

Redland
CITY COUNCIL

AGENDA

GENERAL MEETING

Wednesday, 17 February 2021
commencing at 9.30am

The Council Chambers
91 - 93 Bloomfield Street
CLEVELAND QLD

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1 DECLARATION OF OPENING

On establishing there is a quorum, the Mayor will declare the meeting open.

Recognition of the Traditional Owners

Council acknowledges the Quandamooka people who are the traditional custodians of the land on which we meet. Council also pays respect to their elders, past and present, and extends that respect to other indigenous Australians who are present.

2 RECORD OF ATTENDANCE AND LEAVE OF ABSENCE

Motion is required to approve leave of absence for any Councillor absent from today's meeting.

3 DEVOTIONAL SEGMENT

Member of the Ministers' Fellowship will lead Council in a brief devotional segment.

4 RECOGNITION OF ACHIEVEMENT

Mayor to present any recognition of achievement items.

5 RECEIPT AND CONFIRMATION OF MINUTES

General Meeting - 20 January 2021

6 DECLARATION OF PRESCRIBED CONFLICT OF INTERESTS AND DECLARABLE CONFLICT OF INTERESTS

Councillors are reminded of their responsibilities in relation to a Councillor's Prescribed Conflict of Interest and Declarable Conflict of Interest at a meeting. For full details see Chapter 5B of the *Local Government Act 2009*.

In summary:

Obligation of Councillor with Prescribed Conflict of Interest

Section 150EL of the *Local Government Act 2009* requires Councillors to declare a Prescribed Conflict of Interest in a matter as soon as they become aware of their interest in the matter, either:

- (1) *at a local government meeting, or*
- (2) *as soon as practicable, by giving the Chief Executive Officer written notice of the prescribed conflict of interest.*
- (3) The declaration must include the following particulars:
 - (a) *For a gift, loan or contract – the value of the gift, loan or contract;*
 - (b) *For an application for which a submission has been made – the matters the subject of the application and submission;*
 - (c) *The name of any entity, other than the Councillor, that has an interest in the matter;*
 - (d) *The nature of the Councillor's relationship with the entity mentioned in (c) above;*
 - (e) *Details of the Councillor's, and any other entity's, interest in the matter.*

Dealing with Prescribed Conflict of Interest at a Meeting

Pursuant to Section 150EM of the *Local Government Act 2009*, if a Councillor declares a Prescribed Conflict of Interest in a matter, ***the Councillor must leave the place at which the meeting is being held, including any area set aside for the public, and stay away from the place while the matter is discussed and voted on.***

Obligation of Councillor with Declarable Conflict of Interest

Section 150EQ of the *Local Government Act 2009* requires Councillors to declare a Declarable Conflict of Interest in a matter as soon as they become aware of their interest in the matter, either:

- (1) *at a local government meeting, or*
- (2) *as soon as practicable, by giving the Chief Executive Officer written notice of the declarable conflict of interest.*
- (3) The declaration must include the following particulars:
 - (a) *The nature of the declarable conflict of interest;*
 - (b) *If the declarable conflict of interest arises because of the councillor's relationship with a related party:*
 - (i) *The name of the related party; and*
 - (ii) *The nature of the relationship of the related party to the Councillor; and*
 - (iii) *The nature of the related party's interests in the matter;*
 - (c) *If the Councillor's or related party's personal interests arise because of the receipt of a gift or loan from another person:*
 - (i) *The name of the other person; and*
 - (ii) *The nature of the relationship of the other person to the Councillor or related party; and*
 - (iii) *The nature of the other person's interests in the matter; and*
 - (iv) *The value of the gift or loan, and the date the gift was given or loan was made.*

Procedure if Councillor has Declarable Conflict of Interest

Pursuant to Section 150ES of the *Local Government Act 2009*, *eligible Councillors at the meeting must, by resolution, decide whether the Councillor who has declared the interest:*

- (1) *May participate in a decision about the matter at the meeting, including by voting on the matter; or*
- (2) *Must leave the place at which the meeting is being held, including any area set aside for the public, and stay away from the place while the eligible Councillors discuss and vote on the matter.*

Duty to report another Councillor's Prescribed Conflict of Interest or Declarable Conflict of Interest

Pursuant to section 150EW of the *Local Government Act 2009*, a Councillor who reasonably believes or reasonably suspects another Councillor has a Prescribed Conflict of Interest or a Declarable Conflict of Interest in a matter must:

- (1) *Immediately inform the person who is presiding at the meeting about the belief or suspicion; or*
- (2) *As soon as practicable, inform the Chief Executive Officer of the belief or suspicion.*

The Councillor must also inform the person presiding, or the Chief Executive Officer, of the facts and circumstances forming the basis of the belief or suspicion.

Record of Prescribed and Declarable Conflicts of Interest

Where a Councillor informs the meeting of a Prescribed or Declarable Conflict of Interest, section 150FA of the *Local Government Act 2009* requires the following information to be recorded in the minutes of the meeting:

- (1) The name of the Councillor who may have a prescribed or declarable conflict of interest in the matter;
- (2) The particulars of the prescribed or declarable conflict of interest;
- (3) If another Councillor informs the meeting of a belief of suspicion, about another Councillor's Conflict of Interest:
 - (a) The action the Councillor takes;
 - (b) Any decision by eligible Councillors; and
 - (c) The name of each eligible Councillor who voted in relation to whether the Councillor has a declarable conflict of Interest, and how each eligible Councillor voted.
- (4) Whether the Councillor participated in deciding the matter, or was present for deciding the matter;
- (5) For a matter to which the Prescribed or Declarable Conflict of Interest relates:
 - (a) *The name of the Councillor who has declared the conflict of interest;*
 - (b) *The nature of the personal interest, as described by the Councillor;*
 - (c) *The decision made;*
 - (d) *Whether the Councillor participated in the meeting under an approval by the Minister;*
 - (e) *If the Councillor voted on the matter, how they voted; and*
 - (f) *How the majority of Councillors voted on the matter.*
- (6) If the Councillor has a Declarable Conflict of Interest, in addition to the information above, the following information must be recorded in the minutes:
 - (a) The decision and reasons for the decision as to whether the Councillor with the Declarable Conflict of Interest may participate in the decision, or must not participate in the decision; and
 - (b) The name of each eligible Councillor who voted on the decision, and how the eligible Councillor voted.

7 MATTERS OUTSTANDING FROM PREVIOUS COUNCIL MEETINGS**7.1 INVESTIGATIONS TO POTENTIALLY ACQUIRE ADDITIONAL LAND FOR SPORT AND RECREATION PURPOSES**

At the General Meeting 18 December 2019 (Item 19.3 refers), Council resolved as follows:

That the petition be received and referred to the Chief Executive Officer for consideration and a report to the local government.

A report will be brought to a future meeting of Council.

7.2 SOUTHERN REDLAND BAY EXPANSION AREA (SRBEA) - CONFIRMING THE PREFERRED APPROACH FOR PLANNING INVESTIGATIONS

At the General Meeting 2 September 2020, (Item 14.3 refers), Council resolved as follows:

That Council resolves that this item lie on the table and be brought back to a future General Meeting of Council.

This report will be removed from the table at a future meeting of Council.

7.3 NOTICE OF MOTION - MAJOR AMENDMENT TO THE CITY PLAN - ENVIRONMENTAL CORRIDORS

At the General Meeting 4 November 2020 (Item 17.1 refers), Council resolved as follows:

That Council resolves as follows:

1. *To undertake an urgent review regarding options to provide an enhanced level of statutory land use planning protection to environmental corridors within the Urban Footprint as identified in the Wildlife Connections Plan 2018-2028.*
2. *To request officers undertake the following:*
 - a) *Prepare a report to Council outlining the findings of the review, as well as recommended changes to City Plan by the end of February 2021.*
 - b) *Prepare a major amendment pursuant to Part 4 of the Minister's Guideline's and Rules under the Planning Act 2016, if required, incorporating the proposed changes to City Plan as supported by Council by the end of May 2021.*
 - c) *Consult with each divisional councillor regarding changes to City Plan that may be recommended.*

A report addressing this matter is listed as Item 14.4 of this agenda.

7.4 OPPORTUNITIES FOR SHORT STAY FACILITIES FOR SELF-CONTAINED RECREATIONAL VEHICLES AND CARAVANS ON REDLANDS COAST

At the General Meeting 18 November 2020 (Item 15.2 refers), Council resolved as follows:

That Council resolves as follows:

1. *To note the contents of the report including:*
 - a) *The assessment criteria used to determine suitable sites at Attachment 3 – Essential and Desirable Criteria.*
 - b) *The assessment of all identified sites at Attachment 4 – Site Suitability Assessment.*
 - c) *The preferred sites at Attachment 5 – Preferred Sites.*
2. *That a report be brought back to Council with further details including the preferred operational model and indicative costs of minor infrastructure for the preferred sites.*
3. *To endorse the undertaking of an economic needs assessment for short stay, non-commercial camping of self-contained RVs and caravans in Redlands Coast within four (4) months, subject to budget approval.*
4. *To communicate the current opportunities and limitations for not-for-profit and community based organisations to provide for short stay basic camping ground options in Redlands Coast for self-contained RVs and caravans.*

A report will be brought to a future meeting of Council.

7.5 REDLANDS ECONOMIC DEVELOPMENT ADVISORY BOARD UPDATE

At the General Meeting 2 December 2020 (Item 14.4 refers), Council resolved as follows:

That Council resolves as follows:

1. *To note this report.*
2. *To note the Redlands Economic Development Advisory Board Annual Report 2019-20 (Attachment 1).*
3. *To note that officers will undertake a review of the Redlands Economic Development Advisory Board and provide a further report to Council.*

A report will be brought to a future meeting of Council.

7.6 NOTICE OF MOTION - REQUEST AMENDMENTS TO LOCAL LAW 2 (ANIMAL MANAGEMENT) 2015, SUBORDINATE LOCAL LAW 2 (ANIMAL MANAGEMENT) 2015 AND SUBORDINATE LOCAL LAW 1.5 (KEEPING OF ANIMALS) 2015

At the General Meeting 2 December 2020 (Item 17.1 refers), Council resolved as follows:

That Council resolves as follows:

1. *To request officers prepare a report to Council regarding the existing prohibition on the number of dogs that can be kept on a property. The report will outline the options available to change the number of dogs allowable on a property, to include:*

Option 1 – Activity based assessment:

- a) Benchmarking with other Councils will be undertaken.*
- b) Flexibility on number of dogs for specific activities i.e. Show dogs and foster providers.*

Option 2 – Number of dogs permitted based on property size:

- a) Benchmarking with other Councils will be undertaken.*
- b) Property size and zoning considerations.*

Option 3 – existing criteria modifications

The current local laws provide for a three dog permit, the next available option is a kennel permit. Consideration to be given to additional steps in between based on assessment criteria.

The following Local Laws will require amendments to accommodate a change in the number of dogs permitted on a property.

- a) Local Law No. 2 (Animal Management) 2015.*
- b) Subordinate Local Law No. 2 (Animal Management) 2015*
- c) Subordinate Local Law No 1.5 (Keeping of Animals) 2015*

2. *To request officers to include in the report options available for cat registrations:*

Option 1 – Reduction in registration fees for compliant owners

Owners who are able to demonstrate responsible cat ownership:

- a) Cat enclosures*
- b) Fence rollers*
- c) Other deterrents*

Option 2 – Stepped increase in registration fees for non-compliant owners

Potential to increase the registration fees where:

- a) Complaints have been received about the cat i.e. straying*
- b) Process to subsequently reduce the fee when compliance is achieved.*

3. *That the report be brought to a General Meeting of Council prior to the close of Quarter One, 2021.*

A report will be brought to a future meeting of Council.

7.7 EXPRESSIONS OF INTEREST CAMPAIGN - REDLANDS COAST TOURIST AND COMMUNITY DESTINATION, MACARTHUR ST, ALEXANDRA HILLS

At the General Meeting 2 December 2020 (Item 19.2 refers), Council resolved as follows:

That Council resolves as follows:

- 1. To note the outcomes of the Expressions of Interest Campaign for a Tourist Park and associated community uses that has now finished, and that no tourism-related proposals were received.*
- 2. To hold discussions with proponents of non-tourism related purposes to understand how other proposals may fit into the planning for development of the land that align with Council's policies and plans.*
- 3. To workshop with Councillors, the outcome of these discussions.*
- 4. To provide a further report to Council in regards to the site upon completion of item 3 above.*
- 5. That this report and attachments remain confidential to ensure proposed commercial arrangements and details pertaining to individuals are kept private, subject to maintaining the confidentiality of legally privileged and commercial in confidence information.*

A report will be brought to a future meeting of Council.

7.8 REPORT REVIEWING THE FUTURE OPERATIONS OF REDLAND INVESTMENT CORPORATION PTY LTD (RIC)

At the General Meeting 16 December 2020 (Item 19.1 refers), Council resolved as follows:

That Council resolves to request the Chief Executive Officer to:

- 1. Review the objectives of Redland Investment Corporation and develop options for an operating model that supports Council's future economic development and place-making projects.*
- 2. Undertake a review of Council's Economic Development Advisory Board in conjunction with this review.*
- 3. Prepare a report for Council by 30 June 2021 that positions Redland Investment Corporation or an alternative structure to drive the Redlands Coast economic recovery and more generally its longer term economic development.*
- 4. Note this report will be published with the meeting minutes, subject to maintaining Attachment 1, Redland Investment Corporation Commercial Summary, as confidential and commercial in confidence.*

A report will be brought to a meeting of Council by 30 June 2021.

7.9 NOTICE OF MOTION - CR BOGLARY - INVESTIGATION INTO THE PURCHASE OF CONSERVATION LAND

At the General Meeting 20 January 2021 (Item 17.1 refers), Council resolved as follows:

That Council resolves that a confidential report be tabled at a future General Meeting of Council, investigating the purchase of conservation land.

A report will be brought to a future meeting of Council.

8 MAYORAL MINUTE

In accordance with s.6.9 of Council Meeting Standing Orders, the Mayor may put to the meeting a written motion called a 'Mayoral Minute', on any matter. Such motion may be put to the meeting without being seconded, may be put at that stage in the meeting considered appropriate by the Mayor and once passed becomes a resolution of Council.

9 PUBLIC PARTICIPATION

There will be no Public Participation as this meeting is closed to the public, as a result of COVID-19 Pandemic social restrictions and regulation changes.

10 PETITIONS AND PRESENTATIONS

Councillors may present petitions or make presentations under this section.

10.1 PETITION CR ROWANNE MCKENZIE – INSTALL A PARK SHELTER IN CHANTELE COURT PARK, CAPALABA

In accordance with s.6.11 of Council Meeting Standing Orders, Cr Rowanne McKenzie will present the petition and motion as follows:

That the petition is of an operational nature and be received and referred to the Chief Executive Officer for consideration.

11 MOTION TO ALTER THE ORDER OF BUSINESS

The order of business may be altered for a particular meeting where the Councillors at that meeting pass a motion to that effect. Any motion to alter the order of business may be moved without notice.

12 REPORTS FROM THE OFFICE OF THE CEO

Nil

13 REPORTS FROM ORGANISATIONAL SERVICES

13.1 JANUARY 2021 MONTHLY FINANCIAL REPORT

Objective Reference:

Authorising Officer: Deborah Corbett-Hall, Chief Financial Officer

Responsible Officer: Deborah Corbett-Hall, Chief Financial Officer

Report Author: Udaya Panambala Arachchilage, Corporate Financial Reporting Manager

Attachments: 1. January 2021 Monthly Financial Report [↓](#)

PURPOSE

To note the year to date financial results as at 31 January 2021.

BACKGROUND

Council adopts an annual budget and then reports on performance against the budget on a monthly basis. This is not only a legislative requirement but enables the organisation to periodically review its financial performance and position and respond to changes in community requirements, market forces or other outside influences.

ISSUES

Capital carryover budget 2019-20

Council adopted a carryover budget on 19 August 2020 to accommodate capital works straddling two financial years. The attached monthly financial report for January includes the carryover budget adopted by Council.

2020-21 Budget review

Submissions for the budget review have been completed. The 2020-21 revised budget is tabled for Council's consideration at the February 2021 General Meeting.

STRATEGIC IMPLICATIONS

Council has either achieved or favourably exceeded the following key financial stability and sustainability ratios as at the end of January 2021.

- Operating surplus ratio
- Net financial liabilities
- Ability to pay our bills – current ratio
- Ability to repay our debt – debt servicing ratio
- Cash balance
- Cash balances – cash capacity in months
- Longer term financial stability – debt to asset ratio
- Operating performance
- Interest coverage ratio

The following ratios did not meet the target at the end of January 2021:

- Asset sustainability ratio
- Level of dependence on general rate revenue

The asset sustainability ratio did not meet the target at the end of January 2021 and continues to be a stretch target for Council with renewal spends of \$12.35M and depreciation expense of \$33.10M year to date on infrastructure assets. This ratio is an indication of how Council currently maintains, replaces and renews its existing infrastructure assets as they reach the end of their useful lives. Capital spend on non-renewal projects increases the asset base and therefore increases depreciation expense, resulting in a lower asset sustainability ratio.

Council's Capital Portfolio Prioritisation Administrative Directive demonstrates its commitment to maintaining existing infrastructure and the adoption of a renewal strategy for its existing assets ahead of 'upgrade' and/or 'new' works.

The level of dependence on general rate revenue ratio moves in line with the rating cycle and for January 2021 it is 40.85% which is slightly outside the target range of less than 40%. Increases in this ratio are expected to be cyclical and will occur in the months where the quarterly rates are levied.

Legislative Requirements

The January 2021 financial reports are presented in accordance with the legislative requirement of section 204(2) of the *Local Government Regulation 2012*, requiring the Chief Executive Officer to present the financial report to a monthly Council meeting.

Risk Management

The January 2021 financial reports have been noted by the Executive Leadership Team and relevant officers who can provide further clarification and advice around actual to budget variances.

Financial

There is no direct financial impact to Council as a result of this report; however it provides an indication of financial outcomes at the end of January 2021.

People

Nil impact expected as the purpose of the attached report is to provide financial information to Council based upon actual versus budgeted financial activity.

Environmental

Nil impact expected as the purpose of the attached report is to provide financial information to Council based upon actual versus budgeted financial activity.

Social

Nil impact expected as the purpose of the attached report is to provide financial information to Council based upon actual versus budgeted financial activity.

Human Rights

There are no human rights implications for this report as the purpose of the attached report is to provide financial information to Council based upon actual versus budgeted financial activity.

Alignment with Council's Policy and Plans

This report has a relationship with the following items of Council's 2018-2023 Corporate Plan:

8. Inclusive and ethical governance

Deep engagement, quality leadership at all levels, transparent and accountable democratic processes and a spirit of partnership between the community and Council will enrich residents' participation in local decision-making to achieve the community's Redlands 2030 vision and goals.

8.2 Council produces and delivers against sustainable financial forecasts as a result of best practice Capital and Asset Management Plans that guide project planning and service delivery across the city.

CONSULTATION

Consulted	Date	Comment
Council departmental officers	Year to date January 2021	Consulted on financial results and outcomes
Financial Services Group officers	Year to date January 2021	Consulted on financial results and outcomes
Executive Leadership Team and Senior Leadership Team	Year to date January 2021	Recipients of variance analysis between actual and budget. Consulted as required

OPTIONS**Option One**

That Council resolves to note the financial position, results and ratios for January 2021 as presented in the attached Monthly Financial Report.

Option Two

That Council resolves to request additional information.

OFFICER'S RECOMMENDATION

That Council resolves to note the financial position, results and ratios for January 2021 as presented in the attached Monthly Financial Report.



Monthly Financial Report

January 2021



Monthly Financial Report

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1. EXECUTIVE SUMMARY

This monthly report illustrates the financial performance and position of Redland City Council compared to its adopted budget at an organisational level for the period ended 31 January 2021. The year to date and annual revised budget referred to in this report incorporates the changes from budget capital carryovers adopted by Council on 19 August 2020.

Key Financial Highlights and Overview

Key Financial Results (\$000)	Annual Revised Budget	YTD Revised Budget	YTD Actual	YTD Variance	YTD Variance %	Status Favourable ✓ Unfavourable ✗
Operating Surplus / (Deficit)	(1,473)	19,074	25,633	6,559	34%	✓
Recurrent Revenue	304,795	194,661	192,921	(1,740)	-1%	✗
Recurrent Expenditure	306,268	175,587	167,288	(8,299)	-5%	✓
Capital Works Expenditure	91,150	28,314	24,038	(4,276)	-15%	✓
Closing Cash & Cash Equivalents	171,713	186,658	181,328	(5,330)	-3%	✗

Council reported a year to date operating surplus of \$25.63M which is favourable to budget by \$6.56M due to less than budget recurrent expenditure. The favourable variance in recurrent expenditure is mainly due to timing of contractor cost expenditure. Of note, interest income is lower than budget due to lower than expected interest rates on investments.

Capital grants, subsidies and contributions are below budget due to timing of developer cash contributions.

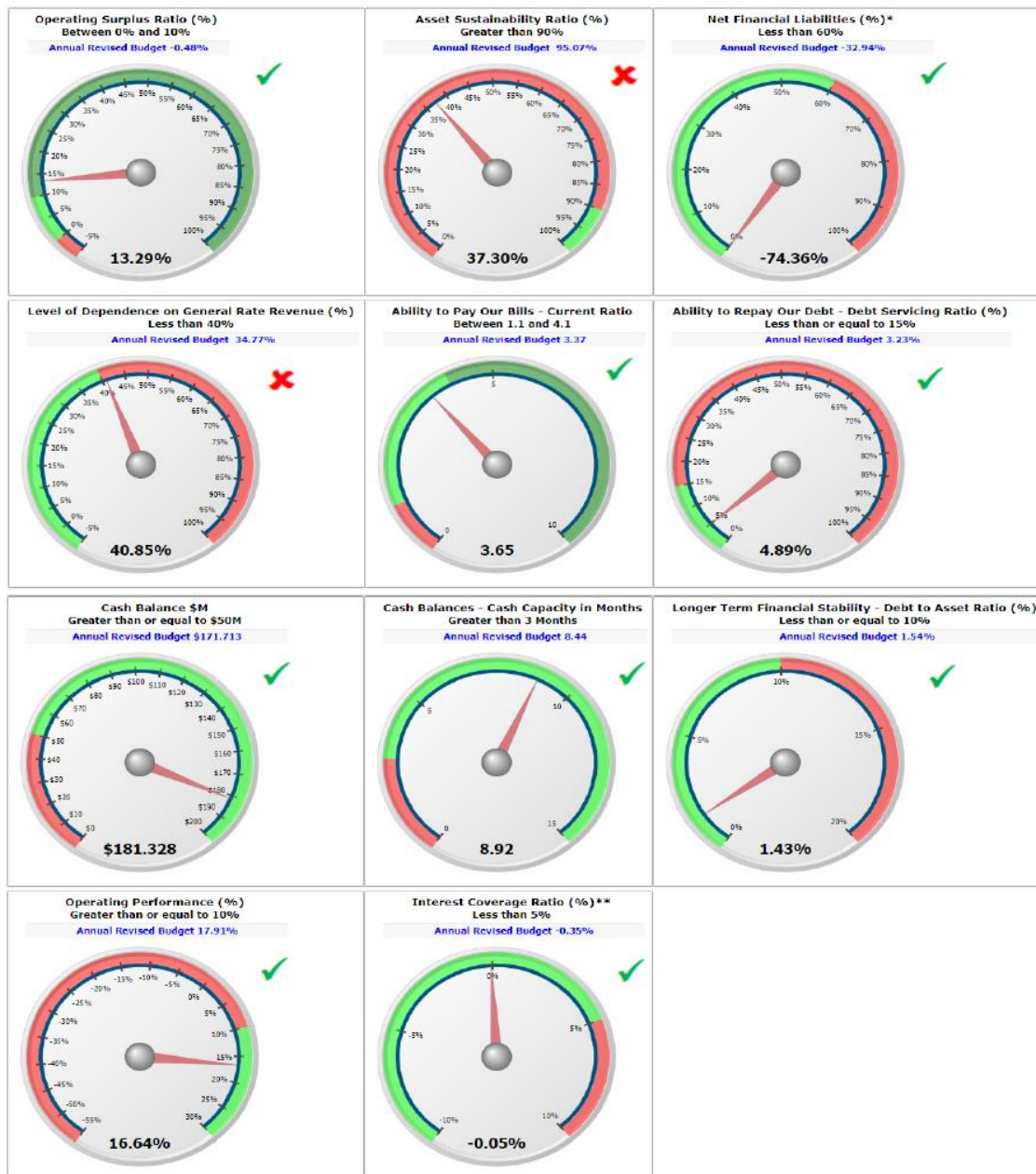
Council's capital works expenditure is below budget by \$4.28M mainly due to timing of works for a number of infrastructure projects including RPAC Pile Wind Hoist Renewal Project, SES Compound Redland Bay and Roads To Recovery - Queen St Cleveland. The variance is also due to timing of procurement for the Fleet Replacement Program and Annual Desktop Replacement Program.

Constrained cash reserves represent 58% of the cash balance.

Monthly Financial Report

2. KEY PERFORMANCE INDICATORS

■ Target met
 ■ Target exceeded
 ■ Target not met



* The net financial liabilities ratio exceeds the target range when current assets are greater than total liabilities (and the ratio is negative)

** The interest coverage ratio exceeds the target range when interest revenue is greater than interest expense (and the ratio is negative)

Monthly Financial Report

3. STATEMENT OF COMPREHENSIVE INCOME

STATEMENT OF COMPREHENSIVE INCOME					
For the period ending 31 January 2021					
	Annual	Annual	YTD	YTD	YTD
	Original Budget \$000	Revised Budget \$000	Revised Budget \$000	Actual \$000	Variance \$000
Recurrent revenue					
Rates charges	108,926	108,926	81,463	81,058	(405)
Levies and utility charges	160,082	160,082	94,642	93,397	(1,245)
Less: Pensioner remissions and rebates	(3,430)	(3,430)	(2,518)	(2,603)	(85)
Fees	13,554	13,554	7,912	8,754	842
Rental income	956	956	463	616	153
Interest received	2,999	2,999	1,750	1,240	(510)
Sales revenue	3,630	3,630	2,322	1,957	(365)
Other income	533	533	393	911	518
Grants, subsidies and contributions	14,896	17,545	8,234	7,591	(643)
Total recurrent revenue	302,146	304,795	194,661	192,921	(1,740)
Recurrent expenses					
Employee benefits	91,988	92,088	54,266	53,464	(802)
Materials and services	145,591	148,140	82,716	76,021	(6,695)
Finance costs	2,382	2,382	1,381	1,397	16
Depreciation and amortisation	64,938	64,938	37,942	37,511	(431)
Other expenditure	520	520	319	171	(148)
Net internal costs	(1,800)	(1,800)	(1,037)	(1,276)	(239)
Total recurrent expenses	303,619	306,268	175,587	167,288	(8,299)
OPERATING SURPLUS / (DEFICIT)	(1,473)	(1,473)	19,074	25,633	6,559
Capital revenue					
Grants, subsidies and contributions	25,922	32,449	15,372	9,710	(5,662)
Non-cash contributions	3,480	3,480	48	-	(48)
Total capital revenue	29,402	35,930	15,420	9,710	(5,710)
Capital expenses					
(Gain) / loss on disposal of non-current assets	289	289	168	607	439
Total capital expenses	289	289	168	607	439
TOTAL INCOME	331,548	340,725	210,081	202,631	(7,450)
TOTAL EXPENSES	303,908	306,557	175,755	167,895	(7,860)
NET RESULT	27,641	34,168	34,326	34,736	410
Other comprehensive income / (loss)					
Items that will not be reclassified to a net result					
Revaluation of property, plant and equipment	-	-	-	-	-
TOTAL COMPREHENSIVE INCOME	27,641	34,168	34,326	34,736	410

Monthly Financial Report

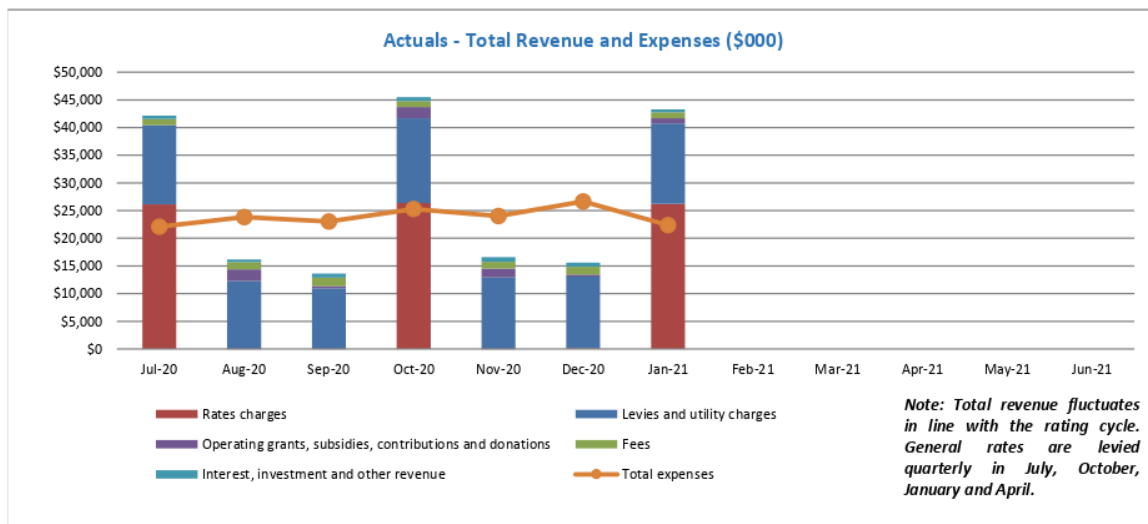
3. STATEMENT OF COMPREHENSIVE INCOME - CONTINUED

LEVIES AND UTILITY CHARGES ANALYSIS					
For the period ending 31 January 2021					
	Annual	Annual	YTD	YTD	YTD
	Original	Revised	Revised Budget	Actual	Variance
	Budget	Budget	\$000	\$000	\$000
	\$000	\$000			
Levies and utility charges					
Refuse collection rate charge	29,127	29,127	16,903	17,058	155
SES separate charge	497	497	372	371	(1)
Environment separate charge	8,387	8,388	6,290	6,257	(33)
Separate charge landfill remediation	2,163	2,163	1,258	1,255	(3)
Wastewater charges	47,842	47,842	27,838	27,679	(159)
Water access charges	20,120	20,120	11,699	11,703	4
Water consumption charges	51,945	51,945	30,282	29,074	(1,208)
Total levies and utility charges	160,082	160,082	94,642	93,397	(1,245)

MATERIALS AND SERVICES ANALYSIS					
For the period ending 31 January 2021					
	Annual	Annual	YTD	YTD	YTD
	Original	Revised	Revised Budget	Actual	Variance
	Budget	Budget	\$000	\$000	\$000
	\$000	\$000			
Materials and services					
Contractors	38,549	39,195	21,777	18,514	(3,263)
Consultants	2,813	3,332	1,832	956	(876)
Other Council outsourcing costs*	23,063	21,918	11,453	11,031	(422)
Purchase of materials	53,059	55,336	30,899	30,958	59
Office administration costs	11,685	11,748	6,909	6,326	(583)
Electricity charges	5,748	5,748	3,365	3,135	(230)
Plant operations	3,548	3,548	1,976	1,664	(312)
Information technology resources	3,067	3,302	1,934	1,637	(297)
General insurance	1,646	1,611	945	773	(172)
Community assistance**	1,777	1,768	1,227	694	(533)
Other material and service expenses	636	634	399	333	(66)
Total materials and services	145,591	148,140	82,716	76,021	(6,695)

* Other Council outsourcing costs are various outsourced costs including refuse collection and disposal, waste disposal, legal services, traffic control, external training, valuation fees, etc.

** Community assistance costs represent community related costs including community grants, exhibitions and awards, donations and sponsorships.



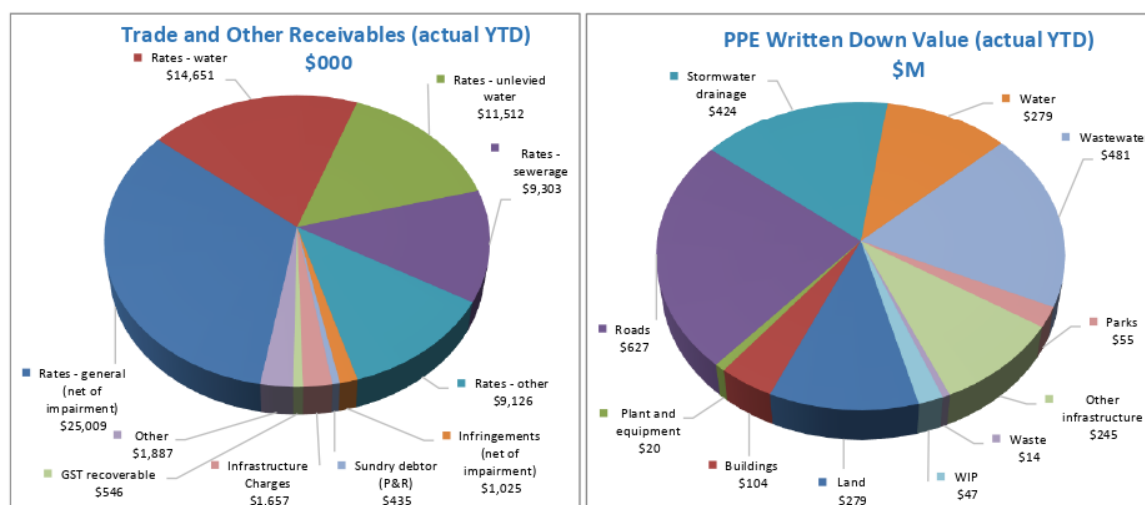
Monthly Financial Report

4. STATEMENT OF FINANCIAL POSITION

STATEMENT OF FINANCIAL POSITION As at 31 January 2021				
	Annual	Annual	YTD	YTD
	Original Budget \$000	Revised Budget \$000	Revised Budget \$000	Actual \$000
CURRENT ASSETS				
Cash and cash equivalents	169,264	171,713	186,658	181,328
Trade and other receivables	45,924	45,900	82,360	75,151
Inventories	918	853	865	812
Non-current assets held for sale	-	118	118	-
Other current assets	1,955	2,956	2,956	2,818
Total current assets	218,061	221,539	272,957	260,109
NON-CURRENT ASSETS				
Investment property	1,091	1,225	1,225	1,225
Property, plant and equipment	2,572,288	2,617,957	2,578,657	2,574,983
Intangible assets	486	1,682	1,866	1,775
Right-of-use assets	5,919	5,911	6,356	6,297
Other financial assets	73	73	73	73
Investment in other entities	13,101	13,101	13,101	13,101
Total non-current assets	2,592,958	2,639,948	2,601,278	2,597,454
TOTAL ASSETS	2,811,018	2,861,487	2,874,235	2,857,563
CURRENT LIABILITIES				
Trade and other payables	28,839	41,895	46,529	29,093
Borrowings - current	6,361	8,326	8,326	8,326
Lease liability - current*	1,302	1,294	1,294	1,294
Provisions - current	10,769	12,188	13,115	13,801
Other current liabilities	-	1,960	18,871	18,657
Total current liabilities	47,271	65,663	88,135	71,171
NON-CURRENT LIABILITIES				
Borrowings - non-current	37,900	35,840	25,482	25,486
Lease liability - non-current*	5,481	5,481	5,957	5,835
Provisions - non-current	15,120	14,162	14,162	14,162
Total non-current liabilities	58,501	55,483	45,601	45,483
TOTAL LIABILITIES	105,772	121,146	133,736	116,654
NET COMMUNITY ASSETS	2,705,246	2,740,341	2,740,499	2,740,909
COMMUNITY EQUITY				
Asset revaluation surplus	1,008,120	1,035,840	1,035,840	1,035,840
Retained surplus	1,580,316	1,597,694	1,594,422	1,599,225
Constrained cash reserves	116,810	106,807	110,237	105,844
TOTAL COMMUNITY EQUITY	2,705,246	2,740,341	2,740,499	2,740,909

Monthly Financial Report

4. STATEMENT OF FINANCIAL POSITION - CONTINUED



RIGHT-OF-USE ASSETS For the period ending 31 January 2021				
	Annual Original Budget \$000	Annual Revised Budget \$000	YTD Revised Budget \$000	YTD Actual Balance \$000
Right-of-use asset				
Buildings	2,780	2,697	2,955	2,969
Land	2,763	2,847	3,013	2,999
Plant and Equipment	376	367	388	329
Closing balance	5,919	5,911	6,356	6,297

PROPERTY, PLANT AND EQUIPMENT (PPE) MOVEMENT* For the period ending 31 January 2021				
	Annual Original Budget \$000	Annual Revised Budget \$000	YTD Revised Budget \$000	YTD Actual Balance \$000
PPE movement				
Opening balance (includes WIP from previous years)	2,556,325	2,588,458	2,588,458	2,588,458
Acquisitions and WIP in year movement	81,096	94,632	28,361	24,038
Depreciation in year	(63,282)	(63,282)	(36,914)	(36,334)
Disposals	(1,851)	(1,851)	(1,248)	(1,182)
Other adjustments**	-	-	-	3
Closing balance	2,572,288	2,617,957	2,578,657	2,574,983

* This table includes movement relating to property, plant and equipment only and is exclusive of intangible assets.

** Other adjustments include transfers between asset classes, revaluation adjustments, prior period adjustments and depreciation thereon.

Monthly Financial Report

5. STATEMENT OF CASH FLOWS

STATEMENT OF CASH FLOWS For the period ending 31 January 2021				
	Annual Original Budget \$000	Annual Revised Budget \$000	YTD Revised Budget \$000	YTD Actual \$000
CASH FLOWS FROM OPERATING ACTIVITIES				
Receipts from customers	276,486	276,486	157,721	161,218
Payments to suppliers and employees	(239,435)	(242,084)	(133,625)	(140,171)
	37,051	34,402	24,096	21,047
Interest received	2,999	2,999	1,750	1,240
Rental income	956	956	463	616
Non-capital grants and contributions	14,483	17,132	7,926	7,627
Borrowing costs	(2,052)	(2,052)	(2,052)	(2,048)
Right-of-use assets interest expense	(144)	(144)	(85)	(85)
Net cash inflow / (outflow) from operating activities	53,294	53,294	32,098	28,397
CASH FLOWS FROM INVESTING ACTIVITIES				
Payments for property, plant and equipment	(77,614)	(91,150)	(28,314)	(24,038)
Proceeds from sale of property, plant and equipment	1,562	1,562	1,080	693
Capital grants, subsidies and contributions	25,922	34,149	17,072	11,685
Net cash inflow / (outflow) from investing activities	(50,131)	(55,439)	(10,162)	(11,660)
CASH FLOWS FROM FINANCING ACTIVITIES				
Proceeds of borrowings	9,612	9,612	-	-
Repayment of borrowings	(6,361)	(6,361)	(6,361)	(6,369)
Right-of-use lease payment	(1,294)	(1,294)	(818)	(941)
Net cash inflow / (outflow) from financing activities	1,957	1,957	(7,179)	(7,310)
Net increase / (decrease) in cash held	5,120	(188)	14,757	9,427
Cash and cash equivalents at the beginning of the year	164,145	171,901	171,901	171,901
Cash and cash equivalents at the end of the financial year / period	169,264	171,713	186,658	181,328

Cash Inflow (actual YTD)

Category	Percentage
Utility charges	48%
Rates charges	33%
Other cash receipts	2%
Capital grants, subsidies and contributions	6%
Interest received	1%
Operating grants and contributions	4%
Fees	6%

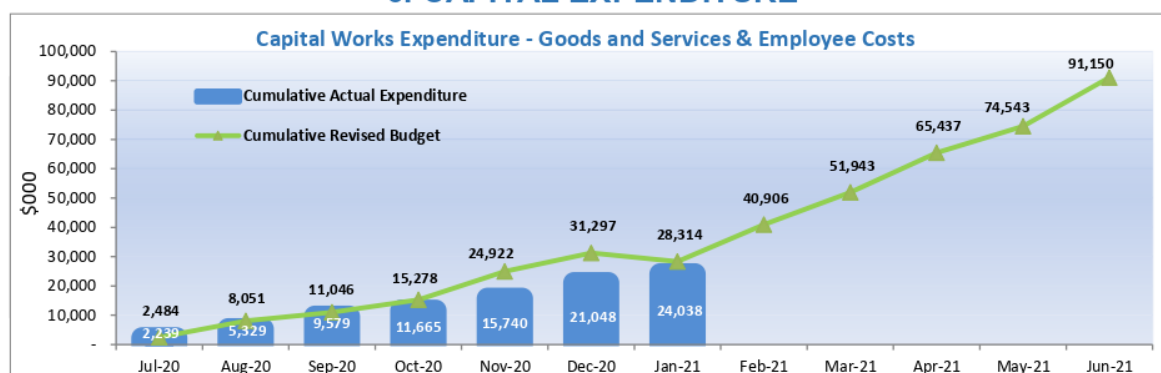
Cash Outflow (actual YTD)

Category	Percentage
Materials and services	48%
Employee costs	33%
Repayment of borrowings	4%
Payments for property, plant and equipment	14%
Borrowing costs	1%

Total Cash Funding (Actual YTD)	183,079	Total Cash Expenditure (Actual YTD)	173,652
Total Cash Funding (Annual Revised Budget)	342,897	Total Cash Expenditure (Annual Revised Budget)	343,085
% of Budget Achieved YTD	53%	% of Budget Achieved YTD	51%

Monthly Financial Report

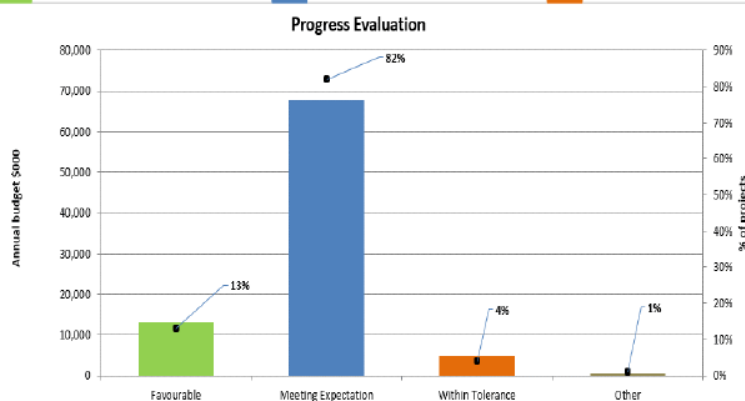
6. CAPITAL EXPENDITURE



	Annual Revised Budget \$'000	YTD Revised Budget \$'000	YTD Actual \$'000	YTD Variance \$'000
Capitalised goods and services	82,717	23,681	19,980	(3,701)
Capitalised employee costs	8,433	4,633	4,058	(575)
Total	91,150	28,314	24,038	(4,276)

7. PROGRAM AND PROJECT UPDATE

Favourable (budget under/schedule on track)	Meeting expectations (budget and schedule on track)	Within tolerance (either budget and schedule not on track)	Other (Schedule to be tracked)
--	--	--	-----------------------------------



Programs and projects are what Council uses to introduce change to achieve corporate outcomes. They allow new infrastructure, products, systems, procedures and services to be delivered. Projects may be undertaken on a standalone basis or as part of a program. Programs and projects may span multiple financial years.

Council is currently progressing more than 100 programs and projects.

Notable Projects

The status of two notable projects are as follows:

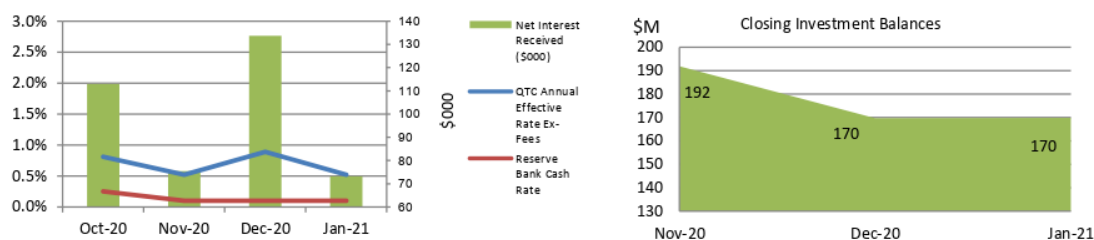
Project description	Progress
Kinross Road Development Sewer Trunk Infrastructure - This project includes the elimination/decommissioning of Sewage Pump Station (SPS) 147 and a new connection line to the gravity network of SPS 86. The sewage load from the Kinross Development and the existing SPS 147 catchment is proposed to flow to SPS 86 via a gravity network.	Within Tolerance
Pathway & Community Safety Lighting Program - This project will provide increased lighting on RCC Footpaths and cycle ways.	Meeting Expectations

Monthly Financial Report

8. INVESTMENT & BORROWINGS REPORT

For the period ending 31 January 2021

INVESTMENT RETURNS - QUEENSLAND TREASURY CORPORATION (QTC)



Total QTC Investment at End of Month was \$169.81M

Council investments are currently held predominantly in the Capital Guaranteed Cash Fund, which is a fund operated by the Queensland Treasury Corporation (QTC). In October 2020 \$10M was invested in a term deposit of Commonwealth Bank of Australia (CBA) to maximise interest earnings.

