • Public infastructure (Fire station and Community Hall) • Residential properties



2040 Short-Term Management	2115 Long-Term Pathways		
Engineering Options	Engineering Options		
PR1 – Beach Nourishment. PR6 - Dune stabilisation. PR4 – Construction of a buried seawall. PR2 – Construction of groy nes Planning Options	PR1 - Beach Nourishment. PR4 - Construction of a buried seawall. PR2 - Construction of groynes Planning Options		
PMRS - Requirement for disclosure of hazards/vulnerability, e.g. notification on title. PMR3 - Prevent further development (Avoid). PMR1 - Leave land and resources unprotected, shoreline and foreshore in natural state. PMR6 - Prolibit high value developments and infrastructure in at risk areas in favour of low-cost activities for example recreation and temporary uses.	PMR2 - Demolition and removal of infrastructure as they become at riskby coastal hazards. ACS - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7 - Relocate public assets within the foreshore reserve landwards as they reach the end of their design life.		
Event Trigger	Event Trigger		
Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of te most seaward part of a lot boundary. This apples where there is a large foreshore reserve in the eastem portion. Properties in the western portion have already exceeded and require implementation of the above engineering and/or planning options. Where a public road is no longer available or able to provide legal access to coastal asset.	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.		
Trade-offs	Notes		
Loss of rates revenue, loss of facility. Monitoring Requirements Beach profile at the western end of the beach to monitor shoreline recession.	Highly valued coastline without any existing coastal intervention. Any engineering actions may exacerbate coastal processes. With reference to the CCVS, physical interventions will have implications for long stretches of natural coastline.		

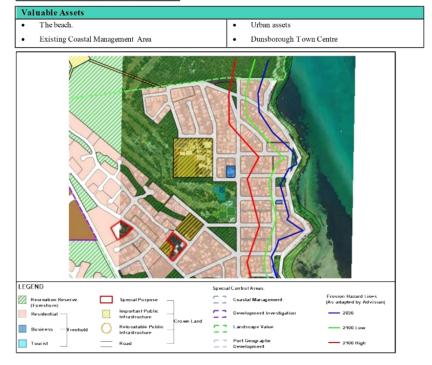








PU05 – OLD DUNSBOROUGH



2030 Short-Term Management	2100 Long-Term Pathways		
Engineering Options	Engineering Options		
Continuation of existing engineering management. PRI — Beach nourishment PR4 - Construction of a buried seawall. PR2 - Construction of groynes Planning Options	Continuation of existing engineering management. PRI – Beach nourishment PR4 - Construction of a buried seawall. PR2 – Construction of groynes Planning Options		
 PMRS - Requirement for disclosure of hazards'vulnerability, e.g. notification on title. AC4 - Locate development on least hazardous portion of site. AC3 - Apply planning controls that enable sequential change of land use as it becomes affected by coastal hazards. 	 AC2 - Prepare emergency evacuation plans to reduce the human consequences to constal hazards. 		
Event Trigger	Event Trigger		
When existing protection infrastructure needs upgrading. Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. This applies where there is a large foreshore reserve in the eastern portion. Many properties have already exceeded and require implementation of the above engineering and/or planning options. Where a pubble road is no longer available or able to provide legal access to coastal asset.	Continue to regularly upgrade protection infrastructure.		
Trade-offs	Notes		
Engineering options may have a negative impact on the adjoining shoreline.			
Monitoring Requirements			
Monitor changes in shoreline position to inform future action.			



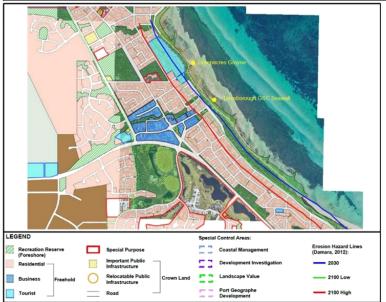






PU06 – DUNSBOROUGH TOWNSITE





2030 Short-Term Management	2100 Long-Term Pathways		
Engineering Options	Engineering Options		
Continuation of existing engineering management (groynes, seawall and beach nourishment) PR1 Beach nourishment PR4 - Construction of a buried seawall. PR2 - Construction of groynes	Continuation of existing engineering management. PR1 Beach nourishment PR4-Construction of a buried seawall. PR2-Construction of groynes		
Planning Options PMR5 - Requirement for disclosure of hazards/vulnerability, e.g. notification on title. AC4 - Locate development on least hazardous portion of site. AC3 - Apply planning controls that enable sequential change of land use as it becomes affected by coastal hazards.	AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards.		
Event Trigger	Event Trigger		
When existing protection infrastructure needs upgrading. Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. This applies where there is a large foreshore reserve in the eastem portion. Many properties have already exceeded and require implementation of the above engineering and/or planning options. Where a public road is no longer available or able to provide legal access to coastal asset.	Continue to regularly upgrade protection infrastructure.		
Trade-offs	Notes		
Engineering options may have a negative impact on the adjoining shoreline.			
Monitoring Requirements			
Monitor changes in shoreline position to inform future action.			

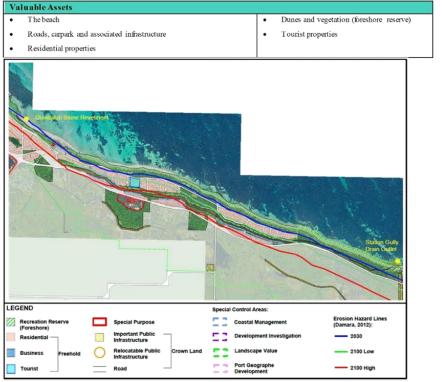








PU07 – QUINDALUP BEACH



2030 Short-Term Management	2100 Long-Term Pathways		
Engineering Options	Engineering Options		
PR1 – Beach Nourishment. PR6 - Dune stabilisation. PR4 – Construction of a buried seawall. PR2 – Construction of groynes Planning Options	PR1 – Beach Nourishment. PR4 – Construction of a buried seawall. PR2 – Construction of groynes Planning Options		
PMR5 - Requirement for disclosure of hazards/vulnerability, e.g. notification on title. PMR6 - Prohibit high value developments and infrastructure in at risk areas in favour of low-cost activities for example recreation and temporary uses. AC3 - Apply planning controls that enable sequential change of land use as it becomes affected by costslal hazards. AC10 - Provide alternative routes or other emergency contingency plans for existing roads.	PMR2 - Demolition and removal of infrastructure as they become at risk by coastal hazards. ACS - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal lanzards. PMR7 - Relocate public assets within the foreshore reserve landwards as they reach the end of their design life.		
Event Trigger	Event Trigger		
Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of te most seaward part of a lot boundary. This applies where there is a large foreshore reserve in the eastem portion. Many properties have already exceeded and require retreat management options now and on an ongoing basis. Where a public road is no longer available or able to provide legal access to coastal asset.	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.		
Trade-offs	Notes		
Loss of rates revenue, loss of business revenue, loss of facility. Monitoring Requirements Beach profile where the blocks of freehold land are located to monitor shoreline recession.	 Due to existing sand bars and considerably sized sand dunes/foreshore, little engineering intervention should be required. Planning options to be considered for a long term managed retreat. 		



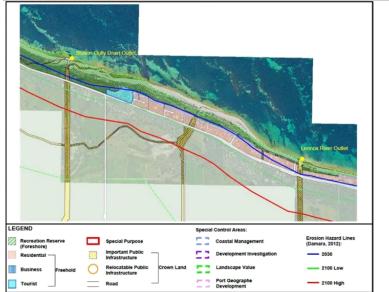






PU08 – MARYBROOK

Valuable Assets The beach Roads, carpark and associated infastructure Residential properties Ounes and vegetation (Éreshore reserve) Tourist facilities (Day Spa)



2030 Short-Term Management	2100 Long-Term Pathways			
Engineering Options	Engineering Options			
PR1 – Beach Nourishment. PR6 – Dune stabilisation. PR4 – Construction of a buried seawall. PR2 – Construction of groynes Planning Options	PRI - Beach Nourishment. PR4 - Construction of a buried seawall. PR2 - Construction of groynes Planning Options			
PMR5 - Requirement for disclosure of hazards/vuherability, e.g. notification on tide. PMR6 - Prohibit high value developments and infrastructure in a trisk areas in favour of low-cost activities for example recreation and temporary uses. AC1 - Buildings of low value, temporary or relocatable structures. AC3 - Apply planning controls that enable sequential change of land use as it becomes affected by coastal hazards. Event Trigger	PMR2 - Demolition and removal of infrastructure as they become at risk by coastal hazards. AC8 - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7 - Relocate public assets within the foreshore reserve landwards as they reach the end of their design life.			
Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of te most seaward part of a lot boundary. This applies where there is a large foreshore reserve in the western portion. Properties in the eastern portion have already exceeded and require implementation of the above engineering and/or planning options. Where a public road is no longer available or able to provide legal access to coastal asset.	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.			
Trade-offs	Notes			
Loss of rates revenue, loss of business revenue, loss of facility. Monitoring Requirements	Exposed portion of coastline without existing engineering protection. Engineering interventions may not be as effective in this portion of the coast.			
 Beach profile near the centre of the beach to monitor shoreline recession. 	1			



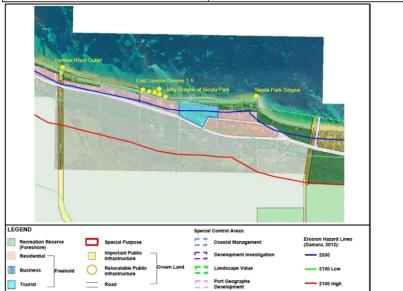






PU09 – SIESTA PARK





2030 Short-Term Management Engineering Options	2100 Long-Term Pathways Engineering Options		
Continuation of existing private engineering management (groynes). PR1 - Beach nourishment PR2 - Construction of groynes PR4 - Construction of a buried seawall. Planning Options PMR5 - Requirement for disclosure of hazards/vulnerability, e.g. notification on title. PMR3 - Prevent further development (Avoid). Do not permit increases in density. PMR6 - Prohibit high value developments and infrastructure in at risk areas in favour of low-cost activities for example recreation and temporary uses. AC1 - Buildings of low value, temporary or elocatable structures. AC3 - Apply planning controls that enable sequential change of land use as it becomes affected by coastal hazards.	Continuation of existing engineering management. PR1 - Beach nourishment PR2 - Construction of groynes PR4 - Construction of a buried seawall. Planning Options PMR2 - Demolition and removal of private and public assets as they become at risk by coastal hazards. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7 - Relocate roads.		
 Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of te most seaward part of a lot boundary. As properties along the shoreline have already exceeded this trigger, implementation of the above engineering and/or planning options is required. 	Where a public road is no longer available or able to provide legal access to coastal asset. When water, sewage or electricity to the lot is no longer available or unsafe as		
Trade-offs	they have been removed/decommissioned by the relevant authority due to coasta hazards. Notes		
Engineering options may have a negative impact on the adjoining shoreline. Loss of rates revenue Monitoring Requirements Beach profile at the western end of the beach to monitor shoreline recession.	Consideration of continual maintenance of private groynes may return desired outcomes for public beach access. The Stesta Park groyne is causing considerable erosion to existing parkland to the east.		

