



**AGENDA FOR ORDINARY MEETING  
TO BE HELD IN COUNCIL CHAMBERS, BUNDABERG  
ON TUESDAY 24 NOVEMBER 2020, COMMENCING AT 10.00 AM**

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**Item****24 November 2020****Item Number:**

F1

**File Number:****Part:**

FINANCE

**Portfolio:**

Organisational Services

**Subject:**

Financial Summary as at 2 November 2020

**Report Author:**

Anthony Keleher, Chief Financial Officer

**Authorised by:**

Amanda Pafumi, General Manager Organisational Services

**Link to Corporate Plan:**

Our People, Our Business - 3.1 A sustainable financial position - 3.1.2 Apply responsible fiscal principles for sustainable financial management.

**Background:**

In accordance with section 204 of the *Local Government Regulation 2012*, a financial report must be presented to Council on a monthly basis. The attached financial report contains the financial summary and associated commentary as at 2 November 2020.

**Associated Person/Organization:**

N/A

**Consultation:**

Financial Services Team

**Chief Legal Officer's Comments:**

Pursuant to section 204 of the *Local Government Regulation 2012* the local government must prepare, and the Chief Executive Officer must present, the financial report. The financial report must state the progress that has been made in relation to the local government's budget for the period of the financial year up to a day as near as practicable to the end of the month before the meeting is held.

**Policy Implications:**

There appears to be no policy implications.

**Financial and Resource Implications:**

There appears to be no financial or resource implications.

**Risk Management Implications:**

There appears to be no risk management implications.

**Human Rights:**

There appears to be no human rights implications.

**Attachments:**

[↓](#)1 Financial Summary Report as at 2 November 2020

**Recommendation:**

**That the Financial Summary as at 2 November 2020 be noted by Council.**

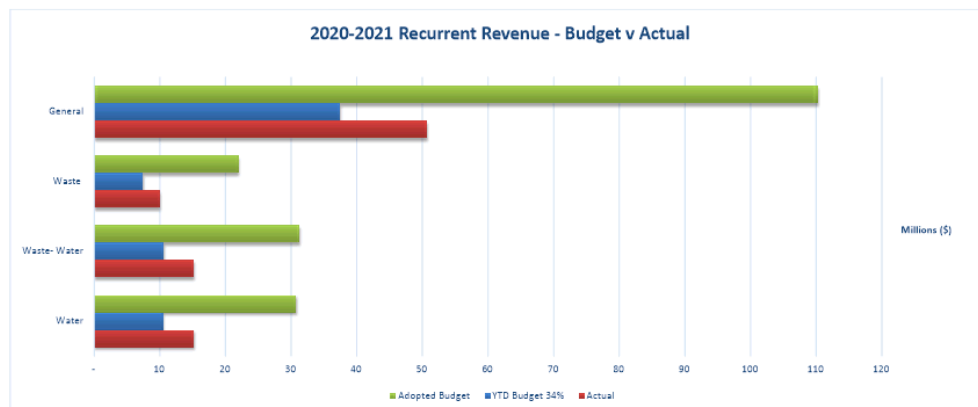
Financial Summary  
as at 02 Nov 2020

	Council			General			Waste			Wastewater			Water		
	Actual YTD	Adopted Budget	% Act/ Bud	Actual YTD	Adopted Budget	% Act/ Bud	Actual YTD	Adopted Budget	% Act / Bud	Actual YTD	Adopted Budget	% Act/ Bud	Actual YTD	Adopted Budget	% Act/ Bud
<i>Progress check - 34%</i>															
<b>Recurrent Activities</b>															
<i>Revenue</i>															
Rates and Utility Charges	78,854,926	158,077,593	50%	41,836,981	83,461,322	50%	7,855,929	15,702,071	50%	14,869,293	30,236,858	49%	14,302,723	28,677,342	50%
Less: Pensioner Remissions	(846,416)	(1,713,874)	49%	(496,974)	(1,042,901)	48%	(120,539)	(228,109)	53%	(134,085)	(255,237)	53%	(94,818)	(187,367)	51%
	<b>77,818,510</b>	<b>156,363,919</b>	<b>50%</b>	<b>41,140,007</b>	<b>82,418,421</b>	<b>50%</b>	<b>7,735,390</b>	<b>15,473,962</b>	<b>50%</b>	<b>14,735,208</b>	<b>29,981,621</b>	<b>49%</b>	<b>14,207,905</b>	<b>28,489,975</b>	<b>50%</b>
Fees and Charges	8,808,433	23,578,503	37%	5,276,609	15,067,769	35%	2,134,932	5,971,134	36%	387,827	917,000	42%	808,065	1,620,800	50%
Interest Revenue	422,179	2,255,970	19%	46,947	785,338	6%	82,497	374,465	22%	85,817	394,114	22%	206,918	702,053	29%
Grants, Subsidies and Donations	3,712,683	12,177,757	30%	3,672,145	12,017,757	31%	40,538	160,000	25%	-	-	-	-	-	-
Sale of Developed Land Inventory	588,894	-	-	588,894	-	-	-	-	-	-	-	-	-	-	-
<b>Total Recurrent Revenue</b>	<b>91,150,699</b>	<b>194,374,149</b>	<b>47%</b>	<b>50,724,602</b>	<b>110,289,285</b>	<b>46%</b>	<b>9,993,357</b>	<b>21,979,501</b>	<b>45%</b>	<b>15,208,952</b>	<b>31,292,735</b>	<b>49%</b>	<b>15,223,788</b>	<b>30,812,628</b>	<b>49%</b>
<i>Expenses</i>															
Employee Costs	24,561,898	76,683,859	32%	18,764,129	59,384,503	32%	2,046,198	6,371,763	32%	1,832,086	5,576,413	33%	1,886,485	5,351,180	35%
Materials and Services	22,203,322	67,411,695	33%	13,542,173	39,598,824	34%	3,505,848	11,740,594	30%	2,372,783	7,075,701	34%	2,782,518	8,996,776	31%
Finance Costs	1,298,340	4,291,551	30%	467,985	1,531,258	31%	284,009	901,259	32%	469,275	1,608,563	29%	77,071	250,471	31%
Depreciation	17,108,364	51,245,441	33%	12,021,574	36,770,998	33%	501,681	1,621,182	31%	2,294,083	6,658,033	34%	2,291,026	6,195,248	37%
<b>Total Recurrent Expenditure</b>	<b>65,171,924</b>	<b>199,632,546</b>	<b>33%</b>	<b>44,825,861</b>	<b>137,285,383</b>	<b>33%</b>	<b>6,340,736</b>	<b>20,634,778</b>	<b>31%</b>	<b>6,968,227</b>	<b>20,918,710</b>	<b>33%</b>	<b>7,037,100</b>	<b>20,793,675</b>	<b>34%</b>
<b>Operating Surplus</b>	<b>25,978,775</b>	<b>(5,258,397)</b>		<b>5,898,741</b>	<b>(26,996,098)</b>		<b>3,652,621</b>	<b>1,344,723</b>		<b>8,240,725</b>	<b>10,374,025</b>		<b>8,186,688</b>	<b>10,018,953</b>	
<i>Transfers to</i>															
NCP Transfers	(1)	-		(5,275,577)	(15,826,731)		7,357	22,073		2,699,982	8,069,947		2,578,237	7,734,711	
<b>Total Transfers</b>	<b>(1)</b>	<b>-</b>		<b>(5,275,577)</b>	<b>(15,826,731)</b>		<b>7,357</b>	<b>22,073</b>		<b>2,699,982</b>	<b>8,069,947</b>		<b>2,578,237</b>	<b>7,734,711</b>	
<b>Movement in Unallocated Surplus</b>	<b>25,978,776</b>	<b>(5,258,397)</b>		<b>11,174,318</b>	<b>(11,169,367)</b>		<b>3,645,264</b>	<b>1,322,650</b>		<b>5,550,743</b>	<b>2,304,078</b>		<b>5,608,451</b>	<b>2,284,242</b>	
Unallocated Surplus/(Deficit) brought forward	43,985,040	43,985,040		(24,947,334)	(24,947,334)		17,805,028	17,805,028		14,703,877	14,703,877		36,423,469	36,423,469	
<b>Unallocated Surplus/(Deficit)</b>	<b>69,963,816</b>	<b>38,726,643</b>		<b>(13,773,016)</b>	<b>(36,116,701)</b>		<b>21,450,292</b>	<b>19,127,678</b>		<b>20,254,620</b>	<b>17,007,955</b>		<b>42,031,920</b>	<b>38,707,711</b>	
<b>Capital Activities</b>															
Council Expenditure on Non-Current Assets	25,277,422	98,559,103	26%	19,116,908	75,273,768	25%	247,028	1,371,312	18%	451,376	3,109,765	16%	5,422,110	18,804,258	29%
Loan Redemption	2,506,905	7,509,801	33%	1,461,357	4,382,494	33%	232,756	700,376	33%	700,884	2,110,234	33%	111,928	336,697	33%
<b>Total Capital Expenditure</b>	<b>27,784,327</b>	<b>106,068,904</b>	<b>26%</b>	<b>20,578,265</b>	<b>79,656,262</b>	<b>26%</b>	<b>479,784</b>	<b>2,071,688</b>	<b>23%</b>	<b>1,152,240</b>	<b>5,219,999</b>	<b>23%</b>	<b>5,534,038</b>	<b>19,140,955</b>	<b>29%</b>
<b>Cash</b>															
Opening balance	136,689,730	136,689,730													
Movement - increase/(decrease)	12,418,843	(37,537,743)													
<b>Closing balance</b>	<b>149,108,573</b>	<b>99,151,987</b>													

Further to the Financial Summary Report as at 2 November 2020, the following key features are highlighted.

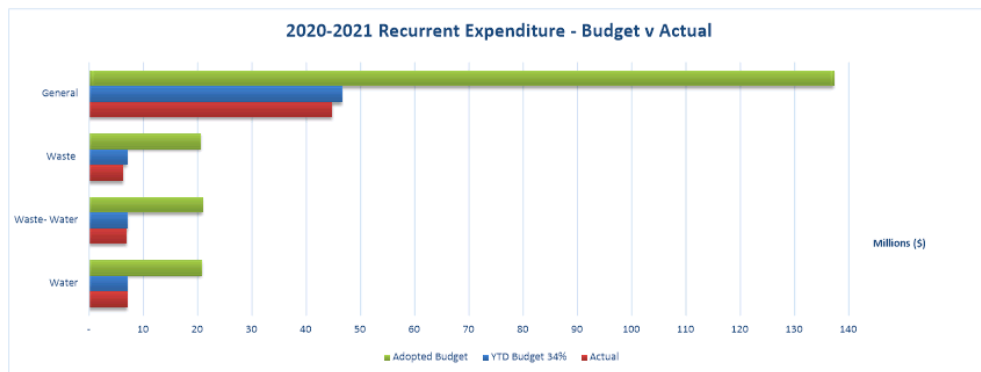
### **Recurrent Revenue**

- Rates and Utility Charges have been levied for the first half year period and pensioner remissions applied. The levied amounts are consistent with the budget.
- Fees and charges are slightly more than the year-to-date budget. This is primarily due to the increased development activity in the area as well as significant recoverable works being delivered in the first part of the financial year. Fees and charges will be monitored in the coming months with the opening of the remainder of Council facilities as well as changes in airline service offerings.
- Interest Revenue is lower than the year-to-date budget. Current investment rates continue to be at historic lows and the outlook in future earnings will be less than forecast.
- Grants, Subsidies and Donations are in accordance with the year-to-date budget. This reflects the payment cycle of many grants which are paid quarterly.
- Council has settled and has several unconditional contracts for parcels of Land Developed for Sale this financial year. These parcels relate to the Kinkuna Waters development. Council does not generally provide for an annual budget for these sales unless it has unconditional contracts at the time the budget is formulated. There are several conditional contracts for sales that are not reflected in the financial summary.



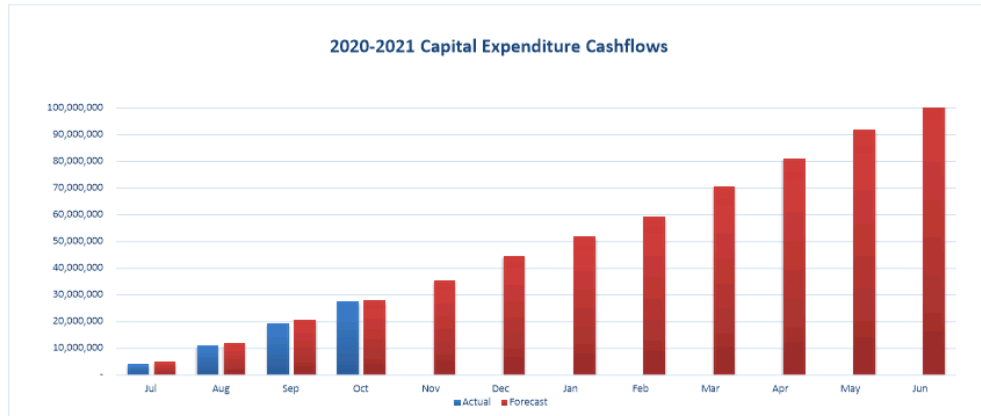
**Recurrent Expenditure**

- Employee Costs are tracking on budget. Employee costs will continue to be monitored with potential shifts in leave patterns the most likely variant in coming months.
- Materials and Services are tracking on budget. Timing in delivery of non-capital projects and one-off expenses are the main factors in variances throughout the year.
- Finance Costs are slightly lower than the year-to-date budget. The timing in the recognition of any bad debts can affect the level of finance costs across a financial year.
- Depreciation has been reviewed with the application of asset valuations in June last financial year. This has resulted in variances across the funds from budget.

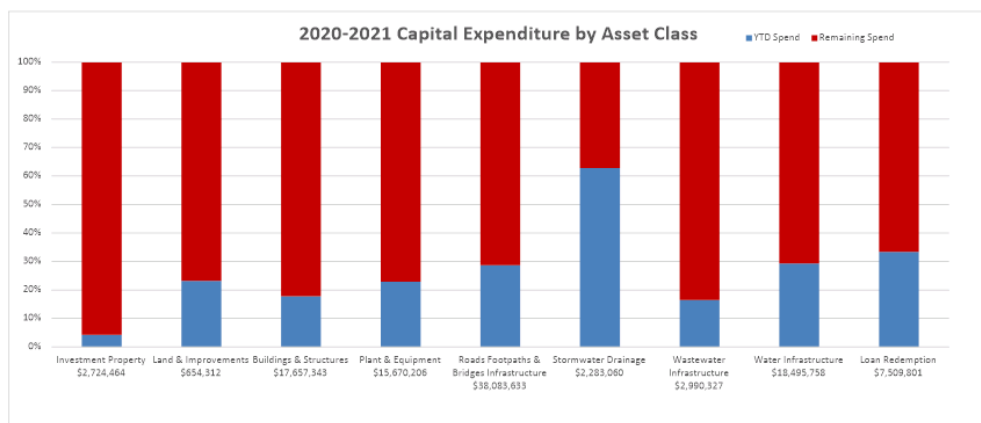


**Capital Expenditure and Capital Grants**

- Council has delivered 26% of this year's capital program during the first quarter which is in line with expected cashflows. The majority of spend is in relation to projects that were in progress last financial year including the delivery of several significant fleet items as well as the delivery of key Water projects.



- The spend by asset class this financial year is shown below.

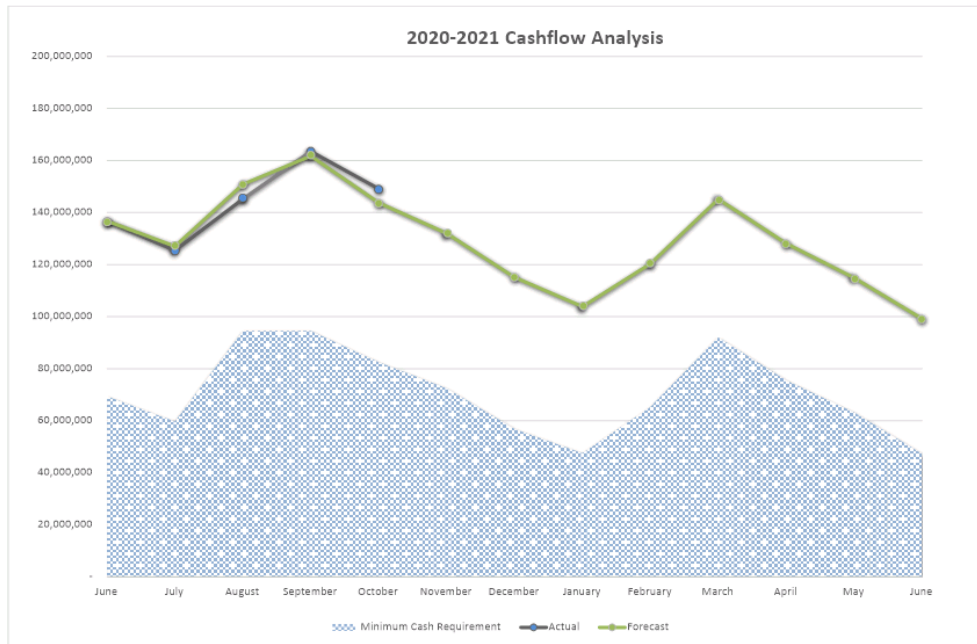


- Capital grants are on track with all milestones having been met. Council is awaiting approval on a variation to the grant agreement for the Aviation and Aerospace Precinct.



**Cash**

- The cash balance as at 2 November 2020 was \$149.1 million, a decrease of \$14.4 million from the last report at 1 October 2020 reflecting the outgoings on operations and delivery of the capital program during the month.
- No short-term liquidity issues are foreseeable.
- The actual and forecast cash movement is shown below.



**Rates Debtor**

- Rates outstanding at 31 October 2020 were \$10.5 million after the issue of the rate notices. Comparatively, this time last year the rates outstanding totalled \$6.4 million. Second reminder notices have been issued for the current levy.

**Other Debtors**

- Infringements outstanding total \$423,000 with the number of infringements increasing to 3,000. Parking infringements represent the majority of the infringements outstanding at around 50%. The remaining relate to local laws, environmental health and development compliance. This financial year, there have been 54 parking infringements waived and no debts written off. Infringements continue to be recovered via the State Penalties, Enforcement Registry.
- Sundry Debtors outstanding for more than 90 days total \$407,000 across 67 accounts. The majority of debtors are recovered via internal resources. Where appropriate, debts are referred to Councils external agency for collection.

**Item****24 November 2020****Item Number:**

G1

**File Number:****Part:**

GOVERNANCE

**Portfolio:**

Organisational Services

**Subject:**

Sale of Lot 8, Lot 12, Lot 15, Lot 39 and Lot 43 on SP 205671 - Kinkuna Waters Estate

**Report Author:**

Nicole Sabo, Property &amp; Leases Officer

**Authorised by:**

Amanda Pafumi, General Manager Organisational Services

**Link to Corporate Plan:**

Our People, Our Business - 3.2 Responsible governance with a customer-driven focus - 3.2.3 Administer statutory compliant governance operations incorporating insurance; risk management; property management and Council policies and procedures.

**Background:**

Council is the freehold owner of Lot 8, Lot 12, Lot 15, Lot 39 and Lot 43 on SP205671 at Kinkuna Waters Estate, Woodgate ('Lots'). Council has previously resolved to sell the Lots as they are surplus to Council's needs.

The Lots were previously offered for sale by auction at which the auction was not successful and the Lots were passed in. The offers to purchase the Lots are from separate buyers and for market values.

**Associated Person/Organization:**

N/A

**Consultation:**

N/A

**Chief Legal Officer's Comments:**

Pursuant to section 236(1)(a)(i) of the *Local Government Regulation 2012* (Qld), Council may apply an exception to the tender/auction requirement on the disposal of a non-current asset if the property has previously been offered by tender/auction.

This disposal must not be for less than market value.

**Policy Implications:**

There appears to be no policy implications.

**Financial and Resource Implications:**

There appears to be no financial or resource implications.

**Risk Management Implications:**

There appears to be no risk management implications.

**Human Rights:**

There appears to be no human rights implications.

**Attachments:**

Nil

**Recommendation:**

**That:**

- 1. Council apply the exception contained in section 236(1)(a)(i) of the *Local Government Regulation 2021 (Qld)* to the disposal of Lot 8, Lot 12, Lot 15, Lot 39 and Lot 43 on SP205671; and**
- 2. the Chief Executive Officer be authorised to enter into a Contract of Sale with each of the Buyers for each of the Lots and attend to all items required to finalise the sale of the properties.**

**Item****24 November 2020****Item Number:**

G2

**File Number:****Part:**

GOVERNANCE

**Portfolio:**

Organisational Services

**Subject:**

Sale of Lot 19 and Lot 21 on SP 210113 - Heritage Oaks Estate, Childers

**Report Author:**

Nicole Sabo, Property &amp; Leases Officer

**Authorised by:**

Amanda Pafumi, General Manager Organisational Services

**Link to Corporate Plan:**

Our People, Our Business - 3.2 Responsible governance with a customer-driven focus - 3.2.3 Administer statutory compliant governance operations incorporating insurance; risk management; property management and Council policies and procedures.

**Background:**

Council is the freehold owner of Lot 19 and Lot 21 on SP210113 at Heritage Oaks Estate, Childers ('Lots'). Council has previously resolved to sell the Lots as they are surplus to Council's needs.

The Lots were previously offered for sale by auction at which the auction was not successful and the Lots were passed in. Council has received offers to purchase the Lots from individual buyers through A1 Realty Wide Bay Burnett. The offers to purchase the Lots presented to Council are for market value.

**Associated Person/Organization:**

N/A

**Consultation:**

N/A

**Chief Legal Officer's Comments:**

Pursuant to section 236(1)(a)(i) of the *Local Government Regulation 2012* (Qld), Council may apply an exception to the tender/auction requirement on the disposal of a non-current asset if the property has previously been offered by tender/auction.

The disposal must not be for less than market value.

**Policy Implications:**

There appears to be no policy implications.

**Financial and Resource Implications:**

There appears to be no financial or resource implications.

**Risk Management Implications:**

There appears to be no risk management implications.

**Human Rights:**

There appears to be no human rights implications.

**Attachments:**

Nil

**Recommendation:**

**That:**

- 1. Council apply the exception contained in section 236(1)(a)(i) of the *Local Government Regulation 2012 (Qld)* to the disposal of Lot 19 and Lot 21 on SP210113; and**
- 2. the Chief Executive Officer be authorised to enter into a Contract of Sale with the Buyer and attend to all items required to finalise the sale of the Property.**

**Item****24 November 2020****Item Number:**

H1

**File Number:**

.