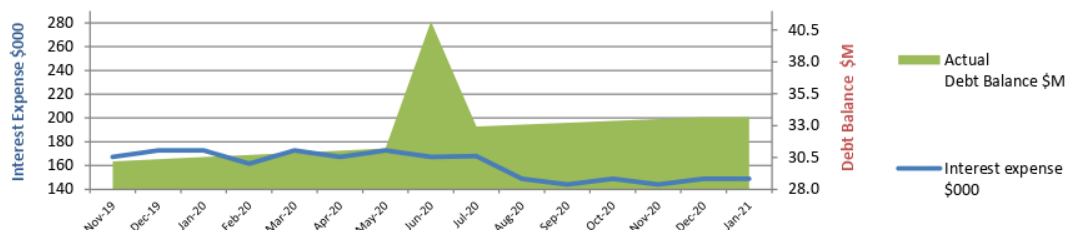
The movement in interest earned is indicative of both the interest rate and the surplus cash balances held, the latter of which is affected by business cash flow requirements on a monthly basis as well as the rating cycle.

Note: the Reserve Bank reduced the cash rate down to 0.10% during November 2020.

On a daily basis, cash surplus to requirements is deposited with QTC to earn higher interest as QTC is offering a higher rate than what is achieved from Council's transactional bank accounts. The current annual effective interest rate paid by QTC is 0.52%. Term deposit rates are being monitored to identify investment opportunities to ensure Council maximises its interest earnings.

Council adopted its Investment Policy (POL-3013) in June 2020 for the 2020/2021 financial year

BORROWINGS AND BORROWING COSTS (QTC)



The existing loan accounts were converted to fixed rate loans on 1 April 2016 following a QTC restructure of loans and policies. In line with Council's debt policy, debt repayment of \$8.42M, being \$6.37M principal and \$2.05M interest has been made *annually* for 2020/2021 which will result in the loans being repaid approximately one year earlier.

The debt balance shows a decrease as the Annual Debt Service Payment (ADSP) was made during July 2020. Interest will accrue monthly on a daily balance until next ADSP in July 2021 which is reflected in the increasing debt balance.

In June 2020 additional borrowings of \$9.80M were undertaken as part of Council's Capital Works Plan.

Total Borrowings at End of Month were \$33.81M

Council adopted its Debt Policy (POL-1838) in June 2020 for the 2020/2021 financial year

BORROWINGS
For the period ending 31 January 2021

	Annual Original Budget \$'000	Annual Revised Budget \$'000	YTD Revised Budget \$'000	YTD Actual Balance \$'000
Borrowings				
Opening balance	(41,273)	(41,178)	(41,178)	(41,178)
Accrued interest on borrowings	(1,789)	(1,789)	(1,043)	(1,051)
Interest paid on borrowings	2,052	2,052	2,052	2,048
Principal repaid	6,361	6,361	6,361	6,369
Loan drawdown	(9,612)	(9,612)	-	-
Closing balance	(44,261)	(44,166)	(33,808)	(33,812)

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9. CONSTRAINED CASH RESERVES

Reserves as at 31 January 2021	Purpose of reserve	Opening Balance	To Reserve	From Reserve	Closing Balance
		\$000	\$000	\$000	\$000
Special Projects Reserve:					
Aquatic Paradise Revetment Wall Reserve	To fund Aquatic Paradise revetment wall works program	2	20	(1)	21
Weinam Creek Reserve	Maintenance and improvements associated with Weinam Creek projects	-	308	(303)	5
Waste Levy Reserve	To fund Waste Levy Program	-	3,276	(2,385)	891
Raby Bay Revetment Wall Reserve	To fund Raby Bay revetment wall works program	2,093	2,136	(373)	3,856
Fleet Plant & Capital Equipment Reserve	To support the long term fleet replacement program	2,536	682	(633)	2,585
		4,631	6,422	(3,695)	7,358
Constrained Works Reserve:					
Public Parks Trunk Infrastructure Reserve	Capital projects for public parks trunk infrastructure	6,662	1,179	(659)	7,182
Land for Community Facilities Trunk Infrastructure Reserve	Land for community facilities trunk infrastructure	3,086	955	-	4,041
Water Supply Trunk Infrastructure Reserve	Upgrade, expansion or new projects for water supply trunk infrastructure	14,626	106	-	14,732
Sewerage Trunk Infrastructure Reserve	Upgrade, expansion or new projects for sewerage trunk infrastructure	10,909	1,024	(1,354)	10,579
Local Roads Trunk Infrastructure Reserve	Capital projects for local roads trunk infrastructure	33,731	2,960	(766)	35,925
Cycleways Trunk Infrastructure Reserve	Capital projects for cycleways trunk infrastructure	11,923	1,103	(144)	12,882
Stormwater Trunk Infrastructure Reserve	Capital projects for stormwater trunk infrastructure	10,842	367	(1,478)	9,731
Tree Planting Reserve	Acquisition and planting of trees on footpaths	103	50	(4)	149
Koala Tree off-set Planting Reserve	Acquisition and planting of trees for koala habitat	12	-	(12)	-
		91,894	7,744	(4,417)	95,221
Separate Charge Reserve:					
Environment Charge Maintenance Reserve	Ongoing conservation and maintenance operations	-	6,257	(4,024)	2,233
SES Separate Charge Reserve	On-going costs of maintaining the Redland SES	38	371	(234)	175
		38	6,628	(4,258)	2,408
Special Charge Reserve - Canals:					
Aquatic Paradise Canal Reserve*	Maintenance and repairs of Aquatic Paradise canals	758	-	-	758
Sovereign Waters Lake Reserve*	Maintenance and repairs of Sovereign Lake	431	-	-	431
1718 Raby Bay Canal Reserve	Service, facility or activity of works in respect of the canals of the Raby Bay canal estate	219	-	-	219
1718 Aquatic Paradise Canal Reserve	Service, facility or activity of works in respect of the canals of the Aquatic Paradise canal estate	(495)	-	-	(495)
1718 Sovereign Waters Lake Reserve	Service, facility or activity of works in respect of the lake	(56)	-	-	(56)
		857	-	-	857
TOTALS		97,420	20,794	(12,370)	105,844
		Closing cash and cash equivalents			181,328
		Reserves as percentage of cash balance			58%

*No interest charged for these reserves January 2021 year to date due to low prevailing interest rate.

Monthly Financial Report

10. CITY WATER STATEMENTS

CITY WATER SUMMARY OPERATING STATEMENT					
For the period ending 31 January 2021					
	Annual Original Budget \$000	Annual Revised Budget \$000	YTD Revised Budget \$000	YTD Actual \$000	YTD Variance \$000
Total revenue	122,970	122,970	71,946	70,366	(1,580)
Total expenses	71,469	71,469	41,240	40,953	(287)
Earnings before interest, tax and depreciation (EBITD)	51,501	51,501	30,706	29,413	(1,293)
External interest expense	71	71	41	65	24
Internal interest expense	10,621	10,621	6,196	6,196	-
Depreciation	24,142	24,142	14,083	14,008	(75)
Operating surplus / (deficit)	16,667	16,667	10,386	9,144	(1,242)

CITY WATER CAPITAL FUNDING STATEMENT					
For the period ending 31 January 2021					
	Annual Original Budget \$000	Annual Revised Budget \$000	YTD Revised Budget \$000	YTD Actual \$000	YTD Variance \$000
Capital contributions, donations, grants and subsidies	2,537	2,537	1,480	1,130	(350)
Net transfer (to) / from constrained capital reserves	(2,365)	(374)	(7)	159	166
Non-cash contributions	3,399	3,399	-	-	-
Funding from utility revenue	8,568	10,151	2,696	995	(1,701)
Total sources of capital funding	12,138	15,714	4,169	2,284	(1,885)
Contributed assets	3,399	3,399	-	-	-
Capitalised expenditure	8,258	11,833	3,888	1,526	(2,362)
Loan redemption	482	482	281	758	477
Total application of capital funds	12,138	15,714	4,169	2,284	(1,885)

11. CITY WASTE STATEMENTS

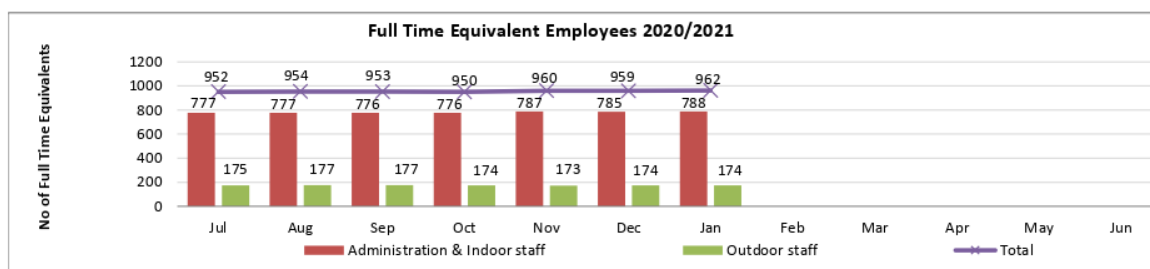
CITY WASTE OPERATING STATEMENT					
For the period ending 31 January 2021					
	Annual Original Budget \$000	Annual Revised Budget \$000	YTD Revised Budget \$000	YTD Actual \$000	YTD Variance \$000
Total revenue	35,715	35,715	21,561	21,379	(182)
Total expenses	27,427	27,427	15,890	15,862	(28)
Earnings before interest, tax and depreciation (EBITD)	8,288	8,288	5,671	5,517	(154)
External interest expense	17	17	10	10	-
Depreciation	327	327	191	197	6
Operating surplus / (deficit)	7,943	7,943	5,470	5,310	(160)

CITY WASTE CAPITAL FUNDING STATEMENT					
For the period ending 31 January 2021					
	Annual Original Budget \$000	Annual Revised Budget \$000	YTD Revised Budget \$000	YTD Actual \$000	YTD Variance \$000
Non-cash contributions	-	-	-	-	-
Funding from utility revenue	924	2,729	1,673	1,577	(96)
Total sources of capital funding	924	2,729	1,673	1,577	(96)
Capitalised expenditure	779	2,584	1,540	1,448	(92)
Loan redemption	145	145	133	129	(4)
Total application of capital funds	924	2,729	1,673	1,577	(96)

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12. APPENDIX: ADDITIONAL AND NON-FINANCIAL INFORMATION

Workforce Reporting



January 2021: Headcount		Employee Type			
Department Level		Casual	Full Time	Part Time	Total
Office of CEO and People, Culture and Organisational Performance		8	38	7	53
Organisational Services		5	206	19	230
Community and Customer Services		35	290	69	394
Infrastructure and Operations		9	343	16	373
Total		57	882	111	1,050

Note: Full Time Equivalent Employees includes all full time employees at a value of 1 and all other employees, at a value less than 1. The table above demonstrates the headcount by department. Following Ourspace, the table includes contract of service and temporary personnel. It includes casual staff in their non-substantive roles as at the end of the period where relevant.

Overdue Rates Debtors & Statistics

Days Overdue	Jan-21	% Overdue	Jan-20	% Overdue	\$ Variance	% Variance	Rates & Charges Statistics		
0 - 30	\$0	0.0%	\$1,706	0.0%	-\$1,706	0.0%	Levied (Billed) Rates & Charges since 1 July 2020	\$211,309,289	\$201,914,990
31 - 60	\$0	0.0%	\$116	0.0%	-\$116	0.0%	Rate arrears b/fwd 1 July 2020	\$12,988,652	\$9,452,770
61 - 90	\$2,924,739	1.3%	\$3,023,355	1.4%	-\$98,616	-0.1%	Total	\$224,297,941	\$211,367,760
91 - 180	\$1,618,369	0.7%	\$1,579,028	0.8%	\$39,341	-0.1%	Balance of overdue rates & charges	\$8,615,726	\$8,060,364
>180	\$4,072,618	1.8%	\$3,466,150	1.6%	\$616,469	0.2%	Percentage Overdue	3.8%	3.8%
Total	\$8,615,726	3.8%	\$8,060,364	3.8%	\$555,362	0.0%			

Monthly Financial Report

13. GLOSSARY

Key Terms

Written Down Value:

This is the value of an asset after accounting for depreciation or amortisation, and it is also called book value or net book value.

Work In Progress:

This represents an unfinished project that costs are still being added to. When a project is completed, the costs will be either capitalised (allocated to relevant asset class) or written off.

Definition of Ratios

Operating Surplus Ratio*:

This is an indicator of the extent to which revenues raised cover operational expenses only or are available for capital funding purposes

Net Operating Surplus
Total Operating Revenue

Asset Sustainability Ratio*:

This ratio indicates whether Council is renewing or replacing existing non-financial assets at the same rate that its overall stock of assets is wearing out

Capital Expenditure on Replacement of Infrastructure Assets (Renewals)
Depreciation Expenditure on Infrastructure Assets

Net Financial Liabilities*:

This is an indicator of the extent to which the net financial liabilities of Council can be serviced by operating revenues

Total Liabilities - Current Assets
Total Operating Revenue

Level of Dependence on General Rate Revenue:

This ratio measures Council's reliance on operating revenue from general rates (excludes utility revenues)

General Rates - Pensioner Remissions
Total Operating Revenue - Gain on Sale of Developed Land

Current Ratio:

This measures the extent to which Council has liquid assets available to meet short term financial obligations

Current Assets
Current Liabilities

Debt Servicing Ratio:

This indicates Council's ability to meet current debt instalments with recurrent revenue

Interest Expense*** + Loan Redemption^
Total Operating Revenue - Gain on Sale of Developed Land

Cash Balance - \$M:

Cash balance includes cash on hand, cash at bank and other short term investments.

Cash Held at Period End

Cash Capacity in Months:

This provides an indication as to the number of months cash held at period end would cover operating cash outflows

Cash Held at Period End
[[Cash Operating Costs + Interest Expense] / Period in Year]

Longer Term Financial Stability - Debt to Asset Ratio:

This is total debt as a percentage of total assets, i.e. to what extent will our long term debt be covered by total assets

Current and Non-current Debt**
Total Assets

Operating Performance:

This ratio provides an indication of Council's cash flow capabilities

Net Cash from Operations + Interest Revenue and Expense
Cash Operating Revenue + Interest Revenue

Interest Coverage Ratio:

This ratio demonstrates the extent to which operating revenues are being used to meet the financing charges

Net Interest Expense on Debt Service***
Total Operating Revenue

* These targets are set to be achieved on average over the longer term and therefore are not necessarily expected to be met on a monthly basis.

** Debt includes lease liabilities.

*** Interest expense includes interest on leases.

^ Loan redemption includes lease redemption.

13.2 2020-21 ANNUAL BUDGET REVIEW

Objective Reference:

Authorising Officer: Deborah Corbett-Hall, Chief Financial Officer

Responsible Officer: Deborah Corbett-Hall, Chief Financial Officer

Report Author: Katharine Bremner, Budget and Systems Manager

Attachments: 1. 2020-21 Annual Budget Review [↓](#)

PURPOSE

To present the annual budget review for the 2020-21 financial year for consideration in accordance with section 170 of the *Local Government Regulation 2012*, following the financial results to the end of December 2020.

BACKGROUND

Council adopted its 2020-21 budget at the Special Budget Meeting held on 25 June 2020. This report presents a review of the 2020-21 adopted carryover budget following the first six months of 2020-21 service delivery. As part of Council's financial management framework, a comprehensive formal budget review was undertaken across all groups within each department.

The annual formal budget review builds on the previous carryover budget review and amends previous forecasts. It also presents new submissions based on previously unknown circumstances or information pertaining to the original budget submissions.

Council previously revised the 2020-21 adopted budget on 19 August 2020 with the carryover budget review to include any capital carryover funding from 2019-20 to 2020-21.

ISSUES

The proposed variations to the 2020-21 budget are outlined in the financial statements included in the attachment.

Of note, the Redland Investment Corporation (RIC), a wholly owned subsidiary of Redland City Council (RCC) has not been consolidated into the attached documents as it has been determined the RIC group will follow a separate budget development and review process.

STRATEGIC IMPLICATIONS

Legislative Requirements

This proposed budget review is presented in accordance with the *Local Government Act 2009* and the *Local Government Regulation 2012*. Section 170 of the *Local Government Regulation 2012* permits a local government to amend the budget for the financial year at any time before the end of the financial year.

Risk Management

Council officers monitor budget to actual expenditure on a regular basis and Council's financial performance and position is reported on a monthly basis. The deliverability of both operational and capital programs is under constant review by the Executive Leadership Team (ELT).

Financial

This recommendation requires an amendment to the 2020-21 adopted carryover budget. The accompanying attachments outline the major movements resulting from this review, as well as the projected financial statements forecast to 30 June 2021.

Officers were requested to ensure that this budget review maintained or improved Council's operating position. The outcome has resulted in a slight improvement to the forecast financial performance to the end of 2020-21.

In addition, Council's already strong financial position is also expected to improve by \$5.1M.

All key performance indicators meet or exceed the targets with the exception of the Operating Surplus Ratio which remains slightly below the target range due to the operating deficit adopted by Council this financial year.

People

Specific impacts to people may result from the budget adjustments and will be worked through at a team, unit and group level in accordance with Council's policies and people strategy (when and if they arise).

Environmental

Specific impacts to the environment may result from the budget adjustments and will be worked through at a team, unit and group level in accordance with Council's policies and guidelines (when and if they arise).

Social

Specific impacts to the community may result from the budget adjustments and will be worked through at a team, unit and group level in accordance with Council's policies and guidelines (when and if they arise).

Human Rights

There are no human rights implications for this report as the purpose is to provide a revised budget to Council.

Alignment with Council's Policy and Plans

This report is aligned with Council's 2018-23 Corporate Plan:

8. Inclusive and Ethical governance: Deep engagement, quality leadership at all levels, transparent and accountable democratic processes and a spirit of partnership between the community and Council will enrich residents' participation in local decision-making to achieve the community's Redlands 2030 vision and goals.
- 8.2 Council produces and delivers against sustainable financial forecasts as a result of best practice Capital and Asset Management plans that guide project planning and service delivery across the city.

CONSULTATION

Consulted	Consultation Date	Comments/Actions
Business Partnering Unit	Nov/Dec 2020	Review of submissions in conjunction with the business areas across Council
Senior Leadership Team	17 Dec 2020	Review of budget review submissions
Executive Leadership Team	18 Jan 2021	Review of budget review submissions and financial statements
Councillors and Executive Leadership Team	28 Jan 2021	Workshop undertaken to review the budget review submissions and financial statements

OPTIONS**Option One**

That Council resolves as follows:

1. To adopt the Revised Budget for 2020-21 at the Redland City Council (RCC) level, which refers to the following (refer attached for details):
 - a. RCC Statement of Financial Position – page 1
 - b. RCC Statement of Cash Flows – page 2
 - c. RCC Statement of Comprehensive Income – page 3
 - d. RCC Operating and Capital Funding Statement – page 5
2. To meet the requirement of the *Local Government Regulation 2012*, adopt the City Water and City Waste Operating and Capital Funding Statements (pages 10 and 11 respectively).

Option Two

That Council resolves to not adopt the Revised Budget for 2020-21 as presented in the Officer's Recommendation.

OFFICER'S RECOMMENDATION

That Council resolves as follows:

1. To adopt the Revised Budget for 2020-21 at the Redland City Council (RCC) level, which refers to the following (refer attachment for details):
 - a. RCC Statement of Financial Position – page 1
 - b. RCC Statement of Cash Flows – page 2
 - c. RCC Statement of Comprehensive Income – page 3
 - d. RCC Operating and Capital Funding Statements – page 5
2. To meet the requirements of the *Local Government Regulation 2012*, adopt the City Water and City Waste Operating and Capital Funding Statements (pages 10 and 11 respectively).



2020-21 Annual Budget Review

General Meeting

17 February 2021





Redland City Council

Statement of Financial Position

Forecast as at 30 June 2021

	Original Budget 2020-21 \$000*	Opening Balance 2020-21 \$000*	Budgeted Movement 2020-21 \$000*	Annual Budget Review Proposed Movements \$000*	Proposed Revised Budget 2020-21 \$000*
CURRENT ASSETS					
Cash and cash equivalents	169,264	171,901	(188)	(4,218)	167,495
Trade and other receivables	45,924	40,732	5,168	(1,700)	44,200
Inventories	918	883	(30)	-	853
Non-current assets held for sale	-	118	-	-	118
Other current assets	1,955	2,956	-	-	2,956
Total current assets	218,061	216,589	4,949	(5,918)	215,621
NON-CURRENT ASSETS					
Investment property	1,091	1,225	-	-	1,225
Property, plant and equipment	2,572,288	2,588,458	29,499	11,052	2,629,009
Intangible assets	486	2,123	(441)	-	1,682
Right-of-use assets	5,919	7,126	(1,215)	(35)	5,876
Other financial assets	73	73	-	-	73
Investment in other entities	13,101	13,101	-	-	13,101
Total non-current assets	2,592,958	2,612,106	27,842	11,017	2,650,965
TOTAL ASSETS	2,811,018	2,828,695	32,791	5,099	2,866,586
CURRENT LIABILITIES					
Trade and other payables	28,839	42,267	(371)	-	41,895
Borrowings - current	6,361	8,326	-	-	8,326
Lease liability - current	1,302	1,294	-	-	1,294
Provisions - current	10,769	14,414	(2,226)	-	12,188
Other current liabilities	0	2,434	(474)	-	1,960
Total current liabilities	47,271	68,734	(3,071)	-	65,663
NON-CURRENT LIABILITIES					
Borrowings - non-current	37,900	32,852	2,988	-	35,840
Lease liability - non-current	5,481	6,775	(1,294)	(13)	5,469
Provisions - non-current	15,120	14,162	-	-	14,162
Total non-current liabilities	58,501	53,788	1,694	(13)	55,470
TOTAL LIABILITIES	105,772	122,523	(1,377)	(13)	121,133
NET COMMUNITY ASSETS	2,705,246	2,706,173	34,168	5,112	2,745,453
COMMUNITY EQUITY					
Asset revaluation surplus	1,008,120	1,035,840	-	-	1,035,840
Retained surplus	1,580,316	1,572,914	24,780	7,586	1,605,281
Constrained cash reserves	116,810	97,419	9,388	(2,474)	104,333
TOTAL COMMUNITY EQUITY	2,705,246	2,706,173	34,168	5,112	2,745,453

* All amounts are rounded to the nearest thousand.



Redland City Council

Statement of Cash Flows

Forecast for the year ending June 2021

	Original Budgeted Cash Flow 2020-21 \$000*	Revised Budget Adj. Cash Opening Bal from 2019-20 \$000*	Proposed Movement Annual Budget Review \$000*	Proposed Revised Budget 2020-21 \$000*
CASH FLOWS FROM OPERATING ACTIVITIES				
Receipts from customers	276,486	276,486	2,434	278,920
Payments to suppliers and employees	(239,435)	(242,084)	266	(241,818)
	37,051	34,402	2,700	37,101
Interest received	2,999	2,999	(100)	2,899
Rental income	956	956	113	1,069
Non-capital grants and contributions	14,483	17,132	(943)	16,189
Borrowing costs	(2,052)	(2,052)	-	(2,052)
Right-of-use assets interest expense	(144)	(144)	(0)	(144)
Net cash inflow / (outflow) from operating activities	53,294	53,294	1,769	55,063
CASH FLOWS FROM INVESTING ACTIVITIES				
Payments for property, plant and equipment	(77,614)	(91,150)	(11,052)	(102,202)
Payments for intangible assets	-	-	-	-
Proceeds from sale of property, plant and equipment	1,562	1,562	-	1,562
Capital grants, subsidies and contributions	25,922	34,149	5,036	39,186
Other cash flows from investing activities	-	-	-	-
Net cash inflow / (outflow) from investing activities	(50,131)	(55,439)	(6,016)	(61,455)
CASH FLOWS FROM FINANCING ACTIVITIES				
Proceeds of borrowings	9,612	9,612	-	9,612
Repayment of borrowings	(6,361)	(6,361)	-	(6,361)
Right-of-use lease payments	(1,294)	(1,294)	29	(1,265)
Net cash inflow / (outflow) from financing activities	1,957	1,957	29	1,986
Net increase / (decrease) in cash held and cash equivalents	5,120	(188)	(4,218)	(4,406)
Cash and cash equivalents at the beginning of the year	164,145	171,901		171,901
Cash and cash equivalents at the end of the financial year	169,264	171,713	(4,218)	167,495

* All amounts are rounded to the nearest thousand.



Redland City Council

Statement of Comprehensive Income Forecast for the year ending 30 June 2021

	Original Budget \$000*	Revised Budget as Adopted \$000*	Proposed Changes Annual Budget Review \$000*	Proposed Revised Budget \$000*
Recurrent revenue				
Rates charges	108,926	108,926	-	108,926
Levies and utility charges	160,082	160,082	-	160,082
Less: Pensioner remissions and rebates	(3,430)	(3,430)	-	(3,430)
Fees	13,554	13,554	445	13,999
Rental income	956	956	113	1,069
Interest received	2,999	2,999	(100)	2,899
Sales revenue	3,630	3,630	110	3,740
Other income	533	533	179	712
Grants, subsidies and contributions	14,896	17,546	(943)	16,603
Total recurrent revenue	302,146	304,795	(197)	304,599
Capital revenue				
Grants, subsidies and contributions	25,922	32,449	5,036	37,486
Non-cash contributions	3,480	3,480	-	3,480
Total capital revenue	29,402	35,930	5,036	40,966
TOTAL INCOME	331,548	340,725	4,840	345,565
Recurrent expenses				
Employee benefits	91,988	92,088	1,007	93,095
Materials and services	145,591	148,140	(1,415)	146,725
Finance costs	2,382	2,382	0	2,382
Depreciation and amortisation	64,938	64,938	(7)	64,931
Other expenditure	520	520	(11)	509
Net internal costs	(1,800)	(1,800)	154	(1,646)
Total recurrent expenses	303,619	306,268	(272)	305,996
Capital expenses				
(Gain)/loss on disposal of non-current assets	289	289	-	289
Total capital expenses	289	289	-	289
TOTAL EXPENSES	303,908	306,557	(272)	306,285
NET RESULT	27,641	34,168	5,112	39,280
Other comprehensive income/(loss)				
Items that will not be reclassified to a net result				
Revaluation of property, plant and equipment	-	-	-	-
TOTAL COMPREHENSIVE INCOME	27,641	34,168	5,112	39,280

* All amounts are rounded to the nearest thousand
2020-21 Annual Budget Review

Page 3 of 12

**2020-21 Annual Budget Review****Key Performance Indicators**

Financial Stability and Sustainability Ratios	Original Budget 2020-21	Revised as per Carryover Budget Review 2020-21	Revised as per Annual Budget Review 2020-21
Level of dependence on General Rate Revenue (Excludes utility revenues) - Threshold set < 40%	35.07%	34.77%	34.79%
Ability to pay our bills - Current Ratio Target between 1.1 and 4.1	4.61	3.37	3.28
Ability to repay our debt - Debt Servicing Ratio (%) Target less than or equal to 15%	3.21%	3.23%	3.22%
Cash Balance \$M Target greater than or equal to \$50m	169.264	171.713	167.495
Cash Balances - cash capacity in months Target greater than 3 months	8.41	8.44	8.24
Longer term financial stability - debt to asset ratio (%) Target less than or equal to 10%	1.57%	1.54%	1.78%
Operating Performance Target greater than or equal to 10%	18.07%	17.91%	18.41%
Operating Surplus Ratio Target between 0% and 10%	-0.49%	-0.48%	-0.46%
Net Financial Liabilities Target less than 60%*	-37.16%	-32.94%	-31.02%
Interest Coverage Ratio Target less than 5%**	-0.40%	-0.35%	-0.32%
Asset Sustainability Ratio Target greater than 90%	75.12%	95.07%	94.54%

*The net financial liabilities ratio exceeds the target range when current assets are greater than total liabilities (and the ratio is negative)

** The interest coverage ratio exceeds the target range when interest revenue is greater than interest expense (and the ratio is negative)



Redland City Council

Operating Statement

Forecast for the year ending 30 June 2021

	Proposed Changes			
	Original Budget \$000*	Revised Budget as Adopted \$000*	Annual Budget Review \$000*	Proposed Revised Budget \$000*
Revenue				
Rates charges	108,926	108,926	-	108,926
Levies and utility charges	160,082	160,082	-	160,082
<i>Less: Pensioner remissions and rebates</i>	(3,430)	(3,430)	-	(3,430)
Fees	13,554	13,554	445	13,999
Operating grants and subsidies	14,339	16,989	(1,119)	15,870
Operating contributions and donations	557	557	176	733
Interest external	2,999	2,999	(100)	2,899
Other Revenue	5,119	5,119	401	5,521
Total revenue	302,146	304,795	(197)	304,599
Expenses				
Employee benefits	91,988	92,088	1,007	93,095
Materials and services	145,591	148,140	(1,415)	146,725
Finance costs other	449	449	-	449
Other expenditure	520	520	(11)	509
Net Internal Costs	(1,800)	(1,800)	154	(1,646)
Total expenses	236,748	239,397	(266)	239,132
Earnings before interest, tax and depreciation (EBITD)	65,398	65,398	69	65,467
Interest expense - External	1,933	1,933	0	1,933
Interest expense - Internal	-	-	-	-
Depreciation and amortisation	64,938	64,938	(7)	64,931
OPERATING SURPLUS/(DEFICIT)	(1,473)	(1,473)	76	(1,397)

Capital Funding Statement

Forecast for the year ending 30 June 2021

	Proposed Changes			
	Original Budget \$000*	Revised Budget as Adopted \$000*	Annual Budget Review \$000*	Proposed Revised Budget \$000*
Proposed sources of capital funding				
Capital contributions and donations	22,911	22,911	-	22,911
Capital grants and subsidies	3,011	9,539	5,036	14,575
Proceeds on disposal of non-current assets	1,562	1,562	-	1,562
Capital transfers (to) / from reserves	(8,260)	(5,941)	3,762	(2,180)
Non-cash contributions	3,480	3,480	-	3,480
New loans	9,612	9,612	-	9,612
Funding from general revenue	56,697	61,386	2,225	63,611
Total sources of capital funding	89,013	102,549	11,023	113,572
Proposed application of capital funds				
Contributed assets	3,480	3,480	-	3,480
Capitalised goods and services	70,514	82,717	10,699	93,416
Capitalised employee costs	7,101	8,433	353	8,786
Loan redemption	7,918	7,918	(29)	7,889
Total application of capital funds	89,013	102,549	11,023	113,572
Other budgeted items				
Transfers to constrained operating reserves	(19,465)	(19,465)	349	(19,116)
Transfers from constrained operating reserves	16,018	16,018	(1,636)	14,382
WDV of assets disposed	1,850	1,850	-	1,850
Tax and Dividends	-	-	-	-

* All amounts are rounded to the nearest thousand



CEO Group

Operating Statement

Forecast for the year ending 30 June 2021

	Proposed Changes			
	Original Budget \$000*	Revised Budget as Adopted \$000*	Annual Budget Review \$000*	Proposed Revised Budget \$000*
Revenue				
Rates charges	-	-	-	-
Levies and utility charges	-	-	-	-
<i>Less: Pensioner remissions and rebates</i>	-	-	-	-
Fees	-	-	-	-
Operating grants and subsidies	170	170	-	170
Operating contributions and donations	-	-	-	-
Interest external	-	-	-	-
Other Revenue	-	-	-	-
Total revenue	170	170	-	170
Expenses				
Employee benefits	5,684	5,511	439	5,950
Materials and services	2,123	1,985	(246)	1,739
Finance costs other	-	-	-	-
Other expenditure	-	-	-	-
Net Internal Costs	(7,346)	(7,208)	3	(7,205)
Total expenses	462	288	195	484
Earnings before interest, tax and depreciation (EBITD)	(292)	(118)	(195)	(314)
Interest expense - External	-	-	-	-
Interest expense - Internal	-	-	-	-
Depreciation and amortisation	5	5	-	5
OPERATING SURPLUS/(DEFICIT)	(297)	(123)	(195)	(319)

Capital Funding Statement

Forecast for the year ending 30 June 2021

	Proposed Changes			
	Original Budget \$000*	Revised Budget as Adopted \$000*	Annual Budget Review \$000*	Proposed Revised Budget \$000*
Proposed sources of capital funding				
Capital contributions and donations	-	-	-	-
Capital grants and subsidies	-	-	-	-
Proceeds on disposal of non-current assets	-	-	-	-
Capital transfers (to) / from reserves	-	-	-	-
Non-cash contributions	-	-	-	-
New loans	-	-	-	-
Funding from general revenue	-	-	-	-
Total sources of capital funding	-	-	-	-
Proposed application of capital funds				
Contributed assets	-	-	-	-
Capitalised goods and services	-	-	-	-
Capitalised employee costs	-	-	-	-
Loan redemption	-	-	-	-
Total application of capital funds	-	-	-	-
Other budgeted items				
Transfers to constrained operating reserves	-	-	-	-
Transfers from constrained operating reserves	-	-	-	-
WDV of assets disposed	-	-	-	-
Tax and Dividends	-	-	-	-

* All amounts are rounded to the nearest thousand



Organisational Services

Operating Statement

Forecast for the year ending 30 June 2021

	Proposed Changes			
	Original Budget \$000*	Revised Budget as Adopted \$000*	Annual Budget Review \$000*	Proposed Revised Budget \$000*
Revenue				
Rates charges	108,926	108,926	-	108,926
Levies and utility charges	8,884	8,884	-	8,884
<i>Less: Pensioner remissions and rebates</i>	(2,963)	(2,963)	-	(2,963)
Fees	1,023	1,023	50	1,073
Operating grants and subsidies	6,208	6,932	(617)	6,315
Operating contributions and donations	-	-	-	-
Interest external	2,234	2,234	(1,417)	817
Other Revenue	609	609	-	609
Total revenue	124,920	125,644	(1,984)	123,660
Expenses				
Employee benefits	24,429	24,602	89	24,691
Materials and services	14,917	15,918	211	16,129
Finance costs other	441	441	-	441
Other expenditure	278	278	-	278
Net Internal Costs	(19,552)	(19,690)	(5)	(19,695)
Total expenses	20,512	21,548	295	21,843
Earnings before interest, tax and depreciation (EBITD)	104,408	104,096	(2,279)	101,817
Interest expense - External	1,784	1,784	0	1,784
Interest expense - Internal	(10,621)	(10,621)	-	(10,621)
Depreciation and amortisation	4,681	4,649	3	4,652
OPERATING SURPLUS/(DEFICIT)	108,564	108,284	(2,282)	106,002

Capital Funding Statement

Forecast for the year ending 30 June 2021

	Proposed Changes			
	Original Budget \$000*	Revised Budget as Adopted \$000*	Annual Budget Review \$000*	Proposed Revised Budget \$000*
Proposed sources of capital funding				
Capital contributions and donations	-	-	-	-
Capital grants and subsidies	1,700	1,218	4,426	5,645
Proceeds on disposal of non-current assets	1,562	1,562	-	1,562
Capital transfers (to) / from reserves	3,814	4,091	579	4,670
Non-cash contributions	-	-	-	-
New loans	9,612	9,612	-	9,612
Funding from general revenue	(1,797)	888	1,058	1,945
Total sources of capital funding	14,891	17,371	6,063	23,433
Proposed application of capital funds				
Contributed assets	-	-	-	-
Capitalised goods and services	8,164	10,644	5,953	16,597
Capitalised employee costs	-	-	110	110
Loan redemption	6,727	6,727	(0)	6,727
Total application of capital funds	14,891	17,371	6,063	23,433
Other budgeted items				
Transfers to constrained operating reserves	(11,078)	(11,078)	-	(11,078)
Transfers from constrained operating reserves	495	495	-	495
WDV of assets disposed	1,562	1,562	-	1,562
Tax and Dividends	(23,811)	(23,811)	-	(23,811)

* All amounts are rounded to the nearest thousand



Customer & Community Services

Operating Statement

Forecast for the year ending 30 June 2021

	Original Budget \$000*	Revised Budget as Adopted \$000*	Proposed Changes Annual Budget Review \$000*	Proposed Revised Budget \$000*
Revenue				
Rates charges	-	-	-	-
Levies and utility charges	-	-	-	-
<i>Less: Pensioner remissions and rebates</i>	-	-	-	-
Fees	8,858	8,858	205	9,063
Operating grants and subsidies	1,028	1,128	(17)	1,110
Operating contributions and donations	14	14	176	190
Interest external	-	-	-	-
Other Revenue	1,098	1,098	279	1,377
Total revenue	10,997	11,097	643	11,740
Expenses				
Employee benefits	31,359	31,459	(32)	31,427
Materials and services	7,934	7,942	243	8,185
Finance costs other	7	7	-	7
Other expenditure	235	235	(11)	224
Net Internal Costs	14,585	14,585	56	14,641
Total expenses	54,120	54,228	256	54,484
Earnings before interest, tax and depreciation (EBITD)	(43,122)	(43,130)	387	(42,743)
Interest expense - External	58	58	1	59
Interest expense - Internal	-	-	-	-
Depreciation and amortisation	2,490	2,522	-	2,522
OPERATING SURPLUS/(DEFICIT)	(45,670)	(45,709)	386	(45,324)

Capital Funding Statement

Forecast for the year ending 30 June 2021

	Original Budget \$000*	Revised Budget as Adopted \$000*	Proposed Changes Annual Budget Review \$000*	Proposed Revised Budget \$000*
Proposed sources of capital funding				
Capital contributions and donations	14,192	14,192	-	14,192
Capital grants and subsidies	-	-	-	-
Proceeds on disposal of non-current assets	-	-	-	-
Capital transfers (to) / from reserves	(14,192)	(14,192)	3,366	(10,826)
Non-cash contributions	-	-	-	-
New loans	-	-	-	-
Funding from general revenue	2,492	2,283	281	2,563
Total sources of capital funding	2,492	2,283	3,647	5,930
Proposed application of capital funds				
Contributed assets	-	-	-	-
Capitalised goods and services	1,918	1,708	3,666	5,375
Capitalised employee costs	-	-	-	-
Loan redemption	574	574	(19)	555
Total application of capital funds	2,492	2,283	3,647	5,930
Other budgeted items				
Transfers to constrained operating reserves	-	-	(136)	(136)
Transfers from constrained operating reserves	930	930	-	930
WDV of assets disposed	-	-	-	-
Tax and Dividends	-	-	-	-

* All amounts are rounded to the nearest thousand



Infrastructure & Operations (incl City Water & City Waste)

Operating Statement

Forecast for the year ending 30 June 2021

	Original Budget \$000*	Revised Budget as Adopted \$000*	Proposed Changes Annual Budget Review \$000*	Proposed Revised Budget \$000*
Revenue				
Rates charges	-	-	-	-
Levies and utility charges	151,198	151,198	-	151,198
<i>Less: Pensioner remissions and rebates</i>	(467)	(467)	-	(467)
Fees	3,673	3,673	190	3,863
Operating grants and subsidies	6,934	8,759	(485)	8,275
Operating contributions and donations	543	543	-	543
Interest external	766	766	1,317	2,082
Other Revenue	3,413	3,413	122	3,535
Total revenue	166,059	167,884	1,145	169,029
Expenses				
Employee benefits	30,517	30,517	511	31,028
Materials and services	120,616	122,295	(1,623)	120,672
Finance costs other	1	1	-	1
Other expenditure	7	7	-	7
Net Internal Costs	10,513	10,513	100	10,613
Total expenses	161,654	163,333	(1,012)	162,321
Earnings before interest, tax and depreciation (EBITD)	4,405	4,551	2,156	6,707
Interest expense - External	92	92	(1)	91
Interest expense - Internal	10,621	10,621	-	10,621
Depreciation and amortisation	57,762	57,762	(10)	57,752
OPERATING SURPLUS/(DEFICIT)	(64,070)	(63,924)	2,167	(61,757)

Capital Funding Statement

Forecast for the year ending 30 June 2021

	Original Budget \$000*	Revised Budget as Adopted \$000*	Proposed Changes Annual Budget Review \$000*	Proposed Revised Budget \$000*
Proposed sources of capital funding				
Capital contributions and donations	8,718	8,718	-	8,718
Capital grants and subsidies	1,311	8,320	610	8,931
Proceeds on disposal of non-current assets	-	-	-	-
Capital transfers (to) / from reserves	2,118	4,160	(183)	3,976
Non-cash contributions	3,480	3,480	-	3,480
New loans	-	-	-	-
Funding from general revenue	56,002	58,216	886	59,103
Total sources of capital funding	71,630	82,895	1,313	84,209
Proposed application of capital funds				
Contributed assets	3,480	3,480	-	3,480
Capitalised goods and services	60,432	70,364	1,080	71,444
Capitalised employee costs	7,101	8,433	243	8,676
Loan redemption	617	617	(10)	607
Total application of capital funds	71,630	82,895	1,313	84,209
Other budgeted items				
Transfers to constrained operating reserves	(8,386)	(8,386)	485	(7,902)
Transfers from constrained operating reserves	14,593	14,593	(1,636)	12,957
WDV of assets disposed	289	289	-	289
Tax and Dividends	23,811	23,811	-	23,811

* All amounts are rounded to the nearest thousand



City Water

Operating Statement

Forecast for the year ending 30 June 2021

	Original Budget \$000*	Revised Budget as Adopted \$000*	Proposed Changes Annual Budget Review \$000*	Proposed Revised Budget \$000*
Revenue				
Rates charges	-	-	-	-
Levies and utility charges	119,907	119,907	-	119,907
<i>Less: Pensioner remissions and rebates</i>	(467)	(467)	-	(467)
Fees	448	448	190	638
Operating grants and subsidies	-	-	-	-
Operating contributions and donations	-	-	-	-
Interest external	662	662	1,031	1,693
Other Revenue	2,032	2,032	-	2,032
Total revenue	122,582	122,582	1,221	123,803
Expenses				
Employee benefits	9,261	9,261	79	9,340
Materials and services	58,429	58,429	(170)	58,260
Finance costs other	-	-	-	-
Other expenditure	-	-	-	-
Net Internal Costs	3,391	3,391	98	3,489
Total expenses	71,081	71,081	7	71,088
Earnings before interest, tax and depreciation (EBITD)	51,501	51,501	1,214	52,715
Interest expense - External	71	71	-	71
Interest expense - Internal	10,621	10,621	-	10,621
Depreciation and amortisation	24,142	24,142	-	24,142
OPERATING SURPLUS/(DEFICIT)	16,667	16,667	1,214	17,881

Capital Funding Statement

Forecast for the year ending 30 June 2021

	Original Budget \$000*	Revised Budget as Adopted \$000*	Proposed Changes Annual Budget Review \$000*	Proposed Revised Budget \$000*
Proposed sources of capital funding				
Capital contributions and donations	2,537	2,537	-	2,537
Capital grants and subsidies	-	-	-	-
Proceeds on disposal of non-current assets	-	-	-	-
Capital transfers (to) / from reserves	(2,365)	(374)	-	(374)
Non-cash contributions	3,399	3,399	-	3,399
New loans	-	-	-	-
Funding from general revenue	8,568	10,151	222	10,374
Total sources of capital funding	12,138	15,714	222	15,936
Proposed application of capital funds				
Contributed assets	3,399	3,399	-	3,399
Capitalised goods and services	8,258	11,833	139	11,973
Capitalised employee costs	-	-	83	83
Loan redemption	482	482	-	482
Total application of capital funds	12,138	15,714	222	15,936
Other budgeted items				
Transfers to constrained operating reserves	-	-	-	-
Transfers from constrained operating reserves	-	-	-	-
WDV of assets disposed	-	-	-	-
Tax and Dividends	18,648	18,648	-	18,648

* All amounts are rounded to the nearest thousand



City Waste

Operating Statement

Forecast for the year ending 30 June 2021

	Original Budget \$000*	Revised Budget as Adopted \$000*	Proposed Changes Annual Budget Review \$000*	Proposed Revised Budget \$000*
Revenue				
Rates charges	-	-	-	-
Levies and utility charges	29,127	29,127	-	29,127
<i>Less: Pensioner remissions and rebates</i>	-	-	-	-
Fees	647	647	-	647
Operating grants and subsidies	4,821	4,821	(485)	4,337
Operating contributions and donations	-	-	-	-
Interest external	61	61	286	347
Other Revenue	900	900	122	1,022
Total revenue	35,557	35,557	(76)	35,480
Expenses				
Employee benefits	1,881	1,881	-	1,881
Materials and services	23,627	23,627	(147)	23,480
Finance costs other	1	1	-	1
Other expenditure	-	-	-	-
Net Internal Costs	1,759	1,759	-	1,759
Total expenses	27,269	27,269	(147)	27,122
Earnings before interest, tax and depreciation (EBITD)	8,288	8,288	71	8,359
Interest expense - External	17	17	0	17
Interest expense - Internal	-	-	-	-
Depreciation and amortisation	327	327	0	327
OPERATING SURPLUS/(DEFICIT)	7,943	7,943	71	8,014

Capital Funding Statement

Forecast for the year ending 30 June 2021

	Original Budget \$000*	Revised Budget as Adopted \$000*	Proposed Changes Annual Budget Review \$000*	Proposed Revised Budget \$000*
Proposed sources of capital funding				
Capital contributions and donations	-	-	-	-
Capital grants and subsidies	-	-	-	-
Proceeds on disposal of non-current assets	-	-	-	-
Capital transfers (to) / from reserves	-	-	-	-
Non-cash contributions	-	-	-	-
New loans	-	-	-	-
Funding from general revenue	924	2,729	0	2,729
Total sources of capital funding	924	2,729	0	2,729
Proposed application of capital funds				
Contributed assets	-	-	-	-
Capitalised goods and services	779	2,584	-	2,584
Capitalised employee costs	-	-	-	-
Loan redemption	145	145	0	145
Total application of capital funds	924	2,729	0	2,729
Other budgeted items				
Transfers to constrained operating reserves	(4,821)	(4,821)	485	(4,337)
Transfers from constrained operating reserves	4,821	4,821	(485)	4,337
WDV of assets disposed	-	-	-	-
Tax and Dividends	5,163	5,163	-	5,163

* All amounts are rounded to the nearest thousand



Infrastructure & Operations (excl City Water & City Waste)

Operating Statement

Forecast for the year ending 30 June 2021

	Original Budget \$000*	Revised Budget as Adopted \$000*	Proposed Changes Annual Budget Review \$000*	Proposed Revised Budget \$000*
Revenue				
Rates charges	-	-	-	-
Levies and utility charges	2,163	2,163	-	2,163
<i>Less: Pensioner remissions and rebates</i>	-	-	-	-
Fees	2,784	2,784	-	2,784
Operating grants and subsidies	2,113	3,938	-	3,938
Operating contributions and donations	543	543	-	543
Interest external	42	42	-	42
Other Revenue	481	481	-	481
Total revenue	8,126	9,952	-	9,952
Expenses				
Employee benefits	19,770	19,770	432	20,202
Materials and services	39,203	40,881	(1,306)	39,575
Finance costs other	0	0	-	0
Other expenditure	7	7	-	7
Net Internal Costs	4,325	4,325	2	4,328
Total expenses	63,305	64,984	(871)	64,112
Earnings before interest, tax and depreciation (EBITD)	(55,179)	(55,032)	871	(54,161)
Interest expense - External	3	3	(1)	3
Interest expense - Internal	-	-	-	-
Depreciation and amortisation	33,294	33,294	(10)	33,284
OPERATING SURPLUS/(DEFICIT)	(88,476)	(88,329)	882	(87,447)

Capital Funding Statement

Forecast for the year ending 30 June 2021

	Original Budget \$000*	Revised Budget as Adopted \$000*	Proposed Changes Annual Budget Review \$000*	Proposed Revised Budget \$000*
Proposed sources of capital funding				
Capital contributions and donations	6,181	6,181	-	6,181
Capital grants and subsidies	1,311	8,320	610	8,931
Proceeds on disposal of non-current assets	-	-	-	-
Capital transfers (to) / from reserves	4,483	4,533	(183)	4,350
Non-cash contributions	82	82	-	82
New loans	-	-	-	-
Funding from general revenue	46,582	45,407	664	46,071
Total sources of capital funding	58,639	64,523	1,091	65,614
Proposed application of capital funds				
Contributed assets	82	82	-	82
Capitalised goods and services	51,395	55,947	941	56,888
Capitalised employee costs	7,101	8,433	160	8,593
Loan redemption	62	62	(10)	52
Total application of capital funds	58,639	64,523	1,091	65,614
Other budgeted items				
Transfers to constrained operating reserves	(3,565)	(3,565)	-	(3,565)
Transfers from constrained operating reserves	9,772	9,772	(1,151)	8,620
WDV of assets disposed	289	289	-	289
Tax and Dividends	-	-	-	-

* All amounts are rounded to the nearest thousand

14 REPORTS FROM COMMUNITY & CUSTOMER SERVICES

14.1 DECISIONS MADE UNDER DELEGATED AUTHORITY FOR CATEGORY 1, 2 AND 3 DEVELOPMENT APPLICATIONS

Objective Reference:

Authorising Officer: Louise Rusan, General Manager Community & Customer Services

Responsible Officer: David Jeanes, Group Manager City Planning and Assessment

Report Author: Jill Driscoll, Group Support Coordinator

Attachments: 1. Decisions made under delegated authority 06.12.2020 to 26.12.2020 [↓](#)

PURPOSE

To note decisions made under delegated authority for development applications (Attachment 1).