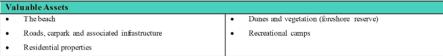


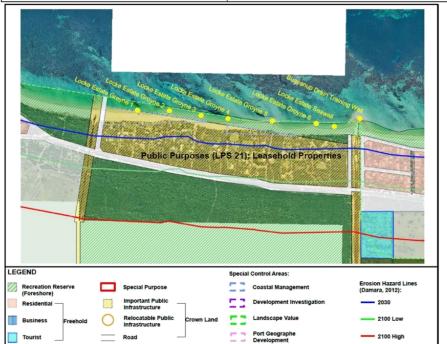






PU10 - LOCKE ESTATE





2030 Short-Term Management	2100 Long-Term Pathways		
Engineering Options	Engineering Options		
Continuation of existing engineering management (groynes) PR1 - Beach nourishment. PR2 - Construction of groynes PR6 - Dune stabilisation. Planning Options	Continuation of existing engineering management PR1 - Beach nourishment PR2 - Construction of groynes PR4 - Construction of a buried seawall. Planning Options		
 PMR5 - Requirement for disclosure of hazards/vulnerability, e.g. notification on title. PMR1 - Leave land and resources unprotected. PMR6 - Prohibit high value developments and infrastructure in at risk areas in favour of low-cost activities for example recreation and temporary uses. AC1 - Buildings of low value, temporary or relocatable structures. AC4 - Locate development on least hazardous portion of site. 	PMR2 - Demohision and removal of infrastructure as they become at risk by coastal hazards. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards.		
Event Trigger	Event Trigger		
 The most landward part of the Horizontal Shoreline Datum (shoreline) is already within 40 metres of the most seaward part of all lot boundaries in this planning unit and require implementation of the above engineering and/or planning options. 	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.		
Trade-offs	Notes		
Loss of rates revenue, loss of business revenue, loss of facility. Monitoring Requirements	Existing coastal intervention has involved a funding partnership between leaseholders and local government. While little negotiation is required to enable managed retreat, short-term protection measures may still be viable with this		
No monitoring required.	approach.		





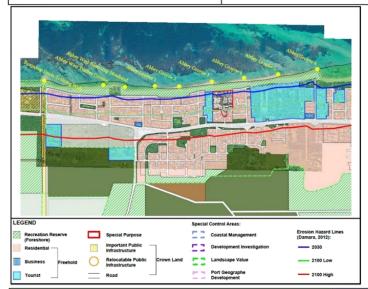




PU11 – ABBEY

Valuable Assets

- The beach
- · Roads, carpark and associated infrastructure
- Residential properties
- Tourist facilities (accommodation & beach resort)
- Dunes and vegetation (foreshore reserve)
- Recreational facilities (boat ramp)
- Business facilities (shopping centre)
 - Public infrastructure (Aged care)



2030 Short-Term Management	2100 Long-Term Pathways
Engineering Options	Engineering Options
Continuation of existing private engineering management (groynes). PR1 — Beach nourishment PR2 — Construction of groynes PR4 - Construction of a buried seawall. Planning Options	Continuation of existing engineering management. PRI – Beach nourishment PR2 – Construction of groynes PR4 - Construction of a buried seawall.
PMR5 - Requirement for disclosure of hazards/vulnerability, eg. notification on title. PMR3 - Prevent further development (Avoid). PMR6 - Prolabil high value developments and infrastructure in at risk areas in favour of low cost activities for example recreation and temporary uses. AC3 - Apply planning controls that enable sequential change of land use as it becomes affected by coastal hazards. AC1 - Buildings of low value, temporary or relocatable structures. AC4 - Locate development on least hazardous portion of site.	PMR2 - Demolition and removal of infrastructure as they become at risk by coastal hazards. ACS - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7 - Relocate public assets within the foreshore reserve landwards as they reach the end of their design life. Event Trigger
Where a public road is no longer available or able to provide legal access to coastal asset. When water, sewage or electricity to the lot is no longer available or unsafe as they have been removed/decommissioned by the relevant authority due to coastal hazards.	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal
Trade-offs	access to coastal asset. Notes
Engineering options may have a negative impact on the adjoining shoreline. Loss of rates revenue, loss of business revenue, loss of facility. Monitoring Requirements	Apply short-term protection measures to allow effective implementation of managed retreat.







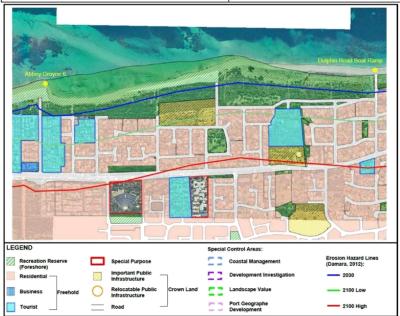


PU12 – BROADWATER

Valuable Assets

- The beach
- · Roads, carpark and associated infrastructure
- Residential properties
- Tourist properties

- Dunes and vegetation (foreshore reserve)
- Recreational facilities (boat ramp)
- Public infrastructure (Aged care)



2030 Short-Term Management Engineering Options	2100 Long-Term Pathways Engineering Options
Continuation of existing private engineering management (groynes). PR1 - Beach nourishment PR2 - Construction of groynes PR4 - Construction of a buried seawall. Planning Options PMR 6 - Requirement for disclosure of hazards/vulnerability, e.g. notification on title. PMR 6 - Prohibit high value developments and infrastructure in at riskareas in favour of low-cost activities for	Continuation of existing engineering management. PRI - Beach nourishment PR2 - Construction of groynes PR4 - Construction of a buried seawall. Planning Options PMR2 - Demolition and removal of infrastructure as they become at risk by coastal hazards.
example recreation and temporary uses. • PMRI - Leave land and assets unprotected. Event Trigger	ACS - Do not permit increases in density. AC2 - Prepare emergency execution plans to reduce the human consequences to coastal hazards. PMR7 - Relocate public assets within the foreshore reserve landwards as they reach the end of their design life. Event Trigger
Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.
Trade-offs	Notes
Loss of rates revenue, loss of business revenue, loss of facility. Monitoring Requirements Monitor changes in shore line position to inform future action.	Coastal assets are well protected in the 2030 timeframe allowing time for future planning. Abbey groyne 6 is causing considerable leeward erosion, requiring review of continued maintenance.



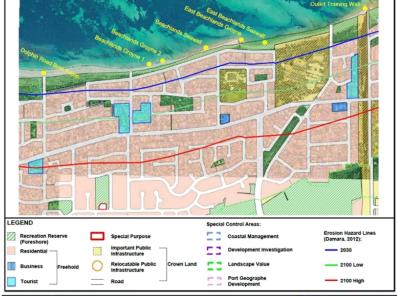






PU13 - BUSSELTON WEST (A)





2030 Short-Term Management	2100 Long-Term Pathways
Engineering Options	Engineering Options
Continuation of existing private engineering management (groynes and seawall). PR1 – Beach nourishment PR2 – Construction of groynes PR4 - Construction of a buried seawall. Planning Options PMR5 - Requirement for disclosure of hazards/vulnerability, eg. notification on title. PMR6 - Probabit high value development (Avoid). PMR6 - Probabit high value developments and infrastructure in at risk areas in favour of low-cost activities for example recreation and temporary uses. AC3 - Apply planning controls that enable sequential change of land use as it becomes affected by coastal lazards. AC1 - Buildings of low value, temporary or relocatable structures.	Continuation of existing engineering management. PR1 – Beach nourishment PR2 – Construction of groynes PR4 - Construction of a buried seawall. Planning Options PMR2 - Demolition and removal of infrastructure as they become at risk by coastal hazards. AC8 - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7 - Relocate public assets within the foreshore reserve landwards as they reach the end of their design life.
AC4 - Locate development on least hazardous portion of site. Event Trigger	Event Trigger
Where a public road is no longer available or able to provide legal access to coastal asset. When water, sewage or electricity to the lot is no longer available or unsafe as they have been removed/decommissioned by the relevant authority due to coastal hazards.	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.
Trade-offs	Notes
Engineering options may have a negative impact on the adjoining shoreline.	Apply short-term protection measures to allow effective implementation of
Monitoring Requirements	managed retreat.
Monitor changes in shoreline position to inform future action.	



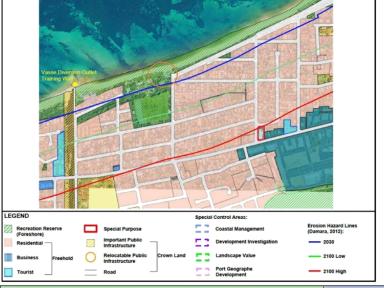






PU14 – BUSSELTON WEST (B)





2030 Short-Term Management	2100 Long-Term Pathways
Engineering Options	Engineering Options
Continuation of existing private engineering management (groynes). PR1 – Beach nourishment PR2 – Construction of groynes PR4 - Construction of a buried seawall. Planning Options PRM5 – Requirement for disclosure of hazards/vulnerability, e.g. notification on title. PMR6 – Prohabil high value development (Avoid). PMR6 – Prohabil high value developments and infrastructure in at risk areas in favour of low-cost activities for example recreation and temporary uses. AC3 – Apply planning controls that enable sequential change of land use as it becomes affected by coastal hazards. AC1- Buildings of low value, temporary or relocatable structures. AC3 – Accate development on least hazardous portion of site.	Continuation of existing engineering management. PR1 - Beach nourishment PR2 - Construction of groynes PR4 - Construction of a buried seawall. Planning Options PMR2 - Demolition and removal of infrastructure as they become at risk by coastal hazards. AC8 - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7 - Relocate public assets within the foreshore reserve landward as they reach the end of their design life.
AC4 - Locate development on least hazardous portion of site. Event Trigger	Event Trigger
 Where a public road is no longer available or able to provide legal access to coastal asset. When water, sewage or electricity to the lot is no longer available or unsafe as they have been removed/decommissioned by the relevant authority due to coastal hazards. 	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.
Trade-offs	Notes
Engineering options may have a negative impact on the adjoining shoreline. Monitoring Requirements	Apply short-term protection measures to allow more time for effective implementation of managed retreat.
Monitor changes in shoreline position to inform future action.	1









PU15 – BUSSELTON CENTRAL





2030 Short-Term Management	2100 Long-Term Pathways
Engineering Options	Engineering Options
Continuation of existing private engineering management (groynes and seawall).	Continuation of existing engineering management.
PR1 – Beach nourishment	PRI – Beach nourishment
PR2 Construction of groynes	PR2 Construction of groynes
 PR4 - Construction of a buried seawall. 	 PR4 - Construction of a buried seawall.
Planning Options	Planning Options
 AC4 - Locate development on least hazardous portion of site. 	AC2 - Prepare emergency evacuation plans to reduce the human
 AC10 - Provide alternative routes or other emergency contingency plans for existing roads. 	consequences to coastal hazards.
Event Trigger	Event Trigger
 When existing protection infrastructure begins to breakdown and needs upgrading. 	 Continue to regularly upgrade protection infrastructure.
Trade-offs	Notes
 Engineering options may have a negative impact on the adjoining shoreline. 	
Monitoring Requirements	
Monitor changes in shoreline position to inform future action.	









PU16 – BUSSELTON EAST





2030 Short-Term Management	2100 Long-Term Pathways
Engineering Options	Engineering Options
Continuation of existing private engineering management (groynes). PR1 - Beach nourishment PR2 - Construction of groynes PR4 - Construction of a buried seawall. Planning Options PMR5 - Requirement for disclosure of hazards/vulnerability, e.g. notification on title.	Continuation of existing engineering management. PR1 - Beach nourishment PR2 - Construction of groynes PR4 - Construction of a buried seawall. Planning Options PMR2 - Demolition and removal of infrastructure as they become at
PMR6 - Prohibit high value developments and infrastructure in at riskareas in favour of low-cost activities for example recreation and temporary uses. AC1 - Buildings of low value, temporary or relocatable structures. AC4 - Locate development on least hazardous portion of site. AC3 - Apply planning controls that enable sequential change of land use as it becomes affected by coastal hazards. Event Trieger	risk by coastal hazards. ACS - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7 - Relocate public assets within the foreshore reserve landwards as they reach the end of their design life.
Where a public road is no longer available or able to provide legal access to coastal asset. When water, sewage or electricity to the lot is no longer available or unsafe as they have been removed/decommissioned by the relevant authority due to coastal hazards.	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.
Trade-offs	Notes
Engineering options may have a negative impact on the adjoining shoreline. Monitoring Requirements Monitor changes in shoreline position to inform future action.	Apply short-term protection measures to allow more time for effective implementation of managed retreat.