**Part:**

INFRASTRUCTURE

**Portfolio:**

Infrastructure Services

**Subject:**

Active Transport Strategy 2020 - 2025

**Report Author:**

Dwayne Honor, Branch Manager Engineering Services

**Authorised by:**

Stuart Randle, General Manager Infrastructure Services

**Link to Corporate Plan:**

Our Environment - 2.1 Infrastructure that meets our current and future needs - 2.1.1 Develop, implement and administer strategies and plans underpinned by the principles of sustainable development.

**Background:**

In 2010, Council engaged a consultant to consolidate the pathway strategies of Bundaberg City and Burnett Shire Councils. The aim of this document was to:

- develop a pathway hierarchy classification based on link functions and categorise the proposed pathway network;
- develop pathway construction standards;
- develop methodology to prioritise pathway projects; and
- provide base for development of an integrated, structured pathway network.

In 2012, Council adopted the Multi-Modal Pathway Strategy for use as the planning document for pathway infrastructure in the Bundaberg region. This document was used to deliver pathway projects via day labour crews or small quote packages through local concreters.

During the 2014/2015 financial year, Council's then Roads and Drainage Department in pursuit of cost savings, made the decision to bundle all pathway projects into one major contract. To manage the risk associated with delivering contracts of this size required specific skills and consistency of staff. This continuity of staff within the planning and delivery of pathways has resulted in a greater understanding of the issues associated with pathway planning and limitations of the current Multi-Modal Strategy.

In 2018, a review of the Multi-Modal Pathway Strategy began providing an opportunity to apply the improved knowledge and learnings of pathway and cycleway

infrastructure to address some of the limitations identified within the existing strategy. During the course of this review, it became apparent that a significant amount of changes were required to bring this document in line with best practice for transport planning of pathways and cycleways.

The biggest change identified in pathway planning since the 2012 adoption of the Multi-Modal Strategy is the evolution from multi-modal pathways to an active transport network. An active transport network, while providing the same transport related outcomes of a multi-modal network (identified above), also has a focus on health, social and environmental related outcomes.

An Active Transport Strategy aims to develop facilities that:

- provide connectivity to the community for those who rely on public transport and non-motorised modes of transport to get around;
- create opportunity for people to integrate physical activity into their daily lives; and
- improve the health and physical well-being of the community by encouraging and promoting physical activity.

The Active Transport Strategy 2020-2025 document has been developed as a transition document, setting out an action plan on how we move from the current Multi-Modal Pathway Strategy to a high-standard and functional active transport network. This will improve the connectivity and amenity of the pathway network with a view to encouraging more people to get active and engage with the community around them.

**Associated Person/Organization:**

Nil

**Consultation:**

Portfolio Spokesperson: Cr Bill Trevor

Divisional Councillor: All

Internal Departments: Development, Design, Roads Corridor, Parks and Natural Areas

**Chief Legal Officer's Comments:**

There appears to be no legal implications.

**Policy Implications:**

There appears to be no policy implications.

**Financial and Resource Implications:**

There appears to be no significant implications to Council's finance or resourcing. Implementation of the strategy action plan will be incorporated as part of normal budgeting processes of Council.

**Risk Management Implications:**

There appears to be no risk management implications.

**Human Rights:**

There appears to be no human rights implications.



**Attachments:**

[↓1](#) Active Transport Strategy 2020-2025

**Recommendation:**

**That Council adopt the Active Transport Strategy 2020-2025 document.**



# Active Transport Strategy 2020-2025

Building Australia's  
best regional community





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Between  
**2012-2019**  
Council increased its  
pathway network  
by over  
**29km**



Bundaberg's average  
percentage of people  
who require assistance  
with core activities is  
**8.3%** well above  
the national  
average of **5.1%**



## Council is working hard to make the Bundaberg Region Australia's best regional community.

A priority as part of this vision is to provide facilities that will ensure we are a healthy, safe and inclusive community.

I am pleased to present Council's Active Transport Strategy 2020-2025, a document which aims to meet these goals through the provision of a connected and considered pathway network.

The main objective of this strategy is to provide a road map that will assist Council to develop, plan, construct and maintain a well-connected and convenient Active Transportation Network that meets the needs of all residents.

This document builds on the Multi-Modal Pathway Strategy, which has been utilised since 2012.

The Multi-Modal Pathway Strategy had a strong focus on transport related outcomes, while the new Active Transport Strategy 2020-2025 connects these outcomes with health and social opportunities.

Our ambition is to be:

- A region that attracts more people with its enviable lifestyle, is well connected and embraces sustainability.
- A community that enjoys a safe and healthy lifestyle and is inclusive and supportive.
- A Council that delivers infrastructure for the future to create better connectivity and improves outcomes for ratepayers and residents.

These ambitions are of particular importance when planning and developing pathway infrastructure.

Providing infrastructure to support and encourage walking, running or cycling has the ability to inspire active living, engage people in social interaction and promote accessibility.

Council remains committed to delivering a high quality, well connected pathway network for all users.

As we work to develop quality pathway infrastructure throughout the region, I would encourage all members of the community to take advantage of these facilities as often as possible and discover their many benefits first hand.

**Mayor Jack Dempsey**  
Bundaberg Regional Council



## 2. Strategy background

Bundaberg Regional Council recognises that the local government area is blessed with a number of attributes conducive to walking and cycling. The warm climate, flat topography, wide road reserves and attractive surrounding rural and coastal landscapes combine to make walking and cycling a desirable and viable mode of social interaction, recreation and transport. In concert with the higher proportion of older residents, the lower average income of households and the increasing number of tourists, opportunity exists to encourage more 'non-motorised' trips by developing an integrated active transportation strategy.

After amalgamation of the Bundaberg City, Burnett, Kolan and Isis Shire Councils in 2008, Bundaberg Regional Council engaged a consultant to integrate the pedestrian and cycling strategies for these Councils, forming what would become the Multi-Modal Pathway Strategy which has been utilised since 2012.

After seven years it was time to review this document and update it to detail:

- What has been achieved?
- What is still required?
- Areas for improvement; and
- Transition into a new active transport philosophy which considers health and social outcomes.

As part of the 2019-2023 Corporate Plan, Bundaberg Regional Council has outlined a vision 'To build Australia's best regional community'. As part of this vision Council wants to provide a healthy and safe community, a community that supports inclusiveness and a low cost of living, while valuing diversity and treating all community members and colleagues with equality and consideration. Given the health benefits associated with walking and cycling, the Active Transport Strategy 2020-2025 document is an opportunity for Council to build on the former Multi-Modal Pathway Strategy to further enhance the quality of pathway networks to create opportunities for residents to get active and engage with the community around them.

The purpose of this Active Transport Strategy 2020-2025 document is to:

- Continue to develop the pathway network identified in the previous strategy while implementing improvements to planning and delivery of pathway infrastructure;
- Integrate lessons learned during the implementation of the previous strategy to create future opportunities;
- Update the strategy to embrace current philosophies in active transport planning;
- Create an action plan to develop pathway and cycling infrastructure planning and delivery for the next five years.

### 3. Strategy objectives

This strategy has the following objectives:

- a) Define the purpose and characteristics of an active transport pathway network;
- b) Provide commentary on the delivery of the previous Multi-Modal strategy and provide a status of the network;
- c) Identify the delivery program for 2020-2025;
- d) Identify opportunities to integrate the Active Transport Strategy 2020-2025 with other Council strategies;
- e) Develop an action plan to develop and improve planning and delivery of the active transport network through the life of this strategy.

This strategy is directed at developing and improving active transportation networks within established urban areas, currently serviced by existing transport infrastructure. It will focus on providing connectivity to major people attractors such as schools, parks, sporting fields and shopping centres. Future growth areas, linking of growth areas and specific recreational and tourist focused pathways are mentioned within this document, however their implementation should be assessed separately as they have different benefits and outcomes to that of establishing an urban active transportation pathway network.



#### Rifle Range Creek Bridge

The Rifle Range Creek Bridge was constructed along the Coastal Pathway to link Bargara and Innes Park. This 58m bridge over the Rifle Range Creek has connected locals to the south with the popular Mary Kinross Park to the north while providing a vital link in the long-term plan of establishing a Coastal Pathway connecting all coastal communities from Elliott Heads to Burnett Heads. This bridge was constructed out of composite fibre products which allowed for it to be constructed in segments on site and lifted into place with minimal disturbance to the coastal vegetation that surrounds Rifle Range Creek.



#### Baldwin Swamp Environmental Park Pathway

The Baldwin Swamp Environmental Park Pathway forms part of the Principal Pathway Network designed to connect the developing area of Ashfield to the Central Business District. Council was able to obtain State Government funding to deliver this significant pathway project. The completion of this section of pathway now allows residents living in the Belle Eden Estate to safely travel to the Central Business District without having to ride on the road. This project has also opened up the eastern end of Baldwin Swamp to allow more people to access and enjoy this area. The pathway enables people with limited mobility who previously did not have access to enjoy this area of the Environmental Park.





## 4. Transition from a multi-modal network to an active transport pathway network

### 4.1 How do we define 'Multi-Modal'?

The Multi-Modal pathway network incorporates those paths that are designed and constructed to meet the needs of the broadest range of potential users. By being designated as such, there is an expectation that the network reflects those needs specific to mobility impaired persons, to able-bodied persons of all ages and to people using wheeled recreational craft permitted by the Transport Operations (Road Use Management – Road Rules) Regulation 2009 to use a path.

The promotion of a pathway network as being 'Multi-Modal' therefore introduces a consideration of the needs and expectations of a raft of users, some of whose behaviour can be anticipated (e.g. commuter) and some of whose behaviour can be more erratic (e.g. school children). It also introduces a consideration of the range of transportation tools or aids and their relative compatibility e.g. bikes, walking frames, roller blades, mobility scooters, prams, skateboards and wheelchairs.

### 4.2 How do we define 'Active Transport'?

Active transport further builds on the multi-modal transport definition by developing not only the network, but the associated supporting

infrastructure to promote and encourage physical activity, as all or part of a transport journey, to achieve not only transport, but health and environmental related outcomes for the community. Provision of trees and shade, regulatory and interpretative signage, seating, watering points and other facilities that improve the amenity and perceived safety of the pathway infrastructure to increase its usage, all form part of a successful active transport network.

### 4.3 Community benefits of an active transport network

Walking and cycling are low-cost transportation modes available to the greater part of the community. Providing bikeways and/or walkways introduces a significant range of community and personal benefits, including:

#### Reduced transportation costs:

Maintaining and improving the road transport network involves high costs to Local (and State) Government. Reducing vehicle use will reduce road maintenance costs.

#### Environmental outcomes:

Walking and cycling do not cause health-threatening impacts on air quality or residential amenity and are the most energy-efficient and sustainable forms of transport.

**Street activation:**

The number of people who feel comfortable walking or riding bicycles is a measure of the quality of life of a town. The presence of pedestrians and cyclists indicates that the sense of community is strong, people feel safe being outdoors and social interaction can happen openly.

**Increased household disposable income:**

The cost of buying and maintaining a bike has been estimated at approximately 1% of the cost of buying and maintaining a car.

**Improved health and well-being:**

Gentle and moderate intensity physical activities respectively, as well as walking and cycling can contribute to the prevention of a number of physical and psychological illnesses, including coronary heart disease, stroke, high blood pressure and depression.

**Economic benefit:**

There is significant literature linking a well-connected active transport network and economic benefit to the community. These benefits can range from increased commerce from improved accessibility, through to a reduced financial burden on the health system through improved health outcomes.

**Social equity:**

Walking and cycling are affordable, accessible and independent travel options for a large number of people, but particularly the 'transportation disadvantaged' – the unemployed, low income earners, the young and others who do not use a motor vehicle for a variety of reasons.

**4.4 What users should an active transport network support?**

An active transport network should seek to satisfy as many needs of the different user groups (generically categorised as cyclists and pedestrians) as possible.



Bundaberg Region currently has 116km of network pathway

**4.4.1 Cyclists**

With respect to cyclists, there is wide acceptance that this user group can be categorised into seven broad sub-groups, each with diverse characteristics and needs that affect pathway planning and design.

These sub-groups are:

**Primary school children** – developing knowledge of road traffic laws and undeveloped cognitive skills.

**Secondary school children** – skill varies widely depending on age.

**Recreational cyclists** – skill varies widely and they generally desire pleasant recreational experiences along off-road paths and local streets.

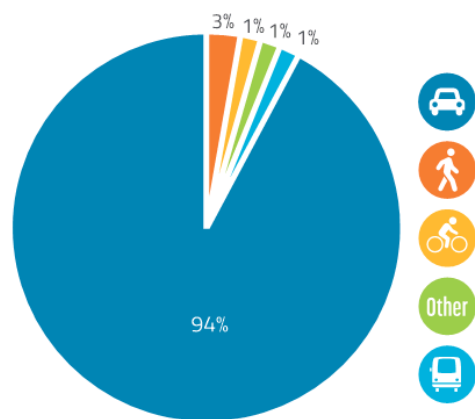
**Commuter cyclists** – includes people who wish to reduce travel time regardless of traffic conditions and those who are willing to take a longer route to avoid high-stress environments. Usually however, the commuter cyclist is best accommodated by on-road facilities because the road network more often offers the most direct route.

**Utility cyclists** – those who ride for a variety of specific purposes such as shopping, visiting friends, travelling to community facilities. These routes are generally unpredictable, short in distance and more often occur along roads not subject to high traffic volumes.

**Touring cyclists** – make extensive long distance journeys or shorter trips around local areas of tourist significance.

**Sports cyclists (in training)** – travel long distances on arterial road networks.

**Journey to work mode share**



(AUSTRALIAN BUREAU OF STATISTICS 2016  
Census of Population and Housing  
Bundaberg (R) (LGA31820) 6432.7 sq Kms

#### 4.4.2 Pedestrians

With respect to pedestrians, again there are several sub-groups with specific characteristics:

**School children** – a high degree of personal safety and security is more important than directness of the route. School students are the heaviest users of both bicycles and walking for transport.

**Commuter** – the route should be direct without being sterile.

**Recreational user** – a higher emphasis is given to the attractiveness of the route with a linear network comprising a raft of experiences preferred.

**Engaged community user** – an emphasis of engaging with the community around them making multiple crossings of the network to attend multiple attractions along the network. Well connected with designated safe crossing points and route connectivity is important.

**Elderly users** – direct routes to specific destinations and public transport facilities. Well maintained, smooth surface to minimise falls, has good passive surveillance for safety and facilities to rest along the journey.

**Users with mobility impairments** – require well maintained, Australian Standard 'AS1428 Design for Access and Mobility' (AS1428) compliant pathways with tactile indicators.

#### 4.4.3 Personal mobility devices?

With respect to Personal Mobility Devices there are two major subgroups with specific characteristics.

**Mobility Scooters** – These devices are relatively slow moving and are utilised mainly by the elderly and people with mobility impairments. They are used for the specific purpose of providing the user with access to the community around them.

**Rideables** – The rideable user group covers a range of devices which includes E-Scooters, Segways and Balance Boards. Rideable users are generally moving at a higher speed to most other pathway users and are most often using the device for recreation or commuting.

#### 4.5 Generators of trips

Residential areas are the origin of cycle and pedestrian trips. The planning scheme identifies areas for higher density housing typically in close proximity to activity centres, such as parts of Bundaberg South and Bundaberg West near the Bundaberg Central Business District (CBD), and parts of Bargara near the Bargara town centre and Esplanade. Residential development is therefore characteristically low-density housing occasionally punctuated with medium density housing.

Attractors of trips are destinations commonly visited by the community. These could be out

of need (eg. shops or schools) or for recreation, enjoyment or knowledge (eg. parks, beaches, tourist attractions). Walking or cycling may form part of a multi-staged journey utilising public transport. Common attractors include:

#### Shops:

Regional, district and local. Shops are a key destination within all communities and a number of shopping trips are easily accomplished by walking and cycling. Although it is recognised that weekly shopping needs met by higher order centres are unlikely to be satisfied by a walk to the shops, the fact remains that these centres also provide top-up shopping needs that can be satisfied by transport means other than a motor vehicle. Infrastructure such as pathways and end trip facilities (e.g. bike parking) should be provided to support and encourage walking and cycling to shops.

#### Sport and recreation facilities include:

Picnic areas, sport fields, tennis courts, skate parks, basketball courts, beaches and playgrounds. Major sporting destinations (such as the Multiplex, Kendalls Flat and Salter Oval) and significant recreation spaces (such as Baldwin Reserve, Queens Park, Bargara Beach, Woodgate Beach) should be accessible by pathway. Other recreation facilities (such as lawn bowls, swimming pools and squash courts) will be connected by pathways as the opportunity presents.

#### Education establishments:

As a general principle, all schools (but particularly primary schools) should be accessible by shared use multi-modal paths. The extent of these paths will be influenced by the road network serving the schools, the strength of travel desire lines and the school catchment. Higher education facilities would preferably be accessible by pathway.

#### Bundaberg Riverside Master Plan area:

A rectangular area between Queens Park to the west and to Kennedy Bridge in the east, from Burnett River in the north to Bourbong Street in the south has been identified as the Riverside Economic Precinct. Public investment in this area will generate increased investment in the private market and it is important that this precinct be a focal point for the pathways network.

#### Medical precincts:

There are several medical precincts around the region. These areas are heavily utilised by people of varying age and physical abilities. The active transport network should seek to connect people to these precincts through pathways with a high standard of embellishment to match the needs of the users.

### Tourist nodes:

Linkages should provide access to and inter-connect significant tourist destinations, e.g. Botanic Gardens, Hinkler Hall of Aviation, Rail Museum, Bundaberg Rum Distillery, Riverfeast, Alexandra Park Zoo and Bundaberg Brewed Drinks.

### Key centres of employment:

The Bundaberg Central Business District is a key centre of employment that is sufficiently compact to be a destination in its own right. This is distinguishable from broadacre industrial estates where employment is less concentrated. Childers, Gin Gin, Bargara Central Shopping Centre and the Bargara Recreational Business District are smaller scale commercial and retail centres which also trigger pathway consideration. Key centres of employment should be easily accessed by cycling or walking, and infrastructure such as pathways and end of trip facilities should be provided to support and encourage active transport trips.

### Other transport options:

For those who utilise pathways as they do not have access to other motorised transport options often do so as part of a multi-stage journey involving public transport. These people are often not physically able or are no longer capable of driving. For connectivity for this user group, AS1428 compliant pathways in close proximity to public transport options, neighbourhood stores and community centres are essential to maintain their independence.

### Support facilities:

The following support facilities, which complement the pathway by increasing convenience of the user, have been prioritised in order of importance. Prioritisation has been based on relative importance, affordability for Council and likelihood of targeting by vandals.

1. Trees and shading
2. Signs: both regulatory and interpretive
3. Lighting
4. Ancillary equipment such as seats, bubblers and tables
5. Bike racks
6. Fitness equipment
7. Showers
8. Lockers.

Provision of this type of infrastructure is not always possible due to site constraints or conflicting land use priorities, however an opportunity exists to integrate other existing Council parks and open space infrastructure. This opportunity is explored in more detail in section 10.1 of this strategy and will be investigated in more detail as part of the Active Transport Strategy 2020-2025 Action Plan.



**Baldwin Swamp Environmental Park Bridge**

The Baldwin Swamp Environmental Park Bridge was constructed to replace an old 1m wide timber crossing of the Baldwin Swamp wetlands. This 3m wide bridge has allowed the continuation of the principal shared pathway that runs from Ashfield through to the CBD. Special consideration was given to how to construct a bridge of this size in the sensitive environmental area of Baldwin Swamp Environmental Park. To minimise disturbance to the waterway a 22m single span bridge was installed to avoid any unnecessary piling or excavation in the watercourse.



**Quay Street East**

This pathway was identified within the Department of Transport and Main Roads Priority Cycle Network Plan (PCNP), however this route never formed part of the Multi-Modal Pathway Strategy. This pathway provides great access for the people of East Bundaberg to the CBD and also connects the people in the CBD with a number of food and beverage tourist experiences such as Riverfeast and the Bundaberg Rum Distillery. As this route was part of the PCNP, Bundaberg Regional Council was able to obtain State Government funding to accelerate the delivery of this project to align with Department of Transport and Main Roads (TMR) work undertaken on the adjoining State Controlled Princess Street.



## 5. Review of 2012 Multi-Modal Strategy

The 2012 Multi-Modal Strategy completed significant work in identifying and assessing pedestrian and cycleway routes within the Bundaberg Region. The strategy successfully integrated the previous transport planning strategies from the amalgamated Council that formed Bundaberg Regional Council.

The 2012 version ascertained the location of proposed pathways by the use of a number of assessment criteria:

- Potential demand
- Personal safety
- Financial cost
- Environmental.

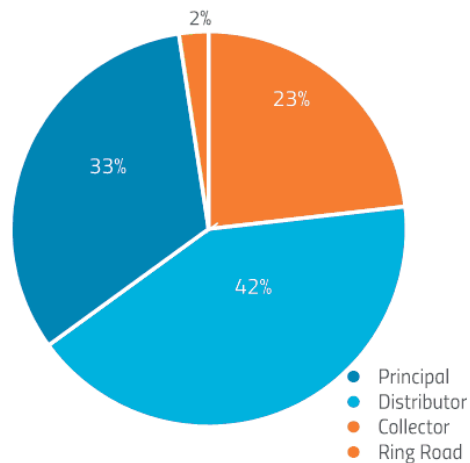
The 2012 Strategy used a weighted criteria assessment for locating and prioritising pathway construction. These criteria included:

- Good passive surveillance
- Direct links to schools
- Convenient to catchment
- Convenient link between destinations
- Uses public land
- Located on land located in the regional plan urban footprint
- Not located on a high traffic road
- Attractive landscape or historical significance
- Availability of supporting infrastructure.

In the years since its adoption, there has been significant developments in the area of active transportation network planning. While the 2012 strategy has identified and prioritised routes based

on the above criteria of physical attributes, there is a number of dynamic elements that require consideration when determining the pathway project priorities throughout the region. The Active Transport Strategy 2020-2025 has identified the need for additional assessment criteria based around demand, connectivity, land use and network condition be established. An action plan in section 13 of this document has identified areas to be investigated to better determine the demand and usage of pathways into the future.

**Breakdown of hierarchy for the 2012 Multi-Modal strategy**  
(percentage of total path length).



## 6. Proposed Active Transport Strategy 2020-2025

### 6.1 Overall outcomes of the active transport pathway network

The Bundaberg Regional Council active pathway network strategy has been developed with regard to:

- The community and personal benefits that accrue from having a well-used path network
- The disparate and sometimes competing user needs
- Generators and attractors of trips
- Principles identified in this report for locating and designing a pathway network
- Existing pathway characteristics and known opportunities and constraints for the augmentation of the existing pathways infrastructure.
- Increased participation and community activity.
- Extending the journey.