This information is provided for public interest.

BACKGROUND

At the General Meeting of 21 June 2017, Council resolved that development assessments be classified into the following four categories:

Category 1 – minor code and referral agency assessments

Category 2 – moderately complex code and impact assessments

Category 3 – complex code and impact assessments

Category 4 – major assessments (not included in this report)

The applications details in this report have been assessed under:

Category 1 – Minor code assessable applications, concurrence agency referral, minor operational works and minor compliance works, and minor change requests and extension to currency period where the original application was Category 1.

Delegation Level: Chief Executive Officer, General Manager, Group Managers, Service Manager, Team Leaders and Principal Planners as identified in the officer's instrument of delegation.

Category 2 – In addition to Category 1, moderately complex code assessable applications, including operational works and compliance works and impact assessable applications without objecting submissions; other change requests and variation request where the original application was Category 1,2,3 or 4*.

**Provided the requests do not affect the reason(s) for the call in by the Councillor (or that there is agreement from the Councillor that it can be dealt with under delegation).*

Delegation Level: Chief Executive Officer, General Manager, Group Managers and Service Managers as identified in the officer's instrument of delegation.

Category 3 – In addition to Category 1 and 2, applications for code or impact assessment with a higher level of complexity. They may have minor level aspects outside a stated policy position that are subject to discretionary provision of the planning scheme. Impact applications may involve submissions objecting to the proposal readily addressable by reasonable and relevant conditions. Assessing superseded planning scheme requests and approving a plan of subdivision.

Delegation Level: Chief Executive Officer, General Manager and Group Managers as identified in the officer's instrument of delegation.

Human Rights

There are no known human rights implication associated with this report.

OFFICER'S RECOMMENDATION

That Council resolves to note this report.

Attachment 1 Decisions Made Under Delegated Authority 06.12.2020 to 26.12.2020

Decisions Made Under Delegated Authority 06.12.2020 to 12.12.2020**CATEGORY1**

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
CAR20/0546	Design and Siting - Additions and Alterations	A1 Certifier Pty Ltd	48 Russell Street Cleveland QLD 4163	Referral Agency Response - Planning	08/12/2020	N/A	Approved	2
MCU17/0062.01	Change to Development Approval - MCU17/0062 Dwelling House (incl Secondary Dwelling)	Oxford Boatshed Pty Ltd C/- Urban Systems Pty Ltd	30 Timbin Road Point Lookout QLD 4183	Minor Change to Approval	09/12/2020	N/A	Approved	2
MCU18/0258.02	Change to Development Approval - MCU18/0258 Dwelling House	Lea Martha CORNELIUS Plan A Town Planning	24 George Nothing Drive Point Lookout QLD 4183	Minor Change to Approval	07/12/2020	N/A	Approved	2
CAR20/0530	Design and Siting - Outbuilding	Vadim RIBINSKY JNR	2-14 Trundle Road Thornlands QLD 4164	Referral Agency Response - Planning	09/12/2020	N/A	Approved	3
OPW20/0114	Operational Works - Domestic Driveway Crossover	Anita Margaret AZCUNE	6 Jane Court Cleveland QLD 4163	Code Assessment	11/12/2020	N/A	Development Permit	3
DBW20/0044	Domestic Outbuilding - Patio and Carport	Dominic John NEALE Marjorie Elizabeth NEALE	25 Lancewood Street Victoria Point QLD 4165	Code Assessment	08/12/2020	N/A	Development Permit	4
RAL19/0059.02	Change to Development Approval - RAL19/0059 Standard Format - 1 into 2 Lots	BGW Mannan Pty Ltd Ronald Alexander HARRIS Sandra Clare HARRIS	8 Sherlock Street Victoria Point QLD 4165	Minor Change to Approval	09/12/2020	N/A	Approved	4
CAR20/0502	Design and Siting - Shed	A1 Certifier Pty Ltd	41 McWilliam Street Redland Bay QLD 4165	Referral Agency Response - Planning	09/12/2020	N/A	Approved	5

Decisions Made Under Delegated Authority 06.12.2020 to 12.12.2020

CATEGORY1

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
CAR20/0508	Design and Siting - Dwelling and Carport	Professional Certification Group Pty Ltd	8 Capewell Court Russell Island QLD 4184	Referral Agency Response - Planning	07/12/2020	N/A	Approved	5
CAR20/0534	Amenity and Aesthetics - Removal dwelling	Desmond NETTO	4 Monsoon Street Russell Island QLD 4184	Referral Agency Response - Planning	10/12/2020	N/A	Approved	5
DBW20/0038	Domestic Additions - Extension to Kitchen, Living, Bed1 Addition of Ensuite, Carport and Patio	Elizabeth Dorothy STAWARUK	80 Timothy Street Macleay Island QLD 4184	Code Assessment	08/12/2020	N/A	Development Permit	5
DBW20/0047	Domestic Outbuilding - Carport	Pronto Building Approvals	109 Torquay Road Redland Bay QLD 4165	Code Assessment	10/12/2020	N/A	Development Permit	5
DBW20/0046	Additions and Alterations	Bay Island Designs	6 Coorong Street Macleay Island QLD 4184	Code Assessment	09/12/2020	N/A	Development Permit	5
MCU20/0081	Dwelling house	The Certifier Pty Ltd	15-17 Bay Drive Russell Island QLD 4184	Code Assessment	09/12/2020	N/A	Development Permit	5
CAR20/0021.01	Change to Development Approval CAR20/0021 Design and Siting - Patio	The Certifier Pty Ltd	9 Wimborne Road Alexandra Hills QLD 4161	Minor Change to Approval	10/12/2020	N/A	Approved	7
CAR20/0284	Build Over or Near Relevant Infrastructure - Swimming Pool	DBR Building Certification	9 Bandicoot Court Capalaba QLD 4157	Referral Agency Response - Engineering	08/12/2020	N/A	Refused	9
CAR20/0519	Design and Siting - Carport	Corban F E NEELEY Phoebe B NEELEY	12 Blaxland Street Capalaba QLD 4157	Referral Agency Response - Planning	07/12/2020	N/A	Approved	9

Decisions Made Under Delegated Authority 06.12.2020 to 12.12.2020**CATEGORY1**

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
CAR20/0520	Design and Siting - Roofed patio	Glenn Murrant Building Certification	4 Kamala Place Birkdale QLD 4159	Referral Agency Response - Planning	09/12/2020	N/A	Approved	10
DBW20/0028	Domestic Additions - Extension to Dwelling	Mark Konrad WACHTEL Sophie Anne BALLENTINE-WACHTEL	25 Mako Avenue Birkdale QLD 4159	Code Assessment	06/11/2020	7/12/2020	Approved	10

Decisions Made Under Delegated Authority 06.12.2020 to 12.12.2020

CATEGORY2

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
OPW20/0089	Operational Works for RAL - 2 into 23 lots	Mawson On Elder Pty Ltd	108 Sturgeon Street Ormiston QLD 4160	Code Assessment	07/12/2020	N/A	Development Permit	1
OPW20/0055	Operational Works for RAL - Trunk Sewer, Trunk Water and Recycled Water	KN Group Pty Ltd	275-495 Serpentine Creek Road Redland Bay QLD 4165	Code Assessment	11/12/2020	N/A	Development Permit	6
OPW20/0103	Excavation & Fill (incl. Retaining walls)	The Certifier Pty Ltd	47 Aquila Street Redland Bay QLD 4165	Code Assessment	11/12/2020	N/A	Development Permit	6
OPW20/0083	Operational Works for RAL - 1 into 2 lots	Julie Vanessa MANCHE Paul George Joseph MANCHE	3 Carlton Court Birkdale QLD 4159	Code Assessment	08/12/2020	N/A	Development Permit	10

Decisions Made Under Delegated Authority 13.12.2020 to 19.12.2020

CATEGORY1

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
CAR20/0541	Design and Siting - Dwelling	Steve Bartley & Associates Pty Ltd	34-36 Raby Esplanade Ormiston QLD 4160	Referral Agency Response - Planning	16/12/2020	N/A	Approved	1
DBW20/0041	Domestic Additions - dwelling house	East Coast Surveys Pty Ltd	9-11 Acacia Street Wellington Point QLD 4160	Code Assessment	17/12/2020	N/A	Development Permit	1
CAR20/0537	Design and Siting - Carport and build over/near infrastructure	The Certifier Pty Ltd	24 Seahaven Court Cleveland QLD 4163	Referral Agency Response - Planning	18/12/2020	N/A	Approved	2
CAR20/0546	Design and Siting - Additions and Alterations	A1 Certifier Pty Ltd	48 Russell Street Cleveland QLD 4163	Referral Agency Response - Planning	16/12/2020	N/A	Approved	2
MCU20/0131	Home based business	East Coast Surveys Pty Ltd	85 Long Street Cleveland QLD 4163	Code Assessment	17/12/2020	N/A	Development Permit	2
CAR20/0521	Design and Siting & BOS - Dwelling house	Platinum Building Approvals	13 Coastview Place Victoria Point QLD 4165	Referral Agency Response - Planning	16/12/2020	N/A	Approved	4
CAR20/0538	Design and Siting - Open Carport	Pronto Building Approvals	13 Boat Street Victoria Point QLD 4165	Referral Agency Response - Planning	17/12/2020	N/A	Approved	4
CAR20/0539	Design and Siting- Dwelling	Bartley Burns Certifiers & Planners	7-9 Benfer Road Victoria Point QLD 4165	Referral Agency Response - Planning	14/12/2020	N/A	Approved	4

Decisions Made Under Delegated Authority 13.12.2020 to 19.12.2020

CATEGORY1

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
CAR20/0498	Design and Siting - Dwelling	Gold Coast Building Approvals Pty Ltd As Trustee	55 Trimaran Street Russell Island QLD 4184	Referral Agency Response - Planning	18/12/2020	N/A	Approved	5
CAR20/0510	Amenity and Aesthetics - Removal Dwelling	Fluid Building Approvals Sunshine Coast	3 Alawa Street Macleay Island QLD 4184	Referral Agency Response - Planning	18/12/2020	N/A	Approved	5
CAR20/0501	Design and Siting - Carport	RD's Building Approvals	15 Citrus Circuit Mount Cotton QLD 4165	Referral Agency Response - Planning	18/12/2020	N/A	Approved	6
CAR20/0533	Design and Siting - Carport	Fluid Approvals	5 Magnum Court Mount Cotton QLD 4165	Referral Agency Response - Planning	18/12/2020	N/A	Approved	6
CAR20/0540	Design and Siting - Carport	Glenn Murrant Building Certification	8 Lyndhurst Place Thornlands QLD 4164	Referral Agency Response - Planning	16/12/2020	N/A	Approved	7
CAR20/0571	Design and Siting - Swimming pool, pool fence and retaining wall	Rogers Pools	46 Glover Drive Alexandra Hills QLD 4161	Referral Agency Response - Planning	15/12/2020	N/A	Approved	7
RAL20/0069	Combined ROL and OPW - Reconfiguring a lot - 1 into 2 lots with access easement and OPW - Stormwater drainage, sewerage and water infrastructure	Newmarket Construction Pty Ltd As Trustee Newmarket Construction Trust Towards Utopia Pty Ltd As Trustee Towards Utopia Trust	732 Old Cleveland Road East Wellington Point QLD 4160	Code Assessment	15/12/2020	N/A	Development Permit	8

Decisions Made Under Delegated Authority 13.12.2020 to 19.12.2020

CATEGORY1

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
CAR20/0548	Design and Siting - Dwelling House x 3	Vadim RIBINSKY	27 Howlett Road Capalaba QLD 4157	Referral Agency Response - Planning	16/12/2020	N/A	Approved	9
OPW20/0106	Operational Works - Domestic Driveway Crossover	Max William CHILCOTT	25 Muskwood Street Capalaba QLD 4157	Code Assessment	18/12/2020	N/A	Development Permit	9
CAR20/0477.01	Change to Development Approval - CAR20/0477 Design and Siting - Shed	Daniel Martin SUTHERLAND	30 Pitt Road Birkdale QLD 4159	Minor Change to Approval	14/12/2020	N/A	Approved	10
CAR20/0529	Design and Siting - Carport	Ashcroft Architects Pty Ltd (Redland Bay)	48 Whitehall Avenue Birkdale QLD 4159	Referral Agency Response - Planning	15/12/2020	N/A	Approved	10

Decisions Made Under Delegated Authority 13.12.2020 to 19.12.2020

CATEGORY2

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
OPW20/0093	Trunk Sewer Infrastructure	Palacio Property Group Pty Ltd As Trustee	445-447 Boundary Road Thornlands QLD 4164	Code Assessment	18/12/2020	N/A	Approved	3
OPW19/0073.01	Change to Development Approval - Operational Works for RAL - 1 into 33 Lots - Stage 2	Andiworth Pty Ltd	88-90 Kinross Road Thornlands QLD 4164	Minor Change to Approval	18/12/2020	N/A	Approved	7
OPW20/0112	Operational Works for RAL - Frontage road work and access road across the frontage of Lots 1, 2, 3, and 22 – 28	CMT Engineers Pty Ltd	157-195 Woodlands Drive Thornlands QLD 4164	Code Assessment	17/12/2020	N/A	Development Permit	9

Decisions Made Under Delegated Authority 20.12.2020 to 26.12.2020

CATEGORY1

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
CAR20/0575	Design and Siting - Extension	Complete Home Extensions	4 Lockitt Place Ormiston QLD 4160	Referral Agency Response - Planning	23/12/2020	N/A	Approved	1
DBW20/0026	Domestic Additions - Deck and Patio Roof	Fastrack Building Certification	39 Sentinel Court Cleveland QLD 4163	Code Assessment	21/12/2020	N/A	Development Permit	2
DBW20/0057	Domestic Additions	Suncoast Outdoor Living	5 Benjamin Court Cleveland QLD 4163	Code Assessment	23/12/2020	N/A	Development Permit	2
CAR20/0554	Design and Siting - Carport	Gregory Keith LEVICK	17 Trafalgar Drive Victoria Point QLD 4165	Referral Agency Response - Planning	23/12/2020	N/A	Approved	4
CAR20/0488	Design and Siting - Carport and roofed patio	Fourie EKSTEEN	5 Newlands Street Redland Bay QLD 4165	Referral Agency Response - Planning	23/12/2020	N/A	Approved	5
CAR20/0532	Design and Siting - Dwelling	Scott Anthony KOMEL	9 Taylor Street Russell Island QLD 4184	Referral Agency Response - Planning	22/12/2020	N/A	Approved	5
CAR20/0558	Design and Siting - Carport	A1 Certifier Pty Ltd	11 Lisa Street Redland Bay QLD 4165	Referral Agency Response - Planning	23/12/2020	N/A	Approved	5
CAR20/0560	Design and Siting - Dwelling house	Platinum Building Approvals	108 Laurel Street Russell Island QLD 4184	Referral Agency Response - Planning	23/12/2020	N/A	Approved	5
CAR20/0561	Design and Siting - Dwelling	Pacific Approvals Pty Ltd	12 Naples Drive Russell Island QLD 4184	Referral Agency Response - Planning	23/12/2020	N/A	Approved	5

Decisions Made Under Delegated Authority 20.12.2020 to 26.12.2020

CATEGORY1

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
CAR20/0570	Design and Siting - Dwelling	Platinum Building Approvals	8 Currong Street Russell Island QLD 4184	Referral Agency Response - Planning	23/12/2020	N/A	Approved	5
DBW20/0043	Domestic Additions	James ROBSON	36 Mel Street Macleay Island QLD 4184	Code Assessment	23/12/2020	N/A	Development Permit	5
CAR20/0551	Design and Siting - Carport	Strickland Certifications Pty Ltd	8 Caswell Crescent Redland Bay QLD 4165	Referral Agency Response - Planning	22/12/2020	N/A	Approved	6
CAR20/0553	Design and Siting - Dwelling House	Building Code Approval Group Pty Ltd	45 Capella Drive Redland Bay QLD 4165	Referral Agency Response - Planning	23/12/2020	N/A	Approved	6
CAR20/0555	Design and Siting - Carport	Adept Building Approvals	4 Ravensworth Place Alexandra Hills QLD 4161	Referral Agency Response - Planning	22/12/2020	N/A	Approved	7
CAR20/0550	Design and Siting - Dwelling	Amya HILL	5 Arcadia Street Capalaba QLD 4157	Referral Agency Response - Planning	22/12/2020	N/A	Approved	8
RAL20/0073	Standard Format - 1 into 2 lots and access easement	Rick MARKHAM	7 Plumer Street Wellington Point QLD 4160	Code Assessment	22/12/2020	N/A	Development Permit	8
CAR20/0564	Design and Siting - Dwelling	Burbank Homes	17 Frost Street Capalaba QLD 4157	Referral Agency Response - Planning	23/12/2020	N/A	Approved	9
RAL20/0039	Standard Format - 1 into 2 lots	East Coast Surveys Pty Ltd	35-39 Stanley Street Capalaba QLD 4157	Code Assessment	23/12/2020	N/A	Development Permit	9

Decisions Made Under Delegated Authority 20.12.2020 to 26.12.2020**CATEGORY1**

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
CAR20/0187	Design and Siting - Carport	Ryan GRIFFITHS	27 Mary Pleasant Drive Birkdale QLD 4159	Referral Agency Response - Planning	23/12/2020	N/A	Approved	10
DBW20/0045	Domestic Additions - Patio & Carport	Fastrack Building Certification Just Patios Qld Pty Ltd	48 Queens Esplanade Thorneside QLD 4158	Code Assessment	23/12/2020	N/A	Development Permit	10

Decisions Made Under Delegated Authority 20.12.2020 to 26.12.2020

CATEGORY2

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
OPW20/0009.01	Change Application - Operational Works for Vegetation Clearing Associated with RAL 1 into 130 lots	Lendlease Communities (Shoreline) Pty Limited	275-495 Serpentine Creek Road Redland Bay QLD 4165	Minor Change to Approval	23/12/2020	N/A	Approved	6
OPW20/0016	Shoreline Pump Station Infrastructure SPS167	KN Group Pty Ltd	275-495 Serpentine Creek Road Redland Bay QLD 4165	Code Assessment	24/12/2020	N/A	Development Permit	6
MCU20/0123	Low impact industry - including ancillary showroom and offices	Multi Span Australia Group Pty Ltd	48 Smith Street Capalaba QLD 4157	Code Assessment	23/12/2020	N/A	Development Permit	9
OPW20/0116	Operational Works for RAL - Conditioned roofwater works and service requirements for 1 into 2	Brendan Alan MORONEY	42 Bates Drive Birkdale QLD 4159	Code Assessment	24/12/2020	N/A	Development Permit	10

Decisions Made Under Delegated Authority 20.12.2020 to 26.12.2020**CATEGORY3**

Application Id	Application Full Details	Applicant	Associated Property Address	Primary Category	Decision Date	Negotiated Decision Date	Decision Description	Division
RAL19/0071	Standard Format - 1 into 50 Lots	Corgold Pty Ltd As Trustee	67-85 Kinross Road Thorncroft QLD 4164	Impact Assessment	21/12/2020	N/A	Development Permit	7

14.2 LIST OF DEVELOPMENT AND PLANNING RELATED COURT MATTERS AS AT 19 JANUARY 2021

Objective Reference:

Authorising Officer: Louise Rusan, General Manager Community & Customer Services

Responsible Officer: David Jeanes, Group Manager City Planning and Assessment

Report Author: Michael Anderson, Senior Appeals Planner

Attachments: Nil

PURPOSE

To note the current development and planning related appeals and other related matters/proceedings.

BACKGROUND

Information on appeals and other related matters may be found as follows:

1. Planning and Environment Court

a) Information on current appeals and applications with the Planning and Environment Court involving Redland City Council can be found at the District Court website using the "Search civil files (eCourts) Party Search" service:

<http://www.courts.qld.gov.au/services/search-for-a-court-file/search-civil-files-ecourts>

b) Judgments of the Planning and Environment Court can be viewed via the Supreme Court of Queensland Library website under the Planning and Environment Court link:

<http://www.sclqld.org.au/qjudgment/>

2. Court of Appeal

Information on the process and how to search for a copy of Court of Appeal documents can be found at the Supreme Court (Court of Appeal) website:

<https://www.courts.qld.gov.au/courts/court-of-appeal/the-appeal-process>

3. Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP)

The DSDMIP provides a Database of Appeals that may be searched for past appeals and applications heard by the Planning and Environment Court:

<https://planning.dsdmip.qld.gov.au/planning/spa-system/dispute-resolution-under-spa/planning-and-environment-court/planning-and-environment-court-appeals-database>

The database contains:

a) A consolidated list of all appeals and applications lodged in the Planning and Environment Courts across Queensland of which the Chief Executive has been notified.

b) Information about the appeal or application, including the file number, name and year, the site address and local government.

4. Department of Housing and Public Works (DHPW)

Information on the process and remit of development tribunals can be found at the DHPW website:

<http://www.hpw.qld.gov.au/construction/BuildingPlumbing/DisputeResolution/Pages/default.aspx>

PLANNING & ENVIRONMENT COURT APPEALS & APPLICATIONS

1.	File Number:	3829 of 2019
	Appellant:	Sutgold Pty Ltd v Redland City Council
	Respondent:	Redland City Council
	Proposed Development:	Reconfiguring a Lot (8 lots into 176 lots and new roads) 72, 74, 78, 80, 82 Double Jump Road, 158-166, 168-172 and 174-178 Bunker Road, Victoria Point (Lots 12, 13, 15, 22 and 21 on RP86773, Lots 16 and 20 on SP293877 and Lot 12 on RP898198)
	Appeal Details:	Appeal against deemed refusal by Council.
	Current Status:	<p>Appeal filed 23 October 2019. An early without prejudice meeting was held on 26 November 2019. A directions hearing was held on 6 February 2020. A list of matters supporting an approval was provided by the Appellant on 14 April 2020. The list of experts has been nominated and without prejudice conferences were held with the Appellant on 6, 14 and 21 May 2020 to discuss Council's position and proposed changes. A review was held on 17 June 2020 and it was ordered that the Appellant was to file and serve any application for a minor change by 26 June 2020. By 15 July 2020, the Respondent and Co-Respondent were to file and serve a written response to the Appellant's minor change application stating whether it will or will not oppose the declaration being made. Council was required to notify of its position on the appeal by 24 July 2020, should the Court determine the changes are minor.</p> <p>The matter was reported to the General Meeting of Council on 22 July 2020. It was confirmed that the proposed changes were a minor change but Council was still opposing the application. The parties were notified of Council's position on 24 July 2020. A without prejudice meeting was held with the appellant on 22 July 2020.</p> <p>The matter was considered at a hearing on 6 August 2020 where it was ordered that the infrastructure and traffic experts nominated by the parties are to meet and prepare a joint expert report (JER), to be completed by 18 September 2020. JERs in respect of town planning and engineering were received on 23 November and 24 November respectively. The ecology and traffic JERs were received on 10 and 14 December 2020 respectively. The appeal is allocated for a hearing in March 2021 for 5 days.</p>

2.	File Number:	4312 of 2019
Appellant:		New Land Tourism Pty Ltd
Respondent:		Redland City Council
First Co-respondents (By election):		Benjamin Alistair Mackay and Renee Michelle Mackay
Second Co-respondents (By election):		Debbie Tye-Anderson, Kerri Vidler, Lee Nicholson, Peter Anderson, Vanessa Anderson, Thelma Anderson.
Proposed Development:		Material change of use (tourist accommodation) 147-205 Rocky Passage Road, Redland Bay (Lot 3 on RP153333)
Appeal Details:		Appeal against Council's decision to give a preliminary approval for a development application.
Current Status:		<p>Appeal filed 29 November 2019. A review was held on 11 June 2020 and it was ordered that the Appellant shall provide without prejudice material to all other parties by 24 June 2020. A without prejudice conference, chaired by the P & E ADR Registrar, was held on 22 July 2020.</p> <p>At a review on 5 August 2020 it was ordered that the appellant shall provide to the other parties without prejudice material addressing wastewater and landscaping issues by 21 August 2020. This material was provided by the Appellant. A review was held on 14 September 2020. The Appellant was to provide further without prejudice material by 25 September 2020. The Appellant provided the further material on 14 October 2020 and a further without prejudice conference was held on 19 October 2020. The Appellant provided revised material for comment. A further without prejudice meeting was held on 16 December 2020. Further information is to be provided in January 2021 and a further review is scheduled for 2 February 2021.</p>

3.	File Number:	4703 of 2019
Applicant:		Redland City Council
Respondents:		Canaipa Developments Pty Ltd Ian Robert Larkman TLC Jones Pty Ltd TLC Supermarkets Unit Trust No 2
Site details:		29-39 High Street, Russell Island (Lot 100 on SP204183)
Application Details:		Application for interim and final relief with respect to alleged development offences under the <i>Planning Act 2016</i> and offences under the <i>Environmental Protection Act 1994</i> .
Current Status:		<p>Application filed 20 December 2019. A directions hearing was held on 5 February 2020 and a review took place on 8 April 2020. A further review was held on 24 April 2020 and Orders were that Council is to notify the Respondents as to whether the proposed replacement on-site sewerage treatment facility complies with the requirements sought in the originating application. A 4 day trial commenced on 28 September 2020. Final written submissions were submitted on 16 October 2020. The Respondent provided final submissions on 30 October 2020 and a response was provided on 6 November 2020. A part hearing was held on 13 November 2020.</p> <p>On 15 December 2020, the Court issued an Enforcement Order requiring the owner of the Russell Island shopping centre to, within 9 months, replace the existing onsite Sewerage Treatment Plant and land application area with a system authorised by an Environmental Authority for Environmentally Relevant Activity 63. The owners of the shopping centre will need to continue to comply with the requirement to have onsite portable toilets.</p>

4.	File Number:	566 of 2020
Appellant:		Clay Gully Pty Ltd
Respondent:		Redland City Council
Proposed Development:		Reconfiguration of a lot by standard format plan (3 lots into 289 lots over 7 stages, new road and park. 39 Brendan Way, 21-29 and 31 Clay Gully Road, Victoria Point (Lot 1 on RP72635, Lot 4 on RP57455 and Lot 1 on RP95513)
Appeal Details:		Appeal against deemed refusal by Council.
Current Status:		<p>Appeal filed 25 February 2020. Council notified of its position in the appeal on 1 May 2020 and provided reasons for refusal on 5 May 2020. A review was held on 8 May 2020 and it was ordered that the Appellant was to file and serve any request for further and better particulars by 15 May 2020.</p> <p>A request for further and better particulars was made by the Appellant on 15 May 2020. Council provided its response to the request for further and better particulars on 1 June 2020. The Appellant submitted its matters supporting approval of the proposed development on 15 June 2020.</p> <p>A without prejudice discussion with the appellant and co-respondent, chaired by the P & E ADR Registrar, was held on 18 June 2020. A further without prejudice meeting was held on 25 June 2020. The matter was adjourned on the papers until 17 August 2020, in order to facilitate further discussions between the parties. A without prejudice meeting was held with the appellant on 3 August 2020.</p> <p>It was ordered that the parties should engage in a further without prejudice meeting by 4 September 2020 and this was held on 3 September 2020. A review was held on 10 September 2020 and the Orders were that the parties engage in a further without prejudice meeting by 9 October 2020. A without prejudice meeting was held on 6 October 2020. The matter was considered at the General Meeting on 7 October 2020.</p> <p>A further review was held on 15 October 2020 and a further without prejudice meeting was held on 22 October 2020. The Appellant filed its minor change application on 23 November 2020 and the matter was listed for further review on 8 December 2020. Orders were made to provide draft conditions by 11 December 2020. The draft conditions were provided on 15 December 2020. The Appellant provided comments on 22 December 2020 and negotiations are ongoing. A formal without prejudice meeting is not required.</p> <p>A further review is scheduled for 3 February 2021.</p>

5.	File Number:	1612 of 2020
Appellant:		Sutgold Pty Ltd
Respondent:		Redland City Council
Proposed Development:		Development permit for a reconfiguration of 9 Lots into 275 Residential Lots, 3 Balance Lots, 1 Load Centre Lot, 2 Park Lots, 2 Open Space Lots, 1 Pedestrian Connection Lot and 1 Multi-function Spine Lot in 12 stages. 36-56 Double Jump Road, 26 Prospect Crescent and 27 Brendan Way, Victoria Point more properly described as Lot 4 on RP57455, Lot 1 on RP95513, Lot 2 on RP86773, Lot 1 on RP86773, Lot 3 on RP148004, Lot 7 on RP57455, Lot 2 on RP169475, Lot 2 on RP165178, Lot 6 on SP145377, Lot 801 on SP261302 and Lot 5 on SP293881.
Appeal Details:		Appeal against deemed refusal by Council.
Current Status:		<p>Appeal filed 5 June 2020. A hearing was held on 23 July 2020 where it was ordered that the respondent was required to notify the parties of its position and grounds if refused or conditions if it should be approved by 7 August 2020.</p> <p>The matter was considered at the General Meeting of Council on 5 August 2020 where it was resolved that the matter ought to be refused. The parties were notified of Council's position as respondent on 6 August 2020.</p> <p>A review was held on 19 August 2020. Orders were made on the papers that that the Appellant was to provide grounds for appeal by 2 September 2020. Council received the grounds of appeal on 9 September 2020. A without prejudice meeting was held on 23 September 2020. A review was held on 16 October 2020. It was ordered that that the parties engage in a further without prejudice meeting by 4 November 2020. A site visit with Council's and Appellant's ecological experts was held on 19 October 2020 and further without prejudice discussions were held on 22 October 2020.</p> <p>The matter was listed for review on 8 December 2020 and it was ordered that the Appellant was to provide its minor change material by 11 December 2020. Council advised that it did not oppose the minor change application on 18 December 2020. The matter is listed for review and minor change hearing is to be held on 2 February 2021.</p>

6.	File Number:	1724 of 2020
Appellant:		Fort Street Real Estate Capital Pty Ltd
Respondent:		Redland City Council
Proposed Development:		Combined development permit for a material change of use (fast food outlet) and reconfiguring a lot (access easement and subdivision by lease). Birkdale Fair Shopping Centre at 2-12 Mary Pleasant Drive, Birkdale and more properly described as Lot 1 on RP816847.
Appeal Details:		Appeal against refusal by Council.
Current Status:		<p>Appeal filed on 17 June 2020. A review was held on 27 July 2020 where it was ordered that the appellant was to notify the parties of any changes to the development application by 31 July 2020. On 14 August 2020 the respondent (Council) notified the appellant that Council would not be opposing the minor change and notified its fully articulated grounds of refusal.</p> <p>A review was held on 19 August 2020 where it was ordered that the parties should exchange its list of experts by 26 August 2020 and that joint expert reports must be completed by 30 September 2020. All joint expert reports were exchanged and a without prejudice meeting was held on 15 October 2020. A three day trial was held on 25-27 November 2020.</p> <p>The judgment was handed down on 11 December 2020 and the appeal was allowed subject to lawful conditions. Draft conditions were provided by Council to the Appellant on 15 January 2021.</p>

7.	File Number:	2080 of 2020
Appellant:		Silkwear Developments Pty Ltd
Respondent:		Redland City Council
Proposed Development:		Development permit for a reconfiguration of a lot (1 into 5 lots) respect of land at 1-13 Beckwith Street, Ormiston, more properly described as Lot 8 on RP895452 (Council ref: RAL19/0087).
Appeal Details:		Appeal against conditions.
Current Status:		<p>Appeal filed on 7 July 2020. A review was undertaken on 2 September 2020. It was ordered that Council is to draft and serve the grounds for the conditions in dispute by 16 September 2020. The appellant is to file and serve any amended grounds for setting aside the disputed conditions by 25 September 2020. A without prejudice meeting was held on 2 October 2020. A further without prejudice meeting was held on 15 October 2020. The Appellant provided revised plans to address stormwater quality and road design on 29 October 2020 and a further without prejudice meeting was due to be held on 19 November 2020 and review on 20 November 2020. These dates were adjourned in order for further changes to take place. Revised material was received on 24 November 2020 and a further without prejudice meeting was held on 26 November 2020.</p> <p>Further to the without prejudice meeting, revised material was provided and further discussions took place on a without prejudice basis.</p> <p>The appeal was adjourned at review on 10 December 2020 and is listed for further review on 5 February 2021 and this will include a minor change application.</p>

8.	File Number:	2081 of 2020
Appellant:	Silkwear Developments Pty Ltd	
Respondent:	Redland City Council	
Proposed Development:	Development permit for a reconfiguration of a lot (1 into 5 lots) respect of land at 1-13 Beckwith Street, Ormiston, more properly described as Lot 8 on RP895452.	
Appeal Details:	Appeal against infrastructure charges notice.	
Current Status:	<p>Appeal filed on 7 July 2020. A review was undertaken on 2 September 2020. A without prejudice meeting was held on 2 and 15 October 2020. A further without prejudice meeting was to be held on 19 November 2020. These dates were adjourned in order for further changes to take place. Revised material was received on 24 November 2020 and a further without prejudice meeting took place on 26 November 2020.</p> <p>The appeal was adjourned at review on 10 December 2020 and is listed for further review on 5 February 2021.</p>	

9.	File Number:	2337 of 2020
Appellant:	Bernard Diab and Tracey Diab	
Respondent:	Redland City Council	
Proposed Development:	Development permit for a material change of use for home-based business in respect of land at 393 Mount Cotton Road, Capalaba and more properly described as Lot 4 on SP297142.	
Appeal Details:	Appeal against refusal by Council.	
Current Status:	<p>Appeal filed on 17 August 2020. A review was held on 16 October 2020. The respondent (Council) issued its consolidated reasons for refusal on 30 October 2020. A without prejudice conference chaired by the ADR Registrar was held on 19 November 2020. The appellant agreed to provide a revised plan early in the week commencing 23 November 2020 with further comments to be provided within one week of receipt. This information was received on 7 December 2020.</p> <p>The appeal is listed for a three day hearing in March 2021.</p>	

10.	File Number:	2893 of 2020
Appellant:	Paige Pty Ltd	
Respondent:	Redland City Council	
Co-Respondent	Sutgold Pty Ltd	
Proposed Development:	Development permit for reconfiguring a lot – 1 into 23 lots and new road on land located at 152-156 Bunker Road, Victoria Point on Lot 23 on RP86773.	
Appeal Details:	Appeal against deemed refusal by Council.	
Current Status:	<p>Appeal filed on 13 October 2020. Council provided its position on the appeal on 20 November 2020. A review was held on the 23 November 2020 and it was ordered that Council (Respondent) is to provide its particularised list of provisions relevant to the grounds for refusal by 27 November 2020. The particularised list identifying each assessment benchmark was provided on 9 December 2020.</p> <p>A further consolidated list of reasons for refusal were provided on 18 December 2020. The Co-respondent is to provide their position by 29 January 2021. A review is listed for 3 February 2021.</p>	

11.	File Number:	39 of 2021
Appellant:		Sutgold Pty Ltd
Respondent:		Redland City Council
Proposed Development:		Development permit for a reconfiguration of a Lot (2 lots into 37 lots, 1 drainage lot, new road and 3 access easements) over land located at 26 Prospect Crescent and 27 Brendan Way, Victoria Point, more particularly described as Lot 801 on SP261302 and Lot 6 on SP145377.
Appeal Details:		Appeal against deemed refusal by Council.
Current Status:		Appeal filed on 4 January 2021.

12.	File Number:	40 of 2021
Appellant:		Sutgold Pty Ltd
Respondent:		Redland City Council
Proposed Development:		Development permit for a reconfiguration of a Lot (3 lots into 157 lots, 2 entry park lots, 2 drainage lots, 2 multi-function spine lots and new road) over land located at 52, 56, 62, 64 and 66 Double Jump Road, Victoria Point, more properly described as Lot 7 on RP86773, Lot 8 on RP222878, Lot 9 on RP222878, Lot 2 on RP165178 and Lot 5 on SP293881.
Appeal Details:		Appeal against deemed refusal by Council.
Current Status:		Appeal filed on 4 January 2021.

13.	File Number:	41 of 2021
Appellant:		Alexandra Margaret Shaw
Respondent:		Redland City Council
Proposed Development:		Other Change to a development approval (Development permit for a standard format reconfiguration) over land at 17-19 Honeygem Place, Birkdale and more properly described as Lot 1 on SP 174943.
Appeal Details:		Appeal against conditions of approval.
Current Status:		Appeal filed on 22 December 2020.

14.	File Number:	42 of 2021
Appellant:		Tea Cup Cottage Pty Ltd
Respondent:		Redland City Council
Proposed Development:		Development permit for material change of use (Residential care facility) over land at 17-19 Honeygem Place, Birkdale and more properly described as Lot 1 on SP 174943.
Appeal Details:		Appeal against conditions of approval.
Current Status:		Appeal filed on 22 December 2020.

APPEALS TO THE QUEENSLAND COURT OF APPEAL

15.	File Number:	8114 of 2018 (MCU012812)/ (QPEC Appeal 3641 of 2015)
	Appellant:	Redland City Council
	Respondent:	King of Gifts Pty Ltd and HTC Consulting Pty Ltd
	Proposed Development:	Material Change of Use for Service Station (including car wash) and Drive Through Restaurant 604-612 Redland Bay Road, Alexandra Hills (Lot 21 on SP194117)
	Appeal Details:	Appeal against the decision of the Planning and Environment Court to allow the appeal and approve the development.
	Current Status:	<p>Appeal filed by Council on 30 July 2018. Council's outline of argument was filed on 28 August 2018. The appellant's outline of argument was filed on 20 September 2018. The matter was heard before the Court on 12 March 2019. The judgment of the Supreme Court on 13 March 2020 was that the appeal is allowed and the orders made on 18 June 2019 be set aside. The appeal is to be remitted back to the Planning and Environment Court and the respondent is to pay the appellant's costs of the appeal.</p> <p>At a review in the P & E Court on 15 June 2020 the Court ordered that written submissions are to be filed by 10 July 2020 with a hearing listed for 17 July 2020. The written submissions were filed on 10 July 2020.</p> <p>The judgment in the Planning and Environment Court was issued on 7 August 2020 and the appeal was allowed.</p> <p>A further appeal has been submitted by Council. An outline of argument and list of authorities were filed on 20 November 2020. The respondent's outline and authorities were filed on 18 December 2020. The applicant's written reply is to be filed 19 January 2021. Amended outline of arguments are due by 4 February 2021 and a hearing date has been set down for 15 March 2021.</p>

DEVELOPMENT TRIBUNAL APPEALS AND OTHER MATTERS

16.	File Number:	Appeal 20-021
Appellant:		Darren Horton
Respondent:		Redland City Council
Proposed Development:		Design and siting request for a swimming pool 11 Reserve Esplanade, Wellington Point (Lot 1 on RP53836)
Appeal Details:		Appeal against the decision of the Redland City Council to direct refusal of a swimming pool structure within the front boundary setback in a design and siting referral.
Current Status:		<p>Appeal filed on 2 September 2020. A tribunal site visit and meeting was held on 13 November 2020. Additional submissions were made on behalf of the Appellant on 18 November 2020 and a response provided by Council on 20 November 2020.</p> <p>Council was notified on 16 December 2020 that the Tribunal orders the Appellant, pursuant to section 250 of the Planning Act, to reconsider the design of the external walls of the proposed swimming pool structure to consider changes to the finish, colours and texture and for these to be provided within 20 days or request the tribunal to decide the appeal without any changes.</p> <p>On 19 December 2020 the Appellant submitted revised treatment of the external walls of the swimming pool to the Tribunal. On 5 January 2021 a response was provided to the Appellant, on behalf of the Tribunal, that whilst it is not the role of the Tribunal to recommend treatment, it had reviewed the details provided and considered that the submitted material was not acceptable. The Tribunal has provided the Appellant until 4 February 2021 to provide revised plans.</p>

Human Rights

There are no known human rights implications associated with this report.

OFFICER'S RECOMMENDATION

That Council resolves to note this report.