PU17 – PORT GEOGRAPHE





2030 Short-Term Management	2100 Long-Term Pathways
Engineering Options	Engineering Options
Continuation of existing private engineering management (groynes). PR1 Beach nourishment PR3 - Construction of a buried seawall. Planning Options PMR5 - Requirement for disclosure of hazards/vulnerability, e.g. notification on title. PMR8 - Prevent further development (Avoid). PMR6 - Prohibit high value developments and infrastructure in at risk areas in favour of low-cost activities for example recreation and temporary uses. AC1 - Buildings of low value, temporary or relocatable structures. AC4 - Locate development on least hazardous portion of size. AC3 - Apply planning controls that enable sequential change of land use as it becomes affected by coastal	Continuation of existing engineering management. PR1 Beach nourishment PR4 Construction of a buried seawall. PR4 Construction of a buried seawall. PIAMING Options PMR2 - Demolition and removal of infrastructure as they become at risk by coastal hazards. AC8 - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7 - Relocate public assets within the foreshore reserve landwards as they reach the end of their design life.
hazards. Event Trigger	Event Trigger
Where a public road is no longer available or able to provide legal access to coastal asset. When water, sewage or electricity to the lot is no longer available or unsafe as they have been removed/decommissioned by the relevant authority due to coastal hazards.	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.
Trade-offs	Notes
Engineering options may have a negative impact on the adjoining shoreline.	
Monitoring Requirements	1
Monitor condition of existing sea wall and the extent of storm surges to inform future action.	1



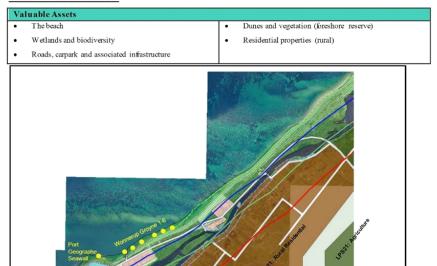






PU18 – WONNERUP

LEGEND



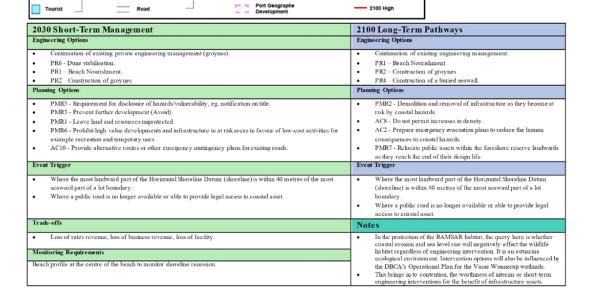
ial Control Areas:

Landscape Value

Development Investigation

2030

- 2100 Low





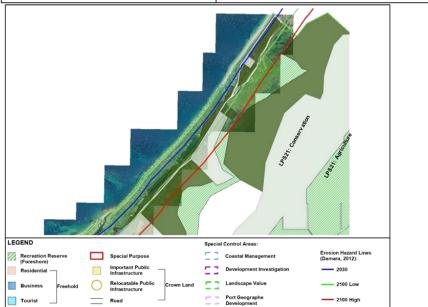




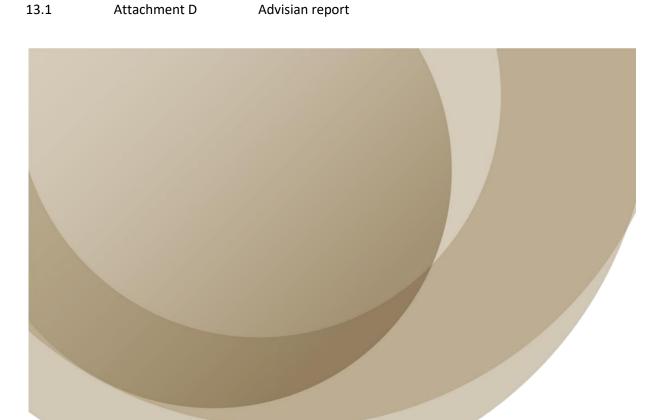


PU19 – FOREST BEACH





2030 Short-Term Management Engineering Options	2100 Long-Term Pathways Engineering Options
PRI Beach nourishment PR6 - Dune stabilisation. Planning Options	PRI Beach nourishment PR2 - Construction of groynes Planning Options
PMRS - Requirement for disclosure of hazards/vulnerability, eg. notification on title. PMR3 - Prevent further development (Avoit). PMR1 - Leave land and resources unprotected. PMR6 - Prohibit high value developments and infrastructure in at risk areas in favour of low-cost activities for example recreation and temporary uses. AC10 - Provide alternative routes or other emergency contingency plans for existing roads.	PMR2 - Demolition and removal of infrastructure as they become at risk by coastal lazards. AC8 - Do not permit increases in density. AC2 - Prepare emergency evacuation plans to reduce the human consequences to coastal hazards. PMR7 - Relocate public assets within the foreshore reserve landward as they reach the end of their design life.
Event Trigger	Event Trigger
 Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset. 	Where the most landward part of the Horizontal Shoreline Datum (shoreline) is within 40 metres of the most seaward part of a lot boundary. Where a public road is no longer available or able to provide legal access to coastal asset.
Trade-offs	Notes
Loss of rates revenue, loss of business revenue, loss of facility. Monitoring Requirements Beach profile at the eastern end of the beach to monitor shoreline recession.	Consider whether constal erosion and sea level rise will negatively affect the conservation and agricultural areas regardless of engineerin intervention.



24 February 2021



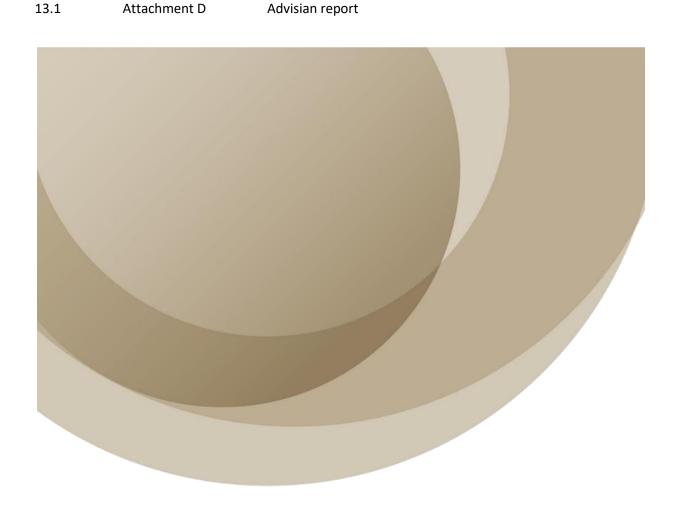
City of Busselton - Coastal Adaptation Strategy FM Asset Replacement cost - Public

Values provided in this table shows the cost of replacing these asset

Year	Planning Unit	Fencing	Gardens Turf and Irrigation	Furniture, BBQs, Play Equipment etc	Roads	Paths and Cycleways	Stormwater Drainage	Jettys and Boatramps	Coastal Protection	Car Parks	Foreshore Electrical	Foreshore Irrigation Main Lines	Street Lights	Buildings	Total
2040			\$ -	\$ 54,050				\$ -	\$ -	\$ 61,329		\$ -	\$ -	\$ -	\$ 760,664
2040			\$ 8,232	\$ 2,029,110			\$ 10,240		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,238,144
2040			\$ -	\$ 187,000			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 192,743
2040			\$ -	\$ 90,650			\$ 6,649		\$ -	\$.	\$ -	\$ -	\$ -	\$ -	\$ 151,068
2040			\$ 173,568	\$ 220,950		\$ 60,800	\$ 328,579		\$ -	\$ 578,363		\$ -	\$ -	\$ 221,500	\$ 2,546,646
2040		\$ 87,412							\$ 375,000			\$ -	\$ -	\$ -	\$ 1,517,229
2040			\$ 19,880						\$ 390,000			\$ -	\$ -	\$ 121,700	
2040			\$ -	\$ 2,950					\$ -	\$ 191,642		\$ -	\$ -	\$ -	\$ 432,694
2040			\$ -	\$ 25,550				\$ 608,000				\$ -	\$ -	\$ -	\$ 1,944,030
2040			\$ -			\$ -	\$ -	\$ -	\$ 960,000		\$ -	\$ -	\$ -	\$ -	\$ 989,485
2040		\$ 6,654					\$ 105,627		\$ 970,000			\$ - \$ -	\$ - \$ -	\$ -	\$ 6,661,765 \$ 1,781,451
2040		\$ 40,688 \$ 36,217							\$ 300,000			100	T.		
2040 2040									\$ 2,038,000			\$ -	\$ -	\$ 228,000	
												-	100	*	Charles and the control of the control of the control of
2040 2040		\$ 312,301 \$ 79,344							\$ 2,350,000 \$ 150,000			\$ 51,040	\$ -	\$ 5,293,500 \$ 56,000	
									\$ 150,000				\$ 4,000		
2040 2040			\$ 374,860	\$ 632,450 \$ 22,250			\$ 38,309 \$ 14,000		\$ 900,000			\$ -	\$ 4,000	\$ 100,000 \$ 130,000	
2040			s -	\$ 1,250			\$ 14,000	\$ 40,000	\$ 900,000	\$ 18,334		\$ -	s .	\$ 130,000	\$ 1,354,457
2070		*	\$ -	\$ 1,250	\$ 1,294,512		*	5 -	\$ -	\$ 18,334	\$ -	\$ -	\$ -	\$.	\$ 1,354,457
2070			\$ 52,620	\$ 637,840			\$ 44,138		\$ -	\$ 89,066		\$ -	\$ -	\$ -	\$ 1,097,088
2070			\$ 32,620	\$ 637,640	\$ 207,933	\$ 52,000	\$ -	\$ -	\$ -	\$ 114,142		\$ -	\$ -	\$ -	\$ 1,097,088
2070			\$ -	\$ 55,800					\$.	\$ 547,642		s -	s -	\$ -	\$ 871,450
2070			\$ -			\$ -	\$ 99,353		s .	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 102,404
2070		\$ 48,000		\$ 254,210			\$ 255,382		\$ -	\$ 387,624	- 1	\$ -	\$ 8,000		\$ 3,496,453
2070			\$ 34,040						s .	\$ 916,069		s -	s -	\$ -	\$ 4,068,757
2070			\$ -	\$ 12,000					s .	\$.	\$.	s -	s -	s .	\$ 933,002
2070			\$ -	\$ 3,350				Š -	\$ -	\$ -	\$.	\$ -	\$ -	\$	\$ 693,187
2070			\$ -	\$ 1,340		\$ 134,900		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$.	\$ 140,424
2070			\$ 179,520						\$ -	\$ 33,074		\$ -	Ś -	\$ -	\$ 4,634,027
2070		\$ 43,215			\$ 1,907,306				\$ -	\$ 298,716		\$ -	\$ -	\$ 74,880	\$ 4,131,939
2070			\$ 440,348						\$ -	\$ 158,798		\$ -	\$ -	s -	\$ 5,414,963
2070		\$ 54,857			\$ 1,457,267				s -	\$ 748,426		s -	s -	\$ 451,000	\$ 4,501,685
2070	PU15	\$ 119,172	\$ 2,544,330						\$ -	\$ 3,095,506	\$ 763,762	\$ 102,560	s -	\$ 4,664,323	\$ 16,747,327
2070	PU16	\$ 5,258							\$ -	\$ 511,574		\$ -	\$ 16,000		\$ 7,226,182
2070	PU17	\$ -	\$ 310,896	\$ 77,000	\$ 1,342,586	\$ 176,200	\$ 577,176	\$ 2,628,000	\$ -	\$ 2,334,873	\$ -	\$ -	\$ 32,000	\$ 72,000	\$ 7,782,641
2070	PU18	\$ -	\$ 58,936	\$ 67,550	\$ 611,635	\$ -	\$ 36,234	\$ -	\$ -	\$ 323,673	\$ -	\$ -	\$ -	\$ -	\$ 1,131,753
2070	PU19	\$ -	\$ -	s -	\$ 1,662,883	\$ -	\$ -	\$ -	\$ -	\$ 76,259	\$ -	\$ -	\$ -	\$ -	\$ 1,792,558
2115	PU01	\$ -	\$ -	\$ 323,600	\$ 59,078	\$ 13,400	\$ 24,945	\$ -	\$ -	\$ 185,410	\$ -	\$ -	\$ -	\$ 47,000	\$ 673,503
2115	PU02	\$ -	\$ 17,204	\$ 90,750	\$ 362,579	\$ 26,600	\$ 113,936	\$ -	\$ -	\$ 767,926	\$ -	\$ -	\$ -	\$ 365,000	\$ 1,797,559
2115	PU03		\$ -	\$ 500			\$ -	\$ -	\$ -	\$ 383,712	\$ -	\$ -	\$ -	\$ 87,000	\$ 760,897
2115	PU04	\$ -	\$ -	\$ -	\$ 210,250	\$ 47,400	\$ 53,809	\$ -	\$ -	\$ 77,793	\$ -	\$ -	\$ -	\$ 110,000	\$ 514,585
2115			\$ -	\$ -		\$ -	\$ 198,087		\$ -	\$ -	\$ -	5 -	\$ -	\$ -	\$ 204,171
2115	PU06	\$ 11,767	\$ -	\$ 48,940				\$ -	\$ -	\$ 92,644	\$ -	\$ -	\$ 4,000	\$ -	\$ 1,043,952
2115			\$ 2,248		\$ 538,077				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 699,511
2115			\$ -	\$ -	\$ 311,610	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 321,180
2115			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2115			\$ -	\$ -	\$ -	\$ 9,300	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 9,586
2115			\$ 1,199,266	\$ 247,040	\$ 2,669,533		\$ 674,871		\$ -	\$ 54,691		\$ -	s -	\$ -	\$ 5,462,818
2115		\$ 61,048							\$ -	\$ 21,941		\$ -	\$ -	\$ -	\$ 5,591,077
2115	PU13	\$ -	\$ 38,720	\$ -	\$ 2,203,856	\$ 454,700	\$ 1,333,204	\$ -	\$ -	\$ 25,805	\$ -	\$ -	\$ -	\$ -	\$ 4,180,868