The overall outcomes that the strategy seeks to achieve:

**Personal Safety:** facilitate pathways that are generally located in areas with good passive surveillance; provide appropriate crossing points at roads; satisfy design specifications for pedestrian, remove hazards and obstacles for users, and most bicycle user groups; contain appropriate signage.

**Connectivity:** provides convenient links to attractors/generators and other parts of the network.

**Amenity:** establish paths that are appealing and encourage through the provision of shade and other support features.

### 6.2 Hierarchy classification

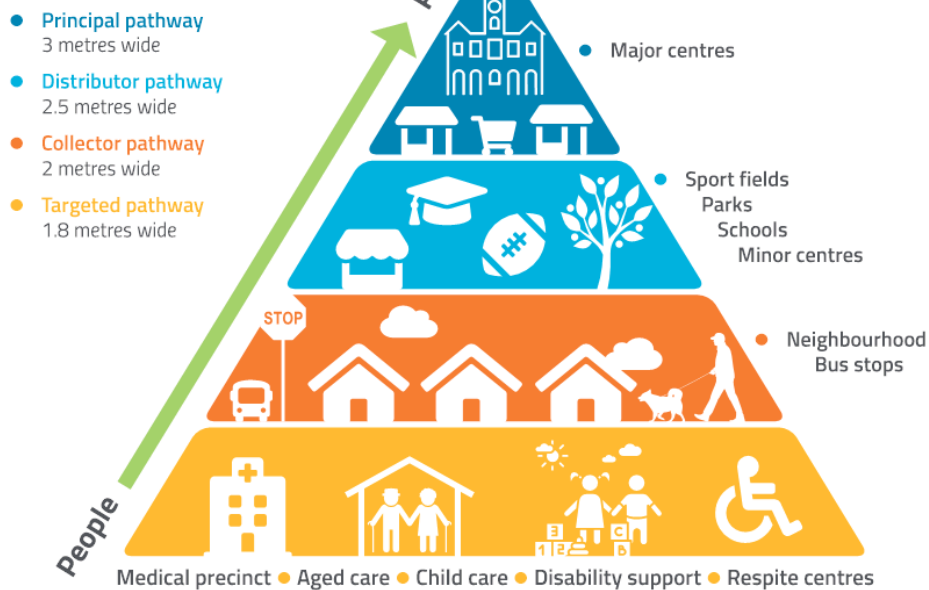
The previous Multi-Modal Strategy contained three functional levels of pathway:

- Principal pathway
- Distributor pathway
- Collector pathway.

The Active Transport Strategy 2020 - 2025 introduces a fourth functional pathway level:

- Targeted pathway.

### Functional Pathway Hierarchy (Linking people to place)



### Principal pathway

#### Primary purpose

A shared off-road path, or a combination of off and on-road facilities, or narrower width pathways duplicated on both sides, serving primarily a commuter/tourist/recreation function and accessing a number of local and regional attractors ultimately feeding users into the Central Business District. Will also serve defined destinations (e.g. schools, shops) but in doing so does not target specific user groups.

#### Physical characteristics

- Shared path design and construction standards reflect higher order function
- Provision of associated infrastructure e.g. drinking fountain, seating, shade trees
- Reflect contemporary mobility design standards.

#### Locational characteristics

- Generally longer distance, intra-urban routes linking a raft of attractions terminating in the Central Business District
- Variety of experiences
- Good passive surveillance.

### Distributor pathway

#### Primary purpose

With a focus on accessing schools, the Distributor path primarily (but not exclusively) accommodates students. Linking alternative destinations, including the principal pathway networks, regional and neighbourhood parks and open spaces, sporting fields and shopping centres makes the path attractive to other user groups.

#### Physical characteristics

- Design width and support facilities less than Tourist/Recreational Path
- Uniform construction standard unless the location dictates otherwise
- Typically located off-road subject to other infrastructure constraints
- Reflect contemporary mobility design standards.

#### Locational characteristics

- Generally located on higher order roads where the primary function is to provide access to schools
- Direct route with good passive surveillance
- Often link different user groups to local destinations (e.g. shops, parks).

### Collector pathway

#### Primary purpose

A shared off-road path providing access in urban areas for different user groups to the higher order paths, as well as access in smaller townships for different user groups to destinations.

#### Physical characteristics

- Design width and support facilities less than Distributor pathway
- Uniform construction standard unless the location dictates otherwise
- Reflect contemporary mobility design standards.

#### Locational characteristics

- Connecting links where the volume of usage is not expected to be as high as a Distributor pathway
- Located on road reserves and through public open space
- Link specific destinations.

### Targeted pathway

#### Primary purpose

A lower order off-road path connecting specific user groups to part of the larger network or specific location or feature (bus stops, respite centres, retirement villages).

#### Physical characteristics

- Design width and support facilities depending on target and specific user group
- Uniform construction standard unless the location dictates otherwise
- Reflect contemporary mobility design standard with additional support facilities as required.

#### Locational characteristics

- Connecting links where a specific user group has been identified (Hospitals, respite centres, disability support, child care)
- Located on road reserves and through public open space
- Link specific destinations to shops, public transport and crossing facilities.

### 6.3 Design and construction standards

Austrroads 'Guide to Road Design – Part 6A: Pedestrian and Cyclist Paths' provides contemporary footpath design and construction standards which should be reflected in the Bundaberg Regional Council active transport network.

With specific reference to the width of shared paths, Section 7.5.3 of Part 6A identifies the following standards.

Table 1 Shared path widths

	Path width (metres)		
	Local access path	Commuter path	Recreational path
Desirable minimum width	2.5	3.0	3.5
Minimum width – typical maximum	2.5-3.0	2.5-4.0	3.0-4.0

While the width identified above may be suited to greenfield sites in significant urban areas there is a number of factors that limit the width of the pathways identified in this strategy:

- Recognition that many of the path user flows are expected to be highly tidal in nature. There are, for example, peak morning and afternoon uni-directional flows of students to and from school.
- Realisation that retro fitting existing road reserves, with their prevailing geometry and infrastructure constraints, will often preclude the achievement of preferred pathway widths.
- Understanding that most towns in the local government area will experience constrained population growth through the State Government's regional planning process and consequently, the present and projected path usage volume will be low in comparison to more densely populated urban areas.
- Where pathways identified are located on the State Controlled Road Network, pathway proposals must be approved by the Department of Transport and Main Roads and comply with their standards.
- Where a pathway route travels through sensitive environmental areas, appropriate setbacks from trees, disturbance areas need consideration.

As ultimate pathway widths are most often not achievable due to site constraints such as available road reserve widths and footpath widths, this strategy has identified the following as the desired minimum requirements:

**Principal pathway** – Minimum of 3m wide on at least one side where physically possible and on-road cycle lanes if identified as a Principal Cycle Network Path (PCNP).

**Distributor pathway** – Minimum of 2.5m on one side.

**Collector pathways** – Minimum 2m on one side.

**Targeted pathway** – Desirable 1.8m varying to a minimum 1.5m should a specific user requirement be identified.

Austrroads Part 6A states that a lesser width should only be adopted where cyclist volumes and operational speeds will remain low. A greater width may be required where the number of cyclists and pedestrians are very high or there is a high probability of conflict between users (eg. people walking dogs, roller bladers and skaters etc).

The above pathway widths are identified within the Bundaberg Regional Council Planning Scheme document. The Planning Scheme also notes that 'Where preferred pathway widths are not achievable, Council may consider alternative pathway proposals (e.g. pathways with reduced widths on both sides of the roads; on-roads cycle lanes)'

Each year  
Bundaberg  
Regional Council  
provides around  
**\$2.5M**  
in its capital budget for  
the delivery of Pathway  
infrastructure



There are several other standards and guides used in the planning and design of active transport infrastructure. At times these design standards and guidelines conflict with each other and their requirements are not always able to be achieved. In addition to these conflicts there are also conflicts with other assets and physical site constraints to be managed. The Active Transport Action Plan identifies the need to develop a risk based assessment process to help achieve positive outcomes for the community in these situations when not all design requirements can be achieved.



### 6.4 Pathway priority of all active transportation networks

Pathway priority is a technique of setting the priority of concrete pathways to assist children, beginner cyclists and people with visual impairment by constructing the pathways through the existing driveways. Pathway priority supports the Transport Operation (Road Use Management – Road Rules) Regulations which details that drivers entering or exiting properties must give way to pedestrians and cyclists on the footpath. By having pathways that continue through driveways, it provides a clear visual cue of the pedestrian priority of the pathway as recommended in Austroads Part 6A Paths for Walking and Cycling. This configuration also assists those who have visual impairment with identifying the pathway location. Photograph 1 shown below indicates an example where the driveways have been cut through to establish pathway priority.



Photograph 1 – Pathway Constructed with Pathway Priority

In addition to the benefits of the visual priority, this treatment of driveways also provides additional benefit to those with limited mobility by providing consistency of surface texture. The Department of Transport and Main Roads, Road Planning and Design manual states, *‘Where a path transitions from one surface to another, the discontinuity is prone to vertical displacement and this combined with a change in surface friction can create a hazard for cyclists and pedestrians’.*

Exposed aggregate, stencilled concrete, pavers and asphalt driveways all come with varying degrees of slip resistance and surface friction. The level of slip resistance in exposed aggregate can vary significantly. The aggregate size, shape, depth of exposure and sealant coating can all affect the slip resistance of the surface. Pavers, over time, can subside or rise up to create an uneven surface. Stencilled driveways can be confusing to those visually impaired walking with the assistance of a cane, have height difference creating trip hazards and pond water in their stencilling creating a slip issue. By cutting through driveways and replacing them with the concrete pathway removes the surface texture variance which gives the elderly

and people with mobility issues confidence of a consistent surface.

Bundaberg Regional Council understands the significant advantages and positive outcomes pathway priority achieves and is committed to utilising this technique on all driveways encountered while constructing its pathway network. Bundaberg Regional Council’s current Standard Drawing R1010 for Driveways identifies the need for pathway priority with the inclusion of the note ‘Should concrete footpaths exist or be required in the area, then the concrete footpath will be continuous through any driveway access’.

In 2020 the State Government introduced new mandatory provisions for neighbourhood design aimed at creating more healthy, active and liveable communities. The Model Code for Neighbourhood Design is aimed at increasing participation in walking in new development areas by building infrastructure to create a walking friendly neighbourhood. To support the new policy the Institute of Public Works Engineering Australasia Queensland (IPWEAQ) developed the Street Design Manual: Walkable Neighbourhoods. Section 5.2 of the manual describes the importance of pathway priority.

### 6.5 Pathway ranking criteria

To help prioritise the delivery of the pathway network, a new ranking criteria has been established. This criteria expands on the previous Multi-Modal Strategy ranking criteria with the inclusion of additional criteria. The Active Transport Strategy 2020-2025 considers things such as integration with public transport as well as connectivity and accessibility for those with physical and cognitive impairments.

The Multi-Criteria Analysis developed focuses on five key areas:



While in the short term we will continue to deliver projects prioritised in the Multi-Modal Pathway Strategy, this criteria will be used throughout the life of this document as we review current mapping and land use to establish a new integrated active transport network. Action plan items have been included as part of this document identifying requirements to establish this network.



## 7. Pathway areas

### 7.1 Pathway network Bundaberg city

The active transport pathway network for the Bundaberg City is reflected in Appendix A of this report.

The plan locates destinations such as educational establishments, commercial districts and public open space and introduces a four-tiered hierarchy of paths. The hierarchy identifies the primary function of each path and gives consideration to the following elements:

1. The Central Business District, currently proposed for redevelopment.
2. Principal Cycle Networks identified by the State Government.
3. Heightened pedestrian activity in the medical precincts of Bourbong Street and Bingera Street.
4. A desire to create loops in the network where possible to provide 'exercise circuits'.

This plan introduces a four-stage strategy to realise the active transport network. The realisation of this strategy is a function of a number of variables, some of which are beyond the control of Council e.g. Federal and/or State Government funding opportunities, pace of land development. The plan references the prioritisation of works rather than a deadline for works. Thus Stage 1 assumes the highest priority and Stage 4 assumes the lowest priority.

To this end, it is recommended that priority be given to:

1. Developing principal network paths feeding pedestrian and cyclist into the high use area of the Central Business District.
2. Providing access to schools (and particularly routes where the path can serve several functions) and providing connectivity to Principal pathways.
3. Developing the inner-city network where return on investment is likely to be higher.
4. Improving access of urban areas to higher order pathways.

### 7.2 Pathway network coastal areas

The active transport pathway network for the Coastal Areas of the Bundaberg region are attached at Appendix A of this report. The plans have been prepared for the coastal towns of Burnett Heads, Bargara, Innes Park, Coral Cove and Elliott Heads. The hierarchy identifies primary function of each path and gives consideration to the following elements:

1. Strong focus on Coastal Pathway enhancing interaction with natural areas along the coastline.
2. Increasing the lower order pathway routes.
3. An assumption that the proposed North South Link Road between Bargara and Elliott Heads will form the western boundary to future urban residential growth.

4. A preference that active transport paths should be characterised by a high level of passive surveillance and should be located to satisfy as many travel desire lines as possible.
5. A preference that active transport paths should provide direct access to schools.
6. A preference to avoid environmental and/or topographical constraints.
7. A desire to create loops in the network where possible to provide 'exercise circuits'.

The Staging Plan introduces a four stage strategy to realise the active transport network. Once again, the realisation of this strategy is a function of a number of variables and the plan reflects construction priorities. To this end, the Staging Plan reflects the following priorities:

1. Effect on the greater part of the Foreshore Tourist/Recreational route.
2. Providing access to schools (and particularly routes where the path can serve several functions).
3. Connecting urban areas to facilities such as schools, shopping, parks and higher order pathways.
4. Future growth areas, master plan areas and higher speed road connections.

### 7.3 Pathway networks Woodgate and Moore Park Beach

The active transport pathway network for Woodgate and Moore Park Beach communities is detailed in the plan attached at Appendix C in this report. While coastal, these townships do not form part of the coastal pathway due to the geographic separation from Elliott Heads to Woodgate in the south and Burnett Heads to Moore Park Beach in the north. Both these townships have similar populations and trip generation factors. Moore Park Beach has educational facilities where Woodgate does not.

In relation to Woodgate, both the Hierarchy Plan and the Staging Plan reflect the significance of the present foreshore path. This path connects Woodgate's linear settlement pattern with the foreshore, the community precinct (in the vicinity of the Woodgate Bowls Club) and the small commercial centre on The Esplanade.

Connectivity of the development areas along Frizzells Road, and connection of existing residential areas to the Esplanade should become the future focus for the Woodgate township area.

Moore Park Beach township has significant networks in place since the development of the previous strategy. At the completion of the identified network, future focus should move to additional lower order pathways to connect urban areas to the significant higher order pathway network.

### 7.4 Pathway network Childers

In relation to Childers, the Hierarchy Plan located in Appendix D, once again locates destinations such as educational establishments, commercial districts and public open space and introduces a three tiered hierarchy of paths. The hierarchy reflects both the expected catchment of each path and the primary function of each path. The plan seeks to achieve the following outcomes:

1. An active transport network that focuses on Childers Central Business District.
2. An active transport network that focuses on accessibility to schools.
3. A desire to create loops in the network where possible to provide 'exercise circuits'.

The Staging Plan introduces a four-stage strategy to realise the network. Once again, the realisation of this strategy is a function of a number of variables and the plan reflects construction priorities. To this end, the Staging Plan reflects the following priorities:

1. Ensuring that the Churchill Street CBD pathway system takes precedence due to its significance to resident and tourist populations
2. Providing active transport access to schools (and particularly routes where the path can serve several functions)
3. Improving access to the Central Business District.



Avoca Street principal pathway

The Avoca Street principal pathway was constructed along the road reserve to run parallel between Avoca Street and Avoca Street Service Road. This 2.5m wide pathway supplements the new on-road cycle facilities at this location providing direct access from Avoca to the CBD for pedestrians and cyclist of all abilities. This pathway is well utilised not only by those heading to the CBD but by residents looking to get active and stay healthy by using it as part of a bigger exercise circuit.

## 7.5 Pathway network Gin Gin

The active transport pathway network for Gin Gin is reflected in the Hierarchy Plan attached in Appendix E of this report.

The Hierarchy Plan locates destinations such as educational establishments, commercial districts and public open space and introduces a two tiered hierarchy of paths. The hierarchy reflects both the expected catchment of each path and the primary function of each path. The plan seeks to achieve the following outcomes:

1. An active transport network that focuses on Gin Gin Central Business District (CBD)
2. An active transport network that focuses on accessibility to schools and medical facilities.
3. A desire to create loops in the network where possible to provide 'exercise circuits'.
4. A network that reflects an expansion of urban residential development as shown in the planning scheme.

The plan introduces a four stage strategy to realise the network. The realisation of this strategy is a function of a number of variables, and the plan reflects construction priorities. To this end, the map reflects the following priorities:

1. Ensuring that the CBD pathway system takes precedence due to its significance to resident and tourist populations. This includes extending the path network to the west along the Bruce Highway to the retirement village.
2. Providing active transport access to schools (and particularly routes where the path can serve several functions e.g. access to the showgrounds, swimming pool, lawn bowls and child care centre in Somerset Street).
3. Connection of urban areas to higher order pathways.



## 8. Significant pathway projects

While the majority of the pathways identified within this strategy focus on establishing an active transportation network to provide connectivity to community infrastructure, some pathways move beyond being purely transportation orientated. The significant pathway projects identified below fall outside of the ranking and priority system as their demand is driven by other factors such as tourism or economic development.

The funding and delivery of these projects will occur independently to the active transport network pathways.

Examples of these pathways include:



### 8.1 Riverside activation

One of Bundaberg's best natural assets is the Burnett River that makes its way from the city centre through to The Port of Bundaberg and out to Burnett Heads. In addition to the picturesque natural environment there are a number of tourist attractions along or near the river. Activating the riverside with pathways, the addition of facilities and signage linking through to attractions in the East Bundaberg Tourist Precinct (Riverfeast, The Rum Distillery and Kirby's Wall) will connect these attractions to the CBD which would further enhance Bundaberg's reputation as a tourism destination. In addition to the East Bundaberg Tourist Precinct, there is other proposed master planning being undertaken to connect the Riverside Parklands to Queens Parks. The benefits of any potential Riverside Activation pathway projects stretch beyond the transported related outcomes of the Active Transport Strategy 2020-2025 and should be assessed on the economic benefit and against other projects of a similar type and therefore falls outside of active transport network prioritisation.



### 8.2 Bundaberg CBD

The Bundaberg CBD is in the early stages of a significant generational revitalisation and upgrade. The Active Transport Strategy 2020-2025 treats the CBD as one of the main destinations of the network, however once into the CBD the integration of cyclists and pedestrians with motorists and facilities will change significantly. The physical infrastructure and design philosophies used to facilitate the integration of all these user groups are uniquely different to those paths identified leading into the CBD and as such, pathway treatments within the CBD should form part of the overall CBD planning rather than as part of the Active Transport Strategy 2020-2025.



### 8.3 Bundaberg to Gin Gin Rail Trail

Bundaberg Regional Council has secured funding for the development of a Bundaberg to Gin Gin Rail Trail. The proposal would utilise the old rail corridor to establish a pathway from Bundaberg to Gin Gin. This project is being driven from a tourism and economic perspective rather than transport infrastructure. While this project may cater to some commuting cyclists, the overall users groups of this pathway will be significantly different to those targeted within the Active Transport Strateg 2020-2025. Projects of this type focus more on health and economic outcomes rather than transport and for this reason it falls outside of Active Transport Strategy 2020-2025 prioritisation.



### 8.4 Bundaberg to Bargara cycleway

The concept of a Bundaberg to Bargara cycleway/pathway has been around for a number of years. While a number of project outcomes relate directly to active transportation, the scope of this project is likely to expand beyond pathways and involve significant levels of civil works. This project will need to involve a number of stakeholders and funding sources to become a viable project. Given the significant financial costs to deliver a project of this size, when assessing this project against other active transport pathways in terms of priority, there is going to be an imbalance and therefore this proposed pathway should not form part of the active transport pathway routes. Bundaberg Regional Council supports the idea of establishing this route, however given that the majority of this project would be on a State Controlled Road, it is expected that the State Government through the Department of Transport and Main Roads would be the lead agency in progressing this project through to completion.

To reinforce our commitment to this pathway, Bundaberg Regional Council has included a Bundaberg to Bargara Cycleway as part of the 'Advocacy Priorities 2020' document. This document identifies 28 Economic, Social, Human and Green infrastructure projects for the region which Council will be seeking bipartisan support from State and Federal Governments to commence delivery on.



## 9. Cycling Infrastructure

### 9.1 Cycling Infrastructure

Cycling plays an integral part of any active transport network. For an active transport network to be attractive and convenient to potential users, it needs to cater for a range of confidence and ability levels. As identified in section 4.4, cyclists can be broken down into several subgroups all with differing levels of skill and ability. While in Queensland cyclists can legally ride on footpaths, a typical concrete pathway is only going to service the needs of some cycling subgroups. Limited widths, driveway access, street furniture and other hazards limit the ability for Sporting or Commuting cyclists to use pathways to travel a constant speed for long distances. To facilitate a wider range of cyclists, an integrated active transport network needs to include provision for dedicated cycling facilities. In Queensland, the planning of cycling infrastructure is undertaken through the Principal Cycle Network Plan (PCNP).

### 9.2 Principal Cycle Network Plan

Published through the State Government Department of Transport and Main Roads in consultation with Local Government Authorities, the PCNP is a 'one network' approach to cycle facility planning and design. Following an extensive stakeholder engagement process which included State and Local Government agencies, local cyclists, bicycle interest groups and community groups, the principal cycle network has been identified. The PCNP not only identifies proposed cycle routes, it also assigns priorities to establish proposed delivery timelines. Bundaberg Regional Council utilise the PCNP document and maps within the document to support funding applications for planning and delivery of cycling infrastructure in the region.



## 10. Integration with Council strategies

Bundaberg Regional Council understands the important benefits to personal health that comes from physical activity and is committed to providing opportunities for this to occur through a number of departments within the organisation. While each department has a specific function in facilitating physical activity there is several opportunities to integrate some of the objectives from other departments into the delivery of the Active Transport Strategy 2020-2025.

### 10.1 Parks and Open Space Strategy

The Bundaberg Regional Council’s Parks and Open Space Strategy identifies the benefits that come from physical activity and documents the need for this infrastructure to be accessible for everyone. The strategy identifies three standards of parks: Local, Neighbourhood and Regional. These standard parks have accessibility targets ranging from 500m for local parks to a 30 minute car ride to a Regional Destination Park.