14.3 ADVERTISING DEVICE REGULATORY FEES

Objective Reference:

Authorising Officer: Louise Rusan, General Manager Community & Customer Services

Responsible Officer: Jen Gisler, Acting Group Manager Environment and Regulation

Report Author: Paul Hoelscher, Team Leader Development Standards
Nick Tzannes, Service Manager Development Control

Attachments: Nil

PURPOSE

To seek approval for an amendment to the adopted 2020-2021 Fees and Charges Schedule. The amendment seeks the inclusion or reinstatement of the fee for annual licensing for advertising signage (permanent static signage) in the Fees and Charges Schedule for 2020-2021 which was inadvertently omitted.

BACKGROUND

The Fees and Charges Schedule for 2020-2021 was adopted in General Meeting on 25 June 2020.

It appears through a review process the removal of the annual licensing fee for advertising signage and inclusion of the new charge for annual licence for LED (Light Emitting Diode) signage was included prematurely. This new approach for LED signage is aimed at reducing the regulatory burden on signs that are not high impact and focuses compliance activities on the signs that generate the most customer requests and required ongoing action from development compliance teams. The new fee enables a strategic targeted monitoring compliance approach to address greater risks to public safety and amenity.

However, omission of the routinely charged fee for annual licensing of static signage was inadvertent and requires resolution.

ISSUES

1. The 2019-2020 fee for the annual licensing for advertising signage was a flat rate of \$310.65 per sign, and it is recommended that this flat rate be included by amendment to the 2020-2021 Register of Fees and Charges.
2. Council officers are required to implement a transition strategy which includes updating processes and procedures, as well as reviewing Local Law provisions and communicating with affected businesses prior to transitioning to the regulatory focus on LED signage. This would be subject to Council approval at a later date, potentially through the budget development process and the fees and charges process for 2021-2022.

STRATEGIC IMPLICATIONS**Legislative Requirements**

Local Law 1 (Administration) 2015 and *Subordinate Local Law No. 1.4 (Installation of Advertising Devices) 2017* contains the provision to license signage. Section 98 of the *Local Government Act 2009* requires a local government to keep a register of fees. For transparency, Council publishes all its annual fees and charges. Section 97 of the *Local Government Act 2009*, allows Council to

charge fees for, the issue or renewal of a licence, permit, registration or other approval providing it is for cost recovery.

The fee is for the cost for Council officers to assess, administer, process the signage renewal/approval. Further, to ensure the sign is maintained in accordance with conditions of the permit.

Risk Management

Reinstatement of the advertising signage license fee will allow Council Officers to maintain exiting licensing processes while providing an opportunity for Council to implement a transition strategy to the LED compliance focus fee.

Financial

Currently no invoices have been issued resulting in a revenue loss of approximately \$50,000.00.

People

There are no identified implications for Council staff.

Environmental

There are no identified environmental implications.

Social

There are no identified social implications.

Human Rights

There are no known relevant human rights matters outlined in s58(5) of the *Human Rights Act* associated with this report.

Alignment with Council's Policy and Plans

The proposed fees and charges align with Council's Revenue Policy and the Register of Fees Guideline.

CONSULTATION

Consulted	Consultation Date	Comments/Actions
Finance Officer – Financial Services	16 December 2020	Nil

OPTIONS

Option One

That Council resolves to amend the 2020-2021 Register of Fees and Charges to include a fee for annual licence for permanent signs of \$310.65.

Option Two

That Council resolves to amend the 2020-2021 Register of Fees and Charges to remove the fee for annual licence for LED signage and re-instate the annual licence for permanent signs of \$310.65.

OFFICER'S RECOMMENDATION

That Council resolves to amend the 2020-2021 Register of Fees and Charges to include a fee for annual licence for permanent signs of \$310.65.

14.4 UPDATE ON REVIEW OF OPTIONS TO ENHANCE THE PROTECTION OF CORE HABITAT AND WILDLIFE CORRIDOR HABITAT IN THE URBAN FOOTPRINT OF THE CITY

This report is being finalised.

15 REPORTS FROM INFRASTRUCTURE & OPERATIONS

15.1 COOCHIEMUDLO ISLAND SHORELINE EROSION MANAGEMENT PLAN

Objective Reference:

Authorising Officer: Dr Nicole Davis, General Manager Infrastructure & Operations

Responsible Officer: Bradley Salton, Group Manager City Assets

Report Author: Lachlan McClure, Adviser, Marine Strategic Infrastructure Planning

Attachments: 1. Coochiemudlo Island Shoreline Erosion Management Plan [↓](#)

PURPOSE

To present the Coochiemudlo Island Shoreline Erosion Management Plan (SEMP) to Council for adoption.

BACKGROUND

Foreshore Erosion on Coochiemudlo Island

The foreshore on Coochiemudlo Island is predominantly in a natural state and therefore subject to the natural sediment transport patterns of erosion and sand deposits associated with tidal processes and storm events. Council receives regular reports of erosion on Coochiemudlo Island, particularly in relation to the eastern beaches.

Previous studies show that patterns of erosion on Coochiemudlo Island is principally linked to storm events where sand is removed from the upper beach resulting in erosion. While natural coastal process will eventually restore the beaches, this can take a long period of time.

Coastal erosion on Coochiemudlo Island poses little risk to private land or public infrastructure. However the visual amenity, community access of the sandy beach and risk to foreshore vegetation in the coastal reserve causes significant concern among members of the community.

Shoreline Erosion Management Plan

In recognition of the erosion issues Council developed a Shoreline Erosion Management Plan (SEMP). The SEMP has been developed by Coastal Engineering Consultancy BMT with input from a Community Reference Group. The purpose of the SEMP is to investigate the underlying causes of shoreline erosion and to establish a framework for Council to respond to erosion. The SEMP has been developed based on the following inputs:

- Independent expert professional advice from qualified coastal engineers including modelling of coastal processes, assessment of geo-referenced historic aerial images and beach survey data, and analysis of potential management options
- Input from a Community Reference Group on their values and preferences
- Advice from State Departments on coastal science, planning and policy matters.

ISSUES

Coastal Processes on Coochiemudlo Island

Coochiemudlo Island is a low wave energy environment. An assessment of available data found minimal long-term changes to most of the Island's beaches. Any changes to the shoreline are often within the order of accuracy of the geo-referenced aerial photographs.

Modelling of sand transport patterns confirmed that sand moves in both directions along the eastern shoreline of Coochiemudlo Island, varying seasonally and depending on weather conditions. During the summer months it is expected that sand will move south along Norfolk Beach and west along Main Beach. The modelling suggests that this process is not particularly strong and that the rate of sand loss is low.

Overall, the predicted wave climate and pattern of sand transport suggests that erosion on Coochiemudlo Island is largely caused by storm events and that there is very low rates of longshore transport. However because there is only a thin layer of sand on Coochiemudlo Island, the movement of small volumes may cause noticeable erosion. This happens when storm events cause sand to be redistributed lower down the beach profile or on adjacent beaches.

Existing Management Practices

Currently Council manages the foreshore of Coochiemudlo Island as per city wide practices which involves responsive maintenance work to ensure the safety of the foreshore. This has included repairs to beach access points and minor sand pushing to reinforce an erosion scarp. Council has previously resolved to install a seawall constructed of sand filled geotextile bags to protect some mature trees.

There is currently no obligation under a policy or plan for Council to preserve the existing foreshore alignment.

Proposed Management Strategy

The SEMP report determined that there are two overarching management strategies that could be adopted by Council:

- 1) Acceptance that a natural process is occurring with cyclic erosion and recovery depending on the frequency and severity of storm events. If long term erosion occurs, even at a very low rate, the eastern beach will slowly roll back but retain a natural beach amenity; or
- 2) Hold the current shoreline position. This can be with beach nourishment, which will retain beach amenity, or by structures such as seawalls, which will result in loss of the beach in front of the structures and exposed bedrock in many areas.

The community through the reference group has expressed a strong desire to preserve the current shoreline alignment and preserve the amenity of the sandy beach. The SEMP recommends the best way to achieving this outcome if adopted by Council as its preferred management strategy. Note that this intervention will have significant ongoing costs compared to existing shoreline management practices as opposed to acceptance of natural processes.

The key recommendations of the SEMP include the following:

- 1) A program of post-storm beach nourishment (importing new sand) to accelerate the natural recovery processes and provide a buffer against future erosion. The recommended program is based on trigger points and surveyed quantities of sand losses during an erosion event. Nourishment would be done in a timely manner to provide a buffer against subsequent erosion. It is estimated this would be needed once every five years at a cost of up to \$350,000.
- 2) Initial nourishment of 2400m³ along Norfolk Beach to address community concerns about exiting conditions by accelerating recovery and provide a buffer against future events at a one off cost of approximately \$170,000.

- 3) Ongoing monitoring program involving the installation of photo monitoring points and annual beach surveys to refine the management plan estimated between \$18,000 and \$34,000.
- 4) A range of complementary actions including vegetation management, review and formalisation of beach access arrangement, stormwater management and sea grass survey at an estimated one off cost of approximately \$104,000.
- 5) Depositing sand dredged from around the barge ramp offshore of the eastern beaches to be washed ashore, subject to approvals and sand specification.

Strategies Not Recommended

The SEMP involved detailed modelling of sand transport patterns and a consideration of a full range of potential management options. Some of the options that were considered but not recommended as they are not suited to the coastal processes present on Coochiemudlo Island or have other negative impacts:

Groynes are structures perpendicular to the shoreline that are designed to trap sand moving along the shoreline under longshore transport processes to retain it in a particular location. Groynes were not recommended for the following reasons:

- Longshore transport is not the principal cause of erosion on Coochiemudlo Island and are only effective where erosion is caused by this process.
- They retain sand in one location at the cost of increased erosion of adjacent beaches which are starved of their sand supply.
- The number needed to protect a long stretch of shoreline, will increase their visual impact and interrupt access along a beach.

Seawalls are built to provide terminal protection against shoreline retreat. They are a barrier separating material behind the structure from wave and current forces. Seawalls were not recommended as they:

- Do not prevent the loss of sediment in front of the wall, and are therefore likely to result in the gradual lowering and loss of the sandy beach.
- Can exacerbate erosion at the ends of the wall where the erosion losses are transferred and concentrated.
- Under the State Development Assessment Provisions, seawalls are only permitted to protect buildings and infrastructure, it is highly unlikely that Council would be able to secure approvals for seawalls to protect vegetation.

Communications

Council will communicate the adoption of the SEMP to the community reference group and clarify the actions to be implemented and the limitations to the provision of beach nourishment following severe weather events. Council will also develop a fact sheet and media release to inform the wider community.

STRATEGIC IMPLICATIONS

Legislative Requirements

The Implementation Plan is a non-statutory document. Implementation of some of the recommendations of the SEMP may require permits and approvals under the *Planning Act 2016*, the *Coastal Protection and Management Act 1995* and *Marine Parks Act 2004*.

Risk Management

Erosion from coastal processes on Coochiemudlo Island does not pose an immediate risk to private land or public infrastructure. The recommended management plan is principally designed to mitigate the risk to coastal vegetation along the foreshore reserve.

Financial

The recommendations of the SEMP are not part of existing operational or capital program budgets and will require additional financial resources. If adopted, officers will request budget to implement recommendations through formal budget processes. The table below outlines an indicative program of works based on the priorities in the SEMP (table 1).

Table 1: Indicative timing and approximate costs of priority actions recommended by the SEMP¹

	Year 1	Year 2	Year 3	Year 4	Year 5
Annual items					
Beach surveys ²	\$34,000	\$34,000	\$34,000	\$34,000	\$34,000
One off Items					
Initial nourishment	\$170,000				
Install photo monitoring points	\$10,000				
Upgrade beach access points		\$20,000			
Storm water management		\$9,000			
Offshore seagrass survey			\$50,000		
Other potential remedial works		\$15,000			
Totals	\$214,000	\$78,000	\$84,000	\$34,000	\$34,000
Other items (as required)					
Responsive nourishment ³	approximately up to \$350,000 once every 5 years				
1. Note other items are noted in the SEMP but not include in this table as they are either part of existing practices or only relevant if conditions change in the future and are subject to future decision making. 2. The cost of beach surveys depend on the scope of works required, the upper range has been adopted for this table. 3. Note actual cost of nourishment depends on the quantities of sand lost and the frequency of erosion events. The SEMP recommends that Council plan for up to 5000m ² at a frequency of once every 5 years.					

Over the past four years, existing maintenance actions in response to erosion on Coochiemudlo Island has cost approximately \$220,000.

The cost associated with responsive beach nourishment are variable and will depend on the timing, frequency and scale of erosion events. Note that the estimates provided are subject to change, particularly the unit cost of supplying sand to an island. Accordingly the SEMP recommends to allow for sand nourishment of 5,000m³ for a single approved location as an annual rolling budget in case of a severe event. Based on an estimated cost of \$70/m³ this equates to \$350,000. Indications from recent storm events suggest that may be required every five years.

The SEMP recommends a number of one-off actions. Initial nourishment of Norfolk Beach which is estimated to cost of \$170,000. Annual surveys are expected to cost between \$18,000 and \$34,000 depending on the scope required. Other complementary actions including sea grass survey, upgrading beach access points, installing monitoring points, and storm water diversion are estimated at a one off cost of approximately \$104,000.

Adoption of strategies and plans that commit Council to an increasing number of actions and a higher level of service, such as the SEMP, will require additional resources and budget to implement if existing priorities and operations are not to be impacted.

Resources will be requested, as required, through normal budgetary processes and be considered within the priorities of Council.

People

The SEMP will assist asset managers and technical officers in their management of the foreshore on Coochiemudlo Island. It also clarifies what members of the community can expect from Council in response to erosion.

Environmental

Impacts on both terrestrial and marine environments have been carefully considered in the assessment of potential options. Works designed to preserve foreshore alignment typically favour terrestrial values at the expense of interfering with natural marine processes.

When considered in isolation, environmental values would dictate that natural processes be permitted to occur without intervention. However the recommended management strategy balances environmental concerns with the community preference to preserve the existing alignment of the foreshore reserve and protect coastal vegetation.

Social

Correspondence received by Council indicates that there is a level of concern among some members of the community of the impacts of erosion, and interest in how Council manages the foreshore on Coochiemudlo Island. The recommended management plan outlines how these the values and expectations can be met.

Human Rights

Adoption of the implementation plan does not infringe on any human rights.

Alignment with Council's Policy and Plans

Completion of the Coochiemudlo Island SEMP is consistent with Councils Operational Plan – it advances *Outcome 3 Embracing the Bay*. Section 3.3 aims to ensure that ‘the community is ready for and adapting to changing coastlines, storm tide and severe weather’ and specifically Section 3.3.1(b) which commits to ‘continue to develop implementation plans for the Amity Point and Coochiemudlo Island shoreline erosion management plans’.

CONSULTATION

Consulted	Date	Comments/Actions
Group Manager, City Operations	29/07/2020	Briefed on the content of the SEMP report.
Group Manager, City Assets	29/07/2020	Briefed and provided feedback on the content of the SEMP report.
Service Manager, Marine Asset Infrastructure Management, City Assets	29/07/2020	Briefed and provided feedback on the content of the SEMP report.
Service Manager, Roads, Drainage and Marine Maintenance, City Operations	13/08/2020	Provided input on current processes and costs.
Divisional Councillor, Division 4	Ongoing, latest - 13/08/2020	Chair of the Community Reference Group Briefed on the content of the SEMP report.
Community Reference Group	11 meetings, latest 9/09/2020	Provided input on community values and preferences. Reviewed draft SEMP report.
Principal Coastal Scientist, State Department of Environment and Science	16/11/2020	Reviewed the SEMP report and conveyed support for its recommendations.

OPTIONS**Option One**

That Council resolves as follows:

1. To adopt the Coochiemudlo Island Shoreline Erosion Management Plan to guide Council's response to foreshore erosion on Coochiemudlo Island.
2. To plan for the implementation of the actions and initiatives recommended in the Shoreline Erosion Management Plan.
3. To authorise the Service Manager, Marine Infrastructure Asset Management to initiate reviews and approve updates to the Management Plan in response to operational changes.
4. To note implementation of the recommended actions are subject to Council Annual Budget development and prioritisation process.

Option Two

That Council resolves to allow the natural coastal processes to eventually restore the beaches of our naturally wonderful environment and not adopt the Coochiemudlo Island Shoreline Erosion Management Plan. To support low scale management of the foreshore on Coochiemudlo according to existing management practices.

OFFICER'S RECOMMENDATION

That Council resolves as follows:

- 1. To adopt the Coochiemudlo Island Shoreline Erosion Management Plan to guide Council's response to foreshore erosion on Coochiemudlo Island.**
- 2. To plan for the implementation of the actions and initiatives recommended in the Shoreline Erosion Management Plan.**
- 3. To authorise the Service Manager, Marine Infrastructure Asset Management to initiate reviews and approve updates to the Management Plan in response to operational changes.**
- 4. To note implementation of the recommended actions are subject to Council Annual Budget development and prioritisation process.**



Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan





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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Executive Summary

i

Executive Summary

The Coochiemudlo Island foreshore is an important asset to residents, the wider community, the islands' Traditional Owners, and has high environmental, cultural, economic and social value. BMT has been engaged by Redland City Council to complete a Shoreline Erosion Management Plan (SEMP) for Coochiemudlo Island to provide strategic direction for the sustainable use of the Islands coastal zone and facilitate coordinated planning of their long-term shoreline erosion management obligations.

The Coochiemudlo Island SEM program, as laid out by Redland City Council, has the following 5 key stages:

Stage 1 – Project initiation

Stage 2 – Shoreline erosion management study

Stage 3 – Draft SEM Plan and Operational Plan

Stage 4 – Revised draft SEM and Operational Plan

Stage 5 – Presentation of revised draft SEM and Operational Plan to the Community Reference Group.

An investigation of coastal process related issues together with other environmental, social, economic, and cultural needs was undertaken to inform assessment of management options appropriate to Coochiemudlo Island and is detailed in a separate Stage 2 report (Coochiemudlo Island Shoreline Erosion Management Plan: Stage 2 - Shoreline Erosion Management Study, BMT 2020).

Most of Moreton Bay is designated within the Moreton Bay Marine Park (MBMP) and the land and waters of Coochiemudlo Island below high water are part of the Moreton Island to Broadwater habitat protection zone (HPZ) of the MBMP. A similar area of Moreton Bay is also designated under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) as Wetland of International Importance ('Ramsar wetland'), declared due to their importance as habitat for migratory shorebirds. This includes the intertidal areas of Coochiemudlo Island as well as the Melaleuca Wetlands Reserve.

While a Native Title determination has not been finalised over Coochiemudlo Island, this area is covered under the current Quandamooka Coast Claim (QC2017/004).

The Emerald Fringe was recently included in the local heritage listing for the Redland City Council on the basis of the following three criteria (Redland City Council, 2018):

- Criteria A: The place is important in demonstrating the evolution or pattern of the region's history.
- Criteria E: The place is important to the region because of its aesthetic significance.
- Criteria G: The place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons important to the region.

Coochiemudlo Island is a low energy coastal environment, sheltered from ocean swell waves by North Stradbroke and Moreton Islands. An assessment of available data including historical aerial imagery found minimal long-term changes to most of the Island's beaches with measured recession or growth of the shoreline often within the order of accuracy of the georeferencing. The exception is North-eastern Norfolk Beach which has experienced approximately 20m of erosion between 1955 and 2018, however images from intervening years indicate that this is not a lineal process.

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Executive Summary

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The study has confirmed that sand transport can occur in both directions on Norfolk Beach, varying seasonally depending on prevailing conditions. A weak net southerly transport is indicated long term under the influence of stronger north-easterly events occurring over summer months. Movement of sand northwards from north-eastern Norfolk Beach onto the tidal flat adjacent to Morwong Beach can occur under high tides and south-easterly conditions. Sand transport is westerly along Main Beach, with a low rate of loss indicated past the golf course. Overall, the predicted wave climate and pattern of longshore sand transport suggests sand transport on all beaches will largely be sporadic and dominated by episodic storm events, with very low rates of net longshore transport occurring under ambient conditions. The ferry terminal was rebuilt in 2015 and the barge ramp upgraded in 2018, which may disrupt westerly transport of sand in the short term. Assessments indicate that it is unlikely that sand is arriving at Coochiemudlo Island from sources within Moreton Bay.

The impact of storm wind and surge has been documented in recent times, including erosion caused by ex-TC Oswald. Erosion caused by storm events is expected to be the critical erosion process acting on Coochiemudlo Island and recommendations have been made to assist in beach recovery and increasing resilience against subsequent events. Due to the thin layer of sand covering bedrock on Coochiemudlo Island, movement of small volumes of sand from one location to another may involve comparatively significant horizontal movement of the shoreline and localised movement of sand due to storm events can show as noticeable erosion in one location when there has been a similar volume of accretion on an adjacent beach.

Beach profile surveys have previously been completed on Main Beach east of the Ferry Terminal and Norfolk Beach fronting Victoria Parade East. The surveys indicate that the width of the upper beach fluctuates annually, however were insufficient to confidently identify trends of beach recession or accretion. An Island wide annual survey program has been initiated, with the first survey undertaken in the second quarter of this year (2020). Seven of the profiles are in approximately the same location as previous surveyed profiles and comparison with 2018 surveys indicates recent erosion has occurred on Norfolk Beach. In addition, members of the community have reported erosion on Norfolk Beach with photos showing erosion at the berm between 2015 and 2020. Photos from July 2020 show active beach recovery is occurring, however in order to supplement recovery processes and provide a buffer against future erosion immediate beach nourishment is been recommended for Norfolk Beach.

As discussed in the Stage 2 report and section 2.1 of this report management should preference 'soft' approaches (e.g. beach nourishment, reprofiling), with 'hard' engineering approaches only adopted where these softer approaches are not feasible. Hard engineering structures are not generally used to protect assets that are not built or trunk infrastructure.

Immediate beach nourishment of 3m³/m (2400m³ total) is recommended to repair remnant existing erosion on Norfolk Beach and return the beaches to functional units.

Beach reprofiling or beach nourishment are then recommended following each erosion event to accelerate natural processes, restore beach amenity and, in the case of beach nourishment, provide an additional buffer against future erosion events. Beach specific recommendations are provided in section 6 and section 8, however the general recommended approach is that beach profiling is undertaken to restore beach amenity following a minor erosion event where sand is retained on the beach above Mean Sea Level (MSL). Beach nourishment is recommended following more severe erosion events where sand is moved to below MSL and in areas where beach reprofiling is not suitable. Sand used for beach nourishment should be the same size or coarser than the native beach sand.

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Executive Summary

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Groynes and an artificial reef or offshore breakwater have been suggested by members of the community as potential erosion control structures suitable for Norfolk Beach. Neither of these options have progressed through the multi-criterial analysis.

Seawalls have been considered for Norfolk Beach and are not recommended. While a properly designed and constructed seawall can protect the landward assets from erosion, it effectively isolates the sand located behind the wall from the active beach system and may lead to other adverse consequences, including loss of beach amenity in front of the seawall. Beach nourishment following an erosion event would still be required at the same frequency and in the same volumes to maintain beach amenity, leading to extra costs over nourishment alone.

While the existing seawalls on Norfolk Beach have strong support from some members of the community overall opinions are mixed, as evidenced by feedback received on this project. These seawalls were constructed as emergency works to provide protection to mature trees. Council has lodged an application with the State Government requesting approval of these structures, the outcome of which has not yet been finalised.

A plan to address maintenance and safety issues and complementary measures noted in the individual beach assessments is provided along with an initial indication of potential costs to assist in determining appropriate budgets.

An Operational Plan for response to storm erosion is provided with indicative beach nourishment volumes and costs for each beach compartment.

Ongoing Island wide monitoring is strongly recommended to better understand the detail of coastal processes and inform future management actions.

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Introduction

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1 Introduction

The Coochiemudlo Island foreshore is an important asset to residents, the wider community, the islands' Traditional Owners, and has high environmental, cultural, economic and social value. BMT has been engaged by Redland City Council to complete a Shoreline Erosion Management Plan (SEMP) for Coochiemudlo Island to provide strategic direction for the sustainable use of the Islands coastal zone and facilitate coordinated planning of their long-term shoreline erosion management obligations.

The Coochiemudlo Island SEM program, as laid out by Redland City Council, has the following 5 key stages:

Stage 1 – Project initiation

Stage 2 – Shoreline erosion management study

Stage 3 – Draft SEM Plan and Operational Plan

Stage 4 – Revised draft SEM and Operational Plan

Stage 5 – Presentation of revised draft SEM and Operational Plan to the Community Reference Group.

An investigation of coastal process related issues together with other environmental, social, economic, and cultural needs has previously been undertaken (Stage 2 of the SEM) to inform assessment of management options appropriate to Coochiemudlo Island (Stage 3 and revised in Stage 4) as presented in this report.

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Planning and Legislative Framework

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2 Planning and Legislative Framework

The planning and legislative context of the Coochiemudlo Island SEMP was detailed in the stage 2 report (BMT 2020) and is reproduced below for convenience.

2.1 Planning and Permissibility

A SEMP is a tool prepared under the Coastal Management Plan (CMP) that, if endorsed, can be relied on to support applications for coastal work approvals (see below). Coastal management outcome (CMO) 1.5 in the CMP provides the basis for the development of SEMPs:

Where there is an imminent threat to the community or infrastructure from coastal erosion, development of a shoreline erosion management plan (SEMP) is recommended to deliver a science-based solution to the erosion problem that considers social, environmental and economic issues.

Further, the CMP notes that 'a SEMP s used to investigate the causes and expected future impacts of erosion, analyse management options, and recommend a solution, with consideration to social, economic and environmental issues.'

The SEMP, and associated management options, should be prepared in accordance with the CMP and other prevailing planning instruments. Thus, any actions proposed for shoreline erosion management should be compatible with the policy and regulatory framework set under state and federal instruments. The relevant elements of this framework in the context of the SEMP are set out below:

- Management should preference the maintenance of natural processes as far as practicable, with protection typically only acceptable where needed to protect the safety of people and integrity of assets or infrastructure. Management options should not be costlier than the infrastructure or assets they intend to preserve.
- Where retreat and/or relocation are not possible, management should preference 'soft' approaches where possible (e.g. beach nourishment, reprofiling), with 'hard' engineering approaches only adopted where these softer approaches are not feasible. Hard engineering structures should generally not be used to protect assets that are not built or trunk infrastructure.
- No works should be undertaken that will cause reclamation. This include construction of hard structures significantly below the high-water mark and backfilling. Reclamation works such as these are not supported in the Moreton Bay Marine Park without significant justification and amendment to regulated boundaries (i.e. legislative changes).
- The values of Ramsar wetlands, including those of the Melaleuca Wetlands Reserve, should be preserved from impacts associated with anthropogenic activities.
- Sand for beach nourishment must be sourced from outside of the marine park, if possible, or taken from navigation channels as part of maintenance dredging works.

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- Management should avoid works that disturb or obscure items of Aboriginal cultural heritage. If such disturbance is necessary, it requires consultation and agreement with the relevant Aboriginal parties.
- Where possible, natural assets and public use areas, including beaches, should be retained as part of shoreline management works. However, this should be managed in balance with the principles above.
- Similarly, the local heritage values of the Emerald Fringe should be protected where possible due in line with the values identified in the heritage citation for this site (Redland City Council 2018). Some relevant values for consideration in management include the location of remnants of tourism infrastructure within the Emerald Fringe (e.g. possible tramway remnants, a cutting, lookout site) and vegetated coastal areas that provide significant aesthetic beauty and cultural value.
- Management should avoid works that, if undertaken, would cause the loss of important breeding and nesting habitat for threatened species.

Additionally, all management actions should be developed in consultation with the Quandamooka Yoolooburrabee Aboriginal Corporation (QYAC) as the representatives of the Quandamooka Traditional Owners, and subject to any Cultural Heritage Management Plan (CHMP) already in place between QYAC and Council. While a Native Title determination has not been finalised over Coochiemudlo Island, this area is covered under the current Quandamooka Coast Claim (QC2017/004).

Note that the above is the current prevailing framework. The authorisation of a SEMP and the approval of specific management actions requires further assessment from relevant regulatory agencies, including the Department of Environment and Science. Thus, there are opportunities for further discussion of preferred policy rules at these points. Therefore, except where an action is explicitly prohibited or not preferred under legislation (which is unlikely to change), management measures not completely aligned with the framework can be considered.

2.2 Approvals and Duties

Shoreline management works in Queensland are regulated primarily under the following systems:

- *Environmental Protection Act 1994* (Qld) – establishes a general environmental duty of care and pollution licencing conditions. This prevents taking action that could cause environmental harm except where licenced under the Act or other legislation, or (if not licencing regime exists) where all reasonable and practical measures are taken to avoid harm. Any works not requiring a licence, therefore, must account for the potential environmental harm they could cause. There is no duty, however, to undertake action to prevent natural loss of environmental values (e.g. erosion causing loss of coastal vegetation).

The Act establishes a framework for Environmental Authorities required for environmentally relevant activities (ERAs) including dredging and placement. Works involved with sourcing and placing sand for beach nourishment purposes, therefore, may require an Authority under the Act.

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- *Planning Act 2016* (Qld) – establishes a system for obtaining planning permits, including those triggered under some other legislation and local planning scheme. For shoreline erosion management relevant triggers for permits include:
 - Tidal works, including beach nourishment, groynes and seawalls.
 - Works interfering with state coastal land, including dune management works.
 - Disturbance of marine plants, including seagrass, mangroves, saltmarsh, melaleucas (where occurring below highest astronomical tide) and dead or fallen trees in tidal areas.
 - Bulk earthworks.
 - Disturbance of state-listed heritage features.
- *Coastal Protection and Management Act 1995* (Qld) – requires Quarry Material Allocation for sand that is to be removed from below high-water mark (e.g. placement of dredged material onshore).
- *Marine Parks Act 2000* (Qld) – requires Marine Park Permit for works within the marine park, including any works below high-water mark.
- *Aboriginal Cultural Heritage Act 2003* (Qld) – establishes a duty of care to not impact on known and unknown cultural heritage items. Where there is a risk of activities causing impacts (e.g. fresh excavations, works around scar trees) works must either adhere to the duty of care guidelines or be undertaken in agreement with the relevant Aboriginal party.
- *Nature Conservation Act 1992* (Qld) – requires permits for works that may impact on protected species, especially where works relate to relocating species and breeding habitat (e.g. nests).
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) – requires referral, assessment and potential permits for any works that could significantly impact on matters of national environmental significance.

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3 Generic Management Options

3.1 Generic Option Considerations

A range of generic management options are available for consideration, which may be classified in terms of their consistency with natural coastal and environmental processes and the natural character and values of the coastline as follows:

“Soft” Options: Options which restore and/or preserve the natural character, behaviour and values of the coastal system. These will ensure the sustainable existence and natural character of the shoreline and foreshore such that future erosion, both during short term storms and over the longer term, can be accommodated in a coastal buffer zone without threat to development requiring protective works.

Soft options may include works such as beach nourishment with sand, re-vegetation of foreshore areas and/or planning solutions that require development to be outside the zone of potential erosion (buffer zone), including:

- Regulatory controls on building in undeveloped areas;
- Removal controls on building in undeveloped areas; and
- Works aimed at restoration of the shoreline/foreshore system seaward of the development to provide an adequate buffer width to accommodate erosion.

“Hard” Options: Options that involve construction of works either to form a barrier to natural coastal erosion to protect development (seawalls) or to alter the natural processes to change the way in which the shoreline behaves (groynes and breakwaters).

Combinations of options or “hybrid” management approaches are often the most suitable where existing development lies within the erosion prone area. For example, works options such as terminal protection (seawalls) are sometimes combined with partial set-back of development, or may be augmented with ongoing beach nourishment to offset associated undesirable environmental and recreational amenity impacts. In addition, most options need to be supplemented with relevant amendments to local planning controls.

Thus, engineering works options for the shoreline may include “soft” or “hard” solutions, or a combination of both. The most common feasible works options for overcoming beach erosion problems include the following and are discussed in more detail below:

- Beach nourishment with sand to restore the beach and dune system;
- Seawalls to protect assets;
- Groynes to control the longshore movements of sand; and
- Offshore breakwaters or submerged reefs to modify wave processes which erode the beach.

Such works options are generally expensive, typically in the range \$3,000 to \$8,000 per metre length of beach to construct for adequate protection, and the hard structural options typically have adverse side effects on the beach system. Ongoing maintenance requirements must be considered in both the design and financing. Experience indicates that careful design in full cognisance of the prevailing

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coastal and ocean processes and the short and longer term effects is essential for success and cost-effectiveness of such works.

For example, it is known that seawalls constructed on retreating shorelines may give protection to land based assets but will eventually cause loss of the adjacent beach. There is a need to ensure that the foundations of the seawall are sufficiently deep for stability to cater for the loss of the beach, typically requiring deeper foundations the more seaward the seawall is located. Similarly, beach nourishment must be designed and implemented to provide for the cross-shore and longshore movements of sand affecting the area for long term effectiveness in providing property protection while maintaining the recreational amenity of sandy beach systems.

3.2 Decision Matrix

It is convenient to consider beach protection options in the broad terms of the simple matrix illustrated in Table 3-1. This matrix, in effect, represents a decision tool based on criteria relating to:

- 'Natural' versus 'Altered' character; and
- 'Non-works' (planning) versus 'Works' options.

Table 3-1 Matrix of Beach System Management Options

Options	Preserve Natural Beach System Character	Accept Change to Natural Beach System Character
Non-Works Options (planning, management and regulation)	Development free buffer zones via planning or land use regulation; Resumptions of erosion prone development; Set-back of buildings; and Building guidelines and controls; Land use guidelines and controls; Management including dune care activities.	Accept development on vulnerable erosion prone land, but prevent any protection works (allow loss of buildings and facilities as erosion occurs).
Works Options	Beach nourishment with sand to restore the beach and dune system; Multi-purpose submerged reefs for shoreline protection and recreation (e.g. fishing, snorkelling, and surfing).	Seawalls to protect assets; Groynes to control the longshore movements of sand; and Offshore breakwaters to modify patterns of sand transport and shoreline shape.

To be consistent with coastal management policy guidelines and the priorities generally adopted by the community in areas where beach amenity and ecological integrity¹ is important, the options in the column headed 'Preserve Natural Beach System Character' would normally have highest ranking in any assessment criteria. Consideration may also be given to other low cost temporary works

¹ The ecological impacts of erosion control and beach nourishment from a fisheries resources point of view are discussed in (Batton, 2007) and will be considered in this SEMP.

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options and hybrid options that combine the beneficial characteristics and offset undesirable characteristics of specific individual options.

The likelihood of success (or the risk of failure) is a key consideration in the selection of possible solution options. The options adopted involving expenditure of public funds should preferably be tied to proven techniques for dealing with beach erosion problems. There are a number of other (generally lower cost) options that are commonly put forward, covering a wide range of operational modes and with various claims of success. Most of these options typically have limited theoretical backing, have limited potential for providing significant long term benefits and/or have generally not been proven as an effective means of beach stabilisation. Such options would be ranked as low feasibility of success and would not be recommended.

3.3 Generic Shoreline Erosion Management Options

The options to deal with an erosion problem at a specific location depend on the nature and level of threat and consequences if it is left unchecked. The most appropriate shoreline management options may vary throughout the study area.

It must be recognised that some options aimed primarily at protection of assets located within the erosion prone area (e.g. seawall construction) may be detrimental to the shoreline amenity and recreational value. Considerations are set out below in the context of the nature of the erosion threat and the priority objective to be achieved.

3.3.1 Undeveloped Areas

In presently undeveloped areas, the key objective is to prevent an erosion problem from occurring in the future. That is, allowing the natural shoreline processes of erosion and accretion, including any progressive long term trend of shoreline retreat to occur without threat to assets.

Often the most successful coastal management strategy is to prevent development within the erosion prone area. The natural processes, including shoreline fluctuations, will thus be allowed to continue unimpeded and the natural amenity and character of the shoreline will be retained.

This may require a set-back control on any future development. To achieve this, the following coastline management strategies would need to be adopted:

- Ensure appropriate planning controls are in place to prevent infrastructure and residential development occurring in erosion prone areas which are presently undeveloped (preferably over a 100-year planning timeframe);
- Allow natural processes to occur with ongoing monitoring of coastline behaviour; and
- Continue dune/foreshore management and protection works and controlled access to the shoreline as required.

3.3.2 Areas with Existing Development

Where present development is not under immediate erosion threat, but may potentially come under threat over time, forward planning is needed to prevent future problems. The degree of natural variability in the coastal processes and the level of uncertainty in predicting future shoreline

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behaviour over long timeframes are such that the need for and nature of any future action will be dependent on uncertain factors such:

- Realisation of the erosion threat and the likelihood of ongoing recession;
- Effects of potential climate change impacts (e.g. sea level rise); and
- Future opportunities and attitudes towards coastline management and options for dealing with erosion threat.

The potential future threat from erosion should be recognised in present planning and appropriate strategies put in place that will not compromise future management decisions.

There are two basic strategic approaches for dealing with the problems of erosion threat to the development and loss of the shoreline, namely:

- Undertake works to hold or improve the present shoreline alignment, thereby preventing future recession; or
- Allow the shoreline to recede in such a way that the natural processes would maintain the beach characteristics and amenity, but at the expense of existing land and infrastructure.

There are alternative approaches within these two categories, as discussed below.

3.3.3 Retreat Options

The intent of retreat options is to remove the development under threat and allow the beach and dune to behave in the natural manner, thus restoring and retaining the natural character and amenity of the beach as the shoreline recedes. The planned retreat option acknowledges that erosion is an ongoing phenomenon and seeks to address the issue by removal of threatened facilities rather than trying to protect them. This would release a quantity of sand into the active beach from the receding dune system and provide some additional space for the natural beach movements to occur.

At some beaches there may be scope for setting back (retreating) some assets. Generally there are two different approaches to planned retreat which essentially relate to the ownership of the land and the responsibility for removal of structures. There are substantial differences between these options in terms of cost, who pays, likelihood of success and ultimate ownership of the beach as discussed below.

3.3.3.1 Retreat under Public Ownership

This option involves the upfront transfer of ownership of all land with an erosion risk to the Crown so that it is under public ownership as recession occurs. Key factors for consideration of planned retreat under public ownership are as follows:

- Transfer of ownership to the Crown should be controlled and implemented via a voluntary acquisition process by government;
- 100% of the affected properties must be obtained in any one beach location for this option to be effective;

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- Coastal land values have increased over recent times and could increase further, which may result in high acquisition cost;
- Once implemented, a need would subsequently arise to address the erosion threat of the “new erosion prone area” (as the shoreline progressively moves landward) and this may entail further significant expenditure to purchase. Unless this land was also purchased, all previous money spent on acquisition could be wasted; and
- At some locations, this retreat option could provide opportunities to establish or enhance public access to and along the beach as land ownership is transferred to the Crown.

3.3.3.2 Retreat under Private Ownership

This option involves the land remaining in private ownership as recession occurs. Key factors for consideration of planned retreat under private ownership are as follows:

- The affected land (currently privately owned) would remain in private ownership when it is lost to erosion and private individuals would be responsible for their own planning in terms of loss of buildings, infrastructure and relocation.
- This option would require regulations to prevent implementation of erosion protection structures by private property owners that comprise principles set out in the CMP. This includes consideration of properties with ambulatory boundaries (which change with natural processes, such as shoreline recession) and those with ‘right line’ boundaries (which are unaffected by natural processes).
- Ad-hoc loss of private property to erosion typically causes significant adverse visual impacts.
- As a public shoreline progressively erodes, the beach could become private property, which could privatise access to and along the beach.
- In terms of equity, it is relevant that the beachfront allotments were historically created by the community (i.e. their representative being the government of the time) for residential use, prior to recognition of the erosion hazard.
- It is noted that experience at other coastal townships where the retreat option has been implemented (e.g. Byron Shire) has learnt that residents are reluctant to leave their beachfront locations and will utilise legal and practical means to protect their properties.

3.3.4 Protection Options

Options to hold the present coastal alignment generally fall into the following sub-categories:

- Beach re-profiling through the redistribution of the existing sand across the beach profile and active dune/foreshore restoration;
- Sand recycling or relocation of sand within the beach system;
- Beach nourishment to rebuild the beach with sand imported from outside the active beach system to make up the deficit, either alone or with other control structures to improve the longevity and give added protection; and

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- Structural measures such as seawalls, groynes or offshore breakwaters/reefs to either directly protect assets or trap sand to rebuild the beach in front.

These protection options are discussed in more detail below.

3.3.4.1 Shoreline Reprofilling Options

Beach reprofiling, or “beach scraping”, generally involves relocating sand from the lower part of the beach to the upper beach and dune system using mechanical equipment (refer Figure 3-1 and Appendix C). The action is assumed to mimic natural beach recovery processes, albeit at an increased rate.



Figure 3-1 Beach Re-profilling using Mechanical Equipment (Carley et al., 2010)

Beach reprofiling can be successfully used to restore beach amenity, widen the upper beach and rebuild dunes. These actions will temporarily improve the protection of adjacent assets by increasing the beach width. Such works are relatively inexpensive, can be implemented quickly and are often undertaken in response to a significant beach erosion event. The main shortcoming of beach reprofiling as an erosion control measure is it needs to be repeated frequently and may only offer limited shoreline protection.

Beach reprofiling does not involve relocating sand from one beach compartment to another. Such an activity can be classified as either sand recycling or beach nourishment.

3.3.4.2 Sand Recycling

Sand recycling or relocation refers to moving sand within the beach system. Sand recycling differs from beach nourishment as no additional sand is added to system, rather the sand is simply redistributed to help maintain beach amenity or protect a section of shoreline susceptible to storm erosion. Sand relocation works are most successful on beaches where the direction of longshore sand transport is evident and sand accumulates at a location where it can be readily accessed. Groynes often trap suitable quantities of sand that can be relocated to updrift shoreline locations.

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3.3.4.3 Beach Nourishment Options

The primary intent of beach nourishment is to ensure existence of the recreational beach and provide protection to the development by rebuilding the beach with sand imported from outside the active beach system. This effectively replaces the loss of sand from the system and/or the deficit in the supply of sand that is causing the erosion. In this way a natural beach and its associated values will be returned and maintained while providing a buffer of sand to accommodate natural beach fluctuations and protect the assets and facilities behind.

The quantity of sand required will depend on the level of initial and ongoing protection, the grain size of the material and the use of structures to enhance the longevity of the works. Sufficient sand should ideally be provided to be able to accommodate short term storm erosion and a period of long term recession associated longshore sediment transport differentials and sea level rise.

Provision should be made for the placed sand to extend across the full beach profile to nourish depleted nearshore areas as well as the upper beach, the total quantity of sand being determined accordingly. If the sand is placed only on the upper visible portion of the beach, redistribution will quickly occur to establish an equilibrium profile giving the impression that the sand is 'lost' and the project is a failure. In such a case, the sand is, in fact, not 'lost' but remains in the active system providing an overall net gain commensurate with the quantity placed after cross-shore distribution.

Dune construction and stabilisation works to prevent sand loss due to wind erosion usually needs to form part of any substantial beach nourishment scheme aimed at restoring the beach and dune system. In that case, it would incorporate design provisions to prevent dune overtopping and oceanic inundation as well as to accommodate the effects of climate change including sea level rise. Where the aim of the nourishment is to re-establish a beach in front of an existing seawall without provision of a dune, the need for stabilisation works such as establishment of native dune vegetation would depend on the potential for wind erosion resulting from the works.

While beach nourishment may affect the ecological values of the beach and nearshore areas, it needs to be recognised that the nourishment sand would be placed in the active zone where the natural environment is one of substantial fluctuations and disturbances to which the ecological communities adapt naturally. Furthermore, the nourishment would effectively rebuild the beach and nearshore profile to where they once were. As such, while there may be some short term ecological impacts, in the longer term the environment will adapt and recolonise to behave as a natural beach system.

One of the inherent advantages of beach nourishment is that it maintains the natural character and recreational amenity of the beach while also providing protection of coastal assets. As such, where the beach is severely depleted, it provides many intangible benefits to the general community, as well as a direct economic benefit to those businesses that rely on tourism and the presence of a usable beach.

However, identification and access to sources of suitable nourishment sand is usually a key issue, as is the ongoing cost to maintain this protection and amenity. When suitable marine sand sources are in close proximity project areas, the transport of sand to the beach is most cost-effectively achieved by dredging procedures. This method of sand delivery is not always operationally feasible

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and requires consideration of the vessel characteristics (e.g. draft, pumping distance) and environmental conditions (e.g. nearshore depth, wave climate).

3.3.5 Structural Protection Options

Structural options provide protection of assets against ongoing erosion either directly through the construction of a seawall or by rebuilding of the beach through the construction of groynes. They are options that could be considered in the event that sufficient beach nourishment sand is not available and/or retreat options are not viable. However, there are always some adverse impacts of such an approach where no additional sand is provided, as outlined below.

Such structures would typically be of flexible rubble mound design with rock being sourced and trucked to the site from quarries in the region. While they may be effective in protecting assets or providing a localised wider beach, they are generally accompanied by associated costs related to adverse impacts on the adjacent beaches. This cost is typically made up of direct costs associated with lost income from the tourist industry and other intangible costs associated with the natural coastal amenity, beach access, loss of recreational beach area and degradation of ecological values.