2115	PU14	\$ - 50	\$ 	\$ 600	\$ 2,009,824	\$ 170,000	\$ 491,551	\$ - 17	\$ 	\$	275,264	\$ 17.	5		\$ -	\$		\$ 3,037,76
2115	PU15	\$	\$ 1,293,500	\$ 440,000	\$ 3,728,890	\$ 401,600	\$ 1,806,655	\$ 	\$	\$	7,119,499	\$	\$		\$ 108,000	5	3,779,200	\$ 19,250,99
2115	PU16	\$ 88,030	\$ 1,196,320	\$ 180,020	\$ 5,223,226	\$ 555,600	\$ 1,910,337	\$ /4	\$ -	S	278,137	\$ -	\$		\$ 16,000	\$	-	\$ 9,737,8
2115	PU17	\$	\$ 685,424	\$ 4,050	\$ 857,216	\$ 125,000	\$ 397,464	\$ - 4	\$	\$		\$	\$		\$ 96,000	\$		\$ 2,231,6
2115	PU18	\$ *)	\$ -	\$	\$ 1,152,608	\$	\$ 24,071	\$	\$	\$	-	\$	\$		\$ -	\$		\$ 1,212,8
2115	PU19	\$ -83	\$	\$ - 2	\$ 319,718	\$ 7/-	\$ 	\$ (8)	\$ 	\$	-	\$ -	\$		\$ -	\$	(-	\$ 329,5

24 February 2021 Council



Appendix I Asset Replacement Cost – State Assets

Attachment D

Advisian report

STATE UTILITY - POTABLE WATER

Cost of removing/replacing reticulation pipes

Values are based on information provided by Busselton Water

			TOTAL TREATMENT PLANTS AND RETICULATION PIPES										
		Г								Г			
Planning Unit	Coastline	2030/2040 (blue)			2030/2040 (blue) to 2070 (green)				2070 (green) to 2115 (red)				
	[m]	L						١.					
	, p	Rei	moval cost		placement	ı		R	eplacement	R	emoval cost	Re	eplacement
	_	ᆫ	[\$]		cost [\$]		noval cost [\$]	_	cost [\$]	ᆫ	[\$]	_	cost [\$]
01. Smiths Beach	720	\$		\$		\$	-	\$	-	\$		\$	
02. Yallingup	880	\$		\$		\$	-	\$		\$	-	\$	
03. Bunker Bay	2150	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
04. Eagle Bay	1250	\$		\$		\$		\$	-	\$	-	\$	
05. Old Dunsborough	1100	\$		\$	n	\$	~	\$	-	\$	-	\$	
06 Dunsborough Townsite	2700	\$		\$		\$	-	\$		\$	-	\$	
07. Quindalup Beach	5620	\$		\$		\$	369,966	\$	501,238	\$	-	\$	
08. Marybrook	2390	\$	-	\$	-	\$	1,048,237	\$	1,420,174	\$	-	\$	-
09. Siesta Park	2700	\$	-	\$		\$	1,048,237	s	1,420,174	\$	-	\$	-
10 Locke Estate	1450	\$	-	\$		\$	258,976	\$	350,867	\$	172,651	\$	233,911
11. Abbey	2960	\$		\$		\$	4,529,810	s	6,137,084	\$	1,941,347	\$	2,630,179
12. Broadwater	2120	\$		\$		\$	926,950	\$	1,255,851	\$	4,563,698	\$	7,916,405
13. Busselton West A	2040	\$		\$		\$	2,229,926	\$	3,021,151	\$	2,229,926	\$	3,021,151
14. Busselton West B	1520	\$	-	\$		\$	2,326,119	\$	3,151,475	\$	996,908	\$	1,350,632
15. Busselton Central	1970	\$	215,341	\$	291,748	\$	646,023	\$	875,245	\$	3,445,454	\$	4,667,975
16. Busselton East	2910	\$	-	\$		\$	2,544,739	\$	3,447,667	\$	5,137,508	\$	9,197,500
17. Port Geographe	1090	\$		\$		\$	511,047	\$	692,377	\$	766,570	\$	1,038,565
18. Wonnerup	2820	\$		\$		\$	958,212	\$	1,298,206	\$	-	\$	-
19. Forest Beach	4540	\$		\$		\$	-	s	-	\$	-	\$	

70 (green) to 21	2070 (green) to 2115 (red)											
2070 (green) (0 2115 (red)												
Removal cost	Replacement cost [\$]											
\$ 855,900	\$ 2,893,000											
\$ 1,320,400	\$ 4,026,000											
	\$ 855,900											

Reticulation pipe												
2030/2040 (blue)				2	030/2040 (bl	,	to 2070	2070 (green) to 2115 (red				
Ren	Removal cost Replacement			Rem	noval cost [\$]		Re	moval cost	t Replacem			
\$		\$		\$		\$		\$		\$		
\$	-	\$		\$		\$		\$		\$		
\$	-	\$		\$	-	\$		\$		\$	-	
\$		\$		\$	-	\$		\$		\$		
\$		\$		\$	-	\$		\$		\$		
\$		\$		\$	-	\$		\$		\$		
\$		\$		\$	369,966	\$	501,238	\$		\$	-	
\$	-	\$		\$	1,048,237	\$	1,420,174	\$		\$	-	
\$	-	\$	-	\$	1,048,237		1,420,174	\$		\$	-	
\$	-	\$		\$	258,976	\$	350,867	\$	172,651	\$	233,91	
\$		\$		\$	4,529,810	\$	6,137,084	\$	1,941,347	\$	2,630,17	
\$		\$		\$	926,950		1,255,851		3,707,798	\$	5,023,40	
\$	-	\$		\$	2,229,926	\$	3,021,151	\$	2,229,926	\$	3,021,15	
\$	-	\$	-	\$	2,326,119		3,151,475	\$	996,908	\$	1,350,63	
\$	215,341	\$	291,748	\$	646,023	\$	875,245	\$	3,445,454	\$	4,667,97	
\$		\$		\$	2,544,739	\$	3,447,667	\$	3,817,108	\$	5,171,50	
\$	-	\$		\$	511,047	\$	692,377	\$	766,570	\$	1,038,56	
\$	-	\$	-	\$	958,212	\$	1,298,206	\$	-	\$	-	
s		Ś	-	ŝ	-	s	-	Ś	-	Ś	~	

TOTAL \$ 215,341 \$ 291,748 \$ 17,398,241 \$ 23,571,511 \$ 19,254,061 \$ 30,056,318

\$ 2,176,300 \$ 6,919,000

STATE UTILITY - SEWER

Cost are project cost including removal, disposal of assets, backfilling of excavations and modifications to remaing assets to return to working order.

Values based on information provided by Watercorp, June 2020

	_		_	TOTAL SEWER	_		
Planning Unit	2030/2040 (blue)			30/2040 (blue) 5 2070 (green)	2070 (green) to 21 (red)		
	R	emoval cost [\$]	Re	emoval cost [\$]	R	emoval cost [\$]	
01. Smiths Beach	+	σται σουτ (φ)			T.	(φ)	
02. Yallingup	$\neg \vdash$						
03. Bunker Bay	\top				\$	2,188,737.73	
04. Eagle Bay	\top		Г				
05. Old Dunsborough	\$	2,620,715.00	\$	2,620,715.00	\$	2,620,715.00	
06 Dunsborough Townsite	\$	2,209,712.00	\$	2,933,899.00	\$	6,361,351.00	
07. Quindalup Beach	\$	23,499.00	\$	331,040.00	\$	1,430,047.00	
08. Marybrook			\$	2,291,087.00	\$	2,291,087.00	
09. Siesta Park							
10 Locke Estate							
11. Abbey	\$	699,683.00	\$	5,331,289.00	\$	15,668,318.00	
12. Broadwater	\$	5,000.00	\$	1,440,126.00	\$	7,137,820.00	
13. Busselton West A	\$	877,161.00	\$	5,473,255.00	\$	8,806,061.00	
14. Busselton West B	\$	562,073.00	\$	5,121,751.00	\$	8,851,739.00	
15. Busselton Central	\$	10,296.00	\$	877,770.00	\$	3,330,299.00	
16. Busselton East	\$	92,479.00	\$	8,108,402.00	\$	15,261,598.00	
17. Port Geographe	\$	178,155.00	\$	797,670.00	\$	1,815,868.00	
18. Wonnerup			\$	101,471.00	\$	101,471.00	
19. Forest Beach							
	\$	7,278,773	\$	35,428,475	\$	75,865,112	

Attachment D Advisian report

STATE UTILITY - ROADS Cost of demolishing bridges and roads

Values are based on information provided by MRWA

Main Roads' assets in this area are Bussell highway (Busselton Bypass) and Caves Road.
For the purposes of this cereine you could work on the seal on each carriageway of Bussell Highway being 12m wide and on Caves Road being 10m wide.
Probably the main costs would be seal removal, sy 34/m², and kethile, say 510fm.