While the Regional Parks are planned to be accessed by car and the Local Parks do not contain embellishments to complement pedestrians and cyclists, there is an opportunity to align the active transport routes with Parks and Open Spaces accessibility targets for Neighbourhood Parks. The Neighbourhood Parks include a number of embellishments that complement active transportation outcomes. These include bike racks, sheltered picnic tables and taps/bubblers.

Complementing facilities principal Pathway and Neighbourhood Parks

Principal pathway support Facilities	Neighbourhood Parks Features
Seats and tables	Three sheltered picnic tables
Trees	Trees
Bike rack	Bike rack
Bubblers	Bubblers
Signage	Signage
Wheelchair compliant	Wheelchair accessibility
	Toilet block

The Active Transport Strategy 2020-2025 action plan at the end of this document identifies the need to pursue opportunities to integrate Pathway and Parks infrastructure. There are mutual benefits to be gained by utilising Parks facilities to support pathway infrastructure and establishing routes to connect the greater pathway network to Parks to help facilitate accessibility targets.

### 10.2 Sport and Recreation Strategy

The Bundaberg Regional Council Sport and Recreation Strategy 2018-2028 aims to guide and structure the provision of sport and recreation programs and infrastructure across the Bundaberg Region.



The Sport and Recreation Strategy specifically references the previous Multi-Modal Pathway Strategy in its action plan. Action item number 11 in the Sport and Recreation Action Plan identifies 'Review the Multi-Modal Pathway Strategy: Connecting our Region 2012 to reflect changing recreation and participation trends. Consider the use of Strava data (and heat maps) to understand popular routes and routes in inappropriate locations'. In section 13.2 of this strategy, the action plan reflects a similar need for a review of demand and usage of the identified pathways.

The Active Transport Strategy 2020-2025 Action Plan highlights the need for more detailed collection of data around participation and usage.

As defined earlier in this document, the evolution from a Multi-Modal Strategy to an Active Transport Strategy 2020-2025 established a need to integrate and promote the health and fitness outcomes of a well-connected pathway network. Opportunities exist for Bundaberg Regional Council to promote walking and cycling activities within the region.

### 10.3 Integration with Planning Scheme

#### 10.3.1 Planning scheme

An important aspect of any transport strategy is to ensure that it is reflected in Council's infrastructure and land use planning instruments. This facilitates cost effective delivery and ensures pedestrian and cycle friendly environments are developed as a matter of course. It is therefore considered important that Council's Planning Scheme and Planning Scheme Policies provide appropriate guidance on providing walkable and cycle-friendly communities.

Opportunities identified for the planning scheme regarding walk/cycle facilities include:

The pathway network be reflected in Council's Local Government Infrastructure Plan (LGIP) schedule of works and plans for trunk infrastructure to ensure there is a plan incorporated and not compromised by new developments.

Codes (assessment benchmarks) to encourage best practice active transport planning e.g. principles such as connectivity, convenience, accessibility, safety, personal safety design principles, amenity/urban design (based on the Street Design Manual and Model code for neighbourhood design).

Requirements for bicycle parking and showers/lockers in new commercial developments (refer to Queensland Development Code Section 4.1 – Sustainable Buildings).

Incorporate consistent standards for active transport paths in Council's standard drawings and Planning Scheme Policy for Development Works, e.g. cross sections, construction standards.

LGIP to incorporate active transport paths.

Ensuring all new pathways, including contributed/'gifted' pathway assets are appropriately recorded in Council's asset register.

#### 10.3.2 State Government walkable neighbourhood provisions

In 2020 the State Government introduced new regulated requirements for walkable neighbourhoods and a supporting model code for neighbourhood design, to help create healthy and active communities. These were developed in conjunction with the new IPWEAQ Street Design Manual. The new provisions emphasise the importance of providing pedestrian and cycling infrastructure as part of new development, not just higher order active transport infrastructure identified in this strategy. The Planning Regulation 2017 includes assessment benchmarks that require development to include pathways on at least one side of local streets, and pathways on both sides of higher order roads (nominally trunk collector and above). The Active Transport Strategy 2020-2025 design standards will apply to routes identified within new development areas, and will complement the State Government minimum standards for walkable neighbourhoods. The State Government has also produced a Walkability improvement tool to help guide the design and provision of improved pathway infrastructure in existing urban areas.

### 10.4 Bundaberg Integrated Transport Strategy (BITS)

Undertaken as a joint project between the Queensland Department of Transport and Main Roads (TMR) and Bundaberg Regional Council (BRC) the BITS is the first major transport study undertaken in the region since 2012. The BITS plans to tackle transport issues and future growth in the region and develop a 20 year integrated transport plan for the BRC Local Government Area (LGA). The BITS gives consideration to all transport modes including freight, passenger, public transport and active transport. The key goals for the BITS are to:

**Integrate** existing and ongoing planning works by Council and TMR.

**Align** Council, State and Federal programs and projects.

**Create** a long term strategic transport plan for the LGA.

**Optimise** the use of existing assets.

**Inform** potential future investment decision.

**Engage** with key stakeholders to understand land use, freight, transport and infrastructure challenges and opportunities.

For Bundaberg Regional Council, the Active Transport Strategy 2020-2025 document, along with BRC Road Investment Strategy will be two key strategy documents used in the BITS development.



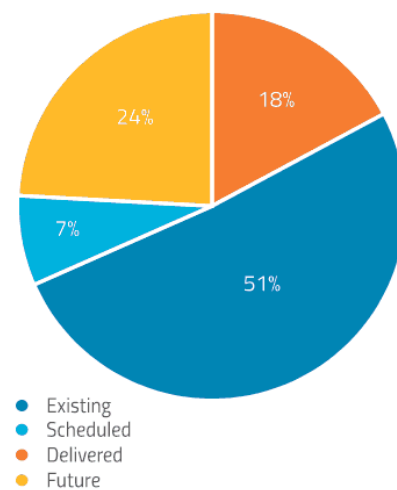
## 11. 2012-2019 Delivery

Following the adoption of the Multi-Modal Pathway Strategy in 2012, Bundaberg Regional Council has been delivering pathways identified within the strategy. In an effort to accelerate the delivery of the strategy to quickly establish useable connected networks, Council programmed delivery based on the philosophy of starting routes that did not currently contain any existing pathway. Each year Bundaberg Regional Council provides around \$2.5M in its capital budget for the delivery of pathway infrastructure. This level of investment coupled with the delivery philosophy mentioned above has now established 68% of the Multi-Modal pathway network with a further 7% scheduled for delivery in the three year Capital Investment Program. Of the remaining network, Stage 1 is complete with 3% of Stage 2, 64% of Stage 3 and 32% of Stage 4 still remaining. While these pathway networks have been established, it should be noted that the segments of these pathways include sections of existing pathway infrastructure that may complete the pathway route identified within the strategy, however the pathway could be improved greatly through renewal of the existing infrastructure. Renewals, upgrades and duplications are now required to achieve desired minimum standard and Australian Standard 'AS1428 Design for Access and Mobility' (AS1428) compliance which will improve the overall amenity and quality of these pathway networks.

In revising the 2012 document to produce the Active Transport Strategy 2020-2025 document, a

number of opportunities to improve the pathway strategy documentation and delivery has been identified. Not having a benchmark of the condition and physical characteristics of the existing network makes it difficult to have a full understanding of the quality of the network. Establishing the condition of the network will help identify and prioritise sections of the completed network pathway that can be further upgraded to create improved facilities for those with restricted mobility.

### Multi-Modal network summary





## 12. Developing the network

### 12.1 Remaining Multi-Modal pathways

After reviewing the completed works on the network under the old Multi-Modal Strategy, 41km of the pathway routes remain uncompleted. While some of these will be completed over the next five years of the Active Transport 2020-2025 Strategy, approximately 21km of pathway have been identified as long term future pathways. Council has identified a desire to establish pathway infrastructure at these locations, however there is a number of factors preventing them from being constructed in the short to medium term. No kerb and channel, significant site constraints, rural road profiles and future development demand all form reasons why some locations will not progress in the short term. The remaining pathways are shown in the table in Appendix C.

### 12.2 Renewal

The delivery philosophy for the previous Multi-Modal Strategy was to start delivery of pathways where no pathways existed before. As identified in section 11 by utilising this philosophy, Bundaberg Regional Council was able to add approximately 29km of new pathway to the network over the life of the Multi-Modal Strategy. As identified in the action plan, additional data is now required on the condition of the network. It is anticipated that as data is collected and the condition of the existing network is assessed, sections of the network are going to be discovered where there is a significant number of

pathway users on sections of the pathway that are reaching the end of their useful life.

The current status of the delivery of the previous Multi-Modal Strategy has been identified in section 11 of this document. As identified in this section, a large number of the remaining sections of the Multi-Modal network are in locations that are difficult to construct. The lack of supporting infrastructure (i.e kerb and channel) are in future development areas of the region. It is for this reason that at some point over the life of the Active Transport Strategy 2020-2025, renewal and duplication of existing higher order pathways will begin to take priority over some of these remaining pathways.

### 12.3 Additional routes

The Active Transport Strategy 2020-2025 has identified the need for additional data collection on user behaviour and a detailed land use assessment before any significant extension to the proposed network should occur. It is for this reason the additional routes added as part of the Active Transport Strategy 2020-2025 document has been kept to a minimum. The routes added are:

#### 12.3.1 Faldt Street Bundaberg

Faldt Street was not included in the 2012 Multi-Modal Strategy, however since 2012 Bundaberg Regional Council has constructed the Bundaberg Multiplex at a site opposite the Walker Street end of Faldt Street. The proposed pathway along Faldt Street, from Maynard Street to Walker Street,

provides another north-south link between these east-west routes. In addition, the Multiplex and the TAFE as people attractors, this route has also been identified as being a highly utilised bus route for the elderly. The provision of this pathway has been brought forward to the 2019/2020 and 2020/2021 financial years to further complement Council's recent investment in bus shelter infrastructure along this popular public transport route.

### 12.3.2 Civic Avenue/Pyefinch Boulevard

Since the adoption of the Multi-Modal Pathway Strategy in 2012, Bundaberg Regional Council has made significant changes to the area around Walker Street/Burrum Street. The relocation of the show grounds and construction of the Bundaberg Multiplex have changed the land use and function of this area. As part of the development of this area, two new roads were created to provide direct access to the Multiplex by linking Burrum Street and Walker Street. These two new roads, Civic Avenue and Pyefinch Boulevard have both been included in this strategy as they connect residents directly to this significant people attractor.

### 12.3.3 Branyan Street Bundaberg

Branyan Street from Walker Street to Bourbong Street has been included as a new distributor pathway in the Active Transport Strategy 2020-2025. While the principal pathway runs parallel to this street, one block over in Mulgrave Street, the Branyan Street pathway serves a different function and provides connectivity to the principal pathway along Bourbong Street which is currently identified on the PCNP. The ongoing expansion to the Friendlies Hospital is expected to be a key driver for network utilisation in this area. This combined with the GP Super Clinic and the large child care centre on Branyan Street justifies the inclusion of this route into the active transport pathway network.

### 12.3.4 Thabeban Street Bundaberg

Thabeban Street from Barolin Street to Fitzgerald Street has developed into a significant link road for the region since the development of the 2012 Multi-Modal Pathway Strategy document. The construction of Eggmolesse Street, combined with new roundabouts constructed at Thabeban Street/Fitzgerald Street/Kay McDuff Drive and Eggmolesse Street/Fitzgerald Street have provided connectivity to a number of land use attractors that include, schools, shops, sporting fields and industrial and residential estates. It is expected that this area will experience significant growth and development over the life of the Active Transport Strategy 2020-2025 document and therefore it needs to be included as one of the few additional routes within the Active Transport Strategy 2020-2025. It is worth noting

the section of this route from Barolin Street to Ritchie Street is planned for the 2019/2020 financial year, however additional kerb and channel works along the section from Ritchie Street to Fitzgerald Street will be required before this pathway will be able to be extended further.

### 12.3.5 Johnston Street Bundaberg

Johnston Street from Twyford Street to Walker Street Bundaberg has been included in this revision of the pathway strategy, as it provides connectivity for the shopping centre at one end and Salter Oval at the other end. This pathway is also connected to the Principal Pathway in Avoca Street via Duffy Street, providing residents in the suburbs of Millbank and Avoca with both direct access to facilities and a long circuit for health and recreation.

### 12.3.6 Duffy Street Bundaberg

Duffy Street provides a vital link for residents in the Avoca/Millbank area to the principal pathway on Avoca Street as well as the above mentioned Johnston Street pathway. This link will improve access to the major shopping centre.

### 12.3.7 Dittmann Road Bundaberg

Dittmann Road from Branyan Drive to Johnston Street will provide a more direct link for Avoca residents utilising the proposed Avoca Road pathway to access the shopping centre. The recent upgrade of the Dittmann Road/Branyan Drive/Avoca Road intersection includes pathway crossing facilities to enable safe passage of pedestrians and cyclists across the busy Branyan Drive.

### 12.3.8 Quay Street East Bundaberg

This pathway was identified within the Department of Transport and Main Road PCNP, however this route did not form part of the Multi-Modal Pathway Strategy. This pathway provides greater access for the people of East Bundaberg to the CBD and also connects the people in the CBD with a number of food and beverage tourist experiences such as Riverfeast and the Bundaberg Rum Distillery. As this route was part of the PCNP, Bundaberg Regional Council was able to obtain State Government funding to accelerate the delivery of this project to align with TMR work undertaken on the adjoining State controlled Princess Street.

### 12.3.9 Lions Drive Childers

Lions Drive from Elizabeth Street to Goodwood Road, much like the western end of Childers there are a number of accommodation facilities providing for itinerant workers for the local agricultural industry. Many of these workers often do not own cars, therefore connecting these people to the vital services provided in the Childers Central Business

District is of high importance. These workers/ tourists provide significant benefit to the region's economy and therefore Council needs to provide infrastructure to ensure a positive experience for those visiting the region.

### 12.3.10 Davidson Street Bargara

The ongoing development around the Hughes Road Corridor and expansion of the shopping centre has created a situation of more people accessing a significant people attractor. By providing infrastructure on Davidson Street, from Bauer Street through to Blain Street, it will hopefully encourage people utilising the Distributor Pathway on Hughes Road travelling to the shopping centre to detour down Blain Street and Davidson Street allowing them to utilise the safe signalised crossing point at Bauer Street/Davidson Street rather than attempting a non-controlled crossing at the Hughes Road/Bargara Road intersection.

## 12.4 Future Trends in Active Transport

### 12.4.1 QDesign

In late December 2018 the State Government of Queensland released the QDesign document. QDesign details principles for good urban design in Queensland. The QDesign document explains that, how well our communities are designed, including suburban streets, buildings, open spaces and the transport network directly impacts how people feel. Several of the QDesign principles detail how active transport plays a significant role in achieving good urban design, as it is one of the main ways to connect people by providing accessibility to schools, shops, other transport options, public and community facilities. These principals included:

**Principle 04** 'Create well defined, legible and connected streets and spaces'

4.1 Part of well-connected network.

Work with existing streets and spaces to create places that are part of a well connected network with simple and direct links.

4.4 Provide shade and shelter.

Use appropriate vegetation, large trees and awnings in public spaces and along streets to provide shade and shelter for pedestrians and cyclists.

**Principle 05** 'Create great places for people to live'

5.3 Easily accessible.

Ensure that the community's daily needs are easily accessible, by providing a safe environment that promotes walking and active mobility by all.

5.5 Prioritise the needs of children and the elderly.

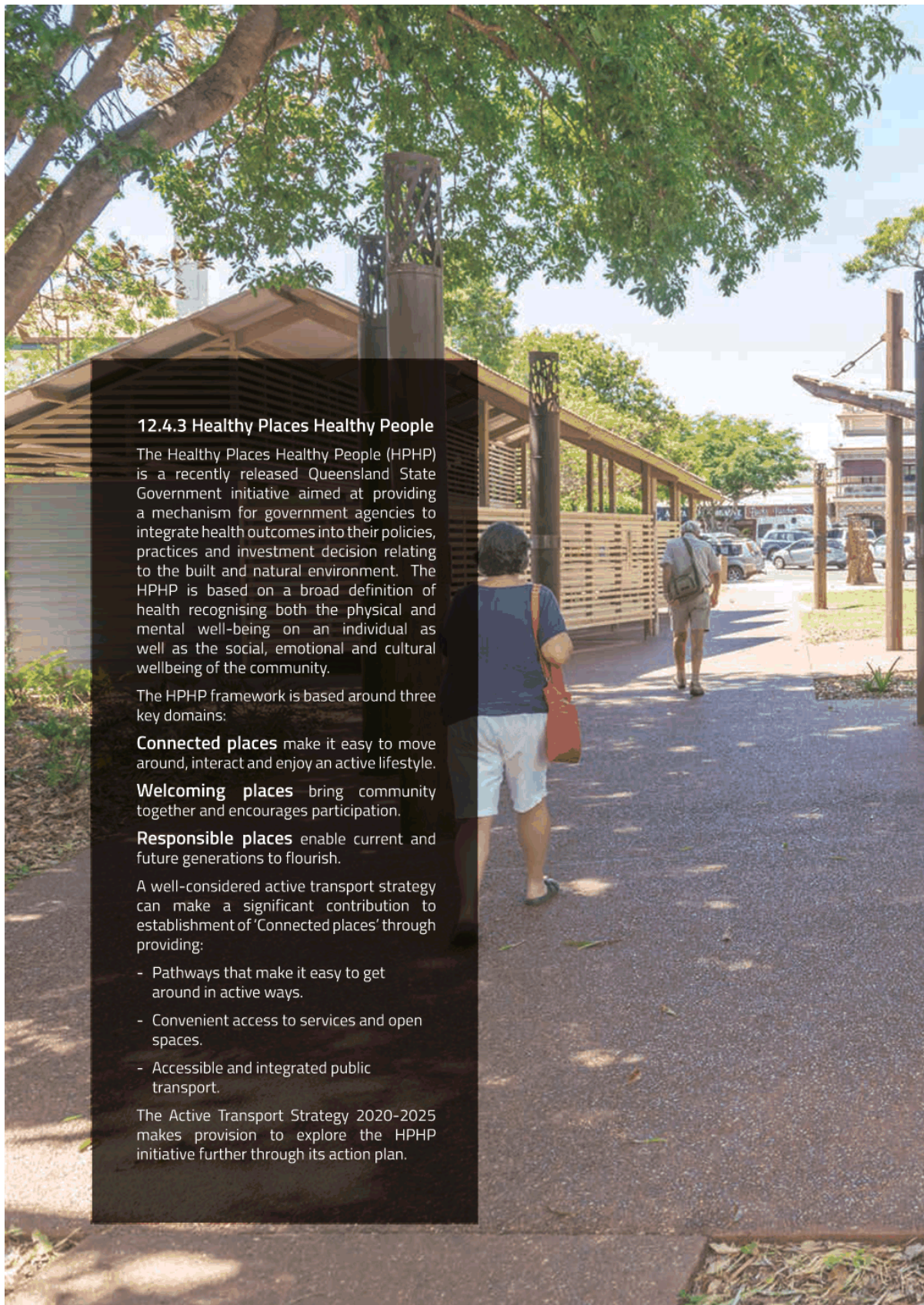
Create places that respond to the diverse needs of society, in particular, prioritise the needs of children and the elderly. If proposed housing options, land use activities, parks, streets and transport options respond to the specific needs of the young and elderly, it is more likely to accommodate the whole community throughout life.

The Active Transport Strategy Action plan identifies a need to further explore opportunities to integrate these QDesign principles into pathway development and design.

### 12.4.2 Movement and Place

The Movement and Place (M&P) philosophy primarily recognises the dual function of streets as movement corridors and destinations in their own right. Movement is described in terms of networks and significance and place in terms of intensity (primarily the level of activity). M&P considers transport modes, focuses on future aspirations for a street, considers the role of place in planning which modes of transport are appropriate on a given street. These classifications need to be carefully managed as to not create opposition between movement and place, but rather to work together to achieve shared outcomes. A movement and place framework aims to integrate both movement and place, including type of street, its activities and uses and how it can be best served by transport.

The Active Transport Strategy Action Plan includes an item that seeks to develop a Movement and Place framework for planning of future active transport networks.



### 12.4.3 Healthy Places Healthy People

The Healthy Places Healthy People (HPHP) is a recently released Queensland State Government initiative aimed at providing a mechanism for government agencies to integrate health outcomes into their policies, practices and investment decision relating to the built and natural environment. The HPHP is based on a broad definition of health recognising both the physical and mental well-being on an individual as well as the social, emotional and cultural wellbeing of the community.

The HPHP framework is based around three key domains:

**Connected places** make it easy to move around, interact and enjoy an active lifestyle.

**Welcoming places** bring community together and encourages participation.

**Responsible places** enable current and future generations to flourish.

A well-considered active transport strategy can make a significant contribution to establishment of 'Connected places' through providing:

- Pathways that make it easy to get around in active ways.
- Convenient access to services and open spaces.
- Accessible and integrated public transport.

The Active Transport Strategy 2020-2025 makes provision to explore the HPHP initiative further through its action plan.



### 13. 2020-2025 Implementation schedule

The following pathways identified within the Capital Investment Plan (CIP) are proposed for implementation over the next three financial years and are estimated to cost \$5.8M.

Location	From	To	Locality	Distance (m)
Bargara Road	Number 89	Number 93	Bundaberg East	100
Sylvan Drive	Malvern Drive	Pandanus Street	Moore Park Beach	1000
Taylor Street	Macrossan Street	Bolton Street	Childers	300
Burrum Street	Crofton Street	Boreham Street	Bundaberg Central	450
Burrum Street	Boreham Street	Walker Street	Bundaberg Central	850
Hughes Road	Durdins Road	Causeway Drive	Bargara	260
Childers Road	University Drive	Kendalls Road	Branyan	720
Telegraph Road	Eastgate Street	Ring Road	Bundaberg East	1200
Barolin Street	Sims Road	McCarthy Road	Avenell Heights	780
Barolin Street	McCarthy Road	Thabeban School	Thabeban	360
Faldt Street	Nott Street	Maynard Street	Norville	485
Sims Road	Elliott Heads Road	Boundary Street	Kepnock	820
Sims Road	Boundary Street	Barolin Street	Avenell Heights	880
Tirroan Road	Watawa Walkway	Watawa Walkway	Gin Gin	130
Avoca Road	Branyan Drive	Smiths Road	Avoca	480
Barber Street	Marks Street	King Street	Bundaberg North	140
Fitzgerald Street	Brother Hogan Drive	Maynard Street	Norville	330
Moodies Road	Wearing Road	Woongarra Scenic Drive	Bargara	670

## 14. Action Plan

As identified in section 13, the delivery of pathways for the first three years of the Active Transport Strategy 2020-2025 have been identified and programmed for delivery. This level of advance programming has created a window for the Council to explore opportunities to develop a pedestrian and cycling infrastructure planning framework by incorporating the learnings from delivering the Multi-Modal Strategy. The areas to be investigated have been mentioned throughout this document and form part of the Action Plan presented in Appendix B. Of the items identified within the Action Plan the following items are the key elements for shaping the Active Transport Network for the next five years:

### 14.1 Condition assessment

While the Multi-Modal Strategy successfully integrated the pathway strategies for the various amalgamated councils, no consideration was given to the attributes and condition of the existing pathway network. Consideration needs to be given to the current network to establish its condition and physical characteristics to determine whether investing in replacement or renewal projects on higher order routes will achieve better outcomes for more users than the establishment of new lower order pathways in less populated areas.