3.3.5.1 Seawalls and Revetments

Seawalls or rock revetments are commonly built with the intent of providing terminal protection against shoreline retreat. Seawalls are robust structures constructed along the shoreline which provide a physical barrier separating the erodible material immediately behind the structure from wave and current forces acting on the beach itself. They are typically constructed of loosely placed rock to allow for some flexible movement and need to be designed to withstand severe wave attack. Figure 3-2 provides an example cross-section of a rock revetment on a sandy shoreline with the toe of the structure down to the bedrock (impermeable layer).

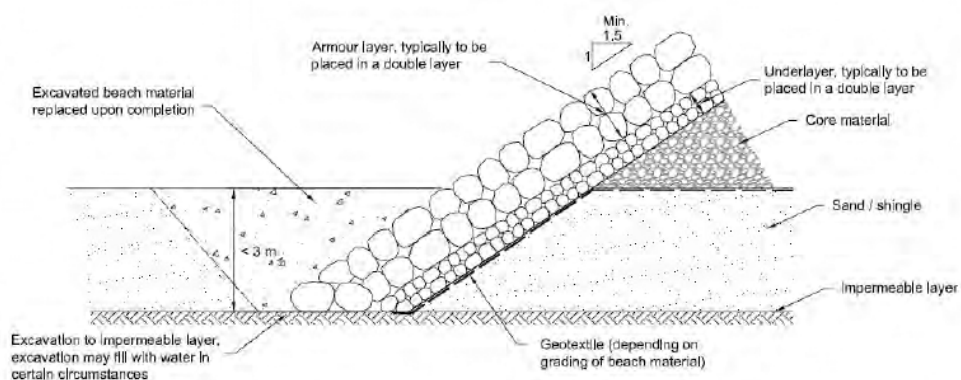


Figure 3-2 Cross-section of a Typical Rock Revetment Seawall (CIRIA, 2007)

Where possible, seawalls should be continuous to prevent end effects and/or discontinuities that could threaten the overall integrity of the wall. They also have to be suitably founded for stability against scour at the toe of the structure, particularly on a receding shoreline. Haphazardly placed rock and/or the use of inappropriate materials intended to provide shoreline erosion protection can have the opposite affect by accelerating the erosion problem.

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While a properly designed and constructed seawall can protect the landward assets from erosion, it effectively isolates the sand located behind the wall from the active beach system and may lead to other adverse consequences. Examples are given in Appendix C.

On a receding shoreline, the seawall becomes progressively further seaward on the beach profile over time. This leads to a gradual increase in the quantity of sand effectively lost from the beach system, with:

- Lowering and eventual loss of the beach in front of the wall; and
- Exacerbation of the erosion on the downdrift end of the wall where the losses are transferred and concentrated.

Scour and lowering of the beach in front of the wall ultimately exposes it to higher wave attack and can lead to slumping and the need for ongoing maintenance. Such maintenance is typically in the form of topping up of the wall with additional rock. However, where the seawall is not adequately designed or constructed, complete reconstruction may be needed.

3.3.5.2 Groynes

Groynes and artificial headlands are impermeable structures typically constructed perpendicular to the shoreline and extend across the beach and the nearshore surf zone. Their function is to trap sand moving along the shoreline under longshore transport processes to build up and stabilise the alignment of the beach on the updrift side. By necessity they starve the beach of sand supply on the downdrift side causing erosion (an example is given in Appendix C).

The sand trapped on the updrift side provides a buffer of sand to accommodate short term storm erosion. The shoreline alignment will also change providing greater stability and reduced long term erosion immediately updrift of the structure. The extent of accretion and length of shoreline affected is dependent on the length of the structure as well as the characteristics of the longshore transport processes. Generally, the longer the groyne, the more sand it will trap over a longer distance with decreasing influence away from the structure.

There is a physical limit to the length of shoreline affected and therefore a number of structures may be needed if substantial benefit or protection is required over a long stretch of shoreline. In such a case, there is a balance between the length and spacing of groynes that needs to be optimised as part of a detailed design process.

An artificial headland is a substantial groyne type structure that has a physical width at its head in comparison to a conventional narrow groyne. It is believed that this width alters the mechanisms of sand transport past the end of the structure and may allow a wider/longer beach to be retained on the updrift side for the same protrusion offshore. This could have the benefit of minimising the need for, or maximising the spacing of, additional structures to provide protection for a long stretch of coastline. However, such headland type structures would be larger and more expensive to construct.

Groynes or artificial headlands can thus be used to rebuild a beach and stabilise the shoreline against ongoing recession on the updrift side. However, in the absence of other works such as beach nourishment, this comes at the cost of exacerbated erosion on the downdrift side to where the erosion trend is transferred.

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Another significant consideration associated with groynes is their potential visual intrusion to the vista of a long sweeping beach and interruption to direct access along the beach. There are various design options with respect to the style and crest height of the structures that could be considered to minimise such adverse effects.

3.3.5.3 Offshore Breakwaters

Emergent offshore breakwaters (with crest level above the water surface at some or all stages of the tide) are commonly used to reduce wave induced beach erosion in the United States, Europe and Japan. Offshore breakwaters are typically constructed parallel to the shoreline and slightly seaward of the surf zone. The structure is intended to dissipate part of the incident wave energy and reduce the direct impact of storm waves. Under prevailing conditions, the presence of a breakwater will modify wave, flow and sediment transport patterns in the lee of the structure may promote the growth of a shoreline salient or tombolo. This effectively widens the target area of the beach and provides an additional erosion buffer. Offshore breakwaters are often constructed in a series to protect long sections of coastline, similar to a groyne field however with the advantage of not completing blocking longshore sediment transport (unless tombolos form).



Figure 3-3 Offshore Breakwater Series and Salient Formation (U.S. Army Corps of Engineers, 2002)

A major problem associated with the construction and maintenance of offshore breakwaters is their significant design requirements and large cost. By design, offshore breakwaters must be placed in the most energetic part of the nearshore zone which leads to operational difficulties during construction and renders them prone to damage during severe wave conditions.

3.3.5.4 Submerged Artificial Reefs

Submerged artificial reefs are designed to dissipate wave energy and/or rotate the average wave direction. The reduction in wave energy and/or induced wave refraction modifies the nearshore

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sediment transport patterns and can lead to the formation of a salient in the lee of the reef and therefore widens the beach. In this regard, a submerged artificial reef is intended to function in a similar way to an offshore breakwater (noting that the crest of a traditional breakwater is above the water surface). Some submerged reefs, such as 'The Twins' at Narrowneck on the Gold Coast (see Figure 3-4), attempt to combine shoreline protection with recreational surfing and/or snorkelling/SCUBA diving benefits and are referred to as 'multi-purpose submerged reefs'. Submerged reefs don't intrude on the beach and have the advantage of low visual impact. Consequently, the scenic amenity of an area is not altered.



Figure 3-4 Geotextile Sand Container Artificial Reef at Narrowneck, Gold Coast (Source: NearMap, 2011)

It is important to consider that a submerged artificial reef aims to take sand from the total sediment budget in order to form a salient and rebuild a targeted section of the beach. This typically moves the erosion problem to downdrift areas as observed with other shoreline structures that interrupt the natural sediment transport such as groynes or artificial headlands. To avoid undesired downdrift erosion beach nourishment should be undertaken to balance the material stored in the salient. Like offshore breakwaters, submerged artificial reefs may be considered a feasible option when there is a sufficient source of beach nourishment sand to balance any losses from the sediment budget.

It should be noted that the key environmental and/or structural parameters governing shoreline response to submerged structures remain uncertain. A fundamental research challenge is to establish and understand the mechanisms that cause erosion or accretion in the lee of such structures (Ranasinghe and Turner, 2006). The performance of offshore artificial reefs, from a shoreline protection perspective, is difficult to quantify due to the necessary complementary beach nourishment (e.g. Prenzler 2013, pers. comm.). For this reason, offshore artificial reef design requires detailed assessment and demonstration of an available source of nourishment material (to

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balance any potential adverse shoreline responses) to be considered as part of a viable shoreline erosion management strategy.

3.4 Material Sources and Costing Considerations

The implementation of coastal protection works is dependent on suitable material being able to be obtained and placed in a practical, economical and environmentally acceptable manner. General considerations associated with sourcing, cost and applicability of different material types are discussed below, including preliminary estimates in terms of unit costs for capital and ongoing maintenance works provided on the basis of available information.

Cost estimates for the various options are based on these unit rates for comparison purposes. Specific recommended works would be subject to detailed design, impact assessment and tendering processes that may influence the final cost. There will also be on-costs associated with the design, impact assessment and approval processes for the recommended options.

3.4.1 Shoreline Nourishment

The feasibility of shoreline nourishment is dependent on the practical and cost-effective availability of a suitable source of sand. Sand should be of suitable quality (grain size and colour) and would ideally match the existing beach sand. When nourishment sand is imported from outside the beach system, sufficient quantities of sand should be available for both initial and ongoing nourishment.

Sand for beach nourishments should be able to be obtained and placed without adverse environmental impacts. In environment sensitive areas, this may be challenging. Potential nourishment sand sources have been considered in terms of their location as discussed below.

3.4.1.1 Marine-based Sources

General considerations with respect to use of offshore sand sourcing sites include:

- Identification of sand source(s);
- Suitability of the sand;
- Quantity required for initial campaign and ongoing maintenance;
- Transport of the sand to the site;
- Rezoning and approval for sand extraction; and
- Potential environmental impacts.

Possible offshore sources of sand for beach nourishment purposes have not been investigated in detail, however it is possible that sand could be available from navigation channel dredging maintenance in lower Moreton Bay through the Gold Coast Waterways Authority (GCWA). Sand from offshore areas is typically dredged with a trailing arm suction hopper dredge that also transports the material to the deposition site where it would be pumped ashore or discharged to a nearshore area. The precise logistics for delivery depends on the location and how close the dredge can approach the shore. Ideally, the dredge would pump sand onto the beach, where it would be moved directly

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into design profiles by earthmoving machinery. Alternatively, it could be delivered elsewhere and trucked to the site.

Costs of such sources, if viable, are typically around \$10-\$30/m³, depending on the distance and method of transport. This cost estimate does not consider the associated project costs such as environmental studies, beach profiling, pre and post construction surveys and ongoing monitoring.

Port of Brisbane Pty Ltd maintenance dredge material is currently used by Council to nourish the beach at Woorim (refer Figure 3-5).

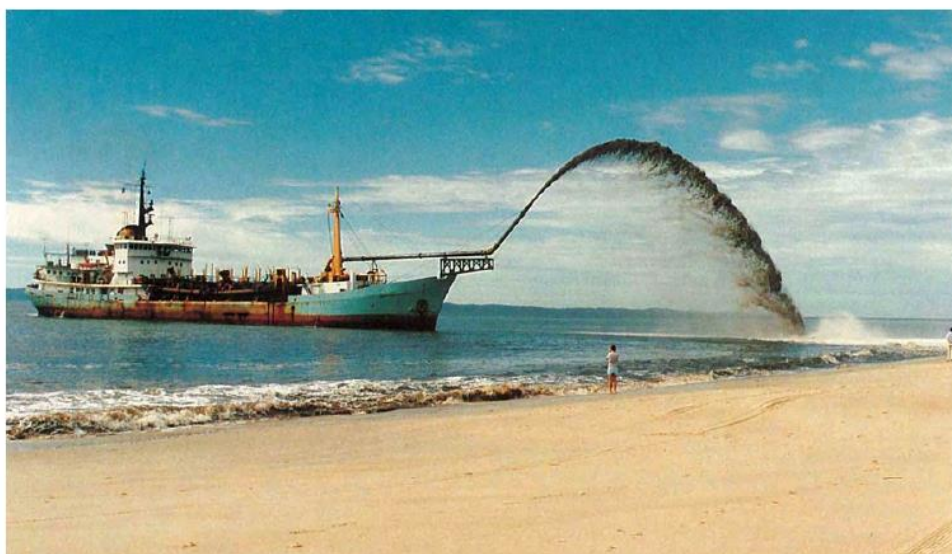


Figure 3-5 Nourishment Sand being Delivered ‘over-the-bow’ to Woorim Beach

3.4.1.2 Land-based Sources

Considerations with respect to use of such sites include:

- Identification of sand source(s);
- Suitability of the sand;
- Quantity required for initial campaign and ongoing maintenance;
- Transport of the sand to the site;
- Possible need to purchase the property involved;
- Rezoning and approval for sand extraction;
- Potential environmental impacts including acid sulfate soil considerations; and
- Site rehabilitation.

Possible onshore sources of sand for beach nourishment purposes have not been investigated in detail on Coochiemudlo Island and beach nourishment material would likely need to be sourced from

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mainland locations. Sand from such sources would be transported to site by conventional equipment and trucks. If viable, the costs of such sources are typically around \$20-\$50/m³ depending on the distance and method of transport.

While this is a proven method transportation of the sand by truck may be an issue, particularly if large quantities are involved. For beach nourishment operations where larger quantities are involved, a specific management plan is required to avoid/manage environmental and traffic concerns.

3.4.2 Shoreline Structures

Shoreline protection structures are typically of a flexible mound construction type to allow for some movement and to absorb some of the wave energy. Rock is the dominant material used in such structures and is dependent on suitable local sources being available. Alternative construction materials such as concrete armour units and sand filled geotextile bags could also be considered for such structures but have limitations such as high cost and poor visual amenity of concrete units and comparatively short practical life due to decay, failure and vandalism of geotextile units. However, this latter type of shoreline protection method has been successfully implemented at a number of locations throughout southeast Queensland.

Rock armour units would need to be obtained from local hard rock quarries. While the specific extent and limitations of the available resource is not known, it is evident that sufficient rock would be available but would need to be sourced by truck from quarries at substantial distance and cost. A significant constraint associated with rock armour is the need to truck the material to the site over local roads. For large projects, this can mean frequent truck movements over an extended time frame.

Geofabric containers will require sand to be imported for filling although the quantities are relatively smaller than rock. A favoured aspect of the geofabric container option is that they can be easily split and removed leaving the sand for future protection. The cost of geofabric containers is often only marginally less than rock.

Typical coastal structure costs including design costs and on-site placement are estimated as follows:

- Seawall (toe level -1m AHD, crest +4m AHD) ~ \$5,000/m; and
- Groyne (toe 2m below seabed, crest +3.0m AHD) ~ \$6,000/m.

Structures by their nature are subject to movement and settlement over time. They are also subject to damage during storm events although they are designed to withstand major wave attack. As such, ongoing maintenance will be required to ensure the structural stability is not compromised.

This will necessitate maintaining access to the top of any seawall to allow 'top up' works to be carried out. Minor slumping of land based or offshore structures after initial construction may not be an issue provided that the function and structural stability are retained. An ongoing maintenance cost of 1% per year is typically adopted for rock structures subject to storm wave attack.

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3.4.3 Comparison Summary

A brief comparison of the various alternative means of combating erosion problems is shown in Table 3-2.

In many practical cases, a combination of methods may be more applicable than relying on any single approach. For example, a commonly used combination is beach nourishment and groyne construction. From the viewpoint of beach protection only, those approaches which do not involve direct interference with the beach system, namely "do nothing" and "planned retreat", are the most desirable. For most developed areas these options are not viable because of low public acceptance for lack of long-term property protection and/or prohibitive long-term costs.

Structural solutions such as rock revetments, groynes and offshore breakwaters are effective in some cases but all cause adverse impacts unless used in conjunction with beach nourishment. Beach nourishment does not cause adverse impacts with regard to long-term or short-term erosion at the beach nourishment site, or adjacent beaches and has been carried out with success on many beaches worldwide. The only real limitation of beach nourishment is its reliance on the local availability of a sand source from which material can be economically extracted and transported to the beach site and the funding commitment needed by Council.

Table 3-2 Comparison of Erosion Control Measures

Erosion Control Measures	Advantages		Disadvantages		Comments
1. Do nothing/Maintain Status Quo	(a)	Beach continues to behave naturally	(a)	Assets and improvements are lost by continued erosion	This approach is only practical where threatened assets are of limited value and the loss can be accepted
	(b)	No direct expenditure required on protective measures – removal of debris may be required	(b)	Limited application in developed areas	
2. Planned Retreat	(a)	Effectively solves the beach erosion problem	(a)	Public reaction against relocation is usually strong	In spite of the apparent drawbacks may be more cost effective over long term
	(b)	Beach continues to behave naturally	(b)	Compensation payments may be prohibitive	
3. Seawalls	(a)	Well suited to emergency erosion control	(a)	Only effective if properly designed and constructed	Should only be used in emergency situations or when an immediate threat to property and/or public safety exists; protects asset but not the beach
	(b)	Provides direct asset protection	(b)	Potential to adversely affect (lower) the beach during extreme erosion event	
			(c)	Decreased scenic amenity	

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Erosion Control Measures	Advantages	Disadvantages	Comments
4. Groynes	(a) Generally effective in building beach on updrift side	(a) Does not prevent erosion – merely transfers it	Only useful in conjunction with beach nourishment or if erosion on downdrift side is acceptable
	(b) Construction and maintenance is shore based and comparatively more cost effective than offshore operations	(b) High level of maintenance	
		(c) Intrusion on beach and high visual impact	
5. Offshore Breakwater	(a) May promote the growth of a shoreline salient or tombolo and therefore widen beach	(a) Construction and maintenance are offshore operations and typically difficult and expensive in areas exposed to wave activity	Commonly used in low wave energy environments in US, Europe and Japan however not typically found on the east coast of Australia
	(b) Shelters beach from storm-induced wave attack	(b) Results in downdrift erosion, nourishment usually required in lee of structure to balance sand lost to salient	
6. Submerged Artificial Reef	(a) No intrusion on beach or impact to scenic amenity	(a) Uncertainty regarding the mechanisms that lead to accretion or erosion of target shoreline	The key environmental and/or structural parameters governing shoreline response to submerged structures remain uncertain
	(b) Potential recreational benefits (e.g. enhanced surfing and/or snorkelling/SCUBA diving conditions)	(b) Construction and maintenance are offshore operations and typically difficult and expensive in areas exposed to wave activity	
		(c) Nourishment usually required in lee of structure to balance sand lost to salient	
7. Beach Nourishment	(a) Widens beach and therefore improves protection against coastal erosion events	(a) Sources of nourishment sand not always close to nourishment site	Generally effective at alleviating local erosion problems
	(b) Visually consistent with natural sandy shoreline	(b) Requires viable sand reserves and necessary commitment to quickly renourish beach following erosion event	

3.5 Environmental Considerations

As well as the cost and effectiveness of each management option, environmental impact issues also need to be considered. Applicable legislation (Refer Stage 2 Report) may require detailed

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environmental assessments (e.g. Environmental Impact Assessments), and approvals processes and government authorities may require additional studies. Note that a comprehensive list of environmental issues for each site and recommended shoreline erosion management measures cannot be determined until the final details of proposed works are known. However, an indication of likely environmental issues is provided below as a guide.

3.5.1 Shoreline Nourishment

Beach nourishment is dependent on being able to source and place suitable sand in an environmentally acceptable, practical and economic manner. Sand can either be obtained from land or marine-based sources with specific considerations as outlined below.

3.5.1.1 Marine-based Sand Extraction

The following is a summary of the potential environmental impacts of marine sand extraction in the study area. This assessment does not include noise, traffic and transport associated impacts, and social and cultural aspects.

Water Quality

The disturbance of the substrata by sand extraction activities generally results in the remobilisation of sediments. The creation of turbid plumes can have indirect effects on aquatic biota and their habitats (e.g. smothering of benthic communities, reduced light in the water column and altered sediment-water dynamics). The extent and magnitude of such increases in turbidity depends on the type of equipment used, the volume and nature of any overflow from the dredge, the material being excavated and the currents present at the excavation site.

The material that would be excavated in marine-based sand supply is typically clean sand from highly active shoal areas with negligible fines content. Hence, turbidity plumes are expected to be of limited spatial and temporal extent.

In areas where there are other materials underlying the clean sands, extraction may result in elevated turbidity, and may potentially release contaminants or elevated oxygen demand into the water column. Wherever possible, disturbance of fine material should be avoided. This requires knowledge of the depths, quantities and characteristics of sand to be dredged.

Ecological Factors

The ecological impacts of sand extraction will vary according to the spatial/temporal scale being considered and the intensity of the disturbance, as well as the resilience of the populations and assemblages to disturbance. Generally, ecological impacts of sand extraction may include:

- Changes to biotope (habitat) structure associated with changes to the morphology of the dredged area. In this regard, shallow banks may be replaced by deep holes/channels.
- Direct effects on seagrass and mangroves due to removal and/or smothering, or indirect effects due to increases in turbidity.
- Disturbance of megafauna. Various cetaceans (dolphins and whales) may occur offshore. The slow speed of vessels used in sand extraction activities is not anticipated to cause mortality of megafauna from boat strike.

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- Six species of marine turtles are known to occur in the region. These include the green (*Chelonia mydas*), loggerhead (*Caretta caretta*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), olive ridley (*Lepidochelys olivacea*) and flatback (*Natator depressus*). Environment management actions are required to ensure turtles are not harmed by proposed dredging activities, and a strategy to manage nests and hatchlings would be required to be developed in conjunction with DES.
- Changes to the diversity, abundance, and structure of macrobenthic assemblages in and adjacent to the dredged area. Some species of benthic macroinvertebrates are of commercial importance (e.g. mud worms *Marphysa sanguinea* cf.) and are collected by recreational harvesters for use as bait (e.g. yabbies *Trypea australiensis*).
- Changes to the fish assemblages in and adjacent to the dredged area, with potential impacts to commercial and recreational fisheries.
- Changes to the population structure of species (e.g. sand crabs *Portunus pelagicus*, that utilise different habitat according to sex).
- Changes to the migration patterns of animals (e.g. crustaceans such as prawns and crabs), with potential impacts to commercial and recreational fisheries.
- Changes to the recruitment dynamics of fish and macrobenthic species. Impacts to recruitment dynamics potentially may have flow-on effects to recreational and commercial fisheries.
- Mobilisation of contaminants and nutrients following disturbance of sediments.

3.5.1.2 Land-based Sand Extraction

There are a wide range of potential environmental issues associated with land-based extraction, from the natural, social and economic perspectives. Potential impacts to natural environment are considered below.

Groundwater and Surface Water

Sand extraction operations on land have the potential to influence both groundwater and surface water through the release of toxicants and turbidity. The potential for disturbance of acid sulfate soils and the mobilisation of heavy metals is of concern. These contaminants may impact on either the underlying groundwater or surface water adjacent to the operations.

Ecological Impacts

Land-based extraction has the potential to have effects on fauna and flora communities and supporting ecological processes through a variety of means including:

- Loss of species as a direct consequence of habitat removal, reduction in habitat area (e.g. decreased habitat suitability for species requiring large home ranges) and habitat isolation (e.g. reduced opportunity to escape the effect of environmental perturbations and recolonise after such events). This may include impacts to species, habitats or ecological communities listed under the Commonwealth and State legislation.

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- Alterations to ecosystem processes due to the development of edge environments, especially areas adjacent to small remnants. This usually involves changes in abiotic and biotic conditions such as microclimate changes (wind, radiation, soil moisture regimes) and increased presence of introduced flora and predatory fauna and disturbance-tolerant aggressive native species).
- Disturbance of acid sulfate soils, which when exposed to air produce sulfuric acid and may release toxic quantities of associated metals into the surrounding environment. Disturbance of other contaminated sediments may also be an issue.
- Negative pressures accompanying development and operations, including disturbance through increased human activity, traffic, noise and light pollution, etc.
- Potentially, large scale disturbances such as:
 - Reduction of population viability and genetic diversity resulting from disruption of ecological connectivity and population isolation. This results from decreases in, and/or cessation of regular successful dispersal between populations; and
 - Alterations to ground water levels (e.g. rising water table and increased salinity) and surface water hydrology (e.g. changes to runoff patterns and increased erosion). These effects may result in waterway degradation through increased salinity, turbidity and nutrient pollution.

3.5.1.3 Placement of Sand for Shoreline Nourishment

Change in Benthic Communities and Habitat Loss

The placement of sand on the shoreline has the potential for immediate impacts associated with burial of existing surface sediments and biota (macroinvertebrates and seagrasses). Sandy material that is placed onshore is unlikely to cause significant changes in the composition of surface sediments and habitat type, but would result in the burial of organisms that have colonised the area. Some buried organisms may be able to migrate through appreciable depths of placed material, but other organisms are likely to be lost. Assuming the surface sediments are similar to those prior to nourishment, recolonisation of the placement area would occur within a short time. Opportunistic and/or mobile species would recolonise the nourishment area within a relatively short period of time.

Further Ecological Considerations

Any loss of benthic macroinvertebrates and/or seagrass associated with burial from nourishment would represent a short-term reduction in available food/habitat resources for fish. Most fish species that inhabit the area would be capable to move from the placement area to forage in other parts of the study area.

Further, placement of sand for beach nourishment may temporarily disturb roosting, breeding or feeding activities of wading birds. Throughout southeast Queensland, the highest number of waders has been recorded in October, during the southern migration when population densities of migratory birds reach an annual peak. The lowest counts are typically recorded during August, a time when mainly resident and juvenile migratory birds (<one year old) stay in the region rather than migrate to breeding grounds in the Northern Hemisphere. In tidally influenced areas, waders forage across the exposed sand and mudflats at low tide (both day and night). At high tide, they move to higher ground to roost on beaches, salt marshes, claypans and artificial ponds.

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Where nourishment is recommended, studies would need to be conducted to determine species using the impacted areas, and periods when roosting and breeding periods for these species can be avoided.

3.5.2 Shoreline and Offshore Structures Considerations

Historically, constructed features have been added throughout the study area and consequently the extent of artificial habitats increased. No known studies have been carried out on the flora and fauna assemblages of artificial shoreline habitats within the region. This is probably due to the fact that constructed features are not regarded as high priority conservation areas. However, in general, artificial structures in the coastal zone contribute to the maintenance of coastal ecosystems and the local richness of habitats and species in the region.

The erosion management options involving constructed features are:

- Replacement of existing rock seawalls;
- New rock seawall construction;
- Groyne construction;
- Offshore breakwater construction; and
- Submerged artificial reef construction.

Environmental considerations associated with these works are outlined below.

3.5.2.1 Terrestrial Vegetation

Replacement or construction of rock walls and groynes would require access to the foreshore. In many cases, there is vegetation in foreshore areas that would have to be removed.

Removal of vegetation for construction will cause a temporary loss of habitat and long term habitat change if there are limited opportunities for re-vegetation. Rebuilding of rock walls is likely to require a corridor of about 10 metres and construction of new rock walls could require a 10-20 metre corridor along the foreshore. In developed areas, removal of unprotected vegetation is likely to have a low impact on regional environmental values. However, these areas are important given the encroachment of urban areas on remaining patches of vegetated habitat.

3.5.2.2 Disturbance of Marine Habitat

Replacement of rock walls and construction of new rock walls, groynes, offshore breakwaters and offshore artificial reefs would impact on inter-tidal and/or marine communities. For example, where unvegetated soft sediments would be replaced by artificial substratum, different assemblages of biota would colonise the surface and may cause a change in biodiversity of the area.

The initial removal of rock required for the replacement of a wall would cause disturbance to benthic communities at the base of the wall and in nearby areas from physical removal and elevated levels of turbidity when works are conducted at high tide. Any adjacent beds of seagrass may also be affected. The effects would depend on the characteristics of the community and the nature of the disturbance. It is likely however, that natural coastal processes such as waves and currents disturb these areas on a regular basis, and as such, are likely to support opportunistic (early successional)

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communities comprised of species that are capable of rapid recolonisation. Likewise, disturbance to communities by the construction of new rock walls, groynes or offshore structures would have a similar effect, with nearby areas recolonising in a short period of time. Changes in current velocities and wave influences due to the construction of rock walls, groynes or offshore structures may potentially change the habitat type/substrata and, thus, result in a change in benthic community structure. Further, changes to water and sediment quality and depth of water may have significant effects on the nature of the system.

Flow on effects may occur in areas used for roosting/feeding by wading birds. The sensitivity of wading birds to disturbance and habitat loss, and the potential for future effects on the viability of local populations should be considered.

Although benthic communities used as food resources by fish and crustaceans may be removed (temporarily/permanently), it is expected that the high mobility exhibited by most common species in the area may result in fish temporarily moving elsewhere if food is in short supply to forage in other parts of the study region.

3.5.2.3 Creation of New Habitat

The artificial structures in the inter-tidal and sub-tidal zone would result in the creation of a new, albeit artificial, substratum that would eventually be colonised by a range of rocky shore associated species. Studies elsewhere have shown that assemblages that colonise artificial structures differ from those that may occur on natural reefs and substrata and that epibiota occurring on vertical surfaces can differ from that occurring on horizontal surfaces. Options promoted that involve the creation of new habitat may require additional studies to determine the potential beneficial and adverse impacts.

3.5.3 Managed Retreat Considerations

Planned retreat or the “do nothing” approach would affect terrestrial communities through the physical loss of vegetation due to erosion. Where vegetation of conservation value occurs in close proximity to the shoreline, there is a possibility that retreat may cause loss of this vegetation. However, it should be recognised that retreat is a natural process. Fauna species using the vegetation as habitat would be likely to move elsewhere as this gradual natural process occurs.²

Retreat would also be likely to result in the disturbance of marine fauna species associated with intertidal areas and dune areas. It is probable that these areas would be recolonised by similar fauna as presently occurs. Such a process would occur in association with natural movement of the shoreline. In this regard, impacts resulting from retreat would be short-term and localised.

3.6 Climate Change Considerations

Planning and management agencies are likely to be faced with undesired impacts of climate change and sea level rise, particularly on developed coastlines. It is convenient to consider appropriate climate change adaptation measures using the simple tool developed by BMT WBM (described in

² Note: there may be limited areas of available habitat with an increase in climate change and associated impacts.

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Fisk and Kay, 2010). The tool works by establishing a time continuum for each climate change parameter or impact being assessed and identifies three key stages for the parameter or impact:

- The baseline (current condition) of the climate change parameter being examined at the time of plan preparation;
- The identification of one or more trigger points along the time continuum that flags to planners and/or responsible management agencies that more aggressive or decisive adaptation actions need to occur prior to the undesirable impact occurring; and
- The undesirable impact or end-state of the climate change parameter being examined (e.g. what are the impacts from climate change that are trying to be avoided?).

The tool can help decision-makers align perceived risk to infrastructure with the selection of the most appropriate adaptation measures and actions. In this regard, the tool is not limited to only climate change studies but can also be used to guide more immediate shoreline planning and management decisions. The tool is illustrated in Figure 3-6.

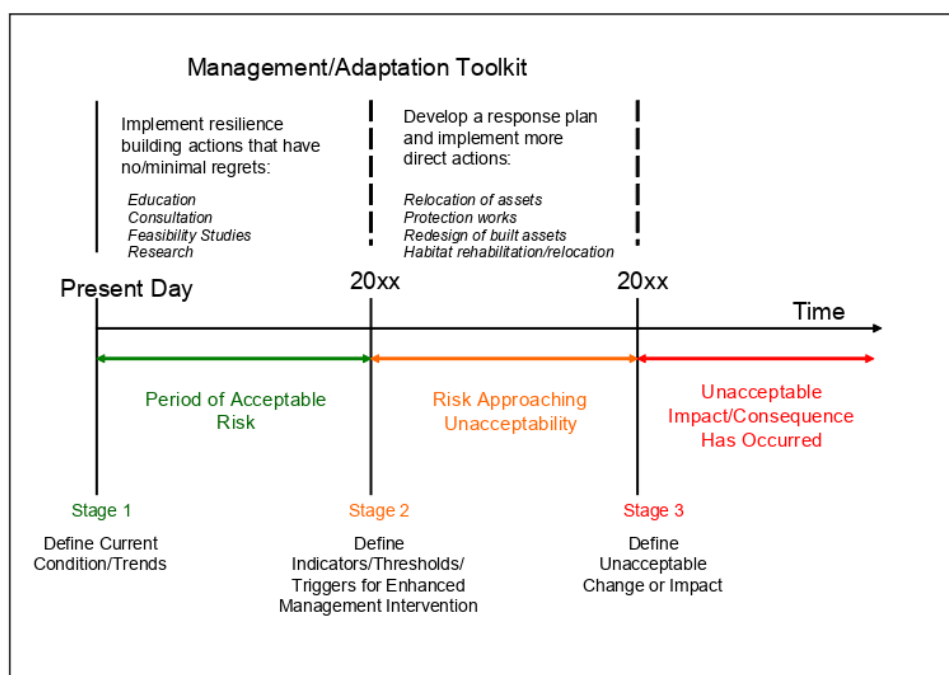


Figure 3-6 Application of Adaptation Actions along the Climate Change Risk Continuum

As discussed by Fisk and Kay (2010), using the tool to characterise climate change risks (and associated impacts) has a number of advantages, including:

- It provides a starting point in terms of establishing the context or the current condition of the risk parameter at the present day (on the left hand side of the continuum – Stage 1).

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- It can be used to define and obtain agreement about the undesirable future impact that is trying to be avoided (on the right hand side of the continuum – Stage 3). An undesirable impact may be defined any number of ways but could include, for example, defining what is unacceptable in terms of regular inundation of critical infrastructure by tidal incursion and flooding or the loss of a particular coastal habitat type.
- It starts to try and define the risk over time and introduces the idea of one or more trigger points (between the two end points) that serve as flags for enhanced management action or consideration.

3.6.1 Future Climate Hazards

Statutory erosion prone areas are declared under section 70 of the *Coastal Protection and Management Act 1995* (Coastal Act) by reference to an erosion prone area plan. These plans have been developed to assist development assessment and to inform the preparation of planning instruments, such as planning schemes and regional plans under the *Planning Act 2016*.

The erosion prone areas apply to land subject to inundation by the Highest Astronomical Tide (HAT) by the year 2100 or at risk from sea erosion. On land adjacent to tidal water the erosion prone area is defined by whichever of the following methods gives the greatest width:

- (1) 40 m buffer from the present-day HAT contour.
- (2) Calculated erosion distance shown in Table 1 of the statutory plan.
- (3) Permanent inundation due to sea level rise in 2100 (defined by present-day HAT plus 0.8 m).

The 40 m buffer from present-day HAT (component 1) generally applies within estuarine areas not exposed to open coast processes. This approximate method is intended to account for the migration of channels within tidal waterways with natural (undeveloped) shorelines.

The calculated erosion distance (component 2) is intended to cater for the potential loss of land for open coast locations (as Coochiemudlo Island is excluded from the State open coast erosion prone area mapping the methodology described in the Coastal Hazard Technical Guide (DEHP, 2013) has not been reproduced here).

The permanent inundation due to SLR (component 3) represents the HAT coastline (or elevation contour) in 2100 in the absence of any adaptation response to treat the risk, such as filling land to an elevation above the threshold water level.

For Coochiemudlo Island the erosion prone area is defined by the greater of (1) and (3) and is shown in Figure 3-7.

BMT has been advised that, as part of the QCoast2100 program, Redland City Council is adopting a projected sea level rise of 0.4 m by 2070 for planning purposes. Contours of HAT and HAT + 0.4m were extracted from the 2009 LiDAR and are shown in Figure 3-8, along with the State mapped HAT + 0.8m line. For most of the Island the landward transition of the shoreline by 2070 does indicate major encroachment of the Emerald Fringe. None of the shoreline management options assessed in Section 6 of this report have a design life approaching 50 years and it is not anticipated that climate

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change impacts in shorter timeframes will be significant enough to require further detailed consideration.





4 Summary of Shoreline Erosion Assessments

Assessments to identify erosion and causes are detailed in the Stage 2 report (BMT, 2020) and are summarised below. Beach profiles were surveyed by Redland City Council officers on Main Beach east of the ferry terminal in 2016 to 2018 and Norfolk Beach fronting Victoria Parade East in 2013 to 2018. The most landward surveyed point is not fixed between surveys and the survey extent is limited to the portion of the beach above the water level at the time of the survey, ranging between approximately -0.5 m to -1.5 mAHD. The surveys indicate that the width of the upper beach fluctuates annually, however were insufficient to confidently identify trends of beach recession or accretion.

An assessment of historical aerial imagery found minimal long-term changes to most of the Island's beaches with measured recession or growth of the shoreline often within the order of accuracy of the georeferencing. North-eastern Norfolk Beach shows approximately 20m of recession between 1955 and 2018. Intervening aerial photos from 1997 and 2013 suggest that this is not a lineal process, with the relatively close locations of the 2013 and 2018 shoreline indicating that a new equilibrium alignment may be close to being achieved. Main Beach showed erosion of up to 10m east of the ferry terminal and accretion of up to 12 m west of the Ferry Terminal between 1997 and 2018, indicating that sand is transported west along the beach.

Modelling of longshore transport has qualitatively confirmed that sand transport patterns vary seasonally. The direction of sand transport may be northerly or southerly along Norfolk Beach, depending on prevailing conditions and tends to be northerly in winter and southerly in summer. A weak net southerly transport is indicated long term under the influence of stronger north-easterly events occurring over summer months. Sand transport northwards from north-eastern Norfolk Beach onto the tidal flat adjacent to Morwong Beach is possible under high tides and south-easterly conditions. Sand transport is westerly along Main Beach, with a low rate of sand loss past the golf course. Overall, the predicted wave climate and pattern of longshore sand transport suggests sand transport on all beaches will largely be sporadic and dominated by episodic storm events, with very low rates of net longshore transport occurring under ambient conditions. The ferry terminal was rebuilt in 2015 and the barge ramp upgraded in 2018, which may disrupt westerly transport of sand in the short term.

The impact of storm wind and surge has been documented in recent times, including erosion caused by ex-TC Oswald. Erosion caused by storm events is expected to be the critical erosion process acting on Coochiemudlo Island. Erosion resulting from an extreme event (using the present day 1 in 100-year design water level and significant wave height) was modelled using two median grain sizes (BMT, 2020). It should be noted that this modelling assumes an unlimited supply of sand available to be mobilised and does not consider the effects of vegetation on reducing erosion, or erosion controls such as the presence of bedrock or man-made coastal erosion protection structures. As the 1 in 100 year event is an extreme event and erosion volumes are likely to far exceed those resulting from what appear to be 1:10 year (or less) storm volumes, approximately half of the less conservative model results (median grain size of 0.36 mm) have been used to estimate nourishment volumes. These are still considered conservative. It should also be noted that due to the thin layer of sand covering bedrock on the Coochiemudlo Island movement of a small volumes of sand from one location to another may involve comparatively significant horizontal movement of the shoreline. As

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such, localised movement of sand due to smaller storm events can show as noticeable erosion in one location when there has been a similar volume of accretion on an adjacent beach.

It appears unlikely that sand is now arriving at Coochiemudlo Island from sources within Moreton Bay, however this assumption has not been confirmed by any particle identification or measurement methodology.

An Island wide annual survey program has been initiated, with the first survey undertaken in the second quarter of this year (2020). Three surveyed profiles on Main Beach and four surveyed profiles on Norfolk Beach are in approximately the same location as previous surveyed profiles. These are presented in Appendix D with June 2018 surveys for Main Beach and June and December 2018 profiles for Norfolk Beach. It should be noted that earlier surveys have not maintained a consistent profile location. While the comparison of surveys is indicative only, it is sufficient for an approximate estimation of beach change.

Members of the community have reported erosion on Norfolk Beach and photographs have been provided by Coastcare that show erosion at the berm occurring sometime between 2015 and 2020. These are provided in Appendix E.

Based on this information it is apparent that there has been recent unaddressed storm erosion on Norfolk Beach. However, photos taken by BMT in July 2020 (see Figure 4-1 and Appendix F) show active beach recovery and significant recovery of the beach is likely given sufficient time. As concerns have been raised by community members that if no action is taken erosion will be exacerbated by future storms, remedial action is recommended to accelerate recovery of Norfolk Beach and provide a greater buffer against future events. This is discussed further in section 6.3.5 and section 8.



Figure 4-1 Active beach recovery, Norfolk Beach, July 2020

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4.1 Hazard Risk Rating Review

The Hazard Risk Ratings for Coochiemudlo Island beaches presented in the CAS (Draft Coastal Adaptation Strategy, RCC 2017) have been reviewed following the same methodology. The reviewed hazard risk ratings are presented in Table 4-1. Criteria scores that have been changed are indicated in **bold** and detailed below. Hazard risk ratings extracted from Appendix 3 of the CAS are presented Table 6-2. All tables referred are provided in Appendix G of this report.

The following changes were made to the criteria scoring:

- Environment (Table on page 20 of the CAS):
 - Criteria: Loss of the foreshore area from an erosion event (m2)
 - Score was reduced from 3 (1000m2 to 1,999m2) to 2 (100m2 – 999m2) for Red Cliff & Golf Links Beach.
 - Score was increased from 2 to 3. Norfolk Beach and Melaleuca Beach.
 - Remaining environment values are maintained at the current values.
- Social (First table on page 21 of the CAS):
 - Criteria: Recreational value of foreshore area
 - Score was increased from 2 (Low recreational value to local community) to 3 (Medium recreational value to local community, but low to minimal to broader community) for Norfolk, Melaleuca, Southeast and Morwong Beaches.
 - Score was increased from 1 (Minimal recreational value) to 2 for Red Cliff & Golf Links Beach.
 - Score has been maintained at 2 for Northeast Beach.
 - Criteria: Cultural Heritage
 - Score has been set to 3 (Locally important cultural heritage value identified) for all locations based on the local heritage status of the Emerald Fringe.
- Economic (Second table on Page 21 of the CAS):
 - No changes have been made to these values. It is noted that a rating of 5 for Infrastructure Value (>\$1,000,000) for Red Cliff & Golf Links Beach seems to be high however, as reducing this rating to 1 will still result in a Medium consequence (and so not alter the hazard risk rating) and asset valuation data used for the CAS has not been made available, the rating it has been left as is.
- Erosion Factor (Second table on Page 22 of the CAS) :
 - Norfolk Beach – rating has been decreased to 2 (Low level of erosion occurring (i.e. recession and regeneration or continual fluctuation of shoreline).
 - Northeast Beach – rating has been increased to 3 (Medium level of erosion occurring (i.e. transformation of location – natural process of recession occurring in one location and progression at another).

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- Overall assessment results:
 - Consequence ratings have remained the same beaches (please see first table on Page 22 of the CAS for calculation method).
- Risk ratings have changed for Norfolk Beach and Northeast Beach as follows (please see first table on Page 23 of the CAS for Risk Matrix):
 - M18 to M12 for Norfolk Beach
 - L8 to M12 for Northeast Beach.

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Table 4-1 Updated Coochiemudlo Island Hazard Assessment Matrix

#	Location	Suburb	ENVIRONMENT								SOCIAL					ECONOMIC			Total average score	Consequence Rating	Erosion Factor	Risk Rating	
			Foreshore	Ecological Value						Nature Conservation Act	Visual Amenity	Recreation	Cultural Heritage	Population	Infrastructure value (\$)	Property value (\$)							
				The loss of the foreshore area from an erosion event (m2)	Adjoining terrestrial value (BPA 3.5) & VMA regulated vegetation	Marine Park Zoning	Ramsar listed	Fish habitat area	EPBC-listed endangered ecological community									Nature Conservation Act Species Present					Total (averaged)
2	Norfolk Beach	Coochiemudlo Island	3	1	3	5	1	1	3	2.43	3	3	3	1	2.50	2	1	1.50	6.43	Medium	2	M12	
3	Main Beach	Coochiemudlo Island	4	1	3	5	1	1	3	2.57	3	3	3	1	2.50	4	1	2.50	7.57	Medium	2	M12	
4	Southeast Beach	Coochiemudlo Island	2	1	3	5	1	1	3	2.29	2	3	3	1	2.25	1	1	1.00	5.54	Low	2	L8	
5	Melaleuca Beach	Coochiemudlo Island	3	4	3	5	1	1	3	2.86	3	3	3	1	2.50	1	1	1.00	6.36	Low	2	L8	
6	Northeast Beach	Coochiemudlo Island	2	1	3	5	1	1	3	2.29	2	2	3	1	2.00	1	1	1.00	5.29	Low	3	M12	
7	Morwong Beach	Coochiemudlo Island	2	1	3	5	1	3	3	2.57	2	3	3	1	2.25	1	1	1.00	5.82	Low	1	L4	
8	Red Cliff & Golf Links Beach	Coochiemudlo Island	2	4	3	5	1	3	3	3.00	3	2	3	1	2.25	5	1	3.00	8.25	Medium	2	M12	

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Table 4-2 Hazard Assessment Matrix (extracted from Appendix 3 pages 57 and 58 of the Draft Coastal Adaptation Strategy (RCC 2017))

#	Location	Suburb	ENVIRONMENT									SOCIAL					ECONOMIC			Total average score	Consequence Rating	Erosion Factor	Risk Rating
			Amount of land at direct risk of erosion (at current rate)	Ecological Value						Nature Conservation Act Species Present	Nature Conservation Act	Total (average)	Visual Amenity	Recreation	Cultural heritage	Population	Total (average)	Infrastruc- ture value (\$)	Property value (\$)				
				Adjoining terrestrial value (BPA 3.5) & VMA regulated vegetation	Marine Park Zoning	Ramsar	Fish Habitat Area	EPBC listed endangered ecological community															
2	Norfolk Beach	Coochiemudlo Island	2	1	3	5	1	1	3	2.29	3	2	3	1	2.25	2	1	1.50	6.04	Medium	3	M18	
3	Main Beach	Coochiemudlo Island	4	1	3	5	1	1	3	2.57	3	3	3	1	2.50	4	1	2.50	7.57	Medium	2	M12	
4	Southeast Beach	Coochiemudlo Island	2	1	3	5	1	1	3	2.29	2	2	3	1	2.00	1	1	1.00	5.29	Low	2	L8	
5	Melaleuca Beach	Coochiemudlo Island	2	4	3	5	1	1	3	2.71	3	2	2	1	2.00	1	1	1.00	5.21	Low	2	L8	
6	Northeast Beach	Coochiemudlo Island	2	1	3	5	1	1	3	2.29	2	2	1	1	1.50	1	1	1.00	4.79	Low	2	L8	
7	Morwong Beach	Coochiemudlo Island	2	1	3	5	1	3	3	2.57	2	2	2	1	1.75	1	1	1.00	5.32	Low	1	L4	
8	Red Cliff & Golf Links Beach	Coochiemudlo Island	3	4	3	5	1	3	3	3.14	3	1	3	1	2.00	5	1	3.00	8.14	Medium	2	M12	

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Multi-criteria Analysis Description

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5 Multi-criteria Analysis Description

The proposed process to undertake a multi-criteria analysis of potential shoreline management options for Coochiemudlo Island is outlined below.