			TOTAL COST Roads & Bridges							
Planning Unit	Coastline	20	30/2040 (blue)	(330/2040 blue) to 70 (green)		70 (green) 2115 (red)			
	[m]	Г								
01. Smiths Beach	720	s		\$		s				
02. Yallingup	880	S	42,000	\$		S				
03. Bunker Bay	2150	\$	-	\$		\$				
D4. Eagle Bay	1250	\$	-	\$		\$				
05. Old Dunsborough	1100	\$		\$		5				
06 Dunsborough Townsite	2700	\$	-	\$		\$				
07. Quindalup Beach	5620	\$	-	\$	71,500	\$	37,500			
08. Marybrook	2390	\$		\$	766,314	\$				
09. Siesta Park	2700	\$	-	\$	114,500	\$				
10 Locke Estate	1450	\$	-	\$	210,684	\$				
11. Abbey	2960	\$	-	\$		\$	472,420			
12. Broadwater	2120	\$	-	\$		5	13,340			
13. Busselton West A	2040	\$		\$		5	652,736			
14. Busselton West B	1520	\$		\$		5	8,120			
15. Busselton Central	1970	\$		\$		\$				
16. Busselton East	2910	\$		\$		\$				
17. Port Geographe	1090	ŝ		\$		S				
18. Wonnerup	2820	\$	-	\$	498,960	5				
19. Forest Beach	4540	\$		\$		\$	117,247			

TOTAL \$ 3,005,321

		Caves	Road			Busselton HWY							В	ridges			
2030/20	040 (blue)	2030/2040 (I) to 2115 (red)	2030/20	040 (blue)		blue) to 2070 een)	2070 (green)	to 2115 (red)	2030/2	040 (blue)		(blue) to 2070 green)		en) to 211 red)
Affected		Affected		Affected		Affected		Affected		Affected							
ength	Removal cost	length	Removal c	length	Removal cost	length	Removal cost	length	Removal cost	length	Removal cost		Removal		Removal cost		Removai
[m]	[S]	[m]	[S]	[m]	[S]	[m]	[S]	[m]	[S]	[m]	[S]		cost [\$]		[5]		cost [\$]
()	S -		5 .) S -	()	5 .		S -		s -		CO31 [9]		[9]		cost (p)
0	5 -	0	s .) S -	0	S -		S -	0	s -		5 42,000				
0	s -	0	\$.		S -	0	\$ -	0	\$ -	0	\$ -						
0	\$ -	0	\$.		\$ -	0	s -		\$ -	0	\$ -						
0	\$ -	0	\$.	(5 -	0	s -	C	\$ -	0	\$ -						
0	\$ -	0	\$ -		\$ -	0	\$ -		\$ -		\$ -						
0	\$ -	1430			\$ 37,500	0	\$ -		\$ -		\$ -						
0	S -	2670			S -	0	s -		\$ -		\$ -				5 632,814		
0	\$ -	2290) \$ -	0	-		\$ -		\$ -			_			-
0	\$ -	1440			5 -	0	\$ -		\$ -	0				_	\$ 138,684		
0	\$ -		\$ -	1130		0			\$ -	1940			_	-		_	\$ 303,40
0	\$ -		\$ -		5 -	0	5 -		\$ -	230			_	-		_	6 500 00
- 0	5 -		\$ -		S -	0	5 -		S -	2230			_	_			\$ 523,35
- 0	5 -		5 -		5 -	- 0	5 -		\$ -		\$ 8,120		_	_	_	_	_
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0	S -		s .		5 -		s -		S -		\$ -				\$ 498,960		
0	s -		ŝ .) s -		s -		\$ -		s -				.50,500		\$ 117,24

TOTAL \$ 42,000 \$ 1,661,958 \$ 1,301,363

TOTAL \$ -\$ 391,500 \$ 94,000 \$ - \$ -\$ 263,320 \$ 42,000 \$ 1,270,458 \$ 944,043

Advisian report

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STATE UTILITY - ELECTRICITY

Cost of removing power lines

No data provided by Western Power

Values assumed on assessment of typical suburban area, with: 25 electricity poles, shared with surrounding blocks so 12.5 for this block plus 5 for internal street

Total 17.5 poles So 0.000282 pole/m2

Western Power website:

cost per pole relocation = \$ 5k to \$15 k

multiple removal would reduce cost, so based on \$5k /pole

So cost for relocation/removal of electric poles =

ELECTRICAL ASSETS

1.4094 \$/m2

1.5	\$/m2	in urban areas
0.5	\$/m2	in rural area

						Ele	ectrical co	sts					
Planning Unit	Coastline	203	0/2040 (b	lue)		2030/2040	(blue) to 2	070	(green)	2070 (gr	een) to 21	15	(red)
	[m]	Affected area	Rate	Rer	moval cost	Affected area	Rate	Rer	noval cost	Affected area	Rate	Rei	moval cost
		[m2]	[\$/m2]		[\$]	[m2]	[\$/m2]		[\$]	[m2]	[\$/m2]		[\$]
01. Smiths Beach	720	-	0.5	\$	-	2,000	0.5	\$	1,000	10,000	0.5	\$	5,000
02. Yallingup	880	-	0.5	\$	-	-	0.5	\$	-	20,000	0.5	\$	10,000
03. Bunker Bay	2150	-	0.5	\$	-	-	0.5	\$	-	15,000	0.5	\$	7,500
04. Eagle Bay	1250	-	0.5	\$	-	-	0.5	\$	-	45,000	0.5	\$	22,500
05. Old Dunsborough	1100	-	0.5	\$	-	125,000	0.5	\$	62,500	80,000	0.5	\$	40,000
06 Dunsborough Townsite	2700	25,000	0.5	\$	12,500	60,000	0.5	\$	30,000	200,000	0.5	\$	100,000
07. Quindalup Beach	5620	-	0.5	\$	-	225,000	0.5	\$	112,500	150,000	0.5	\$	75,000
08. Marybrook	2390	-	0.5	\$	-	150,000	0.5	\$	75,000	40,000	0.5	\$	20,000
09. Siesta Park	2700	70,000	0.5	\$	35,000	120,000	0.5	\$	60,000	10,000	0.5	\$	5,000
10 Locke Estate	1450	-	0.5	\$	-	200,000	0.5	\$	100,000	-	0.5	\$	-
11. Abbey	2960	-	1.0	\$	-	550,000	1.0	\$	550,000	200,000	1.0	\$	200,000
12. Broadwater	2120	-	1.0	\$	-	200,000	1.0	\$	200,000	350,000	1.0	\$	350,000
13. Busselton West A	2040	60,000	1.5	\$	90,000	400,000	1.5	\$	600,000	500,000	1.5	\$	750,000
14. Busselton West B	1520	90,000	1.5	\$	135,000	240,000	1.5	\$	360,000	360,000	1.5	\$	540,000
15. Busselton Central	1970	40,000	1.5	\$	60,000	160,000	1.5	\$	240,000	390,000	1.5	\$	585,000
16. Busselton East	2910	30,000	1.0	\$	30,000	580,000	1.0	\$	580,000	530,000	1.0	\$	530,000
17. Port Geographe	1090		1.0	\$	-	30,000	1.0	\$	30,000	75,000	1.0	\$	75,000
18. Wonnerup	2820	20,000	1.0	\$	20,000	25,000	1.0	\$	25,000	50,000	0.5	\$	25,000
19. Forest Beach	4540	-	0.5	\$	-	-	0.5	\$	-	-	0.5	\$	-

TOTAL \$ 382,500 \$ 3,026,000 \$ 3,340,000

Attachment D

STATE UTILITY - GAS

Cost of removing gas lines

Values based on information provided by ATCO

					Gas	Ma	ins			
					2030/2040	(Ы	ue) to 2070	2070 (gr	eer) to 2115
		2030/2	040	(blue)	(n)	(red)			
Planning Unit	Coastline [m]	m1 affected (mains)	Ren	noval* cost [\$]	m1 affected (mains)	Re	moval* cost [\$]	m1 affected (mains)	Re	moval* cos [\$]
01. Smiths Beach	720	0	\$	-	0	\$	-	0	\$	
02. Yallingup	880	0	\$	-	0	\$		0	\$	
03. Bunker Bay	2150	0	\$		0	\$	-	0	\$	
04. Eagle Bay	1250	0	\$	-	0	\$	-	0	\$	-
05. Old Dunsborough	1100	0	\$		0	\$		0	\$	-
06 Dunsborough Townsit	2700	0	\$	-	0	\$		0	\$	
07. Quindalup Beach	5620	0	\$	-	0	\$	-	0	\$	
08. Marybrook	2390	0	\$	-	0	\$	-	0	\$	
09. Siesta Park	2700	0	\$		0	\$		0	\$	
10 Locke Estate	1450	0	\$	-	0	\$		0	\$	
11. Abbey	2960	470	\$	24,676	1350	\$	85,998	5320	\$	684,247
12. Broadwater	2120	0	\$		3800	\$	242,068	5200	\$	668,813
13. Busselton West A	2040	1670	\$	87,680	3430	\$	218,498	4550	\$	585,211
14. Busselton West B	1520	530	\$	27,827	2150	\$	136,960	3260	\$	419,294
15. Busselton Central	1970	320	\$	16,801	2940	\$	187,284	3830	\$	492,607
16. Busselton East	2910	0	\$		8875	\$	565,356	6960	\$	895,180
17. Port Geographe	1090	360	\$	18,901	960		61,154	1460	\$	187,782
18. Wonnerup	2820	0	\$	-	110	\$	7,007	0	\$	
19. Forest Beach	4540	0	\$	-	0	\$	-	0	\$	
		3350		175,885 175,885	23615	\$	1,504,325	30580	\$	3,933,135
tota	total based on provided info					\$	1,504,325		\$	3,933,135

			Gas N	/lain	15					
			(blue) to 2070							
2030/20	40 (Ы	ue)	(green)	_		2070 (green) to 2115 (red)				
m1 affected Removal* cos (mains) [\$]			m1 affected (mains)	Removal* cost [\$]				m1 affected (mains)	Re	moval* cos [\$]
0			0		-	0		-		
0	\$	-	0	\$	-	0	\$			
0		-	0	\$	-	0	\$			
0	\$	-	0	\$	-	0	\$	-		
0	\$		0	S	-	0	\$			
0	\$		0	\$	-	0	\$			
0	\$		0	5	-	0	\$			
0	\$		0	\$		0	\$	-		
0	\$		0	\$	-	0	\$			
0	\$	-	0	\$	-	0	\$			
470	\$	24,676	1350	\$	85,998	5320	\$	684,24		
0	\$		3800	\$	242,068	5200	\$	668,81		
1670	\$	87,680	3430	\$	218,498	4550	\$	585,21		
530	5	27,827	2150	S	136,960	3260	\$	419,29		
320	\$	16,801	2940	\$	187,284	3830	\$	492,60		
0	5	-	8875	5	565,356	6960	\$	895,18		
360	\$	18,901	960	\$	61,154	1460	\$	187,78		
0	\$	-	110	\$	7,007	0	\$	-		
0	\$	-	0	\$		0	\$	-		
3350	\$	175,885	23615	\$	1,504,325	30580	\$	3,933,13		
on provided info	Ś	175,885		ŝ	1.504.325		Ś	3.933.13		

Assumptions

* while keeping the network integrity

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Busselton 2029 Severe Winter model

No Change in the number of Meters at the coastal area from 2019 onward,

Results:

Stage	Impact on the existing customers (September 2019)	Impact on the existing assets (2019)	Impact on the network integrity
Stage 1	150 customers (standard fee for the demolition of a standard residential meter set is \$649 per property, as at 2019) as per ATCO website	SKM of mains is expected to be inundated (\$20-50k to decommission and purge)	Approximately 0.5Km needs to be installed to maintain the supply for the rest of the network (estimated rate for DN110PE mains is \$157.00 per metre as at 2019)
Stage 2	1350 customers	29KM of mains is expected to be inundated (\$150-200k to decommission and purge)	Approximately 4Km needs to be installed to maintain the supply for the rest of the network
		37Km of mains is expected to be inundated (\$200-300k to decommission and purge)	Approximately 8KM of MAOP 350KPa trunk mains needs to relocated
Stage 3	1650 Customers (standard fee for the demolition of a standard residential meter set is \$649 per property, as at 2019)	1 HPRs	Approximately 8Km of MAOP 700KPa mains needs to be relocated
		8KM of MAOP 700KPa network will be flooded (\$20-50k to decommission and purge)	Installation of a new HPR (\$350,000.00 approximately)

Please consider that this high level indicative cost for new mains is based on existing rates per metre taken over a three year period prior to 2019 for the median pipe size rate per metre.

NOTE: Dollar figures do not include GST and do not take into account variables listed but not limited to; external approvals of the day, removal of existing pipework or reinstatement of property nor reconnection of existing services where customers have had to have gas supply temporarily turned off due to "works".