### 14.2 Demand assessment

To fully comprehend the benefits of 14.1, additional works needs to be undertaken in the area of demand assessment and identification of pedestrian and cycleway movements. This can be undertaken in a number of ways including physical counts, surveys and analysis of the maps of fitness apps such as Strava. Development of strategies to obtain useful data on user's movements and needs will help encourage utilisation and improve health and transport outcomes for the region.

### 14.3 Land use review

To establish the newly introduced 'Targeted' pathway classification, a review of land use around the established pathway network needs to be undertaken. Identifying specific land use will allow targeted pathways to be tailored to suit the needs of the specific user groups and connect them to the wider network.

### 14.4 Mid-block crossings

While establishing the pedestrian demand, it is also expected that data will indicate that movement along a higher order route generates movements across the routes. By establishing mid-block crossing facilities such as a pedestrian refuge will allow users to safely access features such as shops, sporting fields etc, while making their way across the network. Currently BRC receives a number of requests for this type of crossing infrastructure and as such, need to start identifying and budgeting for their construction. This action plan aims to develop a checklist to help prioritise the refuge crossing requests and establish appropriate yearly funding allocation levels for delivery.

### 14.5 Intersection treatments

While the 2012 strategy identified the proposed routes of travel, there is no information on how the user will negotiate major intersections along the route. Much like the mid-block crossing, the demand identified in the 14.2 Demand Assessment will be able to detail how user groups, both on and off the road, use these intersections as part of their journey along multiple pathway routes.

### 14.6 Cycleway audit

Over many years, all amalgamated Councils have delivered cycleway infrastructure to the standard of the day. As time has passed, many of the signage and line marking treatments have outlived their useful life. It is proposed that a cycleway audit be undertaken to establish the current condition and effectiveness of existing cycleway infrastructure and identify what improvements can be made to improve their safety and function.

### 14.7 Principal network pathway mapping

The State Government through the Department of Transport and Main Roads, identify and map the Principal Network Pathway for the Wide Bay Region. This mapping forms the basis for assessment of funding applications for cycleway related projects. The Bundaberg Regional Council will need to provide support and information when the State Government is updating and reviewing their maps.



# Appendix A - Maps

## Bundaberg



Childers



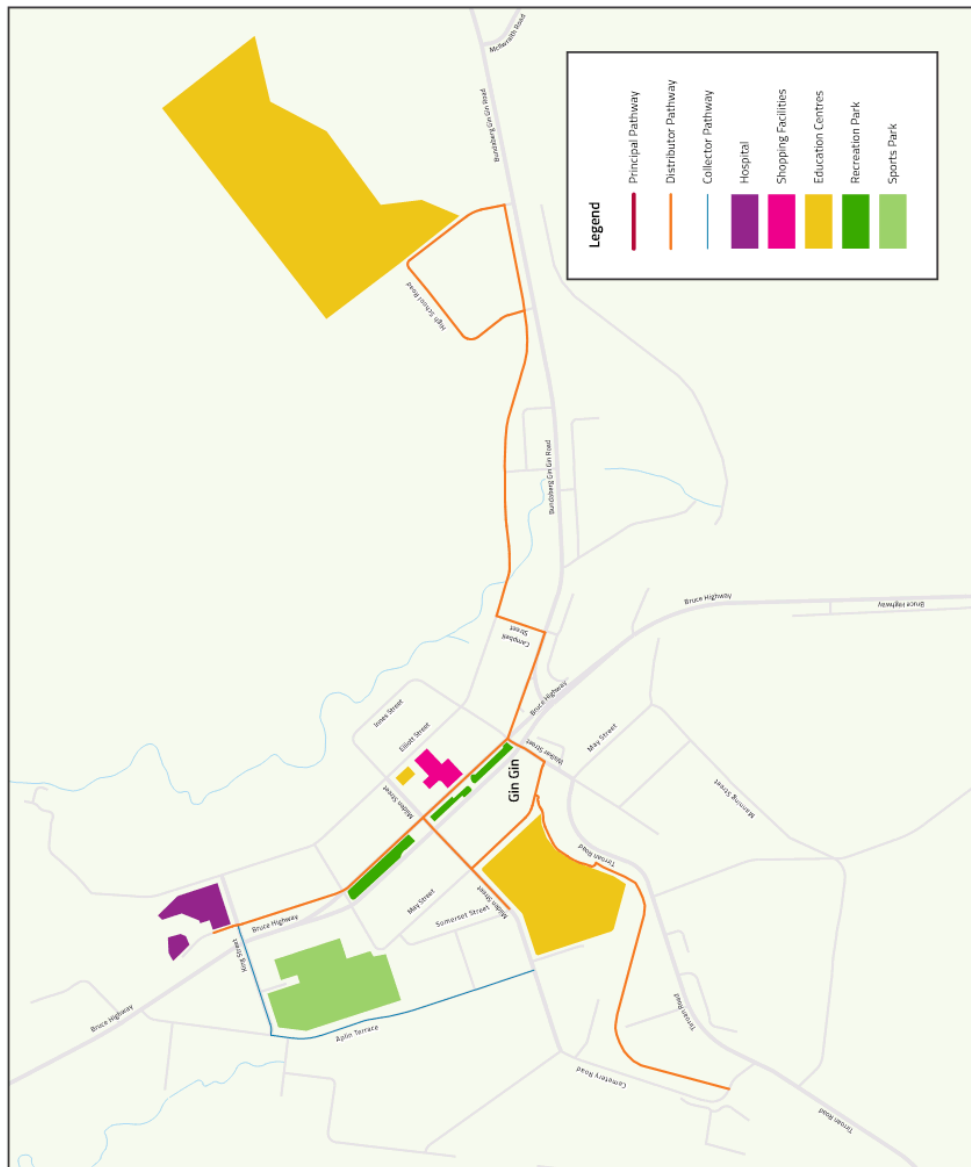
### Coastal communities - Burnett Heads to Bargara



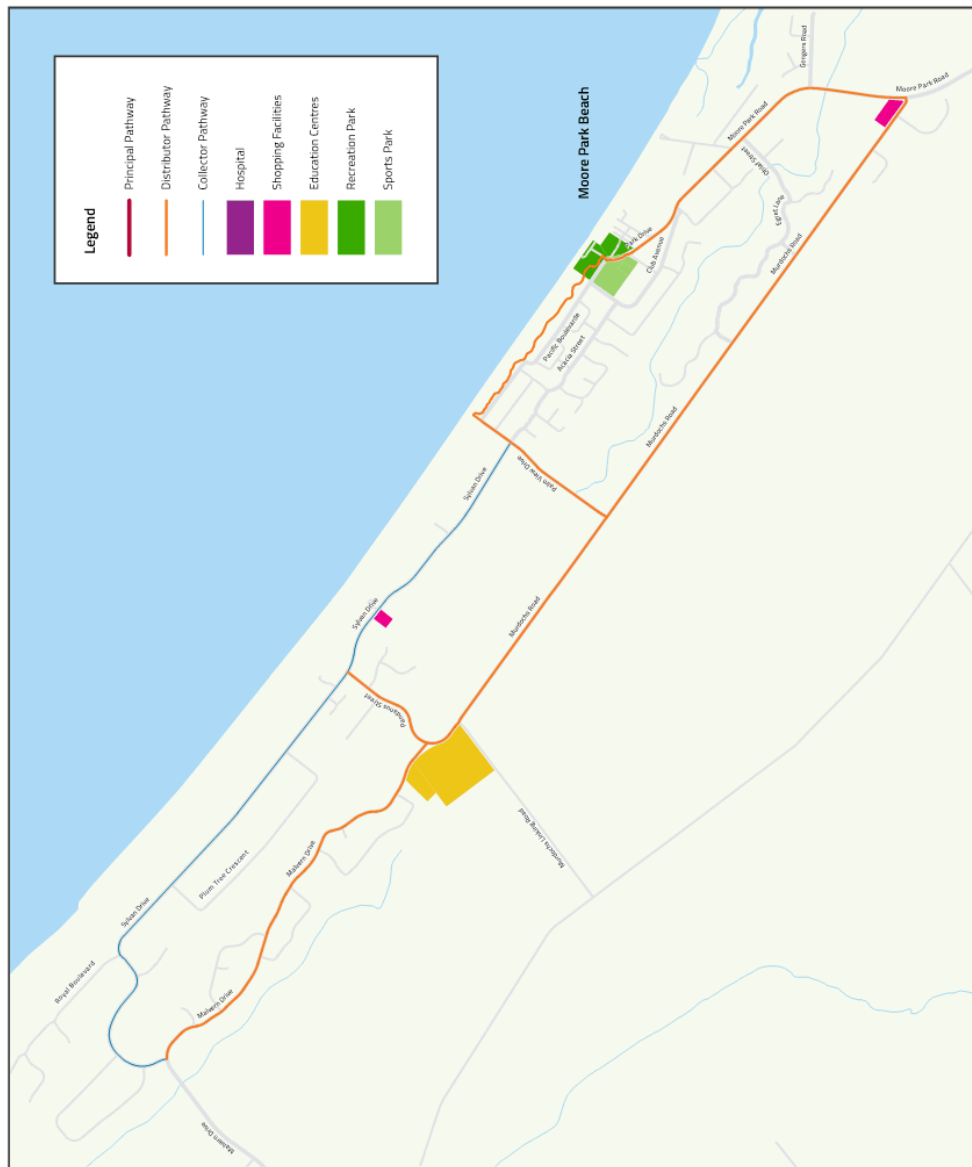
### Coastal communities - Bargara to Elliott Heads



### Gin Gin



### Moore Park Beach



### Woodgate



## Appendix B - Active Transport 2020-2025 Action Plan

No.	Action	Purpose	Timeframe
1.1	Undertake a full audit of existing cycleway signage.	By conducting this audit, Council will be able to identify current status of all historic cycleway signage erected and conduct an assessment of its suitability with today's standards and corresponding infrastructure.	3-5 years
1.2	Review condition assessment criteria to include Australian Standard 'AS1428 Design for Access and Mobility' (AS1428) requirements as part of the collected and assessed data.	Current infrastructure condition assessments are assessed against the physical condition of the asset which helps determine its useful life or intervention levels for maintenance or replacement. The effects of non-compliance with AS1428 creates a risk to specific user groups that are not currently captured in pathway assessments.	1-2 years
1.3	Conduct a new network wide condition assessment to determine areas of non-compliance with AS1428.	Establishing the areas of pathways that do not comply with the current standards. It will give Council the opportunity to identify areas for renewal and upgrade projects. This information combined with trip generation data will give Council the ability to identify high risk areas and work towards improving outcomes at these locations.	1-2 years
1.4	Develop framework for the collection of data relating to user groups, attractors, pedestrian hotspots and demand.	Developing methods to obtain useful data in relation to user's trips and needs will help Council to verify suitability of existing Active Transport Network pathways. In addition to this, the data will also help identify any weakness or opportunity for improvement.	1-2 years
1.5	Review non-compliance areas against usage data results to establish areas of high risk or high value in renewal/rectification works.	By establishing areas of high usage and existing non-compliance infrastructure, Council will be able to establish priority areas for repairs to be considered against areas of new capital.	3 years
1.6	Review mapping and land use to identify attractors, specific user groups and public transport nodes and establish proposed infrastructure within a suitable radius of each attractor.	By establishing a new pathway network maps suited to short and specific (800m and below) trips allow for created connectivity and engagement for pedestrians. These trips and facilities connect people to the long run significant loop network identified in the previous Multi-Modal Pathway Strategy.	1-3 years



No.	Action	Purpose	Timeframe
1.6	cont.	Identification of specific user groups (schools, retirement villages, respite centres) allows pathway infrastructure to be enhanced to provide additional assistance and amenity. For example, additional seating around areas of elderly residents, wider pathways around areas with higher numbers of the community members with cognitive impairment or mobility issues.	
1.7	Establish a weighted criteria ranking system for the prioritisation of identified or requested crossing points within the pathway network.	Prioritisation of crossing points will assist in future planning by ranking proposed crossing locations allowing value for money when selecting sites for future budgets.	1-2 years
1.8	Establish procedures to confirm driveway compliance during the approval process.	The current procedure/policies for single dwelling approvals does not make provision for inspection hold points or approval for driveway design and construction. By improving this process, Council will have the opportunity to ensure the maximum 2.5% cross fall for future pathway construction is achieved. This will provide long-term cost benefit to the community as rectification works on non-compliant driveways creates additional cost for pathway delivery projects.	1-2 years
1.9	Conduct an audit of 'Neighbourhood Park' locations to identify opportunities to utilise park infrastructure to improve comfort and usability of network pathways.	By establishing locations where minor deviation from network pathways can deliver users to the Neighbourhood Standard Parks to utilising existing facilities such as tables, toilets, water bubblers etc. It is anticipated that this sort of integration of Council's parks and roads assets will help promote physical activity and improve utilisation of both the Parks and Network pathways.	3 years
1.10	Investigate innovative methods of providing information and 'way finding' signage.	Communicating pathway route information helps people develop an understanding of the connected network and possible points of interest. This understanding gives people encouragement to further explore the network or plan future trips and extend their journey. As confidence in the network increases, there should also be an increase in participation numbers.  Innovative solutions are required to try and improve the pathway amenity, while not contributing to trip hazards for visually impaired users or further adding to the visual distraction of drivers along these major routes.	3-5 years

No.	Action	Purpose	Timeframe
1.11	Establish framework to transition 'Stage 4' future greenfield pathways to master plans and proposed development.	A framework is required to align proposed pathways in future development areas with submitted development applications. This will allow Council to ensure connectivity and Active Transport outcomes are achieved in areas of new infrastructure.	3-5 years
1.12	Develop an Infrastructure charge scale for pathways to reflect the differences in construction costs between developed areas and Greenfield sites.	Infrastructure charges currently assigned to network pathway do not take into account the difference in cost to construct in a Greenfield site versus a developed. Developed area construction costs are greater than Greenfield as they require significant works on existing driveways to achieve 'Pathway Priority', have clashes with existing infrastructure as well as requiring more detailed and costly traffic management arrangements.	3-5 years
1.13	Revise policy for the appropriate assessment, treatment, integration or offset for conflict with existing street trees and proposed pathway infrastructure.	With an increasing commitment to new street beautification works, coupled with existing street trees, conflicts between existing and proposed assets occur.	1-2 years
1.14	Develop a risk-based assessment for pathway lighting to achieve CPTED outcomes in areas of concern.	By developing an assessment method, Council will be able to achieve positive CPTED outcomes in areas of concern identified.	1-3 years
1.15	Development of Landscaping Manual for Urban Street Design	By ensuring active transport pathways form part of the proposed landscaping design manual will allow pathways to be integrated with other design features improving the amenity and comfort for pathway users.	1-3 years
1.16	Develop a community education campaign regarding shared pathway use and etiquette.	Misinformation regarding legal rights of all user groups on active pathways results in a number of customer requests to council. Education in these areas will help reduce confusion and conflict that exists between user groups.	1-3 Years
1.17	Integrate future trends into planning and design of the network.	Section 12 of the document highlighted the emerging trends of QDesign, Movement and Place, and Happy Places Happy People. By developing a framework to integrate these planning design philosophies with current Active Transport planning will help service the needs of the community into the future.	Ongoing

## Appendix C - Future stages

Street	from	to	Locality	Stage	Distance (m)	Hierarchy	Delivery timeline	Delivery considerations
Princess Street	Eastgate Street	Ring Road	Bundaberg East	2	215	Principal	Short/Med Term	
Alexandra Street	Whittred Street	Avenue Street	Bundaberg East	2	103	Principal	Short/Med Term	
Avenue Street	Alexandra Street	Rum Distillery	Bundaberg East	2	230	Collector	Short/Med Term	
Avoca Road	Michel Lane	River Springs Drive	Avoca	3	585	Collector	Short/Med Term	
Avoca Road	River Springs Drive	Avoca Street	Avoca	3	1100	Principal	Short/Med Term	
Ruddell Street	Maryborough Street	Barolin Street	Bundaberg South	3	280	Distributor	Short/Med Term	
Gahans Road	Bargara Road	Balaam Drive	Kalkie	3	850	Distributor	Short/Med Term	
Telegraph Road	Ring Road	Sergiacomi Drive	Kalkie	3	680	Distributor	Short/Med Term	
Reddan Street	FE Walker Street	Shelter Shed	Bundaberg South	3	1400	Collector	Short/Med Term	Consideration as part of stream naturalisation works
Elliott Heads Road	Greathead Road	McCarthy Road	Kepnock	3	790	Distributor	Short/Med Term	
Kendalls Road	Branyan Drive	Childers Road	Branyan	3	1350	Distributor	Med/Long Term	Kerb and channel, widening works to be completed before pathway can be scheduled
Station Street	Hinkler Avenue	Mount Perry Road	Bundaberg North	3	820	Collector	Med/Long Term	Kerb and channel works required along Wilmot Street to provide link through to Thornhill Street
Barber Street Fairymead Road	Mount Perry Road	McKenzies Road	Bundaberg North	3	1780	Distributor	Med/Long Term	Alignment, connectivity and safety consideration to be addressed prior to programming delivery
McCarthy Road	Barolin Street	Elliott Heads Road	Avenell Heights	4	2500	Distributor	Med/Long Term	
Greathead Road	Elliott Heads Road	Ring Road	Kepnock	4	1400	Collector	Med/Long Term	
Coastal Pathway	Turtle Cove Park	Coolanblue Avenue	Innes Park	3	1200	Principal	Med/Long Term	Property acquisitions/ easement/ development to be resolved
Coolanblue Avenue	Kalina Street	Innes Park Road	Innes Park	2	600	Principal	Med/Long Term	Concept analysis required to determine alignment
Coastal Pathway	Barolin Esplanade	Sea Esplanade	Coral Cove	3	1200	Principal	Med/Long Term	Property acquisitions/ easement/ development to be resolved
Lihs Street	Coastal Pathway	Moore Street	Elliott Heads	3	330	Collector	Med/Long Term	Site constraints along Saunders Street

Street	from	to	Locality	Stage	Distance (m)	Hierarchy	Delivery timeline	Delivery considerations
Moore Street	Esplanade	Saunders Street	Elliott Heads	3	750	Collector	Med/Long Term	
Coral Cove Drive	Barolin Esplanade	Bisdee Street	Coral Cove	3	600	Collector	Med/Long Term	
Rifle Range Road	Woongarra Scenic Drive	Hughes Road	Bargara	3	750	Collector	Med/Long Term	Kerb and channel or drainage works required
Shelley Street	Rickerts Road	Dryden Street	Burnett Heads	3	220	Collector	Med/Long Term	
Shelley Street	Dryden Street	Sea Park Road	Burnett Heads	3	1200	Collector	Med/Long Term	
Ridgeway Street	High School	Mungomery Street	Childers	3	601	Collector	Med/Long Term	Kerb and channel, site constraints at showgrounds and Oakes Street
Mulgrave Street	King Street	Hospital	Gin Gin	4	75	Collector	Med/Long Term	
Queens Park	Hope Street	Bourbang Street	Bundaberg West	3	2000	Collector	Long Term	Any proposed works to be developed as part of a masterplan for the Queens Park
McGills Road	Avenue Street	Kirbys Road	Kalkie	3	3000	Distributor	Long Term	No kerb and channel, tourism driven outcome
Baldwin Swamp	Shelter Shed	Scotland Street	Bundaberg East	3	500	Collector	Long Term	Consideration needs to be given to how this location aligns with Baldwin Swamp Environmental Park Trust Land Management Plan
Branyan Drive	Sandy Hook	Future possible link road	Branyan	4	2050	Distributor	Long Term	Serious site constraints - grades, culvert crossing, rural road profile making this project cost prohibitive
Future possible link road	Branyan Drive	Cummins Road	Branyan	4	1700	Distributor	Long Term	Developing area, no road infrastructure currently exists at this location
Cummins Road	Branyan Drive	Samuels Road	Branyan	4	1300	Collector	Long Term	Rural road profile, site constraints currently making this project cost prohibitive
Samuels Road	Cummins Road	Childers Road	Branyan	4	1200	Collector	Long Term	Rural road profile, site constraints currently making this project cost prohibitive.
Childers Road	University Drive	Samuels Road	Branyan	4	690	Distributor	Long Term	Delivery will depend on finding adequate linkages along Samuels and Cummins Roads.
Innes Park Road	Carla Drive	Back Windermere Road	Innes Park	3	1000	Collector	Long Term	Provide link to long term pathways along Coastal Link Road.
Burnett Heads Road/Rickerts Road	Baldry Street	Shelley Street	Burnett Heads	3	1400	Distributor	Long Term	Rural road profile, 80km/h speed environment, development and growth dependent

Street	from	to	Locality	Stage	Distance (m)	Hierarchy	Delivery timeline	Delivery considerations
Rickerts Road	Shelley Street	Sea Esplanade	Burnett Heads	3	275	Collector	Long Term	Rural road profile, 80km/h speed environment, development and growth dependent
Bruce Highway	Unnamed road 5047	Number 212 Churchill Street	Childers	4	210	Collector	Long Term	Section beyond last accommodation provider, no demand generated at this stage
Future Road	Mungomery Street	Back of School	Childers	4	200	Distributor	Long Term	Road infrastructure does not exist, future development area
Mcllwraith Street	Nelson Street	Thompson Street	Childers	4	200	Distributor	Long Term	
Nelson Street	Mcllwraith Street	Bolton Street	Childers	4	430	Collector	Long Term	Property ownership to be resolved to establish this link
Lakefront	Woodgate Road	Kookaburra Way	Woodgate	4	580	Collector	Long Term	Demand and Environmental consideration to be investigated prior to programming
Rieck Street	Tirroan Road	Number 47	Gin Gin	3	740	Collector	Long Term	Demand, site Constraint Issues
Bundaberg Gin Gin	High School Road	Honors Saunders Road	Gin Gin	3	1100	Collector	Long Term	Demand to be established before works to be programmed
Milden Street	Aplin Terrace	May Street	Gin Gin	1	140	Collector	Long Term	Site constraints along culvert
Aplin Terrace	Milden Street	King Street	Gin Gin	4	840	Collector	Long Term	Site constraints along sections of Aplin Terrace, No Kerb and Channel



Bridge and pathway at Baldwin Swamp Environmental Park.