The option list will be assessed against a set of weighted criteria. A staged approach has been adopted for the assessment with options needing to achieve a minimum score before proceeding to the next stage of the assessment.

Each stage has sub-criteria with variable weightings. The proposed criteria and their weightings are given in the Multi Criteria Analysis (MCA) matrix and include:

- Stage 1 – Effectiveness and Technical Feasibility - whether an option is an effective erosion treatment and if the option is technically feasible.
- Stage 2 – Environmental and Community Impact – whether an adaptation option will benefit or adversely impact terrestrial and marine environmental values and social and community values, including Heritage values, Tourism and local business and Beach access and amenity.
- Stage 3 – Implementation Considerations – consideration of initial and ongoing costs, whether an option is consistent with current planning policy and/or legislative requirements, whether an option can be 'reversed' or adapted to cater for future needs, and whether or not community organisations can assist in delivery.

A 'rating' has been developed to apply to options available for different beach compartments, to indicate:

- "Very Positive" (rating = +2) where an adaptation option has very positive outcome
- "Positive" (rating = +1) where an adaptation option has a somewhat positive outcome
- "Neutral" (rating = 0) where an adaptation option has neither a positive or negative outcome
- "Negative" (rating = -1) where an adaptation option is has a somewhat adverse outcome
- "Very Negative" (rating = -2) where an adaptation option has a significantly adverse outcome.

Once a rating has been assigned to each criterion and the weightings applied, a total score is calculated, and the scores are ranked in order of preference (i.e. highest score is ranked 1st, lowest score is ranked last).

Options with a "Very Negative" rating in either category of stage 1 (option is either ineffective at managing erosion or option is not technically feasible) of the assessment will not be progressed to Stage 2.

Options with a total stage 2 score of below zero (indicating an overall negative impact to environmental and community values) will not be progressed to stage 3.

Financial inputs to the MCA have been provided by Council. The rationale for the ranges adopted for initial and ongoing cost is as follows:

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Multi-criteria Analysis Description

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- Initial (Capital) costs: values are based on a percentage of the average annual city wide capital works budget for foreshore works over the past 3 years (5%, 15%, 30%, 50%, and 75%). This is so that the values are linked to a realistic estimate of that budget that might be available.
- Ongoing (Annual) costs: values are based on an annualised equivalent of the present values of the capital cost increments using an applicable timeframe and discount rate (20 years and 7%). This is so that there is a clear relationship between the capital costs and ongoing costs.

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Multi-criteria Analysis Description

Table 5-1 Multi Criteria Analysis matrix

Stage 1 ³			Stage 2					Stage 3				
Effectiveness and feasibility			Environmental and Community Impact					Implementation Considerations				
	Effectiveness	Technical feasibility	Terrestrial Values	Marine Values	Heritage	Tourism/Local Business	Access and use of beach	Initial Cost	Ongoing Costs (per year)	Consistency with State Policy	Reversible / Adaptable in the future	Community org. involvement
	Will the option help manage erosion impacts?	Is the option technically viable?	Will it have a positive or negative impact?	Will it have a positive or negative impact?	Will it help protect heritage values?	Will it help protect tourism or business?	Will it preserve access and use of the beach?	Are the initial costs low, medium or high?	Are ongoing costs low, medium or high?	How likely that approvals can be secured?	Can the option be reversed or adapted for future circumstances?	Can community orgs assist in delivery?
Weighting	50%	50%	20%	20%	20%	20%	20%	25%	25%	25%	20%	5%
Very Negative (-2)	Option is ineffective at managing erosion.	Is not technically viable.	Will have significant adverse impact on terrestrial environmental values (i.e. Melaleuca Wetlands)	Will have significant adverse impact on marine environmental values (i.e. Moreton Bay Marine Park)	Will significantly impact negatively on heritage values (i.e. complete loss)	Will significantly impact negatively on tourism and/or local business	Will significantly impact negatively on beach access and/or amenity	Very High Economic Cost (\$750,000 to 1,200,000)	Very High Economic Cost (75,000 to 120,000)	Is very unlikely to achieve approval under existing planning/legislative requirements	Option is completely irreversible once implemented; or option limits any alternative options in the future	N/A
Negative (-1)	Option provides a temporary solution (<1 year); or option requires further resources / changes to be effective over the short term.	Is only technically viable with substantial engineering (or other) design investigation and capabilities for implementation	Will have somewhat adverse, but not significant impact on terrestrial environmental values	Will have somewhat adverse, but not significant impact on marine environmental values	Will have somewhat adverse, but not significant impact on heritage values	Will have somewhat adverse, but not significant impact on tourism and/or local business	Will have somewhat adverse, but not significant impact on beach access and/or amenity	High Economic Cost (\$450,000 to 750,000)	High Economic Cost (\$45,000 to \$75,000)	Will require an EIS and/or Govt program to implement; or there is a residual risk that approval will not be obtainable for the proposed works / strategy.	Option is difficult to reverse once implemented, but can be done with effort; or option does limit some alternative options in the future	N/A
Neutral (0)	Option provides a short term solution (1-5 years); or option requires further resources / changes to be effective over the medium term; or option is a complementary measure	Is likely to be technically viable at the site, but would require further investigations to clarify.	No net impact	No net impact	No net impact	No net impact	No net impact	Medium Economic Cost (\$225,000 to \$450,000)	Medium Economic Cost (\$25,000 to \$45,000)	Will require Govt approvals to be implemented, or assistance through existing Govt program; or generally approvals/assistance would be granted assuming requirements are met	Option is reversible or adaptable, but at some cost / effort	Community organisations are not able to assist in delivery
Positive (+1)	Option provides a medium term solution (5-10 years); or option requires further resources / changes to be effective over long term	Is technically viable with some effort.	Will slightly benefit terrestrial environment	Will slightly benefit marine environment	Will slightly benefit heritage values	Will slightly benefit tourism or local business	Will slightly improve beach access and/or amenity	Moderate cost (\$75,000 to \$225,000)	Moderate cost (\$10,000 to \$25,000)	Minimal government approvals required to implement	Option can be adapted for future circumstances or would have only minor impact on future generations	Option can be partially implemented by community organisations
Very Positive (+2)	Option provides a long-term solution (10-20 years)	Is technically viable and easily implementable at the site / location.	Will significantly benefit environment, (e.g. improve habitat value/increase total available habitat.)	Will significantly benefit environment, (e.g. improve habitat value/increase total available habitat.)	Will significantly benefit heritage values (i.e. preserve values for the future)	Will significantly benefit tourism or local business	Will significantly improve beach access and/or amenity	Limited cost (<\$75,000)	Limited cost (<\$10,000)	No government approvals required to implement or can be implemented under existing approvals.	Option can be easily adapted for future circumstances or should impacts not occur; or option would positively impact future generations	Option can be implemented by community organisations

³ Options with a score of -2 for Effectiveness or Technical viability will not be progressed to Stage 2.

6 Option Assessments

6.1 Management Guidelines and Implications

The Queensland government legislation, as detailed in the Stage 2 report (BMT 2020), generally advises that where there is a natural buffer zone protecting property and built infrastructure from coastal hazards a “do nothing” approach would be the most appropriate option, as this results in a more natural beach and shoreline.

While this buffer can be considered to exist on Coochiemudlo Island in the form of the Emerald Fringe, it has been made clear by members of the CRG and Council that this parkland is to be considered as “green infrastructure” and protected. In addition, the Emerald Fringe was recently included in the local heritage listing for the Redland City Council on the basis of the following three criteria (Redland City Council, 2018):

- Criteria A: The place is important in demonstrating the evolution or pattern of the region’s history.
- Criteria E: The place is important to the region because of its aesthetic significance.
- Criteria G: The place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons important to the region.

While relatively sheltered compared to an open coast location the Island’s beaches are still a dynamic environment and will experience periodic erosion and recovery as part of the natural processes. If multiple erosion events occur without sufficient time for recovery in between then loss of vegetation is highly likely, particularly on Norfolk Beach.

Following on from this there are two overarching management strategies that could be adopted:

- Firstly, acceptance that a natural process is occurring with cyclic erosion and recovery depending on the frequency and severity of storm events. If long term erosion occurs, even at a very low rate, the eastern beach will slowly roll back but retain a natural beach amenity; or
- Secondly, hold the current shoreline position. This can be with beach nourishment, which will retain beach amenity, or by structures such as seawalls, which will result in loss of the beach in front of the structures and exposed bedrock in many areas. If long term erosion occurs this loss of beach will be permanent.

While the Emerald Fringe provides the buffer to development required to allow natural processes to occur there is a strong community desire to hold the existing shoreline and prevent any loss of vegetation. As discussed (Stage 2 report, BMT 2020 and briefly in section 2.1) management should preference ‘soft’ approaches where possible (e.g. beach nourishment, reprofiling), with ‘hard’ engineering approaches only adopted where these softer approaches are not feasible. As such, the current study has recommended post-storm beach nourishment to hold the existing shoreline by accelerating natural recovery processes and, in the case of extra beach nourishment, providing a buffer against future erosion. Post storm nourishment should be done in a timely manner i.e. within 3 months as a second event occurring before any natural recovery has taken place may exacerbate erosion and vegetation losses.

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6.2 Broad Complementary Measures

This SEMP is assessing management options for all shorelines of Coochiemudlo Island and these face four different directions and have a varied range of foreshores and exposure to coastal processes. As such each of the shorelines have different erosion pressures and therefore have different options available for erosion management.

However, there are a range of management measures that are similar for many beaches and these are described in this section. Unless noted otherwise in individual beach assessments these complimentary measures apply.

6.2.1 Beach Condition Monitoring

The coastal processes on Coochiemudlo Island are low energy by usual coastal process standards. Typical sand transport rates are several orders of magnitude lower than a typical exposed Queensland beach, even in storm conditions. Therefore, traditional means of assessment, including detailed numerical modelling, are not able to reliably capture and define these processes. The goal of any assessment is to predict the impact of sand movements on the beach, i.e. how much it might change in the future. The most accurate way to begin this assessment is to measure the changes in the beach over time with particular notice given to erosion events. For this to be effective it needs to encompass the areas where sand moves from and to so that absolute quantities are reconciled. This monitoring will make change assessment available in a quantified form and will support the less robust assessments currently available, such as interpretation of photographs and observations, to inform management actions. This was the primary method of assessment before numerical modelling became an accurate tool and in the recent past there were more than 160 full time survey stations located along Queensland's coastline.

Beach profile surveys have been previously undertaken on Norfolk Beach fronting Victoria Parade East and Main Beach east of the Ferry Terminal. The surveys indicate that the width of the upper beach fluctuates annually, however were insufficient to confidently identify trends of beach recession or accretion, or lack thereof (BMT 2020). Regular surveying was not undertaken on Morwong Beach, Norfolk Beach north of control point 3, or Main beach west of the Ferry Terminal.

Therefore, detailed survey monitoring of the beaches on Coochiemudlo Island is vital to both understand and quantify beach changes and to measure the success of management actions. As the changes in beach levels on Coochiemudlo Island are small monitoring needs to be very accurate. A survey specification was provided to Council in November 2019 and has been included in Appendix A. It is recommended that monitoring is carried on an annual basis on all beaches, with additional surveys immediately after an erosion event. These additional surveys will be required to inform locations and quantities of beach nourishment and/or beach reprofiling.

CoastSnap type photo points at key locations have been discussed at CRG meetings. This may be a good idea for a few critical locations and would likely be inexpensive to install, although Council would have to manage photo uploads and storage. This would not decrease the need for surveys to assess beach movement trends, however it could inform beach condition between surveys.

Areas to prioritise for photo monitoring are as follows:

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- (1) Norfolk Beach. Photo monitoring of this beach could assist in confirming the extent and severity of reported erosion issues and inform beach condition between surveys. Beach access may provide suitable locations for photo monitoring, giving a view along the beach in both directions.
- (2) North-eastern Norfolk Beach/Control Point 5. Photo monitoring of this area may assist in informing how much sand moves on and off the beach and help inform erosion rates and confirm if erosion is gradual or event driven. If a photo monitoring point is installed on the north-eastern rock outcrop it may be possible to use the same point to cover Morwong Beach. Morwong Beach appears to be accreting, not eroding so it is less critical. Note that it is expected that permits would be required to install any structure on the rock outcrop.
- (3) Main Beach. Photo monitoring points to provide coverage of the entire beach would be ideal, however priority locations are the heavily trafficked areas east of the barge ramp. While Main Beach is not showing signs of consistent erosion the area is heavily frequented with more infrastructure. If photo monitoring points can be installed on the ferry terminal it might be possible to provide good coverage to the west along Main Beach to the Red Cliffs.

It should be noted that to have benefit such a program will require ongoing data management and analysis.

6.2.2 Underlying Bedrock

The volume of sand on Coochiemudlo's beaches is very limited due to underlying bedrock in some locations. Storm erosion is typically assessed as a volume i.e. m^3/m and therefore thin layers of sand will show more horizontal movement than thicker layers. Also, where longshore transport is being modelled or calculated, it is the potential for transport which is the calculated result and this assumes that sand is always available for transport, i.e. an unlimited supply of sand. If a rock strata exists then there may be insufficient sand to meet the transport need and as such the result will be incorrect.

Therefore, a geotechnical investigation to determine sand thickness and locations and extent of underlying rock, mainly on the eastern beaches would be very useful to inform storm erosion estimates and potential beach nourishment volumes and support possible future investigations into structural erosion controls. It is recommended that this investigation covers the whole of the island, including the western foreshore where possible.

6.2.3 Beach Access

The high level of usage of the beaches on Coochiemudlo Island requires them to be safe to access and walk along. Therefore, it is a matter of priority to upgrade existing beach accesses to safer flexible structures (e.g. board and chain or locally devised methods) which follow lowering beach levels during storms and can be removed temporarily when beach repair works are carried out. Repairs should be prioritised to existing damaged beach access structures and high traffic locations, such as Norfolk Beach south of the Melaleuca Wetlands and Main Beach east of the barge ramp. Upgrades at other locations should be carried out as needed or as part of councils ongoing maintenance activities.

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6.2.4 Vegetation Management

Ongoing dune and habitat management and maintenance activities are currently undertaken with significant involvement from community groups. The value of these actions in maintaining a healthy foreshore is recognised and it is hoped they have the support to continue. BMT have been advised that DES have suggested discussing development of an overall vegetation management/revegetation plan to guide works by local groups and help to minimise future problems like loss of trees from erosion (triggering requests for council to protect the trees) in areas where trees have been planted too close to erosion scarps (S. Sultmann, personal communication, 3 July 2020).

In addition to ongoing work immediate revegetation is recommended following beach reprofiling or beach nourishment to stabilise the dune and assist in retaining sand.

Where fallen trees pose a safety risk they should be, if possible, placed along erosion scarps to assist in reducing beach erosion and aid recovery. While removing unstable trees before they fall would have the added benefit of reducing disturbance to adjacent vegetation approval to remove vegetation, unless already fallen and deemed a safety hazard, is unlikely to be granted. It is noted that under the Fisheries Act a marine plant includes anything that grows on or adjacent to tidal land, whether alive, standing, dead or fallen, and removal will require a permit unless there is risk is posed to public infrastructure or safety. This activity will be applicable for all sections of Norfolk Beach and Main Beach fronting the Golf Course.

6.2.5 Stormwater management

Management of stormwater flow across the beach is recommended to prevent scouring and removal of sand from the upper beach and is considered a core Council responsibility. Where appropriate this measure has been included in the beach specific assessment.

6.3 Individual Beach Assessments

In this section each of the beaches on Coochiemudlo Island are described, issues identified, and management options assessed using a Multi-criteria Assessment matrix. Prioritised recommendations are then reported.

6.3.1 Morwong Beach

Morwong Beach is the Islands only north-facing beach and is protected from northerly events by a wide and shallow intertidal flat. Note that the changes at the very eastern end have been included in the discussion of past severe erosion in the section on North-eastern Norfolk Beach below (section 6.3.3). Numerical modelling has indicated that a small volume of sand transport occurs in both directions along the beach. Aerial photos indicate an increased volume of sand transported from Norfolk Beach onto the intertidal flats at the eastern end of the beach in recent years. Inspection of historical aerial imagery indicates accretion of Morwong Beach of up to 14m between 1955 and 2018.

There is an old and damaged concrete boat ramp at the eastern end of the beach. Scour around the structure is very localised and there is no indication the structure is having any impact on broader coastal processes. A small ephemeral creek outlet channels stormwater and drains the dune system following heavy rainfall, with a build up of sand visible on the intertidal area in the centre of the beach.

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The proximity of this build-up close to the creek mouth indicates that the sand may have been scoured from the upper beach by creek flows.

Survey monitoring of the beach has not been previously undertaken by Council.

For current management practices Council has existing permits for beach reprofiling of up to 5 m³ per lineal meter of beach and sand nourishment of up to 5000 m³ per year.

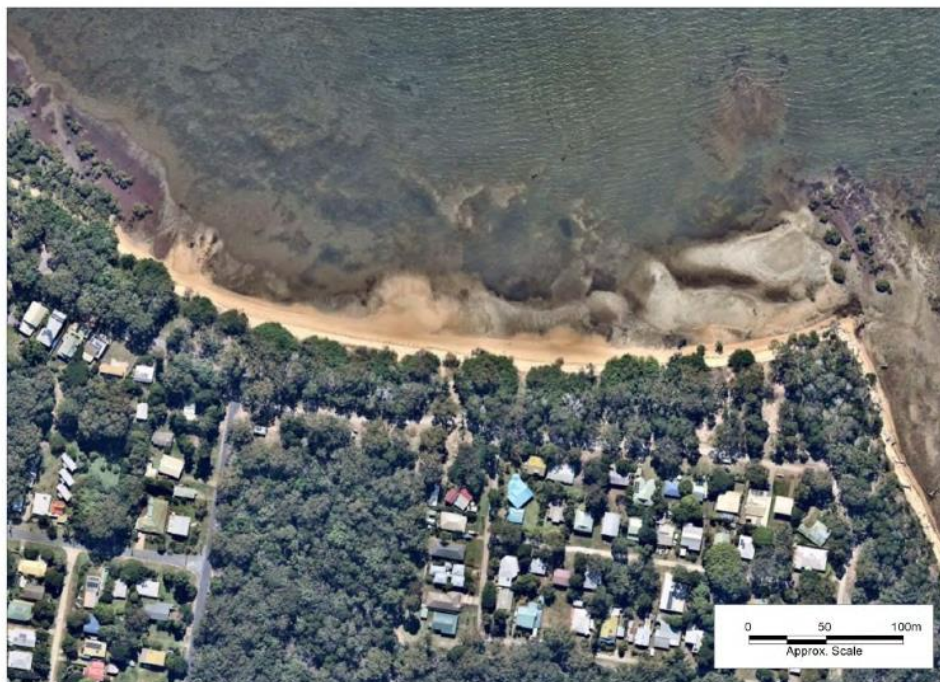


Figure 6-1 Morwong Beach (Nearmap 2020)

6.3.1.1 Option Assessment

Current assessments do not indicate longer-term erosion issues on Morwong Beach and management actions are focused on addressing the short-term effects of erosion resulting from storm events.

Council have requested that the SEMP consider options for the existing boat ramp on Morwong Beach. Based on the information provided we understand that this structure was constructed without approvals and is currently closed due to safety concerns. Due to the short nature of the boat ramp and its location at the top of the beach current interaction with coastal process is minimal and any impacts are localised to the immediate vicinity of the boat ramp.

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Figure 6-2 Morwong Beach Boat Ramp, March 2019

A full Multi Criteria Assessment for the beach is given in Appendix B. A summary of main points is given in Table 6-1 below.

It is recommended that Council prioritise maintenance options for Morwong Beach as per the MCA outcomes, noting that beach nourishment is only recommended to aid recovery following an erosion event. This information will be integrated into an Operation Plan for Coochiemudlo Island.

Table 6-1 MCA results summary – Morwong Beach

Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Remove boat ramp and close access path to vehicles	Prevent any erosion impacts associated with the boat ramp, including vehicle access to the beach. Benefit to environmental and heritage values by removing vehicle access to the beach and through the Emerald Fringe.	2.6	4.5	1
Formalise/maintain access paths	<i>Complementary measure.</i> Recommended if access is damaged by a storm event or if upgrades are planned. Prevent damage to the Emerald Fringe through ad-hoc beach access and improve all condition access.	1.6	3.5	2
Beach nourishment in response to storm erosion	No identified ongoing erosion problems so beach nourishment is recommended in response to storm erosion only. Immediate dune revegetation is recommended following beach nourishment to stabilise the dune.	1.2	2.85	3

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Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Stormwater management	<i>Complementary measure.</i> Preventing sand from washing onto the tidal flat may improve beach amenity, otherwise no impact.	0.2	2.1	4
Beach reprofiling	<i>Option not progressed past stage 2.</i> Due to the narrow width of the beach and overhanging trees, benefit in restored beach amenity would be negligible and not sufficiently outweigh negative environmental impacts from machinery on the beach and disturbed vegetation.	-	-	N/A
Repair/upgrade boat ramp	<i>Option not progressed past stage 1.</i> It is expected that any work to formalise the boat ramp would increase the size of the structure and result in increased interaction with coastal process and possible erosion issues, as well as increase vehicle traffic on the beach and through the Emerald Fringe. In addition, use would be restricted to high tide due to the shallow nature of the intertidal flats.	-	-	N/A

6.3.2 Norfolk Beach

Norfolk Beach is the 1.5 km long easterly facing beach. Council has existing permits for beach reprofiling of up to 5 m³ per lineal meter of beach and sand nourishment of up to 5000 m³ per year at two locations on Norfolk Beach.

Groynes and an artificial reef or offshore breakwater have been suggested by members of the community as potential erosion control structures suitable for Northeast Norfolk Beach. Neither of these options have been progressed through the multi-criterial analysis and the reasons are discussed below.

An artificial reef or offshore breakwater would require a significant supply of sand to be effective at capturing sand. The Stage 2 report (BMT, 2020) on coastal processes concluded that there is no new sand moving onto the Island's beaches from the broader Bay environment. In addition, a significant design issue is that for a structure to mitigate wave action, necessary to locally reduce sand transport i.e. hold sand, it will need to sit high in the water (at storm water levels) particularly at Coochiemudlo Island where the event wave period is short (longer period waves as on the Gold Coast "feel" the bottom in greater water depths). On Coochiemudlo Island the events which cause the most sand movement are north-east wind events which result in an associated surge of up to 1m. Therefore, to be effective against event waves the structure would likely need to be placed such that it was only 0.5 to 1 m below water surface during an event i.e. about spring high tide level. This will have significant impact on local processes during ambient conditions and this impact would need to be assessed. Such a structure would introduce a safety hazard to boats and other watercraft and may reduce visual amenity.

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Groynes, including any seaward extension of existing control points, depend on a consistent longshore sand transport rate to be effective. Assessments suggest the current longshore transport rate is low and seasonally inconsistent, making this option unsuitable for Norfolk Beach. In addition, groynes would significantly alter the current mostly natural state of the beach and may reduce visual amenity.

6.3.3 North-eastern Norfolk Beach

North-eastern Norfolk Beach is the easterly facing section of beach north of the wetlands to the northern end of Norfolk Beach. The beach is fronted by significant rocky intertidal flats and reef.

Aerial photographs from 1955 and 1997 show the rock outcrop connected to Morwong and Norfolk beaches by a sand spit forming a tombolo. Loss of vegetation on the rock outcrop and sand spit occurred between 1955 and 1997, with subsequent erosion of the connecting spit occurring between 1997 and 2013. Aerial photography indicates erosion of up to approximately 20 m since 1955. Minimal change in the vegetation line has occurred in the vicinity of Control Point 4 at the southern end of the beach segment.



Figure 6-3 North-eastern Norfolk Beach (Nearmap 2020)

It is not known what occurred historically at this location to cause such a dramatic change in the shoreline. It is likely to have either been a significant storm causing immediate change or a slow progression of natural processes which reached a breaking point. The area is complex with both north and east facing beaches and an extensive offshore shoal. The wave actions and currents during a storm event such as ex-TC Oswald would be complex and not able to be modelled in detail without extensive focused data collection and significant calibration. This lack of detailed knowledge

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of the localised processes hinders any attempt to assess options to mitigate any ongoing changes. Remnant mangroves offshore might indicate that the area was never sandy. Past erosion on north-eastern Norfolk Beach has been conservatively estimated at 1 to 1.5 m³/m per year. It should be noted that this approach assumes a sandy beach of full depth and is not able to take into account the presently exposed rocky substrate which has not been mapped. Inspections of the site noted vegetation rooted in a thin layer of sand, as shown in Figure 6-4. A geotechnical investigation to determine the depth of the sand layer and extent and composition of the rocky substrate will be required for more accurate erosion estimates and to inform feasibility and design of structural erosion control options.

Numerical modelling has shown that sand transport occurs in both directions depending on the prevalent wind direction.

Survey monitoring of the beach has not been previously undertaken by Council.



Figure 6-4 Exposed rock substrate North-eastern Norfolk beach (October 2018)

6.3.3.1 Option Assessments

While north-eastern Norfolk beach eroded for some time after the event in 1950s which caused significant change in the vegetation and processes it is uncertain if erosion is occurring at a consistent rate. However it is noted that changes occur periodically because of the north-eastern exposure and thin layer of sand over bedrock. It is possible that the impact of the historical perturbation is now approaching a new equilibrium and erosion under current conditions is driven by storm events. Significant shoreline changes may still be seen after storms because of the thin layer of sand over rocky substrate. Aerial photos indicate minimal change between January 2013 (pre TC Oswald) and

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November 2018 indicating either minimal erosion during TC Oswald or erosion with subsequent recovery. This supports the theory that a dynamic equilibrium allowing for storm erosion and recovery has been achieved with the current beach alignment.

Estimates have been made of losses of between 170 and 255 m³ per year however these estimates assume sand is always available to be eroded and do not take into account the presence of the rock substrate, as the extent and location has not been quantified.

It is considered that any attempt to restore the beach to an approximate 1955 state using large scale sand nourishment and extensive dune planting would not likely be successful because of the coastal process regime i.e. the “new” regime established for the current beach alignment. Therefore, any consideration of such an exercise would require extensive design both for the intervention works and the impacts. The resulting works would also likely be very expensive.

Structural options have been included in the MCA assessment including both a seawall along the vegetation line and a groyne type structure between north-eastern Norfolk Beach and Morwong Beach, with the intent of preventing westerly sand transport onto the tidal flats of Morwong Beach. Both these options have achieved low scores in the MCA. Modelling of longshore transport indicates sand is transported in both directions, dependant on the prevailing conditions at the time, with transport to Morwong Beach only occurring at higher tides. Due to this two-way sand transport a groyne structure is unlikely to be effective at preventing erosion and is not recommended. A seawall is not recommended without ongoing nourishment and so there would be a double cost in providing a seawall and nourishment, as opposed to nourishment alone. Uncertainty as to the extent of the exposed rock substrate increases design difficulty and a geotechnical investigation is required to confirm feasibility, as well as to quantify future erosion potential before this option can be considered further. Additionally, such a structure would significantly change the nature of the beach.

A program of ongoing beach monitoring and a geotechnical investigation to determine the extent and nature of the rock substrate are recommended by the SEMP. If this provides future additional information to warrant consideration of structural erosion control measures these measures will require extensive individual assessment to avoid unwanted impacts.

Recommended options for north-eastern Norfolk Beach are as follows:

- Surveys as specified (Appendix A) on an annual basis and following storm events.
- Geotechnical investigation to determine the extent and composition of the rock substrate if sand movement is to be quantified or structural options considered in the future. Such an investigation should extend landward to the road (approximately 40 m).
- Beach nourishment to replace lost offshore sand following a storm event. Volumes will need to be determined by survey, however as annual losses have been conservatively calculated at 250 m³ or less and it is expected that maximum volumes required to recover from a given storm would not be significantly greater.

Ongoing monitoring of this area is critical and a review of indicative erosion rates is recommended as and when repeated survey data is available.

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A full Multi Criteria Assessment for the beach is given in Appendix B. A summary of main points is given in Table 6-2 below. This information will be integrated into an Operation Plan for Coochiemudlo Island.

Table 6-2 MCA results summary – North-eastern Norfolk Beach

Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Beach nourishment in response to storm erosion	Volumes will need to be determined by survey, however as annual losses have been conservatively calculated at 250 m ³ or less and it is expected that maximum volumes required to recover from a given storm would not be significantly greater. Immediate dune revegetation is recommended following beach nourishment to stabilise the dune.	1.2	2.85	1
Larger scale beach nourishment and extensive dune planting	Not recommended at this stage. Ongoing monitoring is required to better determine beach changes before effectiveness and impacts of this option can be determined.	0.1	0.35	N/A
Seawall (with large initial nourishment and ongoing nourishment)	Not recommended at this stage. Ongoing monitoring is required to better determine beach changes before effectiveness and impacts of this option can be determined.	0.2	-0.3	N/A
"Dune enhancement" with sandbags and nourishment between morwong and NE Norfolk to stop sand loss to the north and prevent further beach rotation	Option not progressed past stage 2. This option is not expected to be effective and other potential impacts are unknown. Ongoing monitoring is required to better determine beach changes before effectiveness and impacts of this option can be determined.	-	-	N/A
Beach reprofiling	Option not progressed past stage 1. As there is a lack of sand available for reprofiling option would be both ineffective and not technically feasible.	-	-	N/A

6.3.4 Norfolk Beach fronting the Melaleuca Wetlands

This beach segment is east facing beach with adjacent beaches to the north and south able to supply sand from either direction. Minimal long term changes are indicated by analysis of aerial photography. Variations of up to 5 m are indicated, however this is within the order of accuracy of the image georeferencing. Sand transport occurs in both directions in accordance with wind directions, tending southerly in the summer months and northerly in the winter months.

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Aerial images up to 2013 show a periodic widening of the beach fronting the wetlands directly seaward of the creek, possibly indicating a supply of sand scoured out from the upper beach in times of high flow.

Concern has been raised by the community regarding the potential for saltwater intrusion into the wetlands if the current dune is breached or overtopped. Monitoring is needed to determine whether this is a seasonal or a longer-term trend. It is likely that fresh water outflow after heavy rain will erode the dune, allowing salt water intrusion until natural processes again close the entrance, as shown occurring in Figure 6-5. If a longer-term trend is indicated then the underlying physical process change will need to be identified before a mitigation action can be formulated.

Regular surveying has not previously been undertaken for this section of Norfolk Beach.



Figure 6-5 Melaleuca Wetland and beach (Nearmap 2020)

6.3.4.1 Option Assessment

No clearly defined long term erosion has been identified. Indications are that changes are minor (within 5 m) and cyclic mostly relating to storm events noting that recovery from storm events may take several years. Good quality repeated surveys are needed to determine whether any longer-term processes occur and therefore management actions have been focused on addressing the short-term effects of erosion resulting from storm events and appropriate maintenance actions.

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Suggestions have been made by CRG members that 'reinforcing' or 'reinstating' control points 3 and 4 with groyne type structures should be considered. Such an option has been excluded from the MCA. Given these are low lying rocky structures and unlikely to be damaged or "lost", then if there is sufficient sand on the beach the control points will continue to function as they have in the past. For an intervention of this nature to be justified ongoing monitoring would need to identify long-term erosion issues and confirm that the existing rock outcrops were not effective in holding beach alignment.

Note that a seawall option has been included in the MCA for completeness, however is not recommended at this stage. If repeated monitoring indicates long term recession not related to storm erosion and a high risk to the wetland the option may be reconsidered if ongoing beach nourishment is not favoured. This option would require individual assessment of impacts as part of a future approvals process.

An option has been considered for dredge material taken from the Main Beach ferry channel and barge ramp to be placed slightly offshore of Norfolk Beach and moved onshore by natural processes. This option would provide additional sand to the system and no additional costs are expected to be associated with works. Approvals/permits are required and placement of material is not acceptable where it will result in long-term impact to local marine habitat features, i.e. seagrass beds. A focused study and survey will be required to determine a suitable location for placement. This option has also been included for Norfolk Beach fronting Victoria Parade, as placement offshore of either of these beach segments will be beneficial.

Initial beach nourishment is recommended to rectify existing unaddressed erosion on this beach segment and Norfolk Beach fronting Victoria Parade East and is discussed in section 6.3.5.

A full Multi Criteria Assessment for the beach is given in Appendix B. A summary of main points is given in Table 6-3 below.

It is recommended that Council prioritise maintenance options for this beach segment as per the MCA table, noting that beach nourishment is only recommended to aid recovery following an erosion event, and that a regular survey program is implemented immediately. This information will be integrated into an Operation Plan for Coochiemudlo Island.

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Table 6-3 MCA results summary – Norfolk Beach fronting the Melaleuca Wetlands

Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Formalise/maintain access paths	<i>Complementary measure.</i> Beach access at the north of the beach segment is currently damaged. Initial and maintenance costs expected to be low.	1.6	3.5	1
Dredge material from Main Beach ferry channel and barge ramp placed slightly offshore	This option would provide additional sand to the system to be moved onshore by coastal processes. No additional costs expected to be associated with works. Approvals/permits required for placement of material. Placement of materials is not acceptable where there is long-term impact to local marine habitat features, i.e. seagrass beds.	1.9	3.3	2
Beach reprofiling	To aid recovery following an erosion event. Immediate dune revegetation is recommended following beach reprofiling to stabilise the dune.	1.2	3.1	3
Beach Nourishment in response to storm erosion	Expected to be a maximum of 5m ³ /m repeated every 5-10 years as needed. Immediate dune revegetation is recommended following beach nourishment to stabilise the dune.	1.4	2.55	4
Seawall (with ongoing beach nourishment)	This option would significantly change the nature of the beach and may have unintended impacts on the wetlands. Not recommended at this stage.	1.2	0.25	N/A

6.3.5 Norfolk Beach fronting Victoria Parade East

No clearly defined long term erosion other than unrectified storm losses has been identified. Erosion assessments have indicated that beach fluctuations are minor (within 5 m) and cyclic mostly relating to storm events (BMT, 2020) and therefore management actions have been focused on addressing the short-term effects of erosion resulting from storm events and other appropriate maintenance actions.

The statement that there is no ongoing long-term erosion has been disputed by members of the community. This section of beach was monitored between 2013 and 2018 however while the surveys indicate that the width of the upper beach fluctuates annually, they were insufficient to confidently identify trends of beach recession or accretion not related to storm erosion. Good quality repeated surveys are needed to determine whether any other longer-term processes occur and an annual whole of Island survey program has been recommended.

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Currently there are unapproved existing geotextile container seawalls, constructed as an emergency measure to protect trees. The Norfolk Beach track has also been closed to cars following TC Oswald and beach access has been protected by geotextile containers.

Sewer infrastructure is located in this area with a sewer pipe approximately 20m behind the beach (seaward edge of vegetation) and a sewer pump station set approximately 40 m back from the beach. This infrastructure is outside of the modelled 1% AEP storm erosion area and not currently at risk from coastal processes and so has not been addressed by the SEMP. If monitoring indicates recession of the beach then these assets will eventually need relocating or protecting.

Community members have reported stormwater run-off collects in the trench of the James Street sewer line and discharges onto the beach from under the northern geotextile seawall. As this is a drainage/sewer issue and located well behind the beach this issue needs to be investigated by Council.



Figure 6-6 Sewer pipe and pump station, Norfolk Beach (Red-e-Map, 2020)

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Figure 6-7 Norfolk Beach fronting Victoria Parade East (Nearmap 2020)

6.3.5.1 Option Assessment

BMT has been requested by Council to make recommendations regarding the existing unapproved existing geotextile container seawalls, constructed as an emergency measure to protect trees. While not currently causing any interruption to coastal processes, such as exacerbating erosion at the end of the structures, the protective role of these structures is minimal as the beach in front of the seawalls has subsequently recovered, as shown in Figure 6-8 and Figure 6-9 below. It is noted that while the walls have strong support from some members of the community overall opinions are mixed, as evidenced by feedback received on this project.

An option for additional seawalls has been included in the MCA for completeness, however it is not recommended at this stage. As discussed in section 3.3.5.1, while a properly designed and constructed seawall can protect the landward assets from erosion, it effectively isolates the sand located behind the wall from the active beach system and may lead to other adverse consequences. On a receding shoreline, the seawall becomes progressively further seaward on the beach profile over time and, without ongoing beach nourishment, will result in total loss of the beach. Examples of this process are provided in Appendix C.

This report recommends beach nourishment to replace storm losses. If repeated monitoring indicates long term recession which is not related to storm losses and if increased beach nourishment is not favoured the option for seawalls may be reconsidered, however subsequent long term loss of the beach will occur and must be accepted. Seawalls are not recommended above beach nourishment to respond to erosion resulting from a storm event. Beach recovery naturally occurs following erosion of this nature and beach nourishment accelerates this process, as well as adding resilience to the beach against future events.

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For the reasons discussed above the SEMP does not support seawalls for Norfolk Beach. While the overall score of options to remove or formalise the existing seawalls is equal in the MCA, retaining the existing seawalls is dependent on State Government approval. Council has lodged an application with the State Government requesting approval of these structures, however the outcome of this application has not yet been finalised. If removal of these structures is required, and if the sand is suitable for beach nourishment purposes, the geofabric containers should be emptied in situ.

While there is a cost associated with removal it should be noted that the design life expectancy of a geotextile structure is in the order of 15-20 years and the structure will require removal or replacement at some time in the future.



Figure 6-8 Northern geotextile container seawall - October 2018



Figure 6-9 Geotextile container seawall Norfolk Beach - March 2019

As discussed in section 6.3.4.1 an option has been considered for dredge material taken from the Main Beach ferry channel and barge ramp to be placed slightly offshore of Norfolk Beach, to be moved onshore by natural processes. This option has also been included for Norfolk Beach fronting the Melaleuca Wetlands, as placement offshore of either or both of these beach segments will provide benefit. This option would provide additional sand to the system and no additional costs are expected to be associated with works. Approvals/permits are required along with a focused study and survey to determine a suitable location for placement. Offshore placement is preferred due to

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possible silt inclusion in the material and allows natural processes to optimally distribute the sand onshore.

A full Multi Criteria Assessment for the beach is given in Appendix B. A summary of main points is given in Table 6-4 below.

It is recommended that Council prioritise maintenance options for this beach segment as per the MCA table, noting that beach nourishment is recommended to aid recovery following an erosion event, and that a regular survey program is implemented immediately. This information will be integrated into an Operation Plan for Coochiemudlo Island.

As noted in section 4 the recently completed survey and photos provided by Coastcare indicates the beach is currently in an eroded state. Comparison of the recently completed survey with 2018 surveys, shown in Appendix D, indicates that sand has been removed from the berm with the majority redistributed across the profile. Data available is insufficient to quantify exact changes, however it is estimated that losses from the berm are less than 3 m³/m on average. While photos from July 2020 (provided in Appendix F) indicate beach recovery is currently occurring, to supplement natural recovery processes and provide additional resilience to the beach against possibly future erosion immediate beach nourishment of 3 m³/m (2400 m³ total) is recommended between control point 2 and control point 4. Survey profiles along the nourished section of beach should be resurveyed following nourishment to allow accurate future interpretation of changes.

Table 6-4 MCA results summary – Norfolk Beach fronting Victoria Parade East

Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Formalise/maintain access paths	<i>Complementary measure.</i> Initial and maintenance costs expected to be low.	1.6	3.5	1
Dredge material from Main Beach ferry and barge ramp placed slightly offshore	This option would provide additional sand to the system to be moved onshore by coastal processes. No additional costs expected to be associated with works. Approvals/permits required for placement of material. Placement of materials is not acceptable where there is long-term impact to local marine habitat features, i.e. seagrass beds.	1.9	3.3	2
Recycle sand from the barge ramp back onto the beach.	This action is also appropriate for Main Beach east of the ferry terminal and that should be the priority location if additional sand is required. Immediate dune revegetation is recommended following sand placement to stabilise the dune.	1.4	3.3	3
Stormwater Management	<i>Complementary measure.</i> Manage stormwater runoff from Norfolk Beach track and sewer line.	1.2	3.1	4

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Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Beach reprofiling	To aid recovery following an erosion event. Immediate dune revegetation is recommended following beach reprofiling to stabilise the dune.	1.2	3.1	5
Beach Nourishment in response to storm erosion	Expected to be a maximum of 5m ³ /m repeated every 5-10 years as needed. Immediate dune revegetation is recommended following beach nourishment to stabilise the dune.	1.4	2.8	6
Remove existing emergency works seawalls	Minimal associated cost. If sand is suitable for beach nourishment geotextile containers should be emptied in situ. Disturbance associated with works and possibility of destabilising trees	1.0	2.5	7
Retain and existing emergency works seawalls	Minimal associated cost. State Government Approval required. Note that structures will likely need removing or replacing within 20 years (end of design life).	2.0	2.5	7
Seawall (with ongoing beach nourishment)	This option would significantly change the nature of the beach and may have unintended impacts on the wetlands. Not recommended at this stage.	1.4	0.95	N/A

6.3.6 South-eastern Norfolk Beach

Minimal shoreline change was observed on south-eastern Norfolk Beach (between control points 1 and 2). This relatively short, south-east facing section of beach would be expected to have overall low shoreline variance based on the dominance of ambient winds directly onshore from this direction, combined with the relative closeness of the two control points (refer Figure 3-7).

The following points are noted for this beach:

- This section of beach has a permit for beach reprofiling of up to 5 m³ per lineal meter of beach and sand nourishment of up to 5000 m³ per year;
- Regular surveying has not previously been undertaken for this section of Norfolk Beach;
- It is considered that Control Point 2 is important and if it were to be out-flanked there may be longer term alignment changes to this beach and possibly Norfolk Beach to the north.

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Figure 6-10 South-eastern Norfolk Beach (Nearmap 2020)

6.3.6.1 Option Assessment

A full Multi Criteria Assessment for the beach is given in Appendix B. A summary of main points is given in Table 6-5 below.

It is recommended that Council prioritise maintenance options for this beach segment as per the MCA table, noting that beach nourishment is only recommended to aid recovery following an erosion event, and that a regular survey program is implemented immediately. This information will be integrated into an Operation Plan for Coochiemudlo Island.

While the use of geotextile containers for dune enhancement or reinforcement of control points 1 and 2 has been included in the MCA it is not recommended at this stage. This option refers to specifically to structural reinforcement of the dune and not ongoing vegetation management and enhancement activities, which it is hoped will continue. Recent photos from July 2020 (BMT) shown in Figure 6-11 and Appendix G do not indicate severe erosion to warrant this type of intervention at this time as broader beach nourishment is recommended.

If post storm beach nourishment is carried out as recommended in this report it is expected that the overall beach and control point condition and functionality will improve. If repeated monitoring indicates persistent longer term recession not related to storm erosion or surveying following a storm indicates the integrity of Control Point 1 or 2 has been severely threatened the option for dune reinforcement with geotextile containers could be reconsidered. This option would require individual assessment as part of a future approvals process. It should be noted that beach nourishment with dune revegetation is the preferred option for response to storm erosion.