^{*} while keeping the network integrity

14. ENGINEERING AND WORK SERVICES REPORT

14.1 AWARD OF TENDER RFT 08/20 WEST BUSSELTON SEAWALL UPGRADE

STRATEGIC GOAL 3. ENVIRONMENT Valued, conserved and enjoyed

STRATEGIC OBJECTIVE 3.2 Natural areas and habitats are cared for and enhanced for the

enjoyment of current and future generations.

SUBJECT INDEX Coastal Adaptation

BUSINESS UNIT Engineering and Facilities Services

REPORTING OFFICER Manager, Engineering and Technical Services - Daniell Abrahamse

AUTHORISING OFFICER Director, Engineering and Works Services - Oliver Darby

NATURE OF DECISION Contractual: To enter into a contract e.g. a lease or the award of a

tender etc.

VOTING REQUIREMENT Absolute Majority

ATTACHMENTS Attachment A Published Under Seperate Cover - Confidential

RFT08/20 Tender Recommendation Report, Evaluations and Panel Consensus Score Sheet

OFFICER RECOMMENDATION

That the Council:

- 1. Pursuant to RFT 08/20 West Busselton Seawall Upgrade (RFT 08/20), accept the tender from Leeuwin Civil Pty Ltd for \$908,975 (exclusive of GST) for Stage 1, Option 3 (Re-use existing ironstone, import additional ironstone armour rock and import additional granite armour rock to provide a granite veneer, seawall) as the most advantageous tenderer, (Successful Tenderer) subject to minor variations to be negotiated in accordance with Regulation 20 of the Local Government (Functions and General) Regulations 1996 (FG Regs).
- 2. In accordance with Regulation 18(5) of the FG Regs, decline to accept any tender in respect to RFT 08/20 Stage 1, Option 1 and Option 2 and Stage 2, Options 1 and 2.
 - 3. In respect to RFT 08/20 Stage 1, Option 3, delegate power and authority to the Chief Executive Officer to:
 - negotiate and agree with the Successful Tenderer minor variations in accordance with Regulation 20 of the FG Regs, subject to such variations and final terms not exceeding the overall project budget;
 - subject to and conditional upon all environmental approvals having been obtained, enter into a contract with the Successful Tenderer for supply of the relevant goods and services.
- 4. Endorse the requested budget amendment outlined in Table 1 below resulting in no change to the budgeted cash position.

Table 1:

Cost Code	Description	Current Amended Budget (\$)	Change (\$)	Resulting Proposed Amended Budget (\$)
Expenditure				
510-C2528-3280-0000	Craig Street Groyne and Seawall	660,0000	958,975	298,975
Reserve				
102-9103 Transfer from Climate Adaptation Reserve		(660,000)	(958,975)	(298,975)
Net Total		\$0	\$0	\$0

EXECUTIVE SUMMARY

The City of Busselton invited tenders under Request for Tender RFT08/20: West Busselton Seawall Upgrade (the RFT) for the upgrade of the existing rock seawall along Geographe Bay Road between Bower Street and Earnshaw Road (West Busselton). The RFT called for respondents to price two options for the refurbishment of the seawall in two stages (stage 1 and stage 2), followed by a third option for stage one.

This report summarises the submissions received, and recommends that Council:

- endorse the outcome of the evaluation panel's assessment;
- delegate power and authority to the CEO to negotiate and agree final terms and conditions with the Successful Tenderer, Leeuwin Civil Pty Ltd, and
- enter into a contract(s) for Stage 1, Option 3:- the refurbishment of the eastern 460m of the structure between Bower Street and Earnshaw Road (West Busselton), using existing ironstone, imported additional ironstone armour rock and imported additional granite armour rock.

It is further recommended that Council decline to accept any tenders in respect to Stage 1, Options 1 and 2 and Stage 2, Options 1 and 2.

BACKGROUND

The West Busselton seawall is a strategic coastal protection structure for West Busselton, constructed in the 1970s and aligned along Geographe Bay Road. The seawall provides protection to Geographe Bay Road and the adjacent Dual Use Path. The seawall is approximately 600m long and extends west from Craig Street Groyne to approximately in line with Earnshaw Road.

The overall condition of the seawall has deteriorated over time due to high water levels and a number of large winter storm events in recent years. There is an ongoing risk that the Dual Use Path and Geographe Bay Road will become undermined and damaged as the seawall progressively deteriorates.

Two existing timber groynes (refurbished in 2016) and submerged Longard tubes (constructed late 1970s) have provided varying degrees of coastal stabilisation to the beach since construction. The Longard tubes are now buried and may be uncovered during the works. There are also remnants of two timber groynes (c1980s) on the eastern end of the wall that may be uncovered during the works.

On 27 November 2020, tenders were invited (via Tenderlink) for the upgrade of the existing seawall between Bower Street and Earnshaw Road (West Busselton). The RFT closed on 22 December 2020, with three submissions received.

Respondents initially were asked to price two options for Stages 1 and 2, stage 1 being the refurbishment of the eastern 460m length of the structure between Bower Street and Earnshaw Road (West Busselton), and stage 2 the refurbishment of 150m of the structure between the two timber groynes. See figure 1 below.

Stage 1 is on budget this financial year and stage 2 has been included in the Long Term Financial Plan for the 21/22 Financial Year.



Figure 1 West Busselton Seawall Refurbishment Proposed Staging

The two initial options were:

- Option 1: Re-use existing ironstone and import additional ironstone armour rock;
- Option 2: Re-use existing ironstone and import additional granite armour rock.

The evaluation panel and the Contract and Tendering Officer met on Thursday 14 January 2021 to discuss the submissions received. The tender prices received for both options were in excess of the current available project budget. The CEO was advised of this and a briefing was arranged for Council to discuss the different materials used for constructing seawalls, their cost and expected useful life.

Following the Council briefing on 20 January 2021, officers issued all tenderers with an addendum, requesting them to complete a pricing schedule for a third option for stage 1 only. As outlined below, this option proposed use of a more cost effective combination of materials to provide for an aesthetic and durable granite veneer seawall:

• Stage 1 - Option 3: Re-use existing ironstone, import additional ironstone armour rock and import additional granite armour rock to provide a granite veneer seawall.

The addendum was sent out on 25 January 2021 and respondents had until close of business 5 February 2021 to return the pricing schedule. All stages and options were evaluated together.

OFFICER COMMENT

The City received three compliant tender submissions from the following companies:

- BCP Contractors Pty Ltd;
- Leeuwin Civil Pty Ltd; and
- Neo Civil Pty Ltd.

Assessment Process

In accordance with the City's procurement practices and procedures, tender assessments were carried out by a tender evaluation panel comprising City officers and an independent evaluation panel member with relevant skills and experience.

The tender assessment process included:

- Assessing tenders received against relevant compliance criteria. The compliance criteria were not point scored. Each submission was assessed on a Yes/No basis as to whether each criterion was satisfactorily met. All tenders were deemed compliant.
- Assessing tenders against the following qualitative criteria (weighted as indicated in the table below):

	Criteria	Weighting
(a)	Relevant Experience	20%
(b)	Local Content	5%
(b)	Key Personnel Skills and Experience	15%
(c)	Tenderer's Resources	10%
(d)	Demonstrated Understanding	10%

The qualitative criteria were scored depending on the extent to which each tenderer was able to appropriately satisfy each criteria. The tendered prices were then assessed together with the weighted qualitative criteria and the tenders scored and ranked to determine the most advantageous outcome to the City, based on principles of best value for money. That is, although price was a consideration, the tender containing the lowest price will not necessarily be accepted by the City and nor will the tender ranked the highest on the qualitative criteria.

Summary of Assessment Outcomes

The outcome of the evaluation panel's assessment was as follows:

Rank	Company	Summary
1.	Leeuwin Civil Pty Ltd	The submission addressed all five of the qualitative criteria in detail.
		Relevant experience was demonstrated on four similar projects; City of Busselton - Coastal Protection Works - that included a seawall refurbishment along Geographe Bay Road - Craig Street, Falcon Bay Seawall, 65m long seawall, Augusta Boat Harbour Development - Department of Transport, and Abbey Boat Ramp and Rock Protection - City of Busselton.
		The submission demonstrated a high level of relevant experience amongst their personnel, and substantial plant including mobile plant and trucks, and maintenance capacity. There was a demonstrated understanding of the requirements provided though a detailed construction methodology. Detailed information was also provided on service locations and traffic management for the hauling of rock material to site. They noted lead times on the supply of geotextile material and the supply of ironstone. Local benefit was demonstrated.
	BCP Contractors Pty Ltd	The submission addressed all five of the qualitative criteria in detail.
		Relevant experience was demonstrated with a total of six similar projects successfully completed. Five of the six projects were local to the City of Busselton. The sixth project is the Culham Inlet Crossing Reconstruction project in the Shire of Ravensthorpe. Experience with the following materials was noted - laterite, granite and Geosynthetic Sand Container (GSC).
		Most key personnel have been involved in relevant projects and allocation to the project was clearly identified. Substantial plant including mobile plant and trucks, and maintenance capacity was demonstrated. There was a demonstrated understanding of the requirements though a detailed construction methodology which included construction staging, key hold points, critical risks for the project, methodologies for latent conditions, project execution plan and specific scope of works. The respondent did not provide details of how they will be accessing the site and possible locations of the site compound. Local benefit was demonstrated.

3. Neo Civil Pty Ltd

The submission only addressed four of the five qualitative criteria in detail.

In terms of relevant experience the respondent listed the completion of twelve similar projects including projects at the Shire of Gingin - Seabird foreshore - construction of armoured seawall, the City of Albany - Middleton Beach Foreshore Redevelopment - rock and concrete seawall, the City of Mandurah - Falcon Bay Seawall, the City of Busselton - Dunsborough Sewall - 170m GSC Seawall, the Shire of Coolgardie - Kambalda West Weir Dam, and Chevron - Thevenard Island - GSC – Seawall. Other listed projects were for the City of Rockingham, City of Albany, City of Mandurah, SMC Marine, Shire of Gingin and City of Geraldton.

The submission indicated a relatively large number of organisational personnel including site supervisors, operators and engineering support. Specific project roles were not clear. There was modest plant demonstrated, based in the Perth region. A comprehensive construction methodology was provided including a program indicating the works will be completed before Easter 2021. Given lead time for procurement of some of the material, this time frame might not be achievable. The source for ironstone was uncertain. No direct local community benefit was identified

Based on the combination of price and the qualitative criteria it is recommended that the tender from Leeuwin Civil Pty Ltd for Stage 1, Option 3 be endorsed as the Successful Tenderer and that Council decline to accept any tenders in respect to Stage 1, Options 1 and 2 and Stage 2, Options 1 and 2.

Statutory Environment

In accordance with section 3.57 of the Act, a local government is required to invite tenders before it enters into a contract of a prescribed kind under which another person is to supply goods and service. Part 4 of the *Local Government (Functions and General) Regulations 1996*:

- requires that tenders be publicly invited for such contracts where the estimated cost of providing the required goods and/or service exceeds \$250,000; and
- under Regulations 11, 14, 18, 20 and 21A, provides the statutory framework for inviting and assessing tenders and awarding contracts pursuant to this process.

With regard to the RFT, City officers have complied with abovementioned legislative requirements.

As the Contract value is greater than \$500,000, and in accordance with section 5.43(b) of the Act and Council delegation DA 1-07, Council endorsement of the Successful Tenderer is required.

Section 6.8 of the Act refers to expenditure from the municipal fund that is not included in the annual budget. In the context of this report, where no budget allocation exists, expenditure is not to be incurred until such time as it is authorised in advance, by an absolute majority decision of the Council.

Relevant Plans and Policies

The City's purchasing policies, regional price preference, occupational health and safety, asset management, engineering technical standards and specifications were all relevant to the RFT, and have been adhered to in the process of requesting and evaluating tenders.

Financial Implications

The project/procurement will be funded from Craig Street Groyne and Seawall which has a budget allocation of \$660,000 (cost code 510 C2528 3280 0000), and a recommended draw down from the Climate Adaptation Reserve of \$298,975. A budget amendment as per Table 1 is recommended for that purpose.