Pathway construction on Maryborough Street, Bundaberg.



1300 883 699

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**Item****24 November 2020****Item Number:**

K1

**File Number:**

Not applicable

**Part:**

PLANNING

**Portfolio:**

Planning &amp; Development Services

**Subject:**

Adoption of Amendment to the Bundaberg Regional Council Planning Scheme Policy for Development Works – Uncompleted Works Bonds

**Report Author:**

Evan Fritz, Manager Strategic Planning

**Authorised by:**

Stephen Johnston, Chief Executive Officer

**Link to Corporate Plan:**

Our Environment - 2.3 Sustainable built and natural environment - 2.3.3 Review and consistently enforce local laws, the planning scheme, and other associated environment and public health legislation to ensure they meet community standards.

**Background:**

At its Ordinary Meeting held 29 September 2020 Council resolved to make an amendment to the Bundaberg Regional Council Planning Scheme Policy for Development Works, pursuant to the *Planning Act 2016* and the Minister's Guidelines and Rules.

The purpose and general effect of the proposed amendment is to clarify and provide improved guidance for bonding of development works, including:

- requirements for uncompleted works bonds as security to enable early approval of a survey plan or early commencement of a use; and
- better guidance for other types of bonds, including performance bonds and maintenance bonds (currently addressed in the on-maintenance procedure section of the policy).

Following Council's resolution, public consultation was undertaken for the proposed amendment from 9 October 2020 to 6 November 2020. No submissions were received by Council during the public consultation period.

Public consultation comprised the following:

- A public notice was published on Bundaberg Now on 8 October 2020 providing details about the proposed amendment, including where to obtain information and how to make a properly made submission.



- The proposed amendment was made available on Council's public website, including information about the proposed amendment and submission forms to guide making a properly made submission.
- Development Industry Alert was sent via email to local development industry stakeholders on 9 October 2020 with details about the proposed amendment, providing a link to Council's website and offering meetings to discuss the proposed amendment.
- Follow up email was sent to local development industry stakeholders on 30 October 2020, reminding recipients that submissions were due prior to the closing of the public consultation period on 6 November 2020.

The proposed amendment to the Bundaberg Regional Council Planning Scheme Policy for Development Works is provided in the attachment. No changes are proposed to the amendment post-consultation.

#### Adoption and Commencement

The amendment has followed the process set out in the Minister's Guidelines and Rules (MGR) for making or amending a planning scheme policy, under section 22 of the *Planning Act 2016*.

In accordance with the MGR, Council must decide whether to adopt or not proceed with the proposed amendment and publish a notice of this decision in the local newspaper, the gazette and on Council's website. Council is also required to give the Chief Executive of the Queensland Treasury a copy of the public notice and, if adopted, a certified copy of the proposed amendment.

#### Associated Person/Organization:

Queensland Treasury (Planning Group); Treasurer and Minister for Infrastructure and Planning.

#### Consultation:

Public consultation of the proposed planning scheme policy amendment was undertaken in accordance with requirements of the *Planning Act 2016* and the Minister's Guidelines and Rules (MGR).

#### Chief Legal Officer's Comments:

The *Planning Act 2016* identifies circumstances where a landowner may be entitled to compensation for reduced value of interest in land (arising from a change to Council's planning scheme). Given that the provisions of the policy are being relaxed, it is unlikely that the proposed amendment would give rise to any such compensation.

#### Policy Implications:

The proposed amendment to the Bundaberg Regional Council Planning Scheme Policy for Development Works seeks to provide better guidance for uncompleted works bonds and for other types of bonds, including performance bonds and maintenance bonds within the planning scheme policy.

#### Financial and Resource Implications:

Council's 2020/21 budget includes appropriate allocation of resources to undertake the proposed amendment to the Planning Scheme Policy for Development Works.

**Risk Management Implications:**

There appears to be no risk management implications.

**Human Rights:**

There appears to be no human rights implications.

**Attachments:**

↓1 Proposed Amendments to the Planning Scheme Policy for Development Works

**Recommendation:**

**That pursuant to the *Planning Act 2016* and the Minister's Guidelines and Rules, Council:**

- a) adopt the proposed amendment to the Bundaberg Regional Council Planning Scheme Policy for Development Works as detailed in the attachment; and**
- b) incorporate the amended version of the Planning Scheme Policy for Development Works into the Bundaberg Regional Council Planning Scheme, effective 4 December 2020.**

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## SC6.3 Planning scheme policy for development works

### SC6.3.1 Purpose

- (1) The purpose of this planning scheme policy for development works is to:
  - (a) provide a uniform standard for works within the Bundaberg Regional Council local government area;
  - (b) facilitate the design of new works by the use of standard provisions; however, there is still an allowance for flexibility through the application of the relevant standards, policy documents and industry standards.
- (2) This policy cannot provide a solution for every proposal or for every situation encountered. Consequently, this policy does not prevent or discourage alternate solutions for individual development sites. Where this policy does not provide a solution the Developer/Applicant or their Consultant must demonstrate that the proposed solution is in accordance with industry standards.
- (3) Consultation with Council's development engineers is encouraged, especially early in the concept or design stages, as this will assist in the early identification and resolution of matters and issues that may cause delays in the approval and/or construction of subsequent works.

### SC6.3.2 Application

- (1) This policy applies to development identified as requiring assessment against the **Planning scheme policy for development works**.
- (2) The policy provides supporting requirements to assist in achieving acceptable outcomes within the Bundaberg Regional Council Planning Scheme (planning scheme) and is read in conjunction with the planning scheme.

### SC6.3.3 Roads, driveways, pathways, and cycleways

The purpose of this section is to support development assessment for the design and construction of roads, pathways and cycleways under the planning scheme.

#### SC6.3.3.1 Design standards and reference documents

The planning and design of developments within the Bundaberg Regional Council local government area must be undertaken in accordance with the current edition of the following key reference documents, unless specifically outlined in this policy or other Council references stated otherwise:

- (a) *Austrroads - Guide to Road Design* – at the time of writing this document the series was as listed below:
  - (i) AGRD01-10 Part 1: Introduction to Road Design
  - (ii) AGRD02-06 Part 2: Design Considerations
  - (iii) AGRD03-10 Part 3: Geometric Design
  - (iv) AGRD04-09 Part 4: Intersections and Crossings - General
  - (v) AGRD04A-10 Part 4A: Unsignalised and Signalised Intersections
  - (vi) AGRD04B-11 Part 4B: Roundabouts
  - (vii) AGRD04C-09 Part 4C: Interchanges
  - (viii) AGRD05-10 Part 5: Drainage Design
  - (ix) AGRD06-10 Part 6: Roadside Design, Safety and Barriers
  - (x) AGRD06A-09 Part 6A: Pedestrian and Cyclist Paths
  - (xi) AGRD06B-09 Part 6B: Roadside Environment
  - (xii) AGRD07-08 Part 7: Geotechnical Investigation and Design
  - (xiii) AGRD08-09 Part 8: Process and Documentation

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- (b) *Austrroads - Guide to Pavement Technology* – at the time of writing this document the series, relating to development, was as listed:
- (i) AGPT02-12 Part 2: Pavement Structural Design
  - (ii) AGPT03-09 Part 3: Pavement Surfacing
  - (iii) AGPT04E-09 Part 4E: Recycled Materials
  - (iv) AGPT04G-09 Part 4G: Geotextiles and Geogrids
  - (v) AGPT04I-09 Part 4I: Earthworks Materials
  - (vi) AGPT06-09 Part 6: Unsealed Pavements (the primary document is the ARRB Unsealed Road Manual)
  - (vii) AGPT10-09 Part 10: Subsurface Drainage
- (c) *Austrroads - Guide to Traffic Management* – at the time of writing this document the series, relating to development, was as listed:
- (i) AGTM012-09 Part 1: Introduction to Traffic Management
  - (ii) AGTM02-08 Part 2: Traffic Theory
  - (iii) AGTM03-13 Part 3: Traffic Studies and Analysis
  - (iv) AGTM04-09 Part 4: Network Management
  - (v) AGTM05-08 Part 5: Road Management
  - (vi) AGTM06-13 Part 6: Intersections, Interchanges and Crossings
  - (vii) AGTM07-09 Part 7: Traffic Management in Activity Centres
  - (viii) AGTM08-08 Part 8: Local Area Traffic Management
  - (ix) AGTM09-09 Part 9: Traffic Operations
  - (x) AGTM10-09 Part 10: Traffic Control and Communication Devices
  - (xi) AGTM11-08 Part 11: Parking
  - (xii) AGTM12-09 Part 12: Traffic Impacts of Developments
  - (xiii) AGTM13-09 Part 13: Road Environment Safety
- (d) Other Austrroads Standards presented as follows:
- (i) AG-G34/06 Design Vehicles and Turning Path Templates
  - (ii) AP-G88-11 Cycling Aspects of Austrroads Guides
  - (iii) AP-T36-06 Pavement Design for Light Traffic – A Supplement to Austrroads Pavement Design Guide
  - (iv) AS1289.[0-7] Methods of testing soils for engineering purposes
- (e) Unsealed Roads Manual – Guidelines to Good Practice – ARRB ed Giummarra
- (f) The following Australian Standards:
- (i) AS1158 [1-6] Lighting for roads and public spaces
  - (ii) AS1289 [0-7] Methods of testing soils for engineering purposes
  - (iii) AS1428 Design for Access and Mobility
  - (iv) AS 2890.1 Parking Facilities – Off-street car parking
  - (v) AS 2890.2 Parking Facilities – Off-street commercial vehicle facilities
  - (vi) AS 2890.3 Parking Facilities – Bicycle parking facilities
  - (vii) AS 2890.5 Parking Facilities – On-street parking
  - (viii) AS 2890.6 Parking Facilities – Off-street parking for people with disabilities
  - (ix) AS3798 Guidelines on Earthworks For Commercial and Residential Developments
  - (x) AS4373 Pruning of Amenity Trees
  - (xi) AS4678 Earth-retaining Structures
  - (xii) AS4970 Protection of Trees on Development Sites
- (g) The following Department of Transport and Main Roads Standards:
- (i) Manual for Uniform Traffic Control Devices (MUTCD) Queensland

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- (ii) MRS05/MRTS05 Unbound Pavements
  - (iii) MRS11/MRTS11 Sprayed Bituminous Surfacing
  - (iv) MRS12/MRTS12 Sprayed Bituminous Emulsion
  - (v) MRS17/MRTS17 Bitumen
  - (vi) MRS18/MRTS18 Polymer Modified Binder
  - (vii) MRS19/MRTS19 Cutter Flux Oils
  - (viii) MRS20/MRTS20 Cutback Bitumen
  - (ix) MRS22/MRTS22 Supply of Cover Aggregate
  - (x) MRS30/MRTS30 Dense Graded and Open Graded Asphalt
  - (xi) MRS35 /MRTS35 Recycled Materials for pavements (it is at Council's discretion to use this standard in lieu of Austroads)
  - (xii) The Guide to Pavement Markings
- (h) The following Institute of Public Works Engineering Australia Queensland Division (IPWEAQ) guidelines:
- (i) *Complete Streets – Guidelines for Urban Street Design (2010)*–
  - (ii) *Lower Order Road – Design Guidelines (2016)*
- (i) Bundaberg Regional Council – Standard Drawings – See **Appendix SC6.3A (Standard drawings list)**.

**SC6.3.3.2 Road hierarchy**

The formalisation of a road hierarchy enables the safe and efficient development of the road system that caters for the movement of people and goods whilst maintaining the amenity of urban and rural areas.

**SC6.3.3.2.1 Classifications**

- (1) The road hierarchy structure is divided into two main categories:
- (a) Urban roads –the purpose, function and character for each urban road classification is shown in **Table SC6.3.3.2.1.1 (Urban road classifications)** and their respective cross sections are shown in standard drawing R2001 to R2008; and
  - (b) Rural roads – the purpose, function and character for each urban road classification is shown in **Table SC6.3.3.2.1.2 (Rural road classifications)** and their respective cross sections are shown in standard drawing R3001 to R3004.
- (2) The road hierarchy for all existing roads are shown on Council's interactive mapping website (i.e., <http://www.bundaberg.qld.gov.au/services/interactive-mapping>). In addition, the road hierarchy for all future and existing trunk roads are shown in Schedule 3 (Local government infrastructure plan mapping and supporting material).
- (3) Extractive industry haul routes are a special case and the Developer/Applicant must nominate the design equivalent standard axles (ESA) for each road. Extractive industry haul routes must be designed to provide a road cross section in accordance with the following:
- (a) for urban areas, an Industrial Collector standard is required, and
  - (b) for rural areas, a Principal Rural Collector standard is required.

**Table SC6.3.3.2.1.1 Urban road classifications**

Classification	Purpose	Function & Character
<b>Arterial</b>	Arterial routes provide interregional connections between major activity and service centres and	It is intended that arterial routes will: <ul style="list-style-type: none"> <li>• Be designed for efficient and safe movement of high volumes of people and goods</li> <li>• Serve as primary through and freight routes</li> </ul>

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Classification	Purpose	Function & Character
	major urban areas within the city.	<ul style="list-style-type: none"> <li>• Be designed to help present attractive landscaped entrances and routes through major urban centres within the Bundaberg Regional Council area</li> <li>• Incorporate design measures to minimise environmental impacts on surrounding land uses</li> <li>• Serve as bus and line haul public transport routes</li> <li>• Provide for off-road bicycle and pedestrian facilities</li> <li>• Typically have four or more lanes when fully developed</li> <li>• Ideally have no direct property access</li> <li>• Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 3.7 x 10<sup>9</sup> equivalent standard axles</li> </ul>
<b>Sub-arterial</b>	Sub-arterial routes connect arterial routes through and around major urban areas.	<p>It is intended that Sub-arterial routes will:</p> <ul style="list-style-type: none"> <li>• Be designed for efficient and safe movement of moderate volumes of people and goods</li> <li>• Provide connection between arterial roads and local areas and linkage between arterial roads for through traffic</li> <li>• Be designed to present attractive landscaped routes through major urban centres within the Bundaberg Regional Council area</li> <li>• Incorporate design measures to minimise environmental impacts on surrounding land uses</li> <li>• Serve as bus routes and provide access to public transport</li> <li>• Provide for on-road bicycle lanes and off-road pedestrian paths on both sides of the road</li> <li>• Typically have 4 or more lanes when fully developed</li> <li>• Ideally have no direct property access</li> <li>• Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 2 x 10<sup>9</sup> equivalent standard axles</li> </ul>
<b>Trunk Collector (Suburban)</b>	Trunk Collector roads carry primarily inter-suburb traffic.	<ul style="list-style-type: none"> <li>• It is intended that Suburban Trunk Collectors will:</li> <li>• Be designed to carry freight associated with the local or suburban area</li> <li>• Minimise environmental impacts on surrounding activities</li> <li>• Serve as bus routes and provide access to public transport</li> <li>• Provide for on-road bicycle lanes and off-road pedestrian paths on both sides of the road</li> <li>• Ideally have no direct property access</li> <li>• Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 1 x 10<sup>9</sup> equivalent standard axles</li> </ul>
<b>Collector (Neighbourhood)</b>	Neighbourhood Collectors provide connection between residential access streets and primary traffic carrying roads.	<p>It is intended that Neighbourhood Collectors will:</p> <ul style="list-style-type: none"> <li>• Provide direct access to properties</li> <li>• Provide on-road parking on both sides of the road</li> <li>• Minimise environmental impacts on surrounding activities</li> <li>• Be designed to provide safe use by cyclists and pedestrians and an off-road pedestrian path on one side of the road</li> <li>• Be designed for traffic loading of 3 x 10<sup>5</sup> equivalent standard axles</li> </ul>
<b>Local Access</b>	Local Access streets provide direct access	<p>It is intended that Local Access streets will:</p> <ul style="list-style-type: none"> <li>• Provide direct access to properties</li> </ul>

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Classification	Purpose	Function & Character
<b>(Access Street / Access Place)</b>	to adjoining residential properties.	<ul style="list-style-type: none"> <li>• Provide on-road parking</li> <li>• Provide a safe and pedestrian / cyclist preferred environment</li> <li>• Be designed for traffic loading of 6 x 10<sup>4</sup> equivalent standard axles</li> </ul>
<b>CBD / Commercial Access</b>	Commercial Access streets provide access to properties and businesses within the commercial centres of the city and surrounding towns.	<p>It is intended that Commercial Access streets will:</p> <ul style="list-style-type: none"> <li>• Be designed to carry freight and other commercial goods associated with the Central Business District (CBD) and other commercial areas</li> <li>• Minimise environmental impacts on surrounding activities</li> <li>• Serve as bus routes and provide access to public transport</li> <li>• Provide on-road parking</li> <li>• Provide for on-road bicycle lanes and off-road pedestrian pathways on both sides of the road</li> <li>• Ideally have no direct property access</li> <li>• Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 5 x 10<sup>8</sup> equivalent standard axles</li> </ul>
<b>Industrial Collector</b>	Industrial Collector streets provide connection between Industrial Access streets and connect directly to suburban Trunk Collectors and Sub Arterial routes.	<p>It is intended that Industrial Collector streets will:</p> <ul style="list-style-type: none"> <li>• Be designed to carry heavy vehicles associated with the industrial development area</li> <li>• Minimise environmental impacts on surrounding activities</li> <li>• Provide direct access for heavy vehicles to properties</li> <li>• Provide on-road parking on both sides of the road</li> <li>• Provide for off-road cycle &amp; pedestrian paths on both sides of the road</li> <li>• Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 5 x 10<sup>8</sup> equivalent standard axles</li> </ul>
<b>Industrial Access</b>	Industrial Access streets provide direct access to individual properties.	<p>It is intended that Industrial Access streets will:</p> <ul style="list-style-type: none"> <li>• Provide direct access for heavy vehicles to properties</li> <li>• Be designed to provide a safe environment for cyclists and pedestrians.</li> <li>• Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 5 x 10<sup>8</sup> equivalent standard axles</li> </ul>

Table SC6.3.3.2.1.2 Rural road classifications

Classification	Purpose	Function & Character
<b>Principal Rural Road</b>	Principal Rural roads provide connection between rural villages/townships, other higher order regional roads and urban centres.	<p>It is intended that Principal Rural roads will:</p> <ul style="list-style-type: none"> <li>• Be designed to carry freight and other heavy vehicles associated with rural and primary production activities</li> <li>• Minimise environmental impacts to adjoining properties</li> <li>• Provide direct access to properties</li> <li>• Be of sufficient width to accommodate on-road cycling</li> <li>• Be designed for a minimum traffic loading of 1 x 10<sup>8</sup> equivalent standard axles</li> </ul>
<b>Rural/Rural Residential Collector</b>	Rural Collector roads provide connection between rural access roads and other higher order roads and	<p>It is intended that Rural/Rural Residential Collector roads will:</p>

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Classification	Purpose	Function & Character
	provide direct access to adjoining rural and/or rural residential properties.	<ul style="list-style-type: none"> <li>• Be designed to carry heavy vehicles and other traffic associated with rural and rural residential land use zoning</li> <li>• Minimise environmental impacts to adjoining properties</li> <li>• Provide direct access to properties</li> <li>• Be of sufficient width to accommodate on-road cycling</li> <li>• Be designed for a minimum traffic loading of 5 x 10<sup>5</sup> equivalent standard axles</li> </ul>
<b>Rural/Rural Residential Access</b>	Rural Access roads provide direct access to adjoining rural and/or rural residential properties.	<p>It is intended that Rural Access roads will:</p> <ul style="list-style-type: none"> <li>• Provide access to adjoining properties</li> <li>• Be designed for a minimum traffic loading of 3 x 10<sup>5</sup> equivalent standard axles</li> </ul>
<b>Village/Township Collector</b>	Village/Township Collector are primary traffic carrying streets within rural villages and townships and provide direct access to adjoining properties.	<p>It is intended that Village/Township Collector streets will:</p> <ul style="list-style-type: none"> <li>• Be designed to carry heavy vehicles and other traffic associated with rural and rural residential land use zoning</li> <li>• Minimise environmental impacts to adjoining properties</li> <li>• Provide direct access to properties</li> <li>• Be of sufficient width to accommodate on-road cycling</li> <li>• Be designed for a minimum traffic loading of 3 x 10<sup>5</sup> equivalent standard axles</li> </ul>
<b>Village/Township Access</b>	Village/Township Access streets provide direct access to adjoining properties in rural villages and townships.	<p>It is intended that Rural Access roads will:</p> <ul style="list-style-type: none"> <li>• Provide direct access to properties</li> <li>• Minimise environmental impacts on surrounding activities</li> <li>• Provide a safe and pedestrian / cyclist preferred environment</li> <li>• Be designed for traffic loading of 3 x 10<sup>5</sup> equivalent standard axles</li> </ul>

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### SC6.3.3.3 Geometric design

Council has adopted the Complete Streets (IPWEAQ 2010) as the primary guide for its road layout (refer to standard drawings for the road cross sections). However, Complete Streets does not preclude cul-de-sacs and T-intersections in the mix of road and intersection layouts. Accordingly, it will be necessary, in some cases, to control vehicle speeds in residential streets through tight horizontal alignments - by providing curved alignment and limiting the 'road leg length'. The Design Criteria tables in this manual provide minimum values where speed controls are required. Therefore, Queensland Streets (IPWEAQ 1995) may be used to obtain values outside the minima.

### SC6.3.3.4 Design elements and criteria

#### SC6.3.3.4.1 Layout design principles

- (1) The layout of minor roads should incorporate the following principles.
  - (a) Layouts should ensure strict geometric control of traffic speeds and volumes in residential areas. Council adopts Complete Street (IPWEAQ 2010), however, at the time of writing refer to Queensland Streets (IPWEAQ 1995) for the provision of speed controls outside those given in Council's standard drawings (Appendix SC6.3A);
  - (b) No more than three minor roads should be traversed from the most remote lot to the nearest accessible district access road;
  - (c) Travel time for a vehicle in a low speed residential environment (< 50 km/h) should be no greater than 90 seconds;

- (d) A pavement surface treatment may only be provided on the 50km/h minor road at the 60km/h major road interface. No other minor road intersections should be provided with pavement surface treatments;
- (2) Specific to industrial areas:
  - (a) Road loop layouts in industrial areas should ensure that the design vehicle can be accommodated around bends (without crossing the centreline);
  - (b) Pavement surface treatments are not required in industrial estates.
- (3) Designers are encouraged to consult with Council and other relevant authorities prior to and/or during the preparation of design.