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Figure 6-11 Control Point 2 (looking south-west), July 2020

Table 6-5 MCA results summary – South-eastern Norfolk Beach

Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Formalise/maintain access paths	<i>Complementary measure.</i> Initial and maintenance costs expected to be low.	1.6	3.5	1
Stormwater Management	<i>Complementary measure.</i> Manage stormwater runoff from Norfolk Beach track.	1.2	3.1	2
Beach reprofiling	To aid recovery following an erosion event. Immediate dune revegetation is recommended following beach reprofiling to stabilise the dune.	1.2	3.1	3
Beach Nourishment in response to storm erosion	Expected to be a maximum of 5m ³ /m repeated every 5-10 years as needed. Immediate dune revegetation is recommended following beach nourishment to stabilise the dune.	1.2	2.6	5

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Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Dune enhancement with nourishment and geotextile containers at control points 1 and 2.	Assumes ongoing nourishment as needed (small volumes) Community groups can assist in planting/maintenance. Not recommended at this stage.	0.5	1.05	N/A

6.3.7 Main Beach

Main beach covers the entire southern foreshore from the rock outcrop east of the ferry terminal to west of the golf course. The southerly orientation means that the beach is sheltered from the stronger north-easterly storm events. However, it is exposed to the ambient south-easterly winds that dominate the Queensland weather and therefore sand transport occurs slowly to the west.

Council has existing permits for beach reprofiling of up to 5 m³ per lineal meter of beach and sand nourishment of up to 5000 m³ per year at two locations on Main Beach.

6.3.8 Main Beach East of the Ferry Terminal

Because of its location this beach is the immediate beneficiary of any storm induced southerly sand transport from Norfolk Beach. Therefore, it is expected that there will be some low cyclical accumulation and erosion of this beach as sand moves off and back onto the beach during and after storm events and then moves westward over time. This is evidenced by the occasional formation of a small intertidal lagoon at this location. The beach may also suffer a loss of sand when dredging to support the ferry terminal takes place. Loss of vegetation of up to 10 m east of the ferry terminal was observed from 1997 to 2018, however this is a highly trafficked area and vegetation changes may be related to usage rather than coastal erosion. The ferry terminal was rebuilt in 2015 with associated channel dredging with the dredged material being taken away to the Mud Island spoil ground, resulting in a loss of sand from the system.

Visitor amenities are concentrated in the vicinity of the ferry terminal, including park infrastructure such as BBQs, shelters and a playground. Business is also concentrated in this area, with boat hire and two cafes.

This section of beach was surveyed in 2016, 2017 and 2018. The surveys indicate that the width of the upper beach fluctuates annually, however were insufficient to confidently identify trends of beach recession or accretion, or lack thereof.

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Figure 6-12 Main Beach East of Ferry Terminal (Nearmap 2020)

6.3.8.1 Option Assessment

A full Multi Criteria Assessment for the beach is given in Appendix B. A summary of main points is given in Table 6-6 below.

It is recommended that Council prioritise maintenance options for this beach segment as per the MCA table, noting that beach nourishment is only recommended to aid recovery following an erosion event, and that a regular survey program is implemented immediately. This information will be integrated into an Operation Plan for Coochiemudlo Island.

Table 6-6 MCA results summary – Main Beach East of the Ferry Terminal

Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Recycle sand from the barge ramp back onto the beach.	Placement on Main Beach if needed before placement on Norfolk Beach	2.1	4	1
Beach nourishment in response to storm erosion	Expected to be a maximum of 5m ³ /m repeated every 5-10 years as needed. Immediate dune revegetation is recommended following beach nourishment to stabilise the dune.	2.1	3.5	2
Beach reprofiling	To aid recovery following an erosion event. Immediate dune revegetation is recommended following beach reprofiling to stabilise the dune.	1.6	3.5	3

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Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Formalise/maintain access paths	<i>Complementary measure.</i> Initial and maintenance costs expected to be low.	1.6	3.5	4
Stormwater Management	<i>Complementary measure.</i> Manage stormwater runoff from park hard surfaces	1.4	3.3	5

6.3.9 Main Beach between the Ferry Terminal and Barge Ramp

Visitor amenities are again located in this area with park infrastructure, car park and a toilet block.

Aerial photography indicates an accretion of up to 12 m from 1997 to 2018. The barge ramp upgraded in 2018 and has had accumulations of sand on its eastern edge since completion.



Figure 6-13 Main Beach between Ferry Terminal and Barge Ramp (Nearmap 2020)

6.3.9.1 Option Assessment

Given the indication that the beach is accreting, including sand accumulation against the barge ramp that requires relocation, nourishment has not been considered.

A full Multi Criteria Assessment for the beach is given in Appendix B. A summary of main points is given in Table 6-7 below.

It is recommended that Council prioritise maintenance options for this beach segment as per the MCA table and that a regular survey program is implemented immediately. This information will be integrated into an Operation Plan for Coochiemudlo Island.

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Table 6-7 MCA results summary – Main Beach between the Ferry Terminal and Barge Ramp

Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Formalise/maintain access paths	<i>Complementary measure.</i> Initial and maintenance costs expected to be low.	1.6	3.5	1
Beach reprofiling	To aid recovery following an erosion event. Immediate dune revegetation is recommended following beach reprofiling to stabilise the dune.	1.6	3.5	2
Stormwater Management	<i>Complementary measure.</i> Manage stormwater runoff from park and hard surfaces.	1.4	3.3	3

6.3.10 Main Beach between the Barge Ramp and Red Cliffs

Some park infrastructure is in place just west of the barge ramp. The barge ramp was upgraded in 2018 and the new barge ramp may interrupt westerly transport of sand in the short term.

The Curlew Creek outlet runs behind this section of beach and the alluvial fan at its entrance is clearly seen in the aerial photographs. This creek outlet will naturally move in response to longshore sand transport, storm erosion and rainfall events so the beach may appear to accrete or erode in different locations in response to flows in the creek. Vegetation immediately adjacent to the beach (between the creek and the beach) is mostly ground cover/grasses as opposed to large trees. Comparison of the seaward edge of vegetation (BMT, 2020) shows minimal change between 1955 and 1997 (with subsequent increase in vegetation from 1997 to 2013). Unless safety concerns or immediate threats to infrastructure emerge in the future these natural processes should be allowed to continue.

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Figure 6-14 Main Beach between Barge Ramp and Red Cliffs (Nearmap 2019)

6.3.10.1 Options Assessment

Indications are that the beach is stable or accreting so erosion management action is not considered. There has been no previous monitoring of the beach and as such the recommended monitoring program will help assess longer term trends.

Before considering beach reprofiling or beach nourishment for any location west of the barge ramp sand should be relocated to the western side of the ramp and natural westerly transport allowed to continue. Curlew Creek should be allowed to fluctuate naturally unless safety hazards or threat of loss of infrastructure occurs.

A full Multi Criteria Assessment for the beach is given in Appendix B. A summary of main points is given in Table 6-8 below.

It is recommended that Council prioritise maintenance options for this beach segment as per the MCA table and that a regular survey program is implemented immediately. This information will be integrated into an Operation Plan for Coochiemudlo Island.

Table 6-8 MCA results summary - Main Beach between Barge Ramp and Red Cliffs

Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Formalise/maintain access paths	<i>Complementary measure.</i> Initial and maintenance costs expected to be low.	1.8	3.5	1

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Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Stormwater Management	<i>Complementary measure.</i> Manage stormwater runoff from park and hard surfaces	1.4	3.1	2
Beach reprofiling	To aid recovery following an erosion event. Immediate dune revegetation is recommended following beach reprofiling to stabilise the dune.	1	2.9	

6.3.11 Red Cliffs

The possibility of undercutting at water level and the slope stability of the higher section of Red Cliffs, particularly in relation to the safety of the Community Hall, is of concern to the broader community. As this is a rock/cliff formation these concerns can only be assessed by geotechnical engineers. Council previously engaged Soil Surveys in 2013 who made recommendations regarding the stability of this area, discussed in the Stage 2 report Section 3. If further assessments or recommendations are required, including indicative rates of erosion of rock, then it will be necessary to re-engage geotechnical consultants.

6.3.12 Main Beach fronting the Golf Course

This beach is the ultimate beneficiary of any natural longshore sand transport westwards along Main Beach and there is some evidence of sand moving to the west of the Island. This is the result of the dominant south-easterly winds which occur in SE Queensland. This process will be slow because of the low energy wave climate and will be significantly influenced by man-made structures along the way such as the ferry terminal and barge ramp and associated dredging as well as the natural processes of creek movements and shoal formation. Because of the slow progression of these processes the results of an action either natural or man-made may take years or decades to become apparent at this location.

The analysis of aerial images was inconclusive regarding long term erosion at this site although there are obvious cycles of accretion and erosion as indicated above and as a result trees have fallen over some time in the past.

There also appears to be some issues with cable and electric wires and associated warning signs being inadequately maintained by the appropriate agencies (Figure 6-16).

There has been no previous monitoring of the beach and as such the recommended monitoring program will help assess longer term trends.

Before considering beach reprofiling or beach nourishment for any location west of the barge ramp sand should be shifted to the western side of the ramp and natural westerly transport allowed to continue.

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Figure 6-15 Main Beach fronting the Golf Course (Nearmap 2020)



Figure 6-16 Main Beach fronting the Golf Course - fallen warning sign in the centre of the photo (October 2018)

6.3.12.1 Options assessment

A full Multi Criteria Assessment for the beach is given in Appendix B. A summary of main points is given in Table 6-9 below.

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This is a remote and reasonably pristine part of the Island so any nourishment or beach reprofiling will have a larger relative environmental impact with less social benefits than other beaches. These options are not progressed past stage 2 of the MCA.

It is recommended that Council prioritise maintenance options for this beach segment as per the MCA table and that a regular survey program is implemented immediately. This information will be integrated into an Operation Plan for Coochiemudlo Island.

Table 6-9 MCA results summary – Main Beach fronting the Golf Course

Description	Notes	Stage 1 and 2 score (1 + 2)	Overall score (1 + 2 + 3)	Overall rank
Formalise/maintain access paths	<i>Complementary measure.</i> Beach access doesn't currently seem to be an issue. Maintenance work only. Initial and maintenance costs expected to be low.	1.6	3.5	1
Beach reprofiling	Option not progressed past stage 2. May be reconsidered if surveys indicate an ongoing erosion problem.			
Beach nourishment	Option not progressed past stage 2. May be reconsidered if surveys indicate an ongoing erosion problem.			

6.3.13 Western Foreshore

This part of the Island is sheltered from all easterly winds, including the occasional storms, and is characterised by established mangroves and intertidal flats. The mangroves provide valuable habitat with the additional benefit of providing shoreline protection from boat traffic waves.

There are a couple of ad hoc boat/kayak tracks through the mangroves, one of which is shown in Figure 6-18. The tracks appear to be well defined with the lack of vegetation suggesting frequent use, however as the surrounding mangroves appear healthy and undamaged these are not considered cause for concern at present. Any intensification of use is likely to cause further damage. Similarly for the walking track which does not appear to be heavily used at present but may result in damage to the surrounding vegetation if the use intensifies.

Large patches of invasive plants are present, including Ground Asparagus (*Asparagus aethiopicus*), shown in Figure 6-19. An Integrated Weed Management Plan for Coochiemudlo Island (Ecosure, 2017) was prepared for Council and contains recommendations for weed management and monitoring.

At present no major actions are required for the western foreshore. It is recommended that a weed management strategy is implemented (if not already) to support maintenance of the existing ecosystem. Inspection of the ad hoc tracks through the mangroves and walking tracks on an annual basis is recommended to identify any intensification of use and/or increased damage to the mangroves. If this occurs intervention should be in the form of community education and, if required, fencing to deter access to areas other than defined pathways.

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Figure 6-17 Western Foreshore

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Figure 6-18 Track through mangroves

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Figure 6-19 Invasive weed (Ground Asparagus)

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7 Recommended Maintenance Action Plan

The following table represents a combined plan for action to address maintenance and safety issues and complementary measures noted in the individual beach assessments in Section 6.3. An initial indication of potential costs has been provided to assist in determining appropriate budgets.

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Table 7-1 Recommended maintenance action plan

Priority	Location	Management action	Notes/Timeframe	Stage 1 & 2 score	Overall score	Approvals requirements	Permissibility	Environmental considerations	Indicative cost
1	Norfolk Beach fronting the Melaleuca Wetlands Norfolk Beach fronting Victoria Parade	Beach nourishment	2400m ³ immediately between control points 2 and 4 (3m ³ /m) to address existing erosion.	1.4	2.55/2.8	Covered under existing permits.	-	-	\$170,000.
2	Whole Island	Monitoring	Annual surveys as per specification given in Appendix B.	-	-	-	-	-	Costs expected to be consistent with recent 2020 survey. Details held by council.
3	Whole Island	Monitoring	Establish photo monitoring points where feasible. Within 1 year with ongoing data management.	-	-	Not required if affixed to existing structures.	-	-	\$10,000 for installation. Data management and analysis costs dependant on method and collaboration with universities or other organisations.
4	Morwong Beach All Norfolk Beach All Main Beach	Vegetation Management	Ongoing dune and habitat management and maintenance. Currently ongoing with a high level of involvement from community groups.	-	-	-	-	-	Required Council funding to be determined with community groups.

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Recommended Maintenance Action Plan

Priority	Location	Management action	Notes/Timeframe	Stage 1 & 2 score	Overall score	Approvals requirements	Permissibility	Environmental considerations	Indicative cost
5	All Norfolk Beach Main Beach	Remove fallen trees where posing a safety hazard and relocate to erosion scarp	Ongoing on an as needed basis as part of regular maintenance activities	-	-	Not required if removing terrestrial trees that have already fallen and are posing a risk to public infrastructure or safety. Development Permit required otherwise.	Depends on risk posed by the trees to non-infrastructure and safety matters – see State Code 11 PO1	-	\$500 per fallen tree
6	Morwong Beach	Remove boat ramp and close access path to vehicles	Within 1 year as currently closed due to safety concerns.	2.6	4.5	No permit as long as works comply with requirements in Part B.5 of EPP/2017/3930	-	-	\$10,000
7	Norfolk Beach fronting the Melaleuca Wetlands Norfolk Beach fronting Victoria Parade South-eastern Norfolk Beach	Formalise/maintain access paths	Prioritise damaged beach access at the north of the Melaleuca wetlands as current safety issue. Immediate (within 3-6 months) for this and any other existing damaged beach access. Upgrade remaining beach access on Norfolk Beach within 1 year.	1.6	3.5	Accepted Development	-	-	Up to \$5,000 per access path.

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Recommended Maintenance Action Plan

Priority	Location	Management action	Notes/Timeframe	Stage 1 & 2 score	Overall score	Approvals requirements	Permissibility	Environmental considerations	Indicative cost
8	Main Beach east of the Ferry Terminal Main beach between the Ferry Terminal and Barge Ramp	Formalise/maintain access paths	Prioritise upgrades for high use areas within 1 year.	1.6	3.5	Accepted Development	-	-	Up to \$5,000 per access path.
9	Main beach between the Barge Ramp and Red Cliffs Main Beach fronting the Golf Course	Formalise/maintain access paths	Upgrades on an as needed basis if damaged or as part of planned maintenance.	1.6	3.5	Accepted Development	-	-	Up to \$5,000 per access path.
10	Morwong Beach	Formalise/maintain access paths	Upgrades on an as needed basis if damaged or as part of planned maintenance.	1.6	3.5	Accepted Development	-	-	Up to \$5,000 per access path.
11	Norfolk Beach fronting the Melaleuca Wetlands Norfolk Beach fronting Victoria Parade	Dredge material from Main Beach ferry and barge ramp placed offshore	This option would provide additional sand to the system to be moved onshore by coastal processes and would in effect be recycling sand back to where it came from. No additional costs expected to be associated with works. Approvals/permits	1.9	3.3	Amendment to Marine Park Permit	Needs to be consistent with objects for Habitat Protection Zone. Placement of materials is acceptable where there is no long-term impact to local marine habitat features, i.e. seagrass beds	Seagrass does occur offshore periodically; need to consider temporal and spatial presence of seagrass in context of works	\$50,000 for seagrass survey, sediment testing and assessment of suitable locations. No extra costs expected for placement of material.

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Recommended Maintenance Action Plan

Priority	Location	Management action	Notes/Timeframe	Stage 1 & 2 score	Overall score	Approvals requirements	Permissibility	Environmental considerations	Indicative cost
			required for placement of material.			Development Permit, unless works comply with requirements of Part B.4 of EPP/2017/3930 (i.e. volume <5,000m ³ /yr).	Consistent with State Code 8 PO8. Requires sediment testing and management under PO21 in accordance with National Assessment Guidelines for Dredging.	Testing of material will determine whether it can be used for placement and associated controls.	
12	Norfolk Beach fronting Victoria Parade Main Beach east of the ferry terminal	Recycle sand from the barge ramp back onto the beach.	Prioritise Main Beach east of the ferry terminal if additional sand is required to maintain beach amenity. Placement of excess on Norfolk Beach As required when build-up against the barge ramp becomes an issue.	1.4	3.3	Already approved	-	-	Ongoing activity. Costs expected to be in line with previous work. Details held by council.
13	Norfolk Beach fronting Victoria Parade South-eastern Norfolk Beach	Stormwater Management	Manage stormwater runoff from Norfolk Beach track and sewer line. Prioritise upgrades for high use areas within 1 year.	1.2	3.1	-	-	-	Where non-structural options are used \$3,000 per site. If pipework is required costs to be confirmed with Council engineers.

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Recommended Maintenance Action Plan

Priority	Location	Management action	Notes/Timeframe	Stage 1 & 2 score	Overall score	Approvals requirements	Permissibility	Environmental considerations	Indicative cost
14	Main Beach east of the Ferry Terminal Main beach between the Ferry Terminal and Barge Ramp Main beach between the Barge Ramp and Red Cliffs	Stormwater Management	Manage stormwater runoff from park and hard surfaces Prioritise upgrades for high use areas within 1 year.	1.2	3.1	-	-	-	Where non-structural options are used \$3,000 per site. If pipework is required costs to be confirmed with Council engineers.
15	Morwong Beach	Stormwater management	Upgrades as part of planned maintenance work or if surveys indicate significant sediment loss.	0.2	2.1	-	-	-	Where non-structural options are used \$3,000 per site. If pipework is required costs to be confirmed with Council engineers.
16	Western Foreshore	Monitoring	Annual inspections of existing tracks. Potential for involvement of community organisations in works.	-	-	-	-	-	<\$1000 per year
17	Western Foreshore	Vegetation Management (Weed removal and monitoring)	Ongoing activity. Potential for involvement of community organisations in works.	-	-	-	-	-	<\$5000 per year.

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Recommended Maintenance Action Plan

Priority	Location	Management action	Notes/Timeframe	Stage 1 & 2 score	Overall score	Approvals requirements	Permissibility	Environmental considerations	Indicative cost
18	Whole Island	Geotechnical Investigation	Within 5 years. Required to inform feasibility of structural options or large scale sand replenishment on Norfolk beach.	-	-	-	-	-	\$100,000 for whole of Island. To include assessment of erosion potential of Red Cliff rocks.

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8 Operational Plan (Storm Erosion Response)

A combined plan for action to address storm erosion is presented in Table 8-2. The plan is focused on nourishment after storm erosion with an initial round of remedial nourishment on Norfolk Beach to make up for the deficiency related to events in the last 5 years. If long term erosion, i.e. not related to storm events, is identified in the future then beach nourishment can be increased to allow for this.

Actions are given in order of beach location used for assessments in Section 6.3. In the event that multiple areas are impacted it is recommended that works are prioritised to rectify safety hazards.

It is expected that beach nourishment and reprofiling volumes required will be small and covered under council's existing works permits. It is recommended that locations approved for works are reviewed to ensure all beach segments potentially requiring beach nourishment or reprofiling are covered. A summary of approval requirements is given in Table 8-1.

Triggers for beach nourishment and re-profiling have been informed by the conditions of the existing permits.

Sand used for beach nourishment should be the same grain size or coarser than existing sand. Sediment sampling was undertaken in 2018 across the Redland City Council local government area, including Norfolk Beach and Main Beach on Coochiemudlo Island (FRC Environmental 2018). Particle size analysis of sand samples on Norfolk Beach and Main Beach estimated a median grain size (d₅₀) of 0.36 mm for the upper beach and an average of 0.52 mm for the lower beach. Samples from two quarry sites (including a Redland City Council quarry) were also analysed, with an average median grain size of 0.22 mm. It should be noted that if sand from these sources has previously been used for beach nourishment on Norfolk Beach or Main Beach then the assessed median grain size may not be representative of natural conditions.

Immediate dune revegetation is recommended following reprofiling or beach nourishment to stabilise the dune and help retain sand on the beach and can be supported by community organisations.

The design profile would aim to replace sand relocated from the berm, as indicated by the erosion scarp, and will vary from storm to storm and beach to beach. One of the benefits of ongoing monitoring will be to better understand and inform a working beach profile for each beach unit. Until a design profile can be determined it is recommended that sand is placed against the erosion scarp and sloped to meet the existing profile over a distance of 5 to 10 meters. This sand will naturally redistribute across the beach profile in accordance with prevailing coastal processes.

This study has found erosion is not likely to be beyond the existing approved Council nourishment regime. If monitoring indicates ongoing long term erosion or that more severe storm erosion is likely other options such as larger scale beach nourishment, dune enhancement or seawalls may be investigated using this newfound knowledge.

Costs for beach nourishment are based on response to events where reasonably large volumes are involved (assumed to be on the order of 1000 m³). If small (100-200m³ spread across multiple beach segments) volumes are involved these costs may increase substantially.

Indicative costs are given below are per beach unit, unless otherwise specified. As it is unknown which beach units will be affected by a given event or whether an event will trigger beach profiling or

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beach nourishment total costs have not been provided. It should also be noted that these are estimated costs and that actual costs may vary.

While it is not possible to predict future events, it is unlikely that the northern and southern beaches would be impacted by the same event. A conservative approach would be to allow for the full permitted nourishment of 5,000 m³ for a single approved location as an annual rolling budget in case of a severe event. Based on an estimated cost of \$70/m³ this equates to \$350,000 per year on a rolling basis. Indications from recent storm events suggest that this budget may be required every five (5) years.

As discussed in sections 4 and 6.3.5 reports and photos from community members, as well as the recent survey, indicate unrectified erosion on Norfolk beach fronting Victoria Parade East. Due to the similarity of beach characteristics and coastal processes it is expected that this erosion may extend to Norfolk Beach fronting the Melaleuca Wetlands. It is recommended that immediate beach nourishment of 3 m³/m is undertaken along the section of Norfolk Beach between control points 2 and 4 (approximately 800 m), or 2,400 m³ in total. The estimated cost for this work is \$170,000. Immediate dune planting is recommended following beach nourishment to stabilise the dune. This recommendation has been included in Table 7-1.

Table 8-1 Approvals requirements

Activity	Approval requirements	Permissibility	Environmental considerations
Minor beach reprofiling	Development Permit unless works comply with requirements of Part B.4 of EPP/2017/3930 (sand movement <5m ³ /m, excavation <0.5m)	Consistent with State Code 8	-
Minor beach nourishment	Development Permit unless works comply with requirements of Part B.4 of EPP/2017/3930 (sand movement <5m ³ /m, excavation <0.5m)	Consistent with State Code 8 PO8. Requires sediment testing and management under PO21 in accordance with National Assessment Guidelines for Dredging.	Testing of material will determine whether it can be used for placement and associated controls.
	Allocation of Quarry Material (if placed above high tide)	Need to establish material is suitable for placement.	
	Amendment to Marine Park Permit	Needs to be consistent with objects for Habitat Protection Zone – likely no issue if placed onshore	-

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Table 8-2 Operational Plan for response to storm erosion

Location	Management action	Trigger	Notes	Estimated Cost	Stage 1 & 2 score	Overall score
All affected beach segments	Surveying	Reported storm erosion resulting in an erosion scarp of 0.3m and/or greater or loss of vegetation	Council surveyors to survey a minimum of three (3) beach profiles for each affected beach segment to then be compared to the most recent whole of Island survey and inform sand loss volumes.	\$1,500 per beach segment		
Morwong Beach	Beach nourishment	Sand removed from the upper beach will be deposited on the intertidal flats and returned to the beach by natural processes. As such beach nourishment is only required to rectify safety hazards or if immediate major loss of established vegetation is likely. Volumes are less than 5m ³ /m.	Volumes to be determined by survey however expected to be less than 1000m ³ .	\$70,000	1.2	2.85
North-eastern Norfolk Beach	Beach nourishment	Storm erosion threatening further loss of vegetation.	Volumes to be determined by survey, however as annual losses have been conservatively calculated at 250 m ³ or less and it is expected that maximum volumes required to recover from a given storm would not be significantly greater. Immediate dune revegetation is recommended following beach nourishment to stabilise the dune.	\$17,500	1.2	2.85
Norfolk Beach fronting the Melaleuca Wetlands	Beach reprofiling	Survey indicates the majority of sand has been retained on the beach above MSL and volumes to be reprofiled are less than 5m ³ /m, excavation <0.5m.	Maximum of 5m ³ /m	\$3,000	1.2	3.1
Norfolk Beach fronting the Melaleuca Wetlands	Beach Nourishment	Survey indicates the majority of sand has been deposited below MSL and erosion scarp > 0.3m or loss of vegetation.	Volumes to be determined by survey however expected to be less than 2,500m ³ .	\$175,000	1.4	2.55
Norfolk Beach fronting Victoria Parade	Beach reprofiling	Survey indicates the majority of sand has been retained on the beach above MSL and volumes to be reprofiled are less than 5m ³ /m, excavation <0.5m.	Maximum of 5m ³ /m.	\$3,000	1.2	3.1

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Location	Management action	Trigger	Notes	Estimated Cost	Stage 1 & 2 score	Overall score
Norfolk Beach fronting Victoria Parade	Beach Nourishment	Survey indicates the majority of sand has been deposited below MSL and erosion scarp > 0.3m or loss of vegetation.	Volumes to be determined by survey however expected to be less than 1,500m ³ .	\$105,000	1.4	2.8
South-eastern Norfolk Beach	Beach reprofiling	Survey indicates the majority of sand has been retained on the beach above MSL and volumes to be reprofiled are less than 5m ³ /m, excavation <0.5m.	Maximum of 5m ³ /m.	\$3,000	1.2	3.1
South-eastern Norfolk Beach	Beach Nourishment	Survey indicates the majority of sand has been deposited below MSL and erosion scarp > 0.3m or loss of vegetation.	Volumes to be determined by survey however expected to be less than 1,500m ³ .	\$105,000	1.2	2.6
Main Beach east of the ferry terminal	Beach reprofiling	Survey indicates the majority of sand has been retained on the beach above MSL and volumes to be reprofiled are less than 5m ³ /m, excavation <0.5m.	Note that while Beach Nourishment scored higher in stage 2 of the MCA reprofiling is a less costly option and appropriate to restore beach amenity following less severe events.	\$3,000	1.6	3.5
Main Beach east of the ferry terminal	Beach Nourishment	Survey indicates the majority of sand has been deposited below MSL and erosion scarp > 0.3m or loss of vegetation.	Volumes to be determined by survey however expected to be less than 1,000m ³ .	\$70,000	2.1	3.5
Main beach between the ferry terminal and barge ramp	Beach reprofiling	As required post storm event to rectify safety hazards, restore beach amenity or if immediate major loss of established vegetation is likely. Volumes to be reprofiled are less than 5m ³ /m, excavation <0.5m.	Maximum of 5m ³ /m.	\$3,000	1.6	3.5
Main beach between the barge ramp and red cliffs	Beach reprofiling	As required post storm event to rectify safety hazards, restore beach amenity or if immediate major loss of established vegetation is likely. Volumes to be reprofiled are less than 5m ³ /m, excavation <0.5m.	Maximum of 5m ³ /m.	\$3,000	1	2.9

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Summary of Shoreline Management Actions

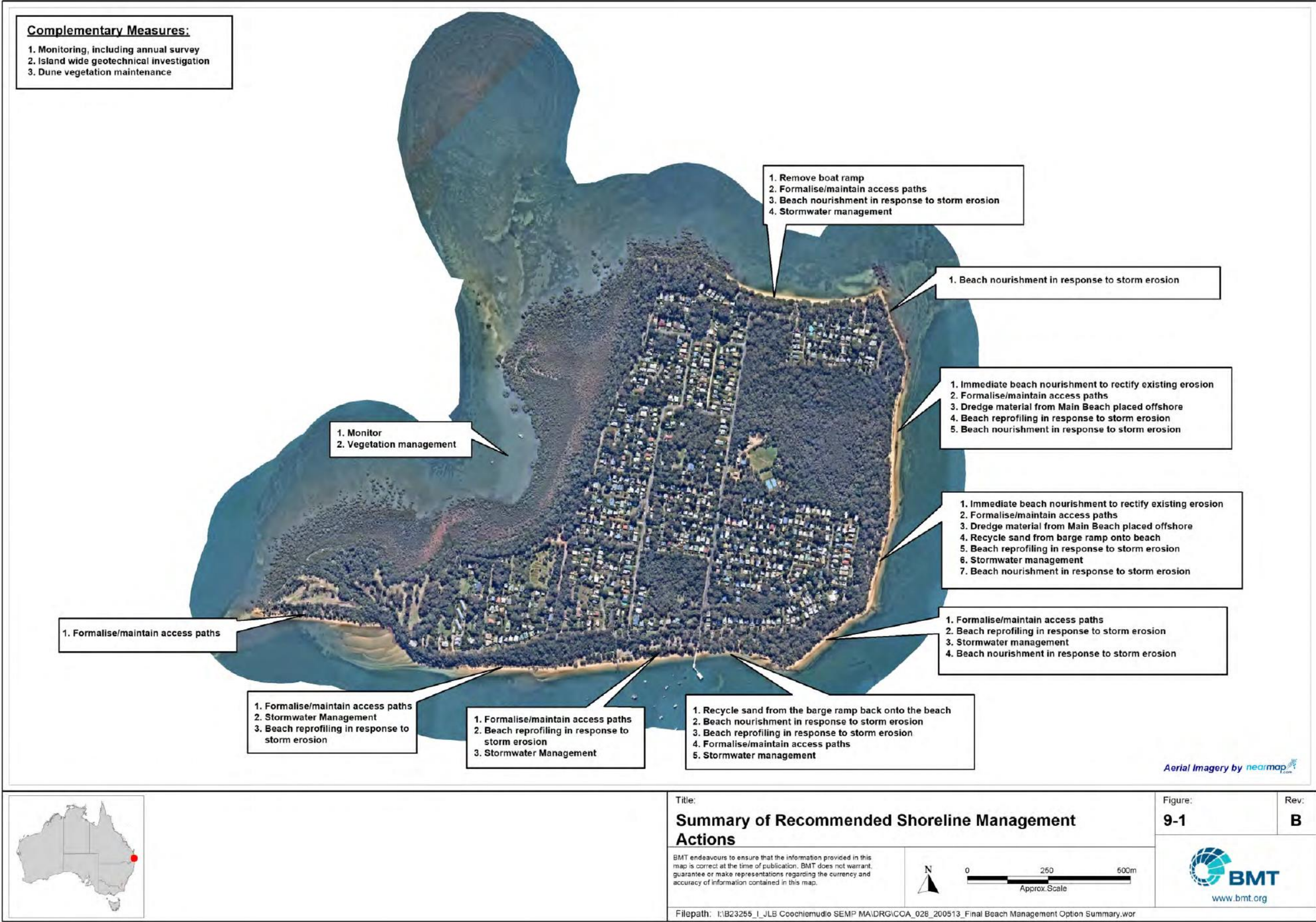
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9 Summary of Shoreline Management Actions

In summary the recommended Shoreline Management actions are;

- Initial nourishment of Norfolk beach of 2,400 m³ to be applied before the end of 2020 to increase resilience of the beach before the 2021 storm season. Expected cost is \$170,000.
- Proceed with the maintenance and safety measures as per Section 7 starting as soon as possible;
- Prepare for storm response as per Section 8, i.e. making sure budget is available for works if needed, as soon as possible noting that storm events often occur in late summer i.e. early 2021.

Recommended maintenance actions and safety measures are given in Table 7-1 with an operational plan for response to storm erosion detailed in Table 8-2. Figure 9-1 provides a summary of all recommended actions for each beach segment.



Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
References

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10 References

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Beach monitoring specification

A-1

Appendix A Beach monitoring specification

Survey for Beach Monitoring – Coochiemudlo Island

Survey Types

Coastal processes on Coochiemudlo beaches are generally very slow in comparison to an open coast beach where most normal monitoring methods have been developed. Therefore, the survey needs to be very accurate with about millimetre accuracy and at the very least sub-centimetre accuracy.

This is unlikely to be achievable with LiDAR or drone (around 15cm accuracy). Tree cover also may also limit accuracy for these.

It would also be preferable if the survey could be mobilised quickly say less than a week after events – again unlikely for remote surveys.

Future photogrammetry from geo-referenced low-level aerial photography is a possibility but experience suggests that this will be difficult to organise and costly. Note that due to the lack of accuracy in geo-referencing historical aerial photography it is unlikely that photogrammetry will be of sufficient accuracy for these previous dates.

Therefore, it is considered that land based conventional survey is best option.

Program Design Considerations

The survey program will need to consider: what are we expecting to be monitored, how often; repeatability (i.e. same lines every time and to a known datum); how will it be analysed / interpreted etc.

Also, we need to be aware that it may not always be possible to detect sand movement on beaches between surveys because of small changes and the reversible nature of most sand movement over time. It is likely to be possible to detect further erosion on NE corner (if it is still occurring) and accretion at eastern end of Main Beach at times.

Generally, the offshore movement (erosion causing a small scarp) and recovery over time on the eastern beaches during and after an event are likely to be small but will likely be captured. It is expected that the eroded sand will initially move quickly offshore then return onshore over time and the survey should be able to pick this up.

However, longshore transport along the beach will not generally be captured except possibly where significant volumes have moved. The most common method to do this is to have many profiles arranged in “bins” and try to interpret changes over time as sand movement from one bin to the next. This is mostly successful on exposed beaches where the sand movement is in one direction and of significant volume. Small quantities and two directions will likely to make this difficult on Coochiemudlo. The best location for this methodology would be to try to capture the loss around the SE corner onto Main Beach as this is likely to be the only long-term loss from the eastern beaches.

Suggested Land Based Survey Program

Suggested program is to have profiles at about 30 locations around the N, E and S beaches. The survey will require a pegged baseline to be set up and a nominated direction and distance (to MSLW) from each peg. This way allows repeatable surveys to be carried out and allows accurate interpretation of changes. The pegs

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Beach monitoring specification

A-2

should be located far enough back from the beach to be out of the erosion zone and in some cases pick up local berms or dunes. The profiles should specifically note: vegetation line; top of erosion scarp; bottom of erosion scarp; edge of rock, edge of silt / mud and any significant changes of grade. These should be surveyed every 3 months and immediately after events for the first 5 years or until some consistency in the interpretation is found.

BMT will nominate lines to coincide with areas where changes are possible with initial thoughts being about 30 profiles (approx. 5m landward of vegetation line to about MSLW):

- Northern Beach 5 profiles
- Eastern beaches 12 profiles
- Southern beaches 13 profiles with 5 at the eastern end to identify volume leaving eastern beaches, 3 along Main Beach, 2 at the red cliffs, 3 near the golf course.

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Individual Beach Multi-criteria Analysis

B-1

Appendix B Individual Beach Multi-criteria Analysis

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Individual Beach Multi-criteria Analysis

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Table B-1 Multi-criteria Analysis - Morwong Beach

Option	Effectiveness	Technical feasibility	Stage 1 score	Notes	Terrestrial Values	Marine Values	Heritage	Tourism/ Local Business	Access and use of beach	Stage 2 score	Notes	Initial Cost	Ongoing Costs (per year)	Consistency with State Policy	Reversible / Adaptable in the future	Community org. involvement	Stage 3 score	Notes
Weighting	50%	50%			20%	20%	20%	20%	20%			25%	25%	25%	20%	5%		
Formalise/maintain access paths - including repairs/upgrades with flexible structures if current access is damaged	0	2	1	Complementary measure. Recommend if access is damaged by a storm event or if upgrades are planned	1	0	1	0	1	0.6	Prevent damage to the emerald fringe through ad-hoc beach access and improve all condition access	2	2	2	2	0	1.9	Low initial and ongoing costs
Stormwater management	0	0	0	Complementary measure	0	0	0	0	1	0.2	Preventing sand washing onto the tidal flat may improve beach amenity. Otherwise no impact	2	2	2	2	0	1.9	Low initial and ongoing costs
Remove boat ramp and close access path to vehicles	2	2	2	Removed any erosion impacts associated with the boat ramp, including vehicle access to the beach.	1	1	1	0	0	0.6	Benefit to environmental values as removed vehicles from the beach and vehicle access through the Emerald Fringe.	2	2	2	2	0	1.9	No ongoing cost, low initial cost.
Beach Nourishment (under existing permits)	0	2	1	Only recommended in response to severe storm erosion.	-1	0	1	0	1	0.2		2	1	2	2	0	1.65	Expectation would be for approximately 1000 m ³ repeated every 5-10 years (at most)
Repair/upgrade boat ramp	-2	-1	-1.5	Potential additional erosion from vehicles on beach, possible other unknown effects. Boat ramp would only be usable at high tide access due to the intertidal flats.	-	-	-	-	-	-	Option not progressed past stage 1	-	-	-	-	-	-	Option not progressed past stage 1
Beach reprofiling	-1	2	0.5	Very temporary measure. May be appropriate after storms.	-1	0	0	0	0	-0.2	Narrow beach so minimal improvement in beach amenity expected. Negative environmental impacts from machinery on the beach	-	-	-	-	-	-	Option not progressed past stage 2

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Individual Beach Multi-criteria Analysis

B-3

Table B-2 Multi-criteria Analysis – North-eastern Norfolk Beach

Option	Effectiveness	Technical feasibility	Stage 1 score	Notes	Terrestrial Values	Marine Values	Heritage	Tourism/ Local Business	Access and use of beach	Stage 2 score	Notes	Initial Cost	Ongoing Costs (per year)	Consistency with State Policy	Reversible / Adaptable in the future	Community org. involvement	Stage 3 score	Notes
Weighting	50%	50%			20%	20%	20%	20%	20%			25%	25%	25%	20%	5%		
Beach Nourishment (under existing permits)	0	2	1	In repose to further erosion in a storm event.	0	0	1	0	0	0.2	Positive environmental impact offset (protection of trees) offset by negative impact from machinery on the beach. Some protection of heritage values (Emerald Fringe).	2	1	2	2	0	1.65	Assume nourishment on the order of 250m ³ , may need repeating annually
Larger scale beach nourishment and extensive dune planting	0	-1	-0.5	Ongoing monitoring is required to better determine beach changes before effectiveness and impacts of this option can be determined.	0	0	1	0	2	0.6	Positive environmental impact offset (protection of trees) offset by negative impact from machinery on the beach. Some protection of heritage values (Emerald Fringe). Improved amenity.	-1	1	0	1	1	0.25	10000m ³ approx. initially, ongoing as per above + plants. Community groups can assist with planting.
Seawall (with large initial nourishment and ongoing nourishment)	1	-1	0	Not sure about technical feasibility. Would require further investigation	-1	0	1	0	1	0.2	Much the same as large scale beach nourishment except for environmental impact.	-1	1	-2	0	0	-0.5	Approvals expected to be difficult to obtain as not for protection of built infrastructure or property.
"Dune enhancement" with sandbags and nourishment between monwong and NE Norfolk to stop sand loss to the north and prevent further beach rotation	-1	-1	-1	Further investigation required to confirm effectiveness and technical feasibility, including ongoing monitoring.	-1	-1	0	0	0	-0.4	Negative environmental impact expected as it would alter natural processes. Full impacts unknown.	-	-	-	-	-	-	Option not progressed past stage 2. Ongoing monitoring is required to better determine beach changes before effectiveness and impacts of this option can be determined.
Beach reprofiling	-2	-2	-1.5	As there is a lack of sand available for reprofiling option would be both ineffective and not technically feasible.	-	-	-	-	-	-	Option not progressed past stage 1.	-	-	-	-	-	-	Option not progressed past stage 1.

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Individual Beach Multi-criteria Analysis

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Table B-3 Multi-criteria Analysis – Norfolk Beach fronting the Melaleuca Wetlands

Option	Effectiveness	Technical feasibility	Stage 1 score	Notes	Terrestrial Values	Marine Values	Heritage	Tourism/ Local Business	Access and use of beach	Stage 2 score	Notes	Initial Cost	Ongoing Costs (per year)	Consistency with State Policy	Reversible / Adaptable in the future	Community org. involvement	Stage 3 score	Notes
Weighting	50%	50%			20%	20%	20%	20%	20%			25%	25%	25%	20%	5%		
Beach Nourishment (under existing permits)	1	1	1	Only recommended in response to severe storm erosion.	0	0	1	0	1	0.4	Positive environmental impact offset (protection of trees) offset by negative impact from machinery on the beach. Some protection of heritage values (Emerald Fringe). Improve beach amenity.	1	0	2	2	0	1.15	Expect maximum of 5m ³ /m repeated every 5-10 years.
Seawall (with large initial nourishment and ongoing nourishment)	2	0	1	Further investigation to determine technical feasibility and impacts	-1	0	1	0	1	0.2	Option would significantly change the nature of the beach and may have unintended impacts on the wetlands.	-1	0	-2	-1	0	-0.95	Approvals expected to be difficult to obtain as not for protection of built infrastructure or property.
Dredge material from main beach placed slightly offshore	1	2	1.5	This option would provide additional sand to the system to be moved onshore by coastal processes. Potential medium-long term benefit depending on frequency of dredging. Sand is retained within the system.	1	-1	1	0	1	0.4	Potential short term impact to marine environmental values from placing sand. Benefit to terrestrial environmental values as extra sand delivered to the beach without any disturbance on the beach itself.	2	2	0	2	0	1.4	No additional costs expected to be associated with works. Approvals/permits required for placement of material.
Beach reprofiling	0	2	0.5	To aid recovery following an erosion event.	-1	0	1	0	1	0.2	Minor and short term benefits.	2	2	2	2	0	1.9	Low costs.
Formalise/maintain access paths - including repairs/upgrades with flexible structures if current access is damaged	0	2	1	Complementary measure. Beach access at the north of the beach segment is currently damaged.	1	0	1	0	1	0.6	Prevent damage to the emerald fringe through ad-hoc beach access and improve all condition access	2	2	2	2	0	1.9	Low initial and ongoing costs.

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Individual Beach Multi-criteria Analysis

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Table B-4 Multi-criteria Analysis – Norfolk Beach fronting Victoria Parade East

Option	Effectiveness	Technical feasibility	Stage 1 score	Notes	Terrestrial Values	Marine Values	Heritage	Tourism/ Local Business	Access and use of beach	Stage 2 score	Notes	Initial Cost	Ongoing Costs (per year)	Consistency with State Policy	Reversible / Adaptable in the future	Community org. involvement	Stage 3 score	Notes
Weighting	50%	50%			20%	20%	20%	20%	20%			25%	25%	25%	20%	5%		
Beach Nourishment (under existing permits)	1	1	1	Only recommended in response to severe storm erosion.	0	0	1	0	1	0.4	Positive environmental impact offset (protection of trees) offset by negative impact from machinery on the beach. Some protection of heritage values (Emerald Fringe). Improve beach amenity.	1	0	2	2	0	1.15	Expect maximum of 5m ³ /m repeated every 5-10 years.
Seawall (with large initial nourishment and ongoing nourishment)	2	0	1	Further investigation to determine technical feasibility and impacts	-1	0	2	0	1	0.4	Option would significantly change the nature of the beach and may have unintended impacts on the wetlands.	-1	0	-2	-1	0	-0.95	Approvals expected to be difficult to obtain as not for protection of built infrastructure or property.
Dredge material from main beach placed slightly offshore	1	2	1.5	This option would provide additional sand to the system to be moved onshore by coastal processes. Potential medium-long term benefit depending on frequency of dredging. Sand is retained within the system.	1	-1	1	0	1	0.4	Potential short term impact to marine environmental values from placing sand. Benefit to terrestrial environmental values as extra sand delivered to the beach without any disturbance on the beach itself.	2	2	0	2	0	1.4	No additional costs expected to be associated with works. Approvals/permits required for placement of material.
Recycle sand from the barge ramp back onto the beach.	0	2	1		0	0	0	1	1	0.4		2	2	2	2	0	1.9	
Maintain existing seawalls	2	2	2	Note that structures will need removing or replacing within 20 years (end of design life).	0	0	0	0	0	0		2	2	-2	0	0	0.5	Minimal associated cost. Approval required.
Remove existing seawalls	0	2	1	Sand from sandbags will continue to provide some short-medium term benefit	0	0	0	0	0	0	Disturbance associated with works and possibility of destabilising trees.	2	2	2	0	0	1.5	Low once off cost.
Beach reprofiling	0	2	1	To aid recovery following an erosion event.	-1	0	1	0	1	0.2	Minor and short term benefits.	2	2	2	2	0	1.9	Low costs.
Stormwater management	0	2	1	Manage stormwater runoff from Norfolk Beach track and sewer line.	0	0	0	0	1	0.2		2	2	2	2	0	1.9	
Formalise/maintain access paths - including repairs/upgrades with flexible structures if current access is damaged	0	2	1	Complementary measure. Prioritise existing damaged beach access	1	0	1	0	1	0.6	Prevent damage to the emerald fringe through ad-hoc beach access and improve all condition access	2	2	2	2	0	1.9	Low initial and ongoing costs.