Planned Amendment Item

Table 1:

Cost Code	Description	Current Amended Budget (\$)	Change (\$)	Resulting Proposed Amended Budget (\$)
Expenditure				
510-C2528-3280-0000	Craig Street Groyne and Seawall	660,0000	958,975	298,975
Reserve				
102-9103	Transfer from Climate Adaptation Reserve	(660,000)	(958,975)	(298,975)
Net Total		\$0	\$0	\$0

The Climate Adaptation Reserve currently has an available balance of \$525,155 estimated at the end of the 2020/21 financial year, assuming that all projects funded from the reserve are completed on budget.

Therefore, with the proposed amendment, the balance of the Climate Adaptation Reserve would be \$226,180.

Stakeholder Consultation

The RFT was advertised in the 'West Australian' newspaper on 28 November 2020 and uploaded to TenderLink on 27 November 2020. The closing time and date for lodgement of a response was 2.00pm (AWST) on Tuesday 22 December 2019. Officers have undertaken reference checks of the preferred tenderer.

Risk Assessment

An assessment of the potential implications of implementing the officer's recommendation has been undertaken using the City's risk assessment framework, with the intention being to identify risks which, following implementation of controls, are identified as medium or greater. There are no such risks identified, with the Successul Tenderer assessed as being capable of delivering the services to a suitable service level.

Options

The Council may consider the following alternate options:

- To award the tender to an alternative tenderer/s. In the view of the officers, this could result in the tender being awarded to a tenderer that is not most advantageous to the City.
- 2. To not award the tender. This would mean going back out to tender, resulting in significant delays to the contract award and potential significant delays to the delivery of the West Busselton Seawall Upgrade.

CONCLUSION

It is recommended that Council accept the tender of Leeuwin Civil Pty Ltd as the most advantageous to the City, subject to minor variations to be negotiated by the CEO, not exceeding the overall project budget. A budget amendment is also requested.

TIMELINE FOR IMPLEMENTATION OF OFFICER RECOMMENDATION

Should Council adopt the officer recommendation, it is anticipated that the contract for construction of Stage 1 of the West Busselton Seawall Upgrade will commence during March 2021 and be completed by mid - June 2021, weather permitting.

15. COMMUNITY AND COMMERCIAL SERVICES REPORT

Nil

16. FINANCE AND CORPORATE SERVICES REPORT

16.1 <u>NEW REQUIREMENTS OF THE LOCAL GOVERNMENT (MODEL CODE OF CONDUCT)</u>
REGULATIONS 2021

STRATEGIC GOAL 6. LEADERSHIP Visionary, collaborative, accountable

STRATEGIC OBJECTIVE 6.1 Governance systems, process and practices are responsible,

ethical and transparent.

SUBJECT INDEX BUSINESS UNITModel Code of Conduct
Governance Services

REPORTING OFFICER Governance Coordinator - Emma Heys

AUTHORISING OFFICER Director Finance and Corporate Services - Tony Nottle

strategies, plans and policies (excluding local planning policies); funding, donations and sponsorships; reviewing committee

recommendations

VOTING REQUIREMENT Absolute Majority

ATTACHMENTS Attachment A Complaints Form (Model Code of Conduct)

OFFICER RECOMMENDATION

That the Council:

- 1. Authorise the Chief Executive Officer for the purposes of receiving complaints and withdrawal of complaints in accordance with Schedule 1, Clause 11(3) of the Local Government (Model Code of Conduct) Regulations 2021 (the Regulations);
- 2. Delegate to the Chief Executive Officer the power to appoint one or more persons to receive complaints and withdrawals of complaints in accordance with Schedule 1, Clause 11(3) of the Regulations;
- 3. Approve the form as at Attachment A as the form in which complaints of alleged breaches of the Code may be received;
- 4. Notes that the CEO will hold a briefing with Councillors to consider any additional behavior requirements for incorporation into the Code of Conduct and present the Code of Conduct for adoption prior to 3 May 2021.

EXECUTIVE SUMMARY

This report seeks to authorise the Chief Executive Officer for the purposes of receiving complaints and the withdrawal of complaints in accordance with Schedule 1, Clause 11(3) of the *Local Government (Model Code of Conduct) Regulations 2021* (the Regulations) and also delegates to the CEO the power to appoint one or more other persons to receive complaints of alleged breaches of the model Code of Conduct (Model Code) and, once adopted, the City's Code of Conduct. This report also seeks Council endorsement of the form in which complaints of alleged breaches may be received (Attachment A).

BACKGROUND

The new Regulations were gazetted and came into effect Wednesday 3 February 2021. Local Governments are required, to adopt a Code of Conduct for Council Members, Committee Members and Candidates (the Code) within three months of gazettal (being 3 May 2021), as per Section 5.104 of the *Local Government Act 1995* (the Act) and the Regulations.

Under the Regulations, local governments are required to authorise one or more persons to receive complaints and withdrawals of complaints, and approve a complaint form in which complaints of alleged breaches of the Code (or in the interim the Model Code) may be made.

OFFICER COMMENT

It is recommended that the CEO be authorised for the purposes of receiving and withdrawing complaints of alleged breaches of the Model Code and the Code, and further, that the CEO be delegated the power to appoint one or more other persons to receive complaints and withdrawals of complaints.

A form for receipt of complaints of alleged breaches has been modelled on the template form provided by the Department of Local Government, Sport and Cultural Industries (Attachment A).

Section 5.104(4) of the Act prescribes that a local government cannot include in an adopted code of conduct any provisions in addition to the principles referred to in Section 5.103(2)(a), that is the general principles to guide behaviour, or the rules of conduct. Additional behaviours may however, in accordance with 5.104(3), be included, with any additional behaviours subject to the complaints process.

Officers propose to hold a briefing with Councillors on the Code and any additional behaviours to be included. Following the briefing officers will finalise the Code and return it to Council for adoption, prior to 3 May 2021. In accordance with section 5.104 of the Act, until such time that the Council adopt the Code, the Model Code will be taken to be the City's adopted Code of Conduct.

Statutory Environment

The adoption of the City of Busselton Code of Conduct for Council Members, Committee Members and Candidates is required under sections 5.103 and 5.014 of the Act and the new *Local Government* (Model Code of Conduct) Regulations 2020.

Schedule 1, Division 3, clause 11(3) of the Regulations requires Council to authorise one or more persons to receive complaints and withdrawals of complaints, while clause 11(2)(a) requires the approval of a form for the receiving of complaints.

Section 5.42 of the Act provides for duties and powers to be delegated to the CEO, other than those referred to in section 5.43 of the Act.

Relevant Plans and Policies

There are no relevant plans or policies to consider in relation to this matter.

Financial Implications

There are no financial implications associated with the officer recommendation.

Stakeholder Consultation

No external stakeholder consultation was required or undertaken in relation to this matter.

Risk Assessment

An assessment of the potential implications of implementing the officer recommendation has been undertaken using the City's risk management framework, with risks assessed taking into account any controls already in place. No risks of a medium or greater level have been identified.

Options

As an alternative to the proposed recommendation, the Council could:

- Choose not to delegate to the CEO the authority to appoint one or more persons to receive complaints and instead authorise only the CEO as the person to receive complaints.
- 2. Request amendments to be made to the form in which complaints of alleged breaches of the Code may be received.

CONCLUSION

This report seeks Council authorisation of the Chief Executive Officer for the purposes of receiving complaints and the withdrawal of complaints and the delegation of power to the CEO to appoint one or more other persons to receive complaints of alleged breaches of the model Code of Conduct (Model Code) and, once adopted, the City's Code of Conduct. This report also seeks Council endorsement of the form in which complaints of alleged breaches may be received (Attachment A).

TIMELINE FOR IMPLEMENTATION OF OFFICER RECOMMENDATION

Immediately upon endorsement, the CEO will be authorised for the purposes of receiving and withdrawing complaints and the form in which complaints will be received will be approved.

Complaints Form (Model Code of Conduct)



Complaint About Alleged Breach Form – Code of conduct for council members, committee members and candidates

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Schedule 1, Division 3 of the Local Government (Model Code of Conduct) Regulations 2021

NOTE:

A complaint about an alleged breach must be made –

- a. in writing in the form approved by the local government (this form);
- b. to an authorised person; and
- c. within one month after the occurrence of the alleged breach.

Name of the person who is making the complain	t:
Name	
Name:	
Given Name(s)	Family Name
Contact details of the person making the compla	int:
Contact details of the person making the compla	
Address:	
Email:	
0	
Contact Number:	
Name of the local government (city, town, shire)	concerned:
Name of the local government (city, town, since)	concerned.
City of Busselton	
,	
Name of the council member, committee member	er, candidate alleged to have committed the breach:
Name:	
Given Name(s)	Family Name
Given Name(s)	Family Name
State the full details of the alleged breach. Attac	hed any supporting evidence to this complaint form:
	, , , ,
Date of the alleged breach:	
/	/20
,	,

Complaints Form (Model Code of Conduct)

Signed:				
Complainant's signature:				
Date of signing:	/	/20		

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Received by Authorised Officer				
Authorised Officers' Name:				
	Given Name(s)		Family Name	
Authorised Officers' Signature:				
Date received:	/	/20		

NOTE TO PERSON MAKING THE COMPLAINT

This form should be completed, dated and signed by the person making a complaint of an alleged breach of the City of Busselton Code of Conduct for Council Members, Committee Members and Candidates (the Code).

The complaint is to be specific about the alleged breach and include the relevant section/subsections from the Code of the alleged breach.

The complaint must be made to the authorised officer within one month after the occurrence of the alleged breach.

This signed complaint form is to be forwarded to the Chief Executive Officer, marked "Attention: Complaints Officer".

16.2 <u>CITY MANAGED AUTOMATIC WEATHER STATIONS</u>

STRATEGIC GOAL6. LEADERSHIP Visionary, collaborative, accountable **STRATEGIC OBJECTIVE**6.4 Assets are well maintained and responsibly managed.

SUBJECT INDEX Governance

BUSINESS UNIT Corporate Services

REPORTING OFFICER Manager Governance and Corporate Services - Sarah Pierson

AUTHORISING OFFICER Director Finance and Corporate Services - Tony Nottle

strategies, plans and policies (excluding local planning policies); funding, donations and sponsorships; reviewing committee

recommendations

VOTING REQUIREMENT Simple Majority

ATTACHMENTS Attachment A Response Letter BOM L

Attachment B MEA Weather Station Use

OFFICER RECOMMENDATION

That the Council:

- 1. Acknowledge the Bureau of Meteorology's (BOM) response to the City's request for establishment of additional weather stations in Busselton and Dunsborough;
- Further consider the procurement and installation of two automated weather stations, one in Busselton and one in Dunsborough, as part of its 2021/2022 budget deliberation process.

EXECUTIVE SUMMARY

At the General Meeting of Electors held on 2 December 2019, the following motion was carried:

That the City of Busselton take the necessary steps to request that the WA Bureau of Metrology establish an office weather station in the Busselton CBD.

In response, Council resolved to write to the Bureau of Meteorology (BOM) seeking the establishment of a weather station in a central location in both Busselton and Dunsborough. This report provides Council with the BOM's feedback, outcomes of research undertaken into the City procuring and managing its own weather stations, and recommends that the Council further consider the procurement and installation of two automated weather stations as part of its 2021/2022 budget deliberations.

BACKGROUND

At the General Meeting of Electors held on 2 December 2019, the following motion was carried:

That the City of Busselton take the necessary steps to request that the WA Bureau of Metrology establish an office weather station in the Busselton CBD.

In response, Council considered the motion at its Ordinary Council meeting of 29 January 2020 and resolved (C2001/023):

That the Council:

1. Note the following Motion carried at the General Meeting of Electors, 2 December 2019 (C1912/245):

That the City of Busselton take the necessary steps to request that the WA Bureau of Meteorology establish an office weather station in the Busselton CBD;

- 2. Request the CEO to write to the Bureau of Meteorology seeking the establishment of a weather station on the City of Busselton Civic and Administration Centre or at another suitable and central location; and
- 3. Additionally request the CEO to write to the Bureau of Meteorology seeking the establishment of a weather station at a suitable and central location in the Dunsborough town centre.