#### SC6.3.3.4.2 Local area traffic management

- (1) A Local Area Traffic Management (LATM) involves the use of treatments like speed bumps and chicanes within a local residential area to improve residential amenity and reduce vehicle speed. Council believes such treatments should not be used in new residential developments as these treatments can affect parking, cycling and pedestrian activities. Developers should manage speed through applying good geometric design and speed control devices should only be proposed on existing roads where no other solution is viable.
- (2) LATM schemes have a major impact on residents and public involvement in their preparation is essential. Where speed control devices on existing roads are proposed, it should be in accordance with a scheme approved by Council. The Developer is to undertake consultation, with guidance from Planning and Development, with the Divisional Councillor, residents, property and business owners and community groups prior to submitting the functional layout for approval.
- (3) For network legibility, consistent forms of speed control treatment should be used along neighbourhood access roads.
- (4) Night time visibility of speed control devices should be enhanced by appropriate means including street lighting, raised retro-reflective pavement markers, white reflective road markings including white painted kerb faces.

#### SC6.3.3.4.3 Design vehicle

Design vehicles for Council roads must be in accordance with AP – G34/06 Austroads – *Design Vehicle Turning paths and Templates* with the exceptions as follows:

- (a) Trunk Collector/ Collector to Trunk Collector/ Collector /Industrial – Design Single Articulate Vehicle (19m);
- (b) Trunk Collector/ Collector to Access Street – Design Single Unit Bus (12.5m) unless specifically approved otherwise by Council's nominated officer;
- (c) Trunk Collector/Industrial –B-Double (25m), where applicable, refer also Transport Operations (Road Use Management) Act 1995 – Route Assessment Guidelines for Multi-Combination Vehicles in Queensland and National Transport Commission – Guidelines for Assessing the Suitability of Heavy Vehicles for Local Roads.

#### SC6.3.3.4.4 Design criteria

Council's standard drawings provide a summary of the design elements that are applicable to Council's road network (refer Guide to Road Design Part 3: Geometric Design (Austroads 2010) for additional guidance). It should be noted that some parts of the existing road network might not comply with all the specified design parameters and road widths may be adjusted in retrofit areas. Designers are encouraged to consult with Council during the preparation of designs if they plan to vary from standard drawings' specifications.

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#### SC6.3.3.4.5 Kerb and channel details

The following design criteria are applicable to kerb and channel:

- (a) Survey - for new kerb and channel should extend a minimum of 50 m along the road beyond the frontage(s) of the subdivision or such greater distance as is required to join to the existing kerb and channel;
- (b) Extend - a minimum of 5 m onto the adjacent land. Note, the road pavements may not always need to be centrally located within the road reserve;
- (c) Grade - not be less than 0.3 percent;
- (d) Where roofwater drains to the street - at least one point of connection in the concrete kerb and channel per lot must be provided. This point of connection shall comprise a heavy duty galvanised steel kerb adapter located a minimum of one (1) metre from any property boundary. For verges where concrete footpath is to be provided, the Developer must install roofwater pipes (RHS downpipes or equivalent) to the property boundary.

#### SC6.3.3.4.6 Cul-de-sac, turning areas & allotment width

- (1) The minimum diameter for a cul-de-sac in all areas must be 20 metres. No other termination treatment is accepted by Council.
- (2) Allotments fronting a cul-de-sac must be of sufficient width at the property boundary to ensure that a driveway at the kerb invert (refer Standard Drawing R1010) can be accommodated with a minimum of 150mm clearance either side of the adjoining allotment driveways. The minimum lot size and dimensions are provided in **Table 9.3.4.3.2 (Minimum lot size and dimensions)**, **Table 9.3.4.3.3 (Access strip requirements for rear lots)**, and **Table 9.3.4.3.4 (Minimum width for irregular shaped lots)** of the reconfiguring a lot code.

#### SC6.3.3.4.7 Medians

Council may, solely at its discretion, allow the use of painted medians rather than raised medians. Medians must be a minimum width of 6.0 metres unless used for traffic islands (refer Section SC6.3.3.5.4) and pedestrian shelters.

#### SC6.3.3.4.8 Verges

##### SC6.3.3.4.8.1 General

Verge is defined as that part of the road reserve between the carriageway and the boundary of adjacent lots. Verge widths are measured from property boundaries to invert of the kerb and channel. Verge widths in older established areas may vary.

##### SC6.3.3.4.8.2 Crossfall

Verge crossfalls will generally be no greater than 2.5%. Verge crossfalls in the older areas usually vary from the standard. Accordingly, it will be necessary to obtain approval, from the relevant Council development engineer, of the proposed crossfalls for each project.

##### SC6.3.3.4.8.3 Longitudinal grade

Longitudinal grades on any verge should aim to be in accordance with AS 1428 – *Design for Access and Mobility*. Using the aforementioned code accommodates people using mobile devices or in wheelchairs. The designer must seek guidance from a Council development engineer where it is not possible to meet the grade requirements of AS 1428.

##### SC6.3.3.4.8.4 Landscaping requirements

The verge will be landscaped with grass or turf. Any other verge landscaping (including the use of Water Sensitive Urban Design) must be specifically approved by the relevant Council development engineer. An example of a Water Sensitive Urban Design for an Access Street is shown in standard drawing R1002.

**SC6.3.3.4.9 Driveways and access to developments**

Council adopts the Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development (Section 3.3) and the Austroads Guide to Traffic Management Part 5: Road Management (Section 2) for access to developments. For large size developments that require internal roads also refer to **Section SC6.3.3.5 (Intersections)**.

**SC6.3.3.4.9.1 Driveways**

- (1) All residential developments must provide a concrete residential driveway slab in accordance with R1010 and R1014 or R1015.
- (2) All rural/ rural residential developments must provide a sealed rural driveway in accordance with R1012 or R1013 (i.e., Type A, B or C).
- (3) All commercial and industrial developments must provide a concrete driveway slab in accordance with R1011, a minimum width of 6.0 metres is nominated, however this width must be sufficient to accommodate at least the entering design vehicle and exiting car at the same time.
- (4) The standard of internal driveway and car park construction (including pavement surfacing) must provide for the proposed traffic vehicle loads and traffic movements. The pavement surfacing must, as a minimum, be equivalent to the road surface fronting the development.

**SC6.3.3.4.9.2 Access handles**

- (1) In all residential developments where access is through an easement or access handle, a driveway must be provided which is:
  - (a) Provided with a concrete residential driveway slab in accordance with R1010;
  - (b) Constructed and sealed with a minimum width of 3.5 metres with asphalt, concrete, bitumen or approved pavers for its full length (see **Table 9.3.4.3.3 (Access strip requirements for rear lots)** of the reconfiguring a lot code). Pavement shall be abutted by concrete edge strips (herein referred to as pavement construction);
  - (c) Provided with a 1.8 metre high screen privacy fence to each boundary of the Access Strip, including provision of a 300mm wide concrete mower strip;
  - (d) Provided with conduits and / or services for water supply, underground power, stormwater and telecommunications within the Access Strip prior to pavement construction.
- (2) In all rural/rural residential village/township developments where access is through an easement or access handle a driveway must be provided which is:
  - (a) Provided with a sealed residential driveway in accordance with R1012;
  - (b) Constructed and sealed with a minimum width of 3.5 metres for rural residential zone and 4 metres for rural zone. The driveway must be sealed with asphalt, concrete, bitumen or approved pavers for the full length of the access, or such lesser distance as would be required to ensure that a future residence on the adjoining lots would not experience nuisance (e.g., dust, noise) from passing traffic (see **Table 9.3.4.3.3 (Access strip requirements for rear lots)** of the reconfiguring a lot code);
  - (c) Provided with conduits and / or services where applicable for water supply, power (if not overhead), stormwater and telecommunications within the Access Strip.

**SC6.3.3.4.10 Pavement tapers (including road widening for MCU/ROL)**

- (1) For a lot reconfiguration where the roadway transitions to a different width pavement at the boundaries of the subject land, the Developer must provide a minimum 1 in 10 taper between new and existing pavements. The tapers commence:
  - (a) Where the surrounding pavement is less wide – the taper commences at the boundaries of the subject land;
  - (b) Where the surrounding pavement is wider than conditioned – taper commences within the subject land;

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- (2) Pavement tapers must also be provided for road widening associated with an MCU (MCU tapers). The MCU tapers must commence at the boundaries of the subject land and must be of sufficient width to accommodate the turning manoeuvres (in and out) of the Design Vehicle from the through lane. Note the minimum turning speed for a design vehicle will be 40 kph and the design vehicle must not cross the centreline of the through pavement.

#### **SC6.3.3.4.11 Staging – temporary sealed turn-around**

A temporary sealed turn-around is to be provided for at the end of each internal roadway at the development stage boundaries. The temporary turn-around must provide with a minimum 20 metre turning circle measured from the edge of pavement. The turn-around may be a bitumen prime then single coat seal and must be fully located within the road reserve.

#### **SC6.3.3.4.12 Alignment – horizontal and vertical**

- (1) For trunk collector and rural roads the speed value of a curve as suggested by its geometry may not be able to be achieved if stopping sight lines is restricted by lateral obstructions. Where the angle of deflection is small, significantly larger radii should be used to achieve an adequate curve length and avoid the unappealing appearance of kinks. It is the radii achieved for the through lanes, not for the design centreline, which is important.
- (2) In a reverse curve situation, a length of tangent should be used between the curves to improve driveability and aesthetics and the curves should be of a similar radius. Broken back or compound curves, where the radius of the second curve is less than that of the first, should not be used. These, or higher, standards should be applied to deviations of through lanes which result from the introduction of turn lanes.
- (3) Intersection location is often dictated by vertical sightline considerations. The consideration of intersection-specific sight distance requirements can influence the vertical alignment adopted for the major road carriageway.

### **SC6.3.3.5 Intersections**

#### **SC6.3.3.5.1 Types**

- (1) *Complete Streets (IPWEAQ 2010)* posits the use of 4-way intersections insofar as they improve permeability and legibility of neighbourhoods, however, *Complete Streets* does reaffirm the need to check the capacity of each 4-way intersection. Council has not developed heuristics for the appropriate number of allotments or road length that would be attributable to 4-way intersection to control road speeds and, hence, Council requires intersection adequacy checks (for all new developments) to demonstrate the efficacy of the *Complete Streets* doctrine. This information is to be included in the Transport Impact Study associated with a development approval.
- (2) The priority for intersections in Greenfield developments should be considered as: 4-way intersections, followed by T-intersection then roundabout or signalised (dependent upon the necessity to accommodate pedestrian movements and on-road bicycle movements).
- (3) Roundabouts should be used only where priority is equalised for all approaches. Consequently, this form of intersection should only be used with roads which are no more than one level apart in the road hierarchy and have reasonably balanced traffic flows to ensure that traffic on major road approaches is not unreasonably impeded by the minor approach traffic. On major junctions, roundabouts should only be used at the lowest end of the traffic volume range (subject to pedestrian and bicycle constraints) where single lane operation can suffice. There may be scope for a staged treatment with single lane approaches before widening to multi lane standard is required, at which time traffic signals may be installed.
- (4) Consideration is to be given to Council's road hierarchy and lower order roads are not to directly access higher order roads.



**SC6.3.3.5.2 Location and intersection geometry**

Council requires the horizontal geometry of T-intersections and 4-way intersections to present at 90 degrees (projection) to the major road, unless specifically approved otherwise in the development approval. The projection or horizontal geometry must continue for a minimum of 10 metres into the minor road.

**SC6.3.3.5.3 Spacing/stagger**

The stagger distance for T-intersections shall generally be in accordance with the Guide to Road Design Part 4A: Unsignalised and Signalised Intersections (Austroads 2010). Council has adopted the following minimum stagger lengths:

- (a) Right-left staggered T-intersection – stagger distance to be a minimum of 40 metres on Access Street/Access Street and 60 metres on all others,
- (b) Left-right staggered T-intersection stagger distance to be a minimum of 60 metres on Access Street/Access Street and 150 metres on all others.

**SC6.3.3.5.4 Traffic islands**

- (1) The function of islands is to effectively restrict vehicles to certain paths, providing safe refuges for pedestrians and locations for the erection of traffic control devices. They should be raised and constructed with semi mountable kerb. Pedestrian paths through islands should be flush with the road surface.
- (2) Raised island kerbs should be set back from traffic lanes and have larger offsets on approaches. The islands should be fully outlined by solid painted lines. Appurtenances and any landscaping on islands have to have adequate clearances to moving traffic and not obstruct visibility. Planting is normally restricted to clean trunk trees and low ground covers.

**SC6.3.3.6 On-street parking****SC6.3.3.6.1 Parking provisions**

On street parking will only need to be line marked in commercial areas or in accordance with development approvals. Refer to Council's standard drawings for on road parking provisions.

**SC6.3.3.6.2 Parking at cul-de-sac and turning areas**

Car parking within the cul-de-sac and turning areas is prohibited. In these cases special parking provisions such as indented bays or central island parking should be incorporated into the design that satisfies the requirements in Council's standard drawings.

**SC6.3.3.7 Sight distance, sightlines and truncations**

- (1) A principal aim in road design is to ensure that the driver is able to perceive any potential road hazards in sufficient time to take action and avoid mishap. Therefore, sight lines must be preserved within the road reserve.
- (2) "Safe Intersection Sight Distance", refer Austroads requirements, should always be met in both the horizontal and vertical planes. Special attention should also be given to Roundabout sight triangle requirements.
- (3) Truncations and road dedications to property boundaries must be provided as required to maintain intersection and corner sightlines, minimum verge and roadway widths at any point in the road networks. Particular notice must be given to: traffic calming devices, intersections, bends, cul-de-sac heads and roundabouts. All truncation areas must be included in road reserve and dedicated free of cost to Council.
- (4) Notwithstanding the truncations to maintain sight lines, as a minimum, a Developer must provide truncations to all intersections to a minimum of six (6.0) metre three (3) chord configuration.

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### SC6.3.3.8 Services

#### SC6.3.3.8.1 Alignments

- (1) Services must be in accordance with the standard drawings unless specifically approved by a Council development engineer.
- (2) Costs associated with relocation of services as a result of a development (e.g., due to clearance issue) will be met by the Developer.
- (3) Council will allow multiple services in a single trench if approval of a proposal is submitted from the relevant service providers.

#### SC6.3.3.8.2 Service pits and manholes

- (1) Service pits and manholes within the roadway or verge should be installed accurately, blending smoothly with the finished longitudinal and transverse grades of the verge. Where the Developer is retrofitting or developing a site it will be necessary to check with a Council development engineer if it is necessary to adjust an existing pit to accommodate the new works. Any modification to Council's network will be at the Developer's expense.
- (2) Any modification to Council's services within neighbouring private allotments will require the provision of an easement at the Developer's expense.
- (3) Service pits should not be placed in areas that would compromise the construction of kerb ramps to the relevant standards, refer standard drawing list.

#### SC6.3.3.8.3 Service conduits

- (1) Service conduits required by the relevant service authorities including water services should be installed prior to final trim of the subgrade.
- (2) Kerb markers (brass indicator discs) should be placed in the kerb and channel at service conduit crossings. In the case of interlocking paver, threshold treatments or mass concrete roads, developers should make provision for incorporating spare conduits (with markers) at the time of construction to alleviate the need for unsightly repair work in the future.
- (3) Note Council will not inspect the subgrade until the conduits have been placed and backfilled.

#### SC6.3.3.8.4 Conflict with council service

##### SC6.3.3.8.4.1 AC water mains

- (1) The Developer must replace the full length of an AC water main, with DI/CL class K9 mains, where the subgrade level of the approved pavement (usually associated with road widening) is within 200 mm of the top of the water main for 100 mm diameter mains or 300 mm for all other diameter water mains.
- (2) Water supply works performed on live water supply infrastructure will be required to be undertaken by Council at the Developer's expense. Council will provide a quotation at the written request of the Developer. The request must be accompanied by plans marked 'For Construction'.

##### SC6.3.3.8.4.2 PVC water mains

PVC water mains must have a minimum 600 mm clearance from the pavement subgrade.

##### SC6.3.3.8.4.3 Wastewater mains

Wastewater mains must have a minimum 600 mm clearance from the pavement subgrade.

### SC6.3.3.9 Pedestrian pathways and cyclist facilities

- (1) Specific conditions relating to the provision of footpaths, shared pathways and cyclist facilities are provided in **Table SC6.3.3.9.1 (Pathway and cycleway requirements)**.

**Table SC6.3.3.9.1 Pathway and cycleway requirements**

Classification	Road Type or Land Use Zone	Footpath (FP) <sup>(1) (2)</sup> Shared Pathway (SP) <sup>(1)</sup> On Road Cycleway (ORC)	Desirable Width (M) <sup>(4)</sup>
<b>Non-trunk requirements</b>			
Urban footpath network	Collector roads	FP one side <sup>(1)</sup>	1.5
	All roads in High Density Residential Zone	FP one side <sup>(1)</sup>	1.5
	All roads in Medium Density Residential Zone	FP one side <sup>(1)</sup>	1.5
	Industrial Access roads	FP one side <sup>(1)</sup>	1.5
	CDB/Commercial Access Roads	FP both sides	2
<b>Trunk requirements (refer to the Local Government Infrastructure Plan and Plans for trunk infrastructure mapping LGIP-TNP-01 to LGIP-TNP-33)</b>			
Urban multi-modal pathway network (as per LGIP) <sup>(3)</sup>	Principal Pathway	SP both sides	3
	Distributor Pathway	SP one side <sup>(1)</sup>	2.5
	Collector Pathway	SP one side <sup>(1)</sup>	2.0
	On Road Principal Cycleway	ORC both sides	2.0
	On Road Distributor Cycleway	ORC both sides	1.5
	On Road Regional Recreational Cycleway	ORC both sides	1.5
	Off Road Regional Recreational Cycleway	Single SP (eg. on old rail alignment or through nature reserve)	3.0

## Notes—

- (1) FP/SP one side will generally be on northern or western side of road.
  - (2) Council may waive the necessity to provide a non-trunk footpath where there would be no chance that a contiguous pathway could be provided in the immediate area/block.
  - (3) Where pathways and cycleways are located on State Controlled Roads, proposals must be approved by Department of Transport and Main Roads and comply with their standards.
  - (4) Where preferred pathway widths are not achievable, Council may consider alternative pathway proposals (e.g., pathways with reduced widths on both sides of the roads; on-road cycle lanes).
- (2) Pathways will be designed in accordance with Austroads Guide to Road Design - Part 6A: Pedestrian and Cyclist Paths.
  - (3) Kerb ramps will be required where a concrete footpath:
    - (a) Leads to a street intersection,
    - (b) At pedestrian crossings,
    - (c) At median islands.
  - (4) Kerb ramps must be located clear of obstacles such as stormwater gullies, street sign posts and trees.

**SC6.3.3.10 Traffic control signage and street names**

The Developer must supply and erect all necessary street signs, traffic control signs and posts in accordance with the Standard Drawings R1040, R1041, R1042 and R1043. Signage should comply with the *Manual of Uniform Traffic Control Devices (MUTCD)* and with *Austroads' Guide to Traffic Management Part 10: Traffic Control and Communications Devices*.

**SC6.3.3.10.1 Traffic control signage**

Signs will not be used on minor roads in order to minimise maintenance commitments and improve visual amenity. However the following exceptions apply:

- (a) Roundabouts;
- (b) Entrances to low speed residential areas, where 'Local Traffic Area 40 km/h' signs are used;

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- (c) Locations where isolated devices might be installed requiring signage to comply with the MUTCD.

**SC6.3.3.10.2 Street names**

- (1) The Developer must liaise with the Bundaberg Regional Council for determination of the names for new development roadways in accordance with the procedure outlined in **Appendix SC6.3B (Street and park naming procedure)**. Generally, it is expected that a Developer will submit three (3) names for each roadway for approval. Council will then provide the developer with a list of approved names.
- (2) The Developer is advised that the road name determination process takes a minimum of three (3) weeks.

**SC6.3.3.11 Traffic impact assessments**

All developments involving high trip generating land uses will require a traffic impact assessment (TIA) report. Council may also request an impact assessment for other developments if the proposed development is considered to have an impact on the safety and operational efficiency of Council's road network.

**SC6.3.3.11.1 Report and modelling requirements**

- (1) The report should be prepared in accordance with the Guide to Traffic Management Part 12: Traffic Impacts of Development (Austroads 2009) and/or Guide for Assessment of Road Impacts of Development (Queensland Government 2006).
- (2) All reports must be accompanied by the electronic SIDRA models.
- (3) Council maintains both Saturn and EMME transportation models. At Council's discretion, larger developments may be required to utilise these models as part of the Transport Study.
- (4) Developers are encouraged to consult with Council's Development Engineer and other relevant authorities prior to or during the preparation of TIA especially in respect to how the developer intends to resolve traffic issues.

**SC6.3.3.11.2 Traffic volumes**

- (1) Traffic volume on the individual minor roads should be determined based on the following generation rates:
  - (a) In residential areas intended to accommodate single detached housing, use 10 vehicles per day (vpd) which is trip ends or cumulative trips out and back) from each dwelling unit,
  - (b) For multi-unit dwellings at 6 vpd,
  - (c) For rural residential and village/townships, assume 7.5 vpd from each allotment,
  - (d) Peak traffic generally is 1 vehicle per lot or 10 percent of AADT ( appropriate lane factor applies),
  - (e) For other developments, use design data from approved traffic studies/guidelines.
- (2) For other development types refer to Roads Transport Authority or Institute of Transportation Engineers publications

**SC6.3.3.11.3 Peak split**

Intersection design must be based on an 80 in and 20 out split for all peak traffic, unless specifically approved otherwise.

**SC6.3.3.11.4 Unsignalised intersection gap acceptance and follow-up headway**

Intersection design must be based on a 5 second gap acceptance and 3 second follow-up headway, unless specifically approved otherwise.

### SC6.3.3.12 Haul route management plan

Major development or extractive industry haul routes must comply with the following:

- (a) A designated haulage route will be required for the import and export of any significant quantities of earthworks or construction materials from the site (>5,000t) including gravel and concrete for example, to minimise the impact on Council roads and nuisance to residents;
- (b) An assessment of the road pavement for the haul route must be made by a Registered Professional Engineer of Queensland (RPEQ) to determine the suitability of the pavement for the intended traffic movements. Mitigation measures will be required where pavements are identified as being substandard;
- (c) A Haul Route Management Plan will be required to ensure that any spillage, pavement damage, or vehicle breakdowns can be addressed with minor impact to residents.