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Individual Beach Multi-criteria Analysis

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Table B-5 Multi-criteria Analysis – South-eastern Norfolk Beach

Option	Effectiveness	Technical feasibility	Stage 1 score	Notes	Terrestrial Values	Marine Values	Heritage	Tourism/ Local Business	Access and use of beach	Stage 2 score	Notes	Initial Cost	Ongoing Costs (per year)	Consistency with State Policy	Reversible / Adaptable in the future	Community org. involvement	Stage 3 score	Notes
Weighting	50%	50%			20%	20%	20%	20%	20%			25%	25%	25%	20%	5%		
Beach Nourishment (under existing permits)	1	1	1	Only recommended in response to severe storm erosion.	-1	0	1	0	1	0.2	Positive environmental impact offset (protection of trees) offset by negative impact from machinery on the beach. Some protection of heritage values (Emerald Fringe). Improve beach amenity.	1	1	2	2	0	1.4	Expect maximum of 1000m ³ /m repeated every 5-10 years.
Dune enhancement with nourishment and geotextile containers at control points 1 and 2.	0	1	0.5	May be justifiable for stable beach alignments – if connection is lost with these two outcrops the whole eastern beach alignment may change.	-1	0	1	0	0	0		1	2	-1	0	1	0.55	Assumes ongoing nourishment as needed (small volumes). Community groups can assist in planting/vegetation maintenance.
Beach reprofiling	0	2	1	To aid recovery following an erosion event.	-1	0	1	0	1	0.2	Minor and short term benefits.	2	2	2	2	0	1.9	Low costs.
Stormwater management	0	2	1	From Norfolk Beach Track	0	0	0	0	1	0.2		2	2	2	2	0	1.9	
Formalise/maintain access paths - including repairs/upgrades with flexible structures if current access is damaged	0	2	1	Complementary measure.	1	0	1	0	1	0.6	Prevent damage to the emerald fringe through ad-hoc beach access and improve all condition access	2	2	2	2	0	1.9	Low initial and ongoing costs.

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan

Individual Beach Multi-criteria Analysis

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Table B-6 Multi-criteria Analysis – Main Beach East of the Ferry Terminal

Option	Effectiveness	Technical feasibility	Stage 1 score	Notes	Terrestrial Values	Marine Values	Heritage	Tourism/ Local Business	Access and use of beach	Stage 2 score	Notes	Initial Cost	Ongoing Costs (per year)	Consistency with State Policy	Reversible / Adaptable in the future	Community org. involvement	Stage 3 score	Notes
Weighting	50%	50%			20%	20%	20%	20%	20%			25%	25%	25%	20%	5%		
Recycle sand from the barge ramp back onto the beach.	1	2	1.5		0	0	1	1	1	0.6		2	2	2	2	0	1.9	
Beach Nourishment (under existing permits)	1	2	1.5	Only recommended in response to severe storm erosion.	0	0	1	1	1	0.6	Area is already heavily trafficked so unlikely to have any additional environmental impact. Benefit will be more related to improved beach amenity.	1	1	2	2	0	1.4	Expect maximum of 1000m ³ /m repeated every 5-10 years.
Beach reprofiling	0	2	1	To aid recovery following an erosion event.	0	0	1	1	1	0.6	Minor and short term benefits.	2	2	2	2	0	1.9	Low costs.
Stormwater management	0	2	1	Manage runoff from hard park surfaces	0	0	0	1	1	0.4		2	2	2	2	0	1.9	
Formalise/maintain access paths - including repairs/upgrades with flexible structures if current access is damaged	0	2	1	Complementary measure.	0	0	1	1	1	0.6	Prevent damage to the emerald fringe through ad-hoc beach access and improve all condition access	2	2	2	2	0	1.9	Low initial and ongoing costs.



Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Individual Beach Multi-criteria Analysis

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Table B-7 Multi-criteria Analysis – Main Beach between the Ferry Terminal and Barge Ramp

Option	Effectiveness	Technical feasibility	Stage 1 score	Notes	Terrestrial Values	Marine Values	Heritage	Tourism/ Local Business	Access and use of beach	Stage 2 score	Notes	Initial Cost	Ongoing Costs (per year)	Consistency with State Policy	Reversible / Adaptable in the future	Community org. Involvement	Stage 3 score	Notes
Weighting	50%	50%			20%	20%	20%	20%	20%			25%	25%	25%	20%	5%		
Beach reprofiling	0	2	1	To aid recovery following an erosion event.	0	0	1	1	1	0.6		2	2	2	2	0	1.9	Low costs.
Stormwater management	0	2	1	Manage runoff from hard park surfaces	0	0	0	1	1	0.4		2	2	2	2	0	1.9	
Formalise/maintain access paths - including repairs/upgrades with flexible structures if current access is damaged	0	2	1	Complementary measure.	0	0	1	1	1	0.6	Prevent damage to the emerald fringe through ad-hoc beach access and improve all condition access	2	2	2	2	0	1.9	Low initial and ongoing costs.

Table B-8 Multi-criteria Analysis – Main Beach between the Barge Ramp and Red Cliffs

Option	Effectiveness	Technical feasibility	Stage 1 score	Notes	Terrestrial Values	Marine Values	Heritage	Tourism/ Local Business	Access and use of beach	Stage 2 score	Notes	Initial Cost	Ongoing Costs (per year)	Consistency with State Policy	Reversible / Adaptable in the future	Community org. involvement	Stage 3 score	Notes
Weighting	50%	50%			20%	20%	20%	20%	20%			25%	25%	25%	20%	5%		
Beach reprofiling	0	2	1	To aid recovery following an erosion event.	-1	0	0	0	1	0	Activity to have minimal impact on heritage values due to Creek between beach and Emerald Fringe	2	2	2	2	0	1.9	Low costs.
Stormwater management	0	2	1	Manage runoff from hard park surfaces	0	0	0	0	1	0.2		2	2	2	2	0	1.9	
Formalise/maintain access paths - including repairs/upgrades with flexible structures if current access is damaged	0	2	1	Complementary measure.	1	0	1	0	1	0.6	Prevent damage to the emerald fringe through ad-hoc beach access and improve all condition access	2	2	2	2	0	1.9	Low initial and ongoing costs.

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan

Individual Beach Multi-criteria Analysis

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Table B-9 Multi-criteria Analysis - Main Beach fronting the Golf Course

Option	Effectiveness	Technical feasibility	Stage 1 score	Notes	Terrestrial Values	Marine Values	Heritage	Tourism/ Local Business	Access and use of beach	Stage 2 score	Notes	Initial Cost	Ongoing Costs (per year)	Consistency with State Policy	Reversible / Adaptable in the future	Community org. involvement	Stage 3 score	Notes
Weighting	50%	50%			20%	20%	20%	20%	20%			25%	25%	25%	20%	5%		
Beach reprofiling	-1	-1	-1	To aid recovery following an erosion event.	-1	-1	0	0	0	-0.4	This is a remote and reasonably pristine part of the Island so any nourishment/beach reprofiling will have a larger relative environmental impact with less social benefits than other locations.	-	-	-	-	-	-	Option not progressed past stage 2.
Beach Nourishment (under existing permits)	1	-1	0	Following a storm event	-1	-1	0	0	0	-0.4	As above	-	-	-	-	-	-	Option not progressed past stage 2.
Formalise/maintain access paths - including repairs/upgrades with flexible structures if current access is damaged	0	2	1	Complementary measure.	1	0	1	0	1	0.6	Prevent damage to the emerald fringe through ad-hoc beach access and improve all condition access	2	2	2	2	0	1.9	Low initial and ongoing costs.



Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Beach protection examples

C-1

Appendix C Beach protection examples

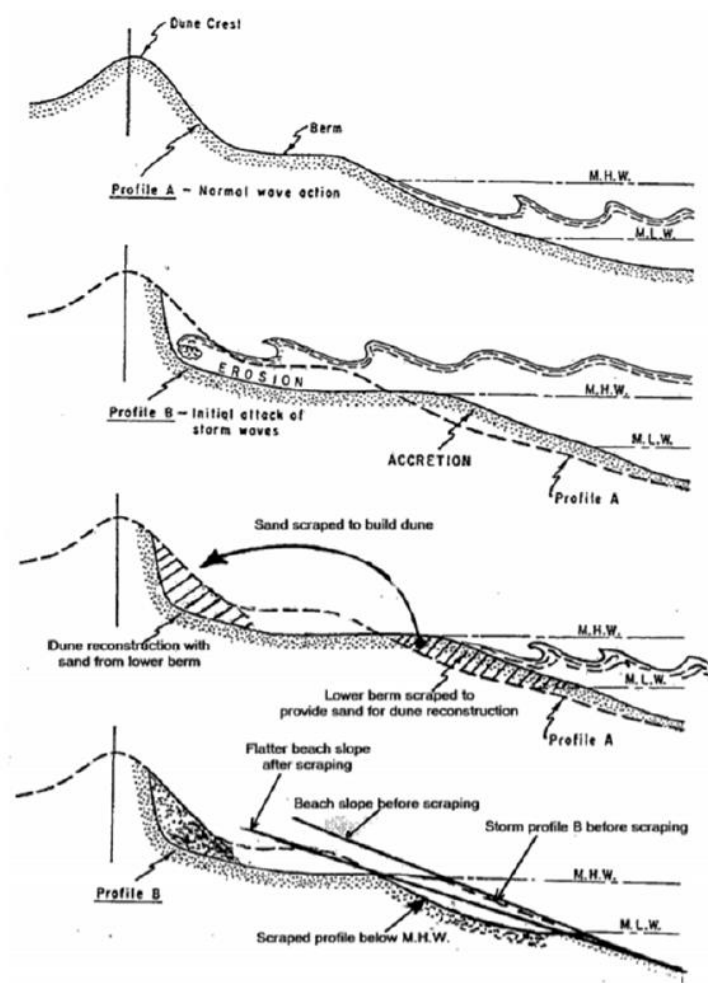


Figure C-1 Beach reprofiling concept

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Beach protection examples

C-2



Figure C-2 Beach nourishment before (left) and after (right)



Figure C-3 Beach nourishment before (left) and after (right)

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Beach protection examples

C-3

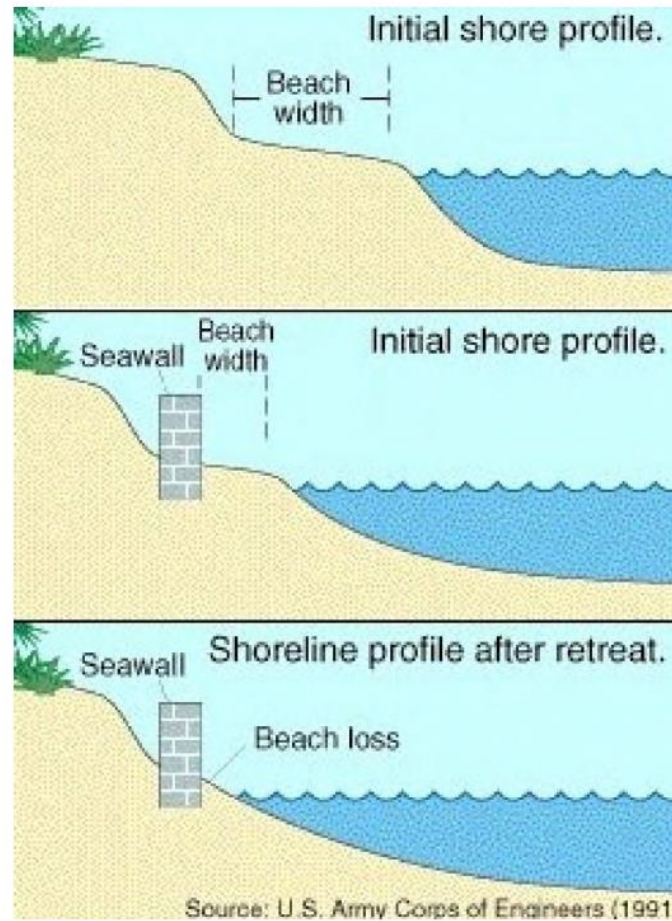
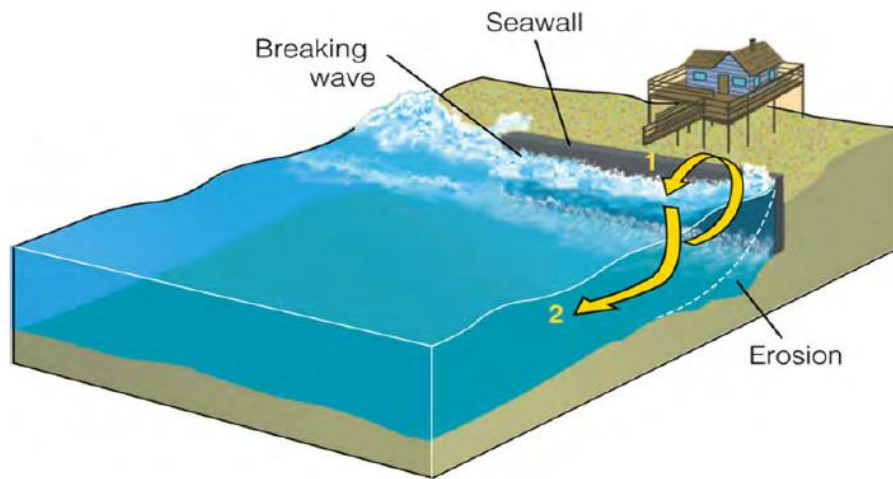


Figure C-4 Example of the processes by which a beach in front of a seawall is lost

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Beach protection examples

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Figure C-5 Example of the processes by which a beach in front of a seawall is lost



Figure C-6 Eroded beach in front of a geotextile container seawall

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Beach protection examples

C-5



Figure C-7 Eroded beach in front of a geotextile container seawall



Figure C-8 Typical groyne result with longshore transport. Arrow indicates direction of sand transport

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
2020 Survey profiles, selected Main Beach and Norfolk Beach locations

D-1

Appendix D 2020 Survey profiles, selected Main Beach and Norfolk Beach locations

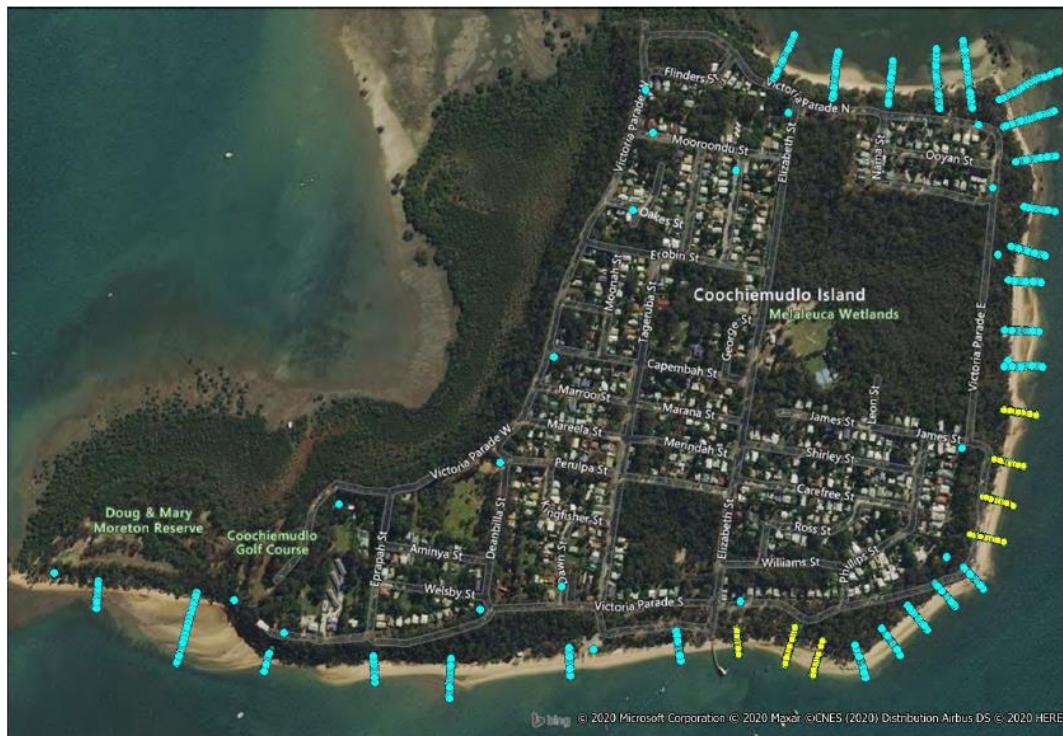


Figure D-1 2020 Survey, all points. Yellow indicates profiles that have been surveyed previously.

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
2020 Survey profiles, selected Main Beach and Norfolk Beach locations

D-2



Figure D-2 2020 Survey, Main beach east of the Ferry Terminal, South-east Norfolk Beach and Norfolk Beach fronting Victoria Parade. Yellow indicates profiles that have been surveyed previously

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
2020 Survey profiles, selected Main Beach and Norfolk Beach locations

D-3

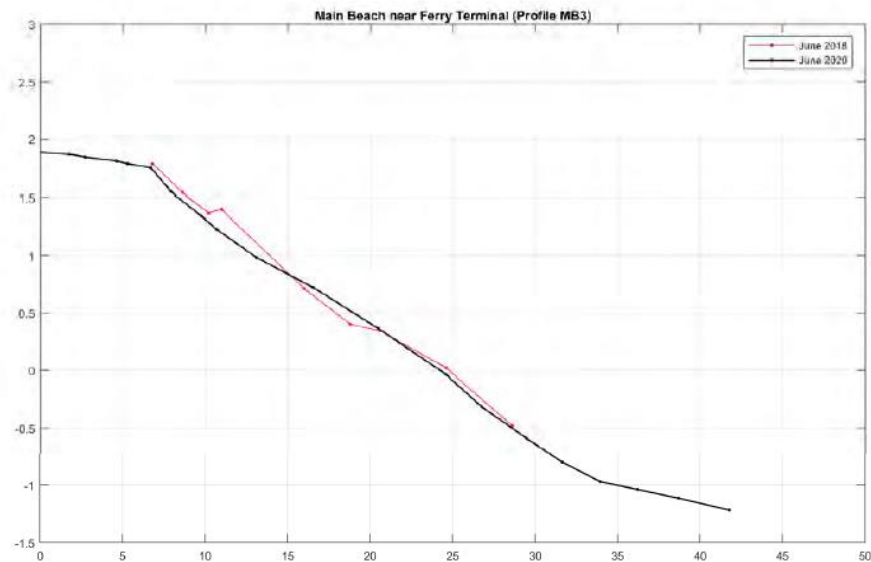


Figure D-3 June 2018 and June 2020 surveys, Profile MB3, Main Beach

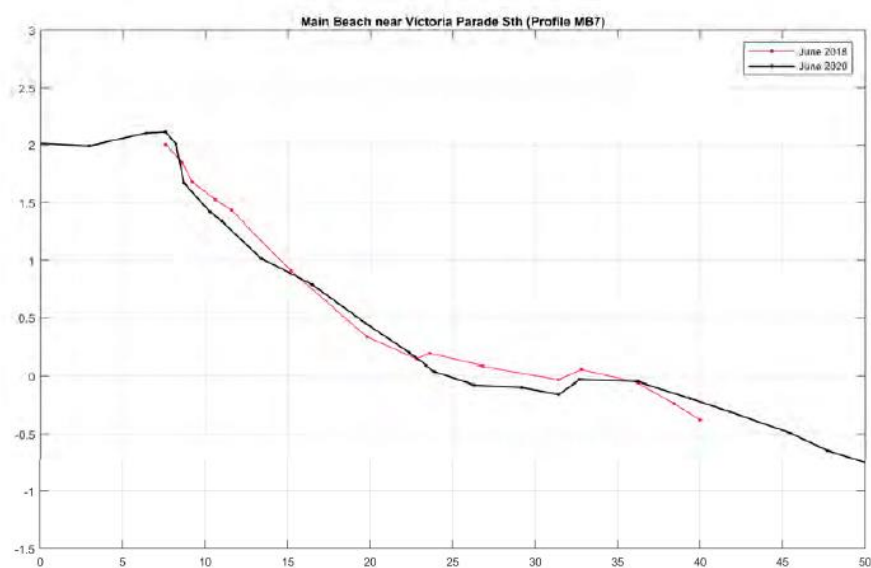


Figure D-4 June 2018 and June 2020 surveys, Profile MB7, Main Beach

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
2020 Survey profiles, selected Main Beach and Norfolk Beach locations

D-4

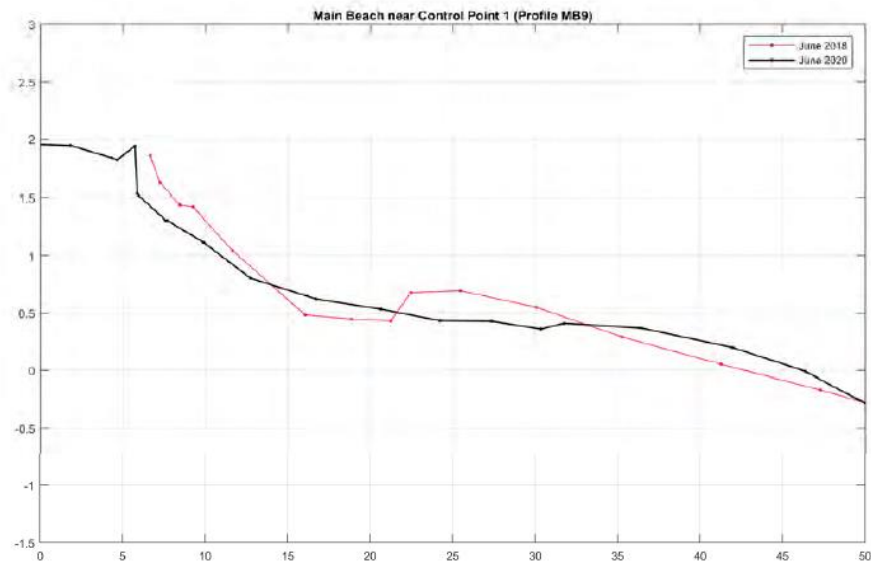


Figure D-5 June 2018 and June 2020 surveys, Profile MB9, Main Beach

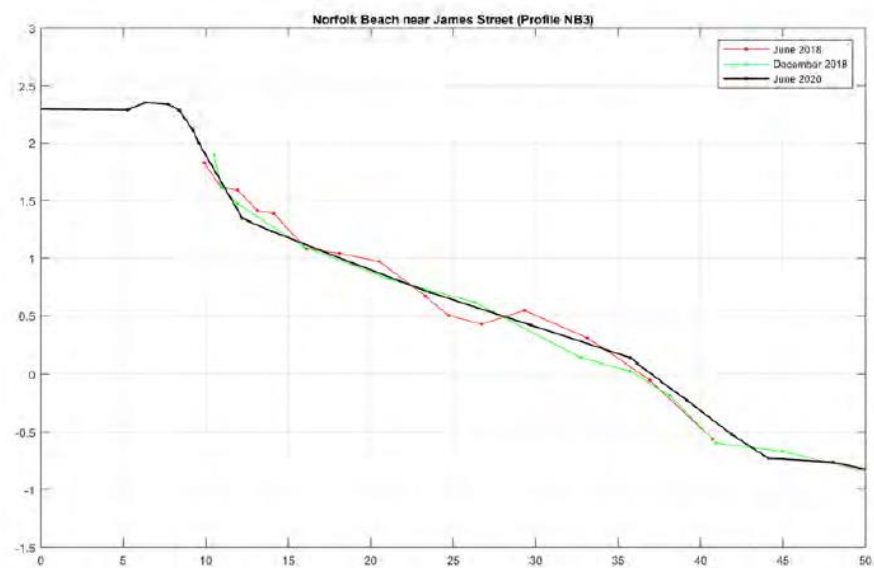


Figure D-6 June 2018, December 2018 and June 2020 surveys, Profile NB3, Norfolk Beach

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
2020 Survey profiles, selected Main Beach and Norfolk Beach locations

D-5

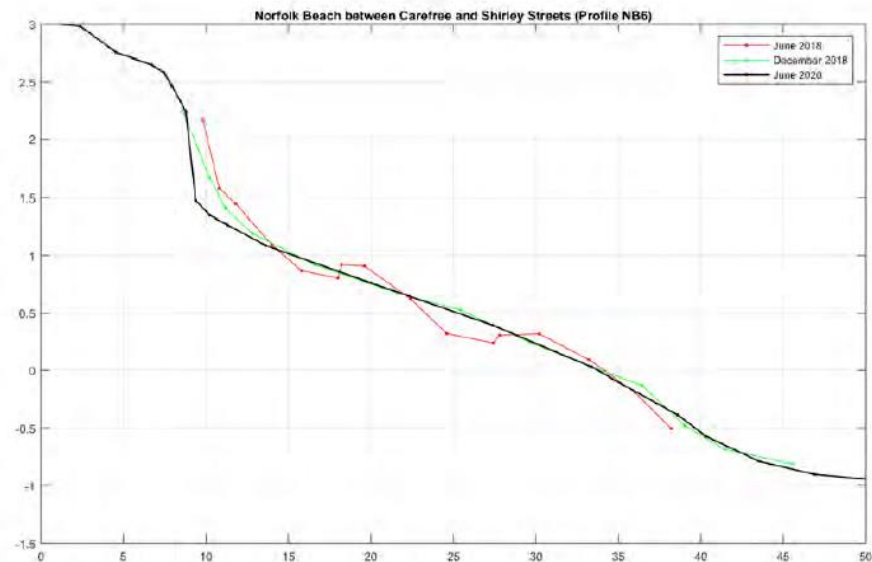


Figure D-7 June 2018, December 2018 and June 2020 surveys, Profile NB6, Norfolk Beach

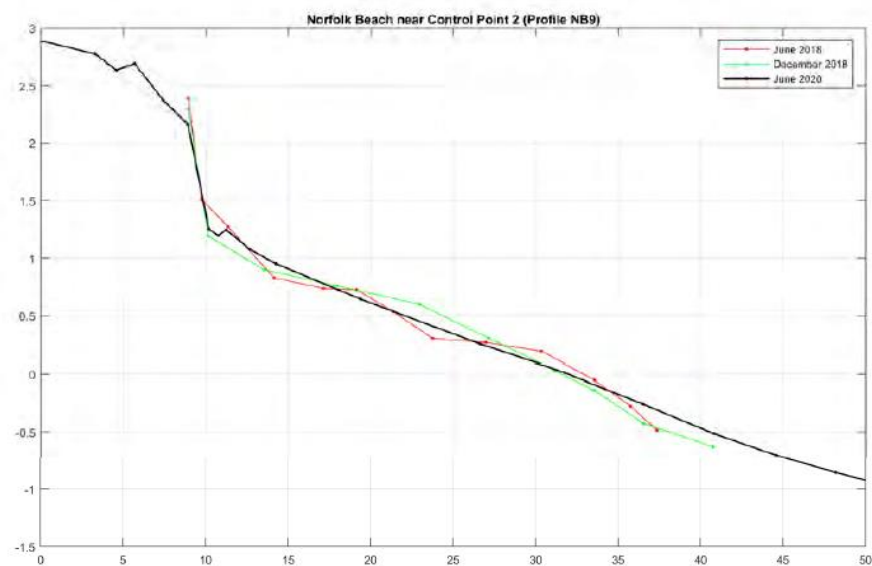


Figure D-8 June 2018, December 2018 and June 2020 surveys, Profile NB9, Norfolk Beach

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
2020 Survey profiles, selected Main Beach and Norfolk Beach locations

D-6

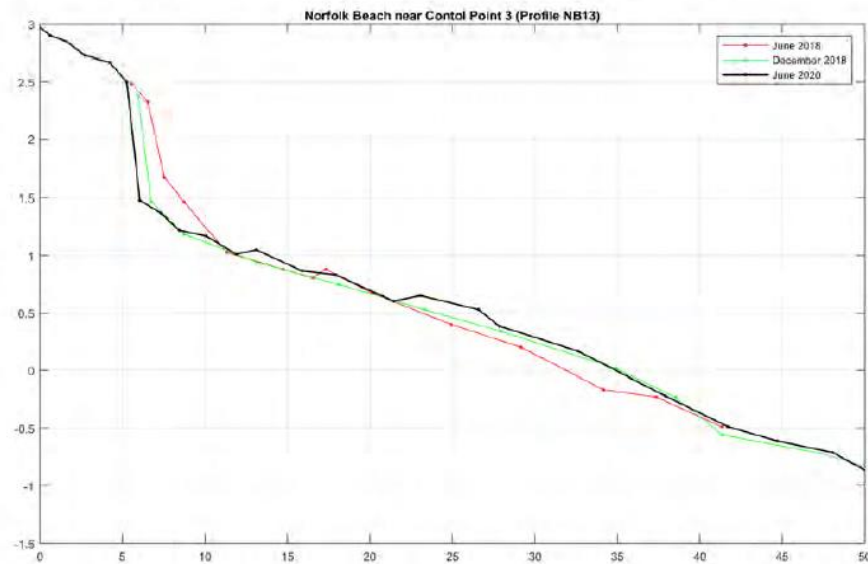


Figure D-9 June 2018, December 2018 and June 2020 surveys, Profile NB13, Norfolk Beach

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Photos of Norfolk Beach (courtesy of Coastcare)

E-1

Appendix E Photos of Norfolk Beach (courtesy of Coastcare)

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Southern beach access to Heritage Precinct, Norfolk Beach 2 May 2015



Southern beach access to Heritage Precinct, Norfolk Beach 11 March 2020



Looking towards CP2 from the southern access to the Heritage precinct, Norfolk Beach - 5 May 2015. Note width of vegetated dune



Same spot 11 March 2020 – Note erosion & this is the least eroded section on Norfolk Beach today



Looking north to CP3. Compare the top photo from May 2015 to the bottom, 11 March.2020 -
Note the loss of vegetated dune , particularly in front of the fence line



Northern access to Heritage precinct looking north – note top photo from 3 May 2015 lush vegetated dune compared to the eroded scarp 3 metres from the fence-line yesterday - 11 March 2020

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Photos 20 July 2020 (BMT)

F-1

Appendix F Photos 20 July 2020 (BMT)



Figure F-1 Mouth of Curlew Creek, Main Beach (looking west)

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Photos 20 July 2020 (BMT)

F-2



Figure F-2 Mouth of Curlew Creek, Main Beach (looking east)

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Photos 20 July 2020 (BMT)

F-3



Figure F-3 Control Point 2 (looking south-west)

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Photos 20 July 2020 (BMT)

F-4



Figure F-4 Control Point 2 (looking north-east)

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Photos 20 July 2020 (BMT)

F-5



Figure F-5 Active beach recovery – Norfolk Beach (shoe to indicate scale)

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Photos 20 July 2020 (BMT)

F-6

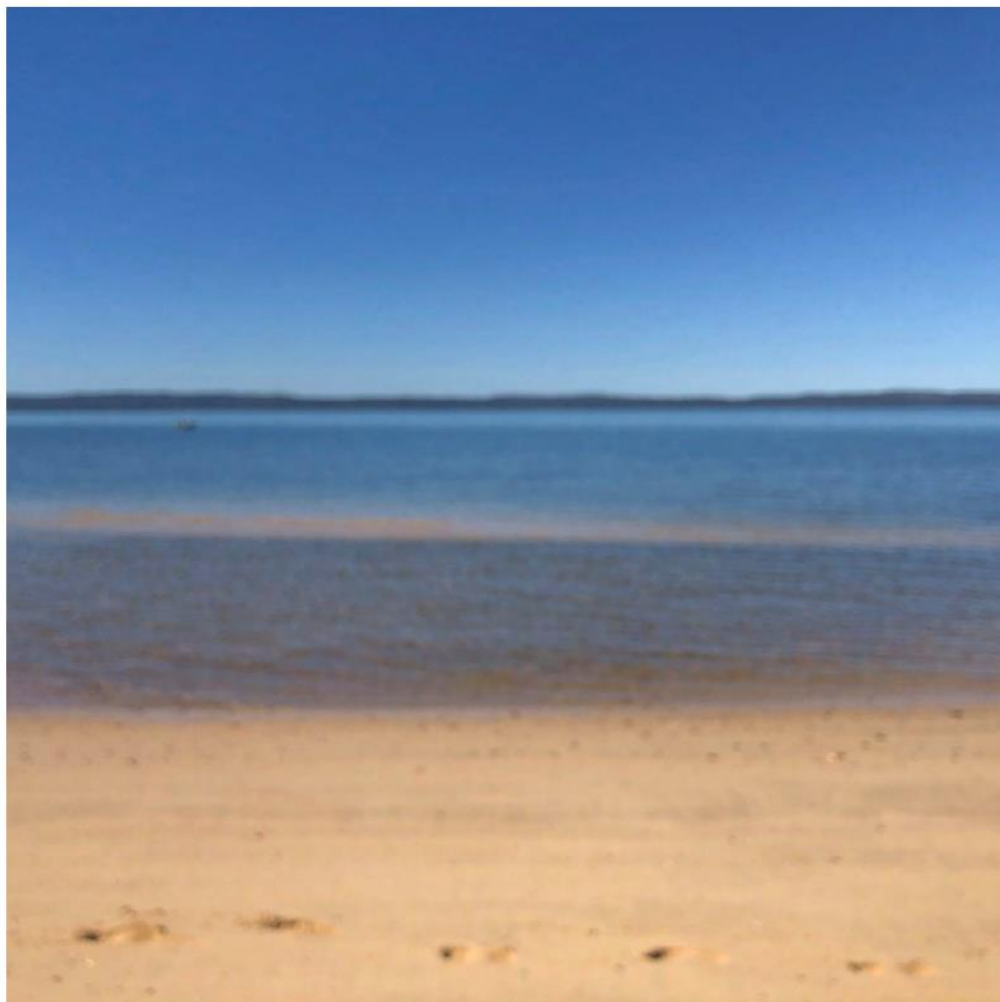


Figure F-6 Sand moving onshore (Photo taken from Norfolk Beach looking east).

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Photos 20 July 2020 (BMT)

F-7



Figure F-7 Beach recovery (Melaleuca Wetlands looking north to Control Point 4)

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Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Photos 20 July 2020 (BMT)

F-8



Figure F-8 North-eastern corner between Morwong Beach and North-eastern Norfolk Beach (looking south-west)

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Photos 20 July 2020 (BMT)

F-9



Figure F-9 Mature tree at the eastern end of Morwong Beach

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Hazard Risk Rating Assessment Tables

G-1

Appendix G Hazard Risk Rating Assessment Tables

The following tables have been copied from the CAS (Draft Coastal Adaptation Strategy, RCC 2017).

Table G-1 Environment Criteria (Table on Page 20 of the CAS)

Criteria		Scoring Method					Score
		1	2	3	4	5	
Environment	The loss of the foreshore area from an erosion event (m ²)	<99m ²	100m ² – 999m ²	1,000m ² – 1,999m ²	2,000m ² – 3,999m ²	>4,000m ²	eg. 3
	Adjoining terrestrial value (BPA 3.5); or Vegetation regulated under the <i>Vegetation Management Act 1999</i>	Minimal ecological value (i.e. cleared land, invasive species, etc.)	Low ecological value / Category X: Vegetation not regulated under the <i>Vegetation Management Act 1999</i>	Near threatened species identified / Category C: High-value regrowth vegetation	Vulnerable species identified / Category B: Remnant vegetation	Endangered or critically endangered species identified / Category A: Declared areas, offset areas or an exchange area	
	Marine Park Zoning	No Marine Park	General Use Zone	Habitat Protection Zone	Conservation Park Zone	Marine National Park Zone	
	Ramsar listed	Not Ramsar				Ramsar listed	
	Fish habitat area	Not in				Fish habitat area	
	EPBC-listed endangered ecological community	Not present				Present	
	Nature Conservation Act Species Present	No species present		Vulnerable species present		Endangered species present	
Environment Score (Total Average)							

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Hazard Risk Rating Assessment Tables

G-2

Table G-2 Social Criteria (First table on Page 21 of the CAS)

Criteria		Scoring Method					Score
		1	2	3	4	5	
Social	Refers to the visual quality and appreciation of the foreshore space by the public	Minimal visual amenity	Low value of visual amenity	Moderate level of visual amenity	Local Important visual amenity	Very high level of visual amenity	eg. 3
	Recreational value of the foreshore area receives	Minimal recreational value	Low recreational value to local community	Medium recreational value to local community, but low to minimal to broader community	High local recreational value to the local community and medium value to broader community	High recreational value to broader community, can be considered a recreation 'destination'	
	The presence of cultural heritage (Indigenous & European)	No cultural heritage identified	Minor cultural heritage value identified	Locally important cultural heritage value identified	Regionally important cultural heritage value identified	Significant cultural heritage site identified	
	The number of people residing in a location affected by the identified hazard	<10	10 to 19	20 to 49	50 to 99	>100	
Social Score (Total Average)							

Table G-3 Economic Criteria (Second table on Page 21 of the CAS)

Economic	The total value of public infrastructure that is at risk of being impacted by the identified hazard	up to \$49,999	\$50,000 – \$199,999	\$200,000 – \$499,999	\$500,000 – \$999,999	>\$1,000,000	eg. 3
	Approximate value of property impacted by the identified hazard						
	*Private land is determined by the Unimproved Capital Value of the property *Public land is calculated at area of land within the erosion prone area ¹⁰	up to \$49,999	\$50,000 – \$199,999	\$200,000 – \$499,999	\$500,000 – \$999,999	>\$1,000,000	
Economic Score (Total Average)							
Total Score (Environment average + Social average + Economic Average)							

Coochiemudlo Island Shoreline Erosion Management Plan and Operational Plan
Hazard Risk Rating Assessment Tables

G-3

Table G-4 Erosion Factor (Second table on Page 22 of the CAS)

	Scoring Criteria				
	1	2	3	4	5
Severity of Erosion	Minimal erosion occurring	Low level of erosion occurring (i.e. recession and regeneration or continual fluctuation of shoreline)	Medium level of erosion occurring (i.e. transformation of location—natural process of recession occurring in one location and progression at another)	High level of erosion occurring (i.e. permanent loss of shoreline)	Severe erosion occurring (i.e. significant permanent loss of foreshore, often resulting in sudden and significant events)

Table G-5 Consequence Rating (First table on Page 22 of the CAS)

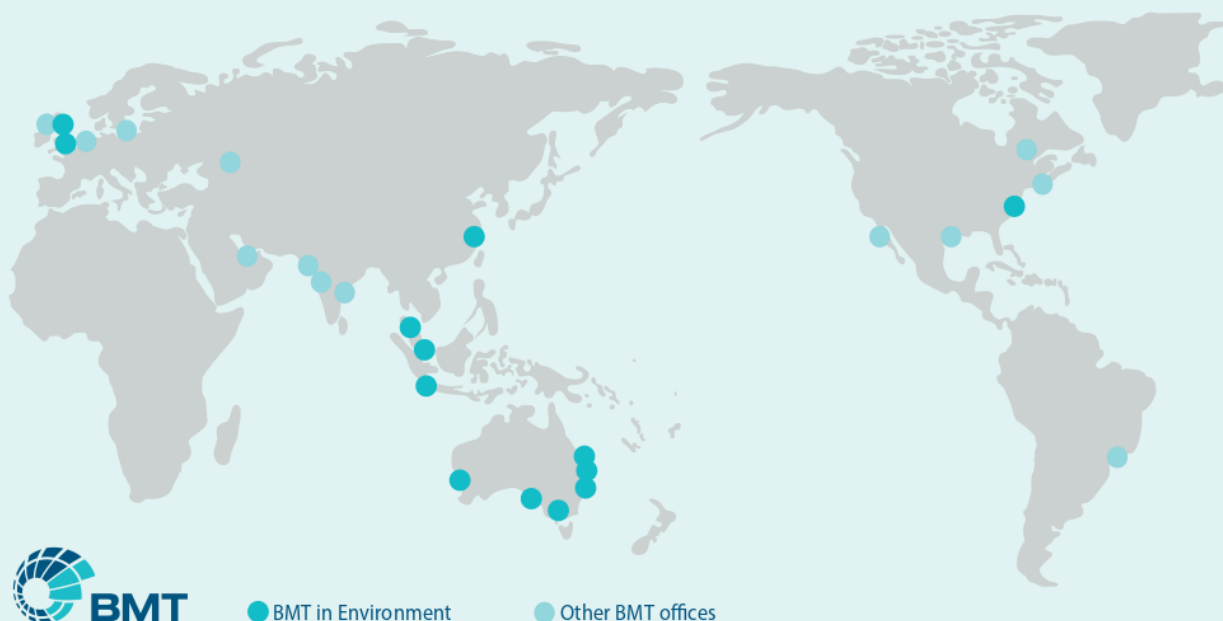
Consequence	Total Score
Severe	12-15
Major	9-11
Medium	6-8
Low	4-5
Minimal	3

Table G-6 Risk Matrix (First table on Page 23 of the CAS)

		Prioritisation Score				
		1	2	3	4	5
Consequence Rating	Severe	M10	H20	H30	E40	E50
	Major	M8	M16	H24	E32	E40
	Medium	L6	M12	M18	H24	E30
	Low	L4	L8	M12	M16	H20
	Insignificant	L2	L4	L6	M8	M10

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16 NOTICES OF INTENTION TO REPEAL OR AMEND A RESOLUTION

In accordance with s.262 *Local Government Regulation 2012*.

17 NOTICES OF MOTION

17.1 NOTICE OF MOTION CR WENDY BOGLARY - INVESTIGATION INTO PURCHASE OF CONSERVATION LAND ORMISTON

In accordance with s.6.16 of Council Meeting Standing Orders, Cr Boglary intends to move as follows:

MOTION

That Council resolves that a confidential report be tabled at a future General Meeting of Council, investigating the purchase of land at Ormiston.

BACKGROUND

The background around this matter is considered to be confidential under Section 254J(3)(g) of the *Local Government Regulation 2012*, and the Council is satisfied that discussion of this matter in an open meeting would, on balance, be contrary to the public interest as it deals with negotiations relating to a commercial matter involving the local government for which a public discussion would be likely to prejudice the interests of the local government.

18 URGENT BUSINESS WITHOUT NOTICE

In accordance with s.6.17 of Council Meeting Standing Orders, a Councillor may bring forward an item of urgent business if the meeting resolves that the matter is urgent.

Urgent Business Checklist	YES	NO
To achieve an outcome, does this matter have to be dealt with at a general meeting of Council?		
Does this matter require a decision that only Council make?		
Can the matter wait to be placed on the agenda for the next Council Meeting?		
Is it in the public interest to raise this matter at this meeting?		
Can the matter be dealt with administratively?		
If the matter relates to a request for information, has the request been made to the CEO or a General Manager Previously?		

19 CONFIDENTIAL ITEMS

COUNCIL MOTION

That Council considers the confidential report(s) listed below in a meeting closed to the public in accordance with Section 254J of the *Local Government Regulation 2012*:

19.1 Managed Print Services Delegated Authority

This matter is considered to be confidential under Section 254J(3)(g) of the *Local Government Regulation 2012*, and the Council is satisfied that discussion of this matter in an open meeting would, on balance, be contrary to the public interest as it deals with negotiations relating to a commercial matter involving the local government for which a public discussion would be likely to prejudice the interests of the local government.

Overview

To seek Redland City Council (Council) resolution delegate authority to the Chief Executive Officer (CEO) under s.257(2)(b) of the Local Government Act 2009 to make, vary and discharge a contract for Managed Print Services with an estimated value of more than \$2,500,000 (incl. GST) with the preferred tenderer, in accordance with the agreed terms and conditions.

19.2 Sutgold Pty Ltd v Redland City Council (Planning and Environment Court Appeal) 39/2021 and 40/2021

This matter is considered to be confidential under Section 254J(3)(e) of the *Local Government Regulation 2012*, and the Council is satisfied that discussion of this matter in an open meeting would, on balance, be contrary to the public interest as it deals with legal advice obtained by the local government or legal proceedings involving the local government including, for example, legal proceedings that may be taken by or against the local government.

Overview

To provide Council with an update on the Sutgold Pty Ltd (Sutgold) v Redland City Council (Council) (Planning & Environment Court Appeals 39/2021 and 40/2021) matters, which are deemed refusal appeals. Council (the respondent) will be required to confirm its position on the development applications in the Planning & Environment Court appeal. It is referred to Council for determination.

20 MEETING CLOSURE