Officers wrote to the BOM on 28 February 2020 and received a response dated 22 June 2020 (Attachment A). In brief, the BOM declined the City's request on the basis that the City of Busselton already has two weather stations that cover all of the intended services, and Dunsborough also has its own. The BOM advised that the City could explore buying its own automated weather station, the details from which can be hosted on their Weather on the Web (WOW) website.

OFFICER COMMENT

Busselton's weather is currently recorded by the weather station at Busselton Margaret River Regional Airport, located 10.6 kilometres from the centre of Busselton (as per the Busselton GPO). There is also a weather station at the Busselton Jetty however it only records wind. Up until approximately 2011 there was a weather station at the Busselton Hospital. In Dunsborough weather is recorded at Cape Naturaliste.

Notwithstanding the BOM's response, weather conditions can differ between central Busselton and the airport which is further inland on the coastal plain. Conditions can also differ in Dunsborough to those experienced at Cape Naturaliste. Officers have therefore undertaken research into the costs and implications of procuring and managing its own automated weather stations.

The standard model recommended by the BOM is the MEA. This the station used by the Department of Primary and Regional Industries and is designed for general purpose applications. It is supplied in a largely built up form, and is attached to a 1.5m in-ground post (not provided). The installation of the equipment is not complex. The attached brochure provides more information (Attachment B). While there are alternative models available, officers have based their considerations on this model.

The MEA station transmits data to a web app called Green Brain. The BOM however have referred to a website called WOW. The WOW website is a BOM affiliated website and has significantly more weather data, both from BOM and from private weather stations. It is therefore recommended that the data from any automated weather station be pushed to the WOW website. An upload link would need to be configured by IT for this purpose. A link to the WOW website would be placed on the City's website and promoted through facebook and the City's Bay to Bay publication.

The approximate cost per station based on the MEA quotation is as follows:

Item	Cost (ex GST)
Station	\$7890
(including upgraded wind sensors due to the coastal location)	
Yearly Subscription	\$350
(for telemetry and website maintenance) – while the website	
aspect would not be needed this is part of the fixed cost quoted	
Timber Crate (refundable once returned)	\$300
Freight (approx.)	\$120
TOTAL	\$8,660 (plus installation and
	maintenance)

Additional (in-house) installation costs, including time to configure the upload link, are estimated at \$500 per station. Ongoing maintenance is estimated at approximately one hour per month, with replacement of each station every 3 to 5 years.

While the BOM have indicated that Busselton and Dunsborough are adequately serviced in terms of official weather stations, they have suggested that the City consider setting up their own weather stations. The costs to do so are not significant, and establishing a data link to the WOW website is reasonably straightforward. The costs are not provided for in the current financial year budget however; given this, it is recommended that Council do not proceed with the project this financial year, but that they further consider it as part of their 2021/2022 budget deliberations.

Statutory Environment

The officer recommendation supports the general function of a local government under the *Local Government Act 1995* to provide for the good government of persons in its district.

Relevant Plans and Policies

There are no relevant plans or policies to consider in relation to this matter.

Financial Implications

There are no immediate financial implications associated with the officer recommendation. If Council choose to proceed with establishing the weather stations in 2021/2022 a budget allocation of \$17,000 would be required in the facilities budget.

Stakeholder Consultation

The BOM was consulted in relation to the matter, as detailed within the report.

Risk Assessment

An assessment of the potential implications of implementing the officer recommendation has been undertaken using the City's risk management framework, with risks assessed taking into account any controls already in place. No risks of a medium or greater level have been identified.

Options

As an alternative to the proposed recommendation, the Council could purchase an automated weather station for Busselton and for Dunsborough in the current 2020/2021 financial year using the Council contingency budget allocation.

CONCLUSION

The BOM have advised that both Busselton and Dunsborough are adequately serviced by the current official weather stations. The City can however procure and manage its own additional stations, and officers recommend that Council give further consideration to this as part of the 2021/2022 budget deliberations.

TIMELINE FOR IMPLEMENTATION OF OFFICER RECOMMENDATION

The Council resolution will be implemented as part of the 2021/2022 budget workshops in May 2021.

Australian Government
Bureau of Meteorology

Western Australia Regional Office Bureau of Meteorology PO Box 1370 West Perth WA 6872 Australia

In reply please quote

22nd June 2020

To: Chief Executive Officer, Mr Mike Archer
City of Busselton

Dear Sir,

Thankyou for your letter dated 28 February 2020 and apologies for the late reply. I have carefully considered your request to install further Automatic Weather Stations (AWS) in the Busselton and Dunsborough town sites but unfortunately, we must deny your request.

AWSs are installed according to the following guidelines:

- · To assist with public weather and marine forecasting
- To assist with aviation forecasting and weather monitoring
- · To assist with long term climate monitoring.

The City of Busselton already has 2 weather stations that cover all of these services and is therefore considered appropriate for the greater Busselton region. It is not always possible to cover every aspect of a town with one weather station, particularly a town that has both coastal and inland regions. So we endeavour to find a balance between the two and install at a site where our guidelines are met, but where it can be of most use to the general public. A coastal and an airport site are the most appropriate for the Busselton region.

As you have noted, Dunsborough does not have its own weather station but is close to the Cape Naturaliste AWS (within 13km). This is considered close enough to be representative of the weather at the town, although the AWS is likely to be somewhat windier due to its exposed location.

Council 16.2

Attachment A

493 Response Letter BOM

Notwithstanding this, there are many affordable automated weather station options that the City can explore buying if they wish. They are generally easy to setup and we can host any weather data available on our Weather on the Web (WOW) website, details are available at http://bom-wow.metoffice.gov.uk.

If I can be of any further assistance, then please do not hesitate to contact me.

Regards

Michelle Mews Observing Operations Hub Manager Perth Bureau of Meteorology 1 Ord Street, West Perth, WA, 6872 Ph: 08 9263 2296

Mob: 0408 305 728 Michelle.mews@bom.gov.au



MEA Weather Station



A QUALITY WEATHER STATION DELIVERING RELIABLE DATA.

YEAR, AFTER YEAR, AFTER YEAR.

With all of your data in the Green Brain web app. For local weather made simple.

FEATURES

A **robust** Weather Station designed to provide **high-quality** data for many years.

Supplied with a standard set of sensors: Air Temperature, Relative Humidity, Wind Speed and Direction, Solar Radiation and Rainfall. Additional sensors can be added if required.

Calculated climate variables include **Evapotranspiration**, Accumulated Chill Portions, Growing Degree Days, **Delta-T**, and Frost Point Temperature.

Whether you're Spraying, Planning, Harvesting, Baling, or Irrigating, you can **rely** on an MEA Weather Station.

Remote diagnosis and support provided within 2 hours (during business hours) of initial contact to MEA.

SMS **alerts notify you** when specific conditions are met (e.g. frost risk, high wind speeds, spray conditions change).

Sensors are pre-fitted to the mast, making **installation a snap**.

WEATHER MONITORING PLATFORM		
Standard Setup	MEA Weather Station (Air Temperature, Relative Humidity, Wind Speed & Direction, Solar Radiation and Rainfall)	
Optional extras	Leaf Wetness	
	Soil Temperature	
	Soil Moisture Sensors (Content or Tension, as required)	
	Barometric Pressure	
	t about other customisations to either the sensor set supplied, or for a specific into your existing systems.	

17. CHIEF EXECUTIVE OFFICERS REPORT

17.1 COUNCILLORS' INFORMATION BULLETIN

STRATEGIC GOAL 6. LEADERSHIP Visionary, collaborative, accountable

STRATEGIC OBJECTIVE 6.1 Governance systems, process and practices are responsible,

ethical and transparent.

SUBJECT INDEX Councillors' Information Bulletin

BUSINESS UNIT Executive Services

REPORTING OFFICER Reporting Officers - Various

AUTHORISING OFFICER Director Finance and Corporate Services - Tony Nottle

NATURE OF DECISION Noting: The item is simply for information purposes and noting

VOTING REQUIREMENT Simple Majority

ATTACHMENTS Nil

OFFICER RECOMMENDATION

That the items from the Councillors' Information Bulletin be noted:

17.1.1 Current Active Tenders

17.1.2 Donations, Contributions and Subsidies Fund – January 2021

EXECUTIVE SUMMARY

This report provides an overview of a range of information that is considered appropriate to be formally presented to the Council for its receipt and noting. The information is provided in order to ensure that each Councillor, and the Council, is being kept fully informed, while also acknowledging that these are matters that will also be of interest to the community.

Any matter that is raised in this report as a result of incoming correspondence is to be dealt with as normal business correspondence, but is presented in this bulletin for the information of the Council and the community.

INFORMATION BULLETIN

17.1.1 Current Active Tenders

Note: Information in *italics* has previously been provided to Council, and is again provided for completeness.

EOI02/20 CONSTRUCTION OF BUSSELTON PERFORMING ARTS AND CONVENTION CENTRE

- Requirement the construction of the Busselton Performing Arts and Convention Centre.
- An Expression of Interest was advertised on 11 July 2020 with a closing date of 11 August 2020.
- Seven submissions were received.
- The CEO under delegation has shortlisted all seven respondents as acceptable tenderers.
- The original timeframe for issuing the Request for Tender to the shortlisted tenderers was December 2020, but has since been revised to the first quarter of 2021.

RFT08/20 WEST BUSSELTON SEAWALL REFURBISHMENT

- Requirement refurbishment of approximately 460m of the existing rock seawall along Geographe Bay Road between Bower Street and Earnshaw Road.
- A request for tender was advertised on 28 November 2020 and closed on 22 December 2020.
- Three tenders have been received and are currently being evaluated.
- The value of the contract is likely to exceed the CEO's current delegated authority.
- A report will be presented to Council for consideration at the 24 February 2021 meeting.

RFT09-20 CONSTRUCTION SUPERINTENDENT

- Requirement construction superintendent services for the construction phase of the Busselton Performing Arts and Convention Centre.
- A request for tender was advertised on 9 December 2020 and closed on 12 January 2021.
- The value of the contract was within the CEO's delegated power for accepting tenders (DA 1-07 Inviting, Rejecting and Accepting Tenders).
- 11 tenders have been received.
- Donald Cant Watts Corke (WA) Pty Ltd was selected as preferred tenderer.
- Pursuant to the CEO's delegated power the City entered into a contract with the preferred tenderer.

RFT01-21 MITCHELL PARK UPGRADE

- Requirement a contractor to carry out civil and landscaping works as part of the Mitchell Park Upgrade.
- A request for tender was advertised on 16 January 2021 and closed on 16 February 2021.
- The value of the contract is expected to exceed the CEO's delegated power for accepting tenders (DA 1 07 Inviting, Rejecting and Accepting Tenders).
- A report to Council for deciding which tender to accept will be included in the 24 February 2021 Council meeting agenda.

PQS01/21 PEST AND WEED CONTROL SERVICES

- Requirement: To establish a panel of pre-qualified suppliers for provision of pest and weed control services as follows:
 - Pest and weed control within City urban areas, including road verges, cycleways, footpaths, kerb-lines, drainage infrastructure and public open space.
 - Pest and weed control within City rural areas, including road verges, cycleways, footpaths, kerb-lines, drainage infrastructure and public open space.
 - Inspection of and pest and weed control at various bridge infrastructure managed by the City.
- An invitation to apply was advertised on 6 February 2021 and closed on 23 February 2021.
- Applications will be evaluated and the panel of pre-qualified supplier will be established by the CEO under delegation DA 1-10 Panels of Pre-Qualified Suppliers.

17.1.2 Donations, Contributions and Subsidies Fund – January 2021

0 applications were processed in January 2021.

18. MOTIONS OF WHICH PREVIOUS NOTICE HAS BEEN GIVEN

Nil

19. **URGENT BUSINESS**

20. CONFIDENTIAL MATTERS

Nil

21. CLOSURE