### SC6.3.3.13 Pavement design

#### SC6.3.3.13.1 Design objectives and principles

The underlying principle of pavement design is to achieve a pavement that is functional, structurally sound, has good ride quality, and requires minimal maintenance over its design life (refer Austroads Guide to Pavement Technology).

#### SC6.3.3.13.2 Design procedure

##### SC6.3.3.13.2.1 Design life

The design life for flexible pavements is 20 years. This value may be increased by Council in certain circumstances for the higher order roads. The design life for rigid pavements is 40 years.

##### SC6.3.3.13.2.2 Traffic loadings

Traffic loading may be obtained from **Table SC6.3.3.13.2.1 (Road classification pavement details)** or derived using Austroads *Guide to Pavement Technology* and *Pavement Design for Light Traffic – A Supplement to Austroads Pavement Design Guide*.

##### SC6.3.3.13.2.3 Subgrade strength

- (1) The design parameter for the subgrade is the California Bearing Ratio (CBR – refer Laboratory Determination for more details). The pavement design should be based on the CBR tests being the lowest CBR representative of the subgrade over the various lengths of road at the box depth.
- (2) A design CBR should be determined for each identifiable unit defined on the basis of topographic, geological and drainage conditions at the site. In determining the design CBR, account should also be taken of the variation of the subgrade strength with depth below subgrade level. The critical layer of material should be established to ensure each layer has adequate cover.

##### SC6.3.3.13.2.4 Sampling frequency

- (1) Subgrade should be evaluated at the following frequencies:
  - (a) Road length  $\leq$  120m: 1 test for every 60m or part thereof, but not less than 2 tests for each project (unless minor road widening associated with MCU then only one test);
  - (b) Road length > 120m: 1 test for every 60m-120m, but not less than 3 tests for each project;
  - (c) One Dynamic cone penetrometer profile AS 1289.6.3.2 at each CBR location or stratum.
- (2) Notwithstanding the above frequencies, at least one sample should be evaluated for each soil type. Spacing of test sites should be selected to suit subgrade, topographic and drainage characteristics.

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SC6.3.3.13.2.5 *Laboratory determination of design CBR*

- (1) The design CBR should be based on the soaked condition in the subgrade at a compaction of 100% standard i.e., the design CBR is the 4-day soaked CBR as determined by testing in accordance with AS 1289.6.1.1 (single point test).
- (2) When the subgrade CBR is particularly sensitive to changes in moisture content, adequate testing of the CBR over a range of moisture contents and densities should be provided and CBR interpolated at the design moisture content and density conditions (i.e., 4-point test using QDMR Main Roads test Q113A).
- (3) Where a number of tests are taken use the 10<sup>th</sup> percentile (Mean - 1.3\*SDV).

SC6.3.3.13.2.6 *Soft subgrades and sand*

- (1) If the CBR determined for the subgrade is less than the minimum CBR nominated in Austroad – *Guide to Pavement Design*; then one of the following subgrade treatment options is required:
  - (a) Remove unsuitable subgrade material and replace with minimum CBR 15 gravel or select material. The depth of subgrade replacement must be determined for each specific site, however, as a guide the depth would be expected to be in the vicinity of 300 mm;
  - (b) Carry out lime stabilisation treatment in accordance with Main Roads methodologies (this option should only be used in subgrades with high PI);
  - (c) Utilise other techniques such as rock spalls on geotextile, geogrids together with correctly sized gravel/rock blanket course, etc. These proposals need to be submitted to Council for approval.
- (2) After subgrade improvement, the pavement design should be based on subgrade CBR 3 for granular pavement and CBR 5 for concrete pavement. Also refer to Austroads – *Guide to Pavement Design* for further information.
- (3) Note, a 150 mm select fill trimming course will be required for roads constructed on sand. The trimming course must not be included in the pavement design.

**SC6.3.3.13.3 Pavement types**SC6.3.3.13.3.1 *Pavement types/materials*

Pavement materials must be in accordance with MRS05 & MRTS05 - *Unbound Pavements* unless the pavement is associated with a lot reconfiguration of unsealed rural road where the land is associated with agricultural purposes where the ARRB *Unsealed Roads Manual – Guidelines to Good Practice* will apply. Refer **Section SC6.3.3.13.3.3 (Concrete pavements)** for concrete pavements.

SC6.3.3.13.3.2 *Pavement thickness*

- (1) The supervising engineer (or Superintendent) must provide a pavement design for approval by a Council development engineer for each new road or road widening. The pavement design must be carried out in accordance with Austroads *Guide to Pavement Technology* and/or *Pavement Design for Light Traffic – A Supplement to Austroads Pavement Design Guide*. Pavement Depths must be increased by 25mm to allow for tolerances (averaged maximum).
- (2) Council's minimum pavement depths are set out in accordance with **Table SC6.3.3.13.3.2.1 (Road classification pavement details)**. Pavement depths must be recorded in all pavement density checks and included in the information provided to Council at 'On Maintenance'.

Table SC6.3.3.13.3.2.1 Road classification pavement details

Classification	Road Type	Pavement Design <sup>(1)</sup> (ESAs)	Minimum Sub Base (MRTS Class)	Minimum Base (MRTS Class)	Min Pavement Thickness (including Surfacing)	Pavement Surfacing (mm AC)
Urban Residential	Trunk Collector	1 x 10 <sup>6</sup>	2.2	2.1	300	40
	Collector	3 x 10 <sup>5</sup>	2.3	2.1	225	25
	Access Rd/Place	6 x 10 <sup>4</sup>	2.3	2.1	225	25
Industrial	Collector	5 x 10 <sup>6</sup>	2.2	2.1	275	40
	Access	5 x 10 <sup>6</sup>	2.2	2.1	275	40
Commercial	CBD/Comm.	5 x 10 <sup>6</sup>	2.2	2.1	275	40
Rural/ Rural Residential	Principal Rural Road	1 x 10 <sup>6</sup>	2.2	2.1	225	Prime & 2 Coat <sup>(2)</sup>
	Collector	5 x 10 <sup>5</sup>	2.3	2.1	200	Prime & 2 Coat <sup>(2)</sup>
	Access <sup>(3)</sup>	3 x 10 <sup>5</sup>	2.3	2.2	200	Prime & 2 Coat <sup>(2)</sup>
Village/ Township	Collector	3 x 10 <sup>5</sup>	2.3	2.1	200	Prime & 2 Coat <sup>(2)</sup>
	Access	3 x 10 <sup>5</sup>	2.3	2.2	200	Prime & 2 Coat <sup>(2)</sup>

Notes—

- (1) ESA may be determined by traffic study
- (2) Minimum depth does not include subgrade replacement and prime must be place independently of the seal and must be allowed 48 hours to cure prior to the placement of the seal. Note for boney surfaces the minimum spray rate of 0.82 l/m<sup>2</sup> must be increased. The final rate must be approved by the relevant Council development engineer prior to application.
- (3) Where road is to unsealed use gradings specified by ARRB *Unsealed Roads Manual – Guidelines to Good Practice*

#### SC6.3.3.13.3.3 Concrete pavements

- (1) Full depth concrete roads are generally used only in heavily trafficked situations. These roads must be designed in accordance with the Austroads *Guide to Pavement Design* and submitted to Council for approval.
- (2) A full depth concrete road can be designed for urban streets subject to the following requirements:
  - (a) The pavement must have a minimum 100 mm thick unbound granular sub-base consisting of Class 2.1 granular material (MRS 05);
  - (b) The flexural strength of the concrete must be a minimum 4.0 MPa;
  - (c) The Load Safety Factor (LSF) must be 1.3;
  - (d) Integral or structural concrete shoulders are not required;
  - (e) Special attention should be paid to the jointing details in regard to ride quality and the provision of additional conduits for future services;
  - (f) The design, detailing and construction of concrete pavements for residential streets should be in accordance with the publication *Guide to Residential Streets and Paths* (Cement & Concrete Association of Australia, C&CAA T51, February 2004).

#### SC6.3.3.13.4 Pavement widening (specific requirements)

- (1) The pavement design for road widening must be in accordance with **Section SC6.3.3.13.3.2 (Pavement thickness)**. However, where the design pavement depth is less the existing pavement, the existing pavement depth must be adopted to provide for pavement drainage.

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- (2) Existing pavement must be cut back in 150 mm steps for each layer of the new pavement widening.
- (3) Seals must overlap a minimum of 300 mm.

#### **SC6.3.3.13.5 Subsoil drainage**

- (1) Subsoil Drainage, refer Austroad Part 10 and Figure 5.2 - Pavement Drain Type 2 Austroads Part 5: Drainage Design (2008, p.58), must be provided in the following locations:
  - (a) Under all kerb, kerb and channel or edge restraint (where underground drainage is available);
  - (b) Under all traffic islands containing landscaping;
  - (c) In all locations where the wet weather water table is above the subgrade or where natural springs may wet the pavement;
  - (d) In any location where there is insufficient side drainage (table drains) or where the pavement materials are not free draining.
- (2) Subsoil drainage should only be used in rural areas where table drains will not adequately protect the pavement from wetting (i.e., springs).

#### **SC6.3.3.14 Pavement construction**

- (1) The technical requirements for the construction of unbound pavements are defined in the Guide to Pavement Technology Part 8: Pavement Construction (Austroads 2009).
- (2) When constructing a new road, a Developer must operate under a Quality Management System (QMS). Generally this would be associated with an ROL involving more than 3 new residential allotments and MCU having more than 4 car parks.
- (3) Geotextile Filters are the preferred subsoil for all Bundaberg Regional Council roads, unless specifically approved otherwise by the relevant Council development engineer. See also Figure 5.2 Pavement Drain Type 2 (Austroads Part 5: Drainage Design 2008, p.58)
- (4) Unbound granular pavement materials must be supplied in accordance with DTMR standards,

#### **SC6.3.3.15 Road surfacing**

##### **SC6.3.3.15.1 Asphalt pavements**

- (1) Asphalt is the required surfacing material for all roads within the urban, CBD/commercial and industrial road hierarchy. Asphalt must be supplied and placed in accordance with MRS30 and MRTS30.
- (2) For all new construction, i.e., previously unsealed surfaces, the surface must be primed with AMC00 or AMC0 (MRTS20) sprayed at a rate of 1 - 0.82 l/m<sup>2</sup>. The prime must be allowed to cure for a period of 48 hours prior to the tack coat and application of the Asphalt surfacing.
- (3) For boney unbound pavement surfaces (low fines) Council reserves the right to increase the minimum application rate and/or request an application of single coat sprayed seal. The necessity for a revised application rate and/or bitumen seal will be determined by the relevant Council development engineer prior to the inspection of the base.
- (4) Note: all recycled pavements require a single coat 10 mm sprayed seal and a minimum of 40 mm asphalt.

##### **SC6.3.3.15.2 Bitumen seals**

###### *SC6.3.3.15.2.1 Supply of bitumen*

Bitumen and associated materials must be supplied in accordance with MRS11 and MRS 17 – 20.



**SC6.3.3.15.2.2 Cover aggregate**

Supply of precoated aggregate must be in accordance with MRS22.

**SC6.3.3.15.2.3 Surfacing**

Bitumen surfacing must be in accordance with MRS11 with the seal consisting on a prime and then two coat seal.

**SC6.3.3.15.2.4 Typical application rates for double/double seal**

The typical application rates are provided in **Table SC6.3.3.15.2.4.1 (Typical rates for prime and seal road surfacing)**.

**Table SC6.3.3.15.2.4.1 Typical rates for prime and seal road surfacing**

Surfacing	Spray Rate (l/m <sup>2</sup> )	Cover Aggregate Rate (m <sup>3</sup> to m <sup>2</sup> )
Prime	1 - 0.82 AMC00 or AMC0	Na
<i>Allow 48 hours between prime and seal</i>		
First Coat <sup>(1)</sup>	1.35 Aggregate 16 mm	1 to 88
Second Coat	0.72 Aggregate 7 mm	1 to 175

Note—

- (1) The spray rate must be confirmed by the Superintendent or Supervising Engineer prior to its application.

**SC6.3.3.15.3 Threshold treatments****SC6.3.3.15.3.1 Stamped asphalt**

Council's preferred treatment for entrance thresholds is stamped asphalt as it combines a decorative appearance with a strong and low maintenance asphalt base. Council recommends "StreetPrint" or similar at these locations. For more information on "StreetPrint" refer to <http://www.bricknpave.com.au/StreetPrint.htm>.

**SC6.3.3.15.3.2 Concrete surfacing to full depth pavement**

- (1) Exposed aggregate surface is permitted in local traffic area threshold treatments provided that the crushed aggregate finish:
  - (a) Achieves a minimum Polished Aggregate Friction Value (PAFV) value of 45
  - (b) Complies with the skid resistance requirements of the Guide to Pavement Technology Part 3: Pavement Surfacing (Austroads 2009) and the Guide to Residential Streets and Paths – 2nd Ed (Cement & Concrete Association of Australia 2004).
- (2) Stamped concrete is not permitted as the surface texture can cause a potential hazard for cyclists.

**SC6.3.3.15.3.3 Coloured threshold treatments**

- (1) Coloured surface treatment must serve a traffic management function such as thresholds at local traffic areas and to visually enhance school zones. The use of coloured surface treatment as an aesthetic enhancement to the streetscape is not permitted. For further details and particular requirements on coloured treatments, texturing, decorative, and high friction coatings on asphalt and concrete surfaces, refer to the DTMR *Guideline to pavement markings (June 2013)*.
- (2) The colour of the threshold treatment must be approved by Council.

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### SC6.3.4 Water and wastewater

The design and construction standard for Council's water and wastewater networks are stated in the WBBROC Water Services Design and Construction Code. This code is consistent with the SEQ Design and Construct Code which in turn reflects the various, nationally accepted WSAA codes. Further reference documents and requirements are included in the remainder of this section.

#### SC6.3.4.1 Design standards and reference documents

The planning and design of development within the Bundaberg Regional Council local government area must be undertaken in accordance with the current edition of the following key reference documents, unless specifically outlined in this section or other Council references dictate otherwise:

- (a) WBBROC Water Services Design and Construction Code (including relevant WSAA codes and Australia Standards)
- (b) DERM – Planning Guidelines for Water and Sewerage, (DERM, Queensland Government 2010)
- (c) Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots (Queensland Fire and Emergency Services, Queensland Government 2015)
- (d) Bundaberg Regional Council – Standard Drawings – See **Appendix SC6.3A (Standard drawings list)**.

#### SC6.3.4.2 General design considerations

##### SC6.3.4.2.1 Easements

- (1) Council's requirements for easements are listed in WBBROC Water Services Design and Construction Code.
- (2) Council has a standard instrument of easement, for use by Developers. A copy of the document can be made available upon request.

##### SC6.3.4.2.2 Building over or near water or wastewater infrastructure

- (1) Developers and designers are advised that Council will not allow dwellings to be constructed over water and wastewater infrastructure.
- (2) Permissible clearances are given in WBBROC Water Services Design and Construction Code.
- (3) Part 1.4 of the Queensland Development Code (QDC MP 1.4) provides a mechanism for initial assessment of potential impact a building or structure may have on infrastructure assets and provide some acceptable solutions. These should be consider in association with the WBBROC Water Services Design and Construction Code.

##### SC6.3.4.2.3 Connection to existing water or wastewater infrastructure

- (1) Any works performed on live water or wastewater infrastructure will be undertaken by Council at the Developer's expense.
- (2) Council will provide a quotation to undertake the works at the written request of the Developer (FM-7-467 "Notice to Service Provider Application for Water & Sewer" is available at [www.bundaberg.qld.gov.au/council/forms](http://www.bundaberg.qld.gov.au/council/forms)). The request must be accompanied by plans marked 'For Construction'.

##### SC6.3.4.2.4 Alignment of water or wastewater mains

- (1) The alignment of water or wastewater mains shall be in accordance with WBBROC Water Services Design and Construction Code with further clarification as follows:
  - (a) *Road Reserve* – Refer Council's standard drawing number R1050,

- (b) *Allotments* – except where perpendicular to or intersecting with a property boundary, a water or wastewater main shall not be situated closer than 1.5 metres to a property boundary (fenceline).

#### **SC6.3.4.2.5 Water or wastewater mains within parks and reserves**

- (1) Water or wastewater mains within parks and reserves must be contained within an easement as outlined in WBBROC Water Services Design and Construction Code.
- (2) A Developer will be required to negotiate with DERM to obtain an easement over proposed water or wastewater infrastructure where the aforesaid infrastructure traverses an existing reserve. All costs associated with obtaining and registration of the easement will be at the Developer's expense.

#### **SC6.3.4.2.6 Replacement of existing water mains**

The Developer must replace existing water mains with ductile iron where:

- (a) Trench - it is necessary to trench under the main,
- (b) Subgrade - refer also section 11 of the Roads and Pathways chapter of the development manual.

#### **SC6.3.4.2.7 Flushing and sterilisation of water mains**

- (1) The Developer must provide flushing and sterilisation points as per WBBROC Water Services Design and Construction Code. The Council's preferred sterilisation point is a hydrant.
- (2) Council will undertake sterilisation of the water main prior to connection to the water infrastructure. Works will be conducted at the Developer's expense.

#### **SC6.3.4.3 Design programs for sizing mains**

The following computer programs are accepted for design of main sizing (also refer Table 3.2 of WSA 03):

- (a) SewGEMS, and
- (b) WaterGEMS

#### **SC6.3.4.4 Partial Water Services**

For greenfield development, Council requires the provision of partial water services in accordance with WBBROC standard drawing WBB-WAT-1109-2. The Developer/Applicant is to coordinate the tag and bagging of these services during Operational Works (see SC6.3.13.8)

#### **SC6.3.5 Stormwater**

- (1) The Queensland Urban Drainage Manual (QUDM) Fourth Edition, 2016 shall be the basis for the design of stormwater drainage, except as amended by this manual.
- (2) The design of the proposed drainage system and earthworks for a development commences with establishing a lawful point of discharge for the site. Once the lawful point of discharge has been established to the satisfaction of Council's development engineers then the Applicant/Developer must provide a drainage solution that does not adversely affect the upstream or downstream drainage systems. If the downstream system is not capable of carrying the increased discharge the Applicant/Developer must indicate what measures are proposed to mitigate the impact. The Applicant/Developer must also consider any trunk drainage identified in the Local Government Infrastructure Plan that is required to support future upstream or downstream developments.

#### **SC6.3.5.1 Design standards, reference documents and acceptable programs**

The planning and design of the developments within the Bundaberg Regional Council local government area must be undertaken in accordance with the current edition of the following key reference documents, unless specifically outlined in this chapter or other Council references dictate otherwise:

## SC6.3 Planning scheme policy for development works

- (a) Queensland Government – at the time of writing this document the series was as listed below:
- (i) State Planning Policy - state interest guideline Water quality,
  - (ii) Urban Stormwater Quality – Planning Guidelines (2010),
  - (iii) Environmental Protection (Water) Policy 2009 – Burrum, Gregory, Isis, Cherwell and Elliott Rivers environmental values and water quality objectives – Basin 137 at <https://www.ehp.qld.gov.au/water/policy/pdf/documents/burrum-river-ev-2010.pdf>, and Plan WQ1371 at <https://www.ehp.qld.gov.au/water/policy/pdf/plans/burrum-river-ev-plan-2010.pdf>.
- (b) IPWEA – Queensland Urban Drainage Manual Fourth Edition, 2016
- (c) Environment Protection Agency's (EPA) – Guideline – EPA Best Practice Urban Stormwater Management – Erosion and Sediment Control <http://www.derm.qld.gov.au/register/p02301aa.pdf>
- (d) Engineers Australia – at the time of writing this document, the series relating to development was as listed :
- (i) Australian Rainfall and Runoff (ARR) – 1987 and 2016,
  - (ii) Australian Runoff Quality – A guide to water sensitive urban design.
- (e) *EDAW – Ecological Engineering Practice Area* – Urban Stormwater – Queensland best practice environmental management guidelines 2009
- (f) *Water by Design* – at the time of writing this document, the series relating to development was as listed:
- (i) Music Modelling Guidelines (2010),
  - (ii) Construction and Establishment Guidelines – Swales, Bioretention Systems and Wetlands.
  - (iii) Bundaberg Regional Council Urban Stormwater Quality Management Plan (BMT WBM 2013).
- (g) The following Australian Standard:
- (i) AS1554 Structural Steel Welding
  - (ii) AS1597 Precast Reinforced Concrete Box Culverts
  - (iii) AS3725 Design for Installation of Buried Concrete Pipes
  - (iv) AS 4058 Precast Concrete Pipes
  - (v) AS4139 Fibre Reinforced Pipes
  - (vi) AS4671 Steel Reinforcing Materials
- (h) Austroads – Waterway Design – A Guide to the Hydraulic Design of Bridges, Culverts and Floodways
- (i) *Austroads - Guide to Pavement Technology* – at the time of writing this document, part relating to development was AGPT10-09 - Part 10: Subsurface Drainage
- (j) *Australian Institute for Disaster Resilience – Managing the floodplain – a guide to best practice in flood risk management in Australia – Handbook 7 - Floodplain Management in Australia: Best Practice Principles and Guidelines*
- (k) *John Argue – Storm Drainage Design in Small Urban Catchments – A handbook for Australian Practice – Special Report 34 Australian Road Research Board*
- (l) International Erosion Control Association – Best Practice Erosion and Sediment Control
- (m) *Lewis Rossman – Stormwater management model User's Manual Version 5 – United States Environmental Protection Agency*
- (n) *Bundaberg Regional Council – Standard Drawings – See Appendix SC6.3A (Standard drawings list).*

## Schedule 6 – Planning Scheme Policies

### SC6.3.5.2 Environmental requirements

#### SC6.3.5.2.1 Water quality

- (1) Designs must incorporate the principles of Water Sensitive Urban Design (WSUD) into the development at all stages of the development.
- (2) For urban catchments, the Bundaberg Regional Council Urban Stormwater Quality Management Plan (USQMP) has identified the Environmental Values (EVs) and Water Quality Objectives (WQOs) and key opportunities for implementing stormwater best management practices.
- (3) Developments are classified as being either high or low risk.
- (4) Developments are high risk if they:
  - (a) fall within the urban catchments identified in the USQMP, and
  - (b) have and a site area 2500m<sup>2</sup> or greater, and
  - (c) have 6 or more lots/dwellings, or an impervious area greater than 25% of the net developable area.
- (5) All other developments are low risk unless the development is deemed to be of a size and scale that is inconsistent with the planning scheme by the assessment manager. If in doubt, the catchment risk will be determined at the pre-lodgement meeting.
- (6) High risk developments trigger the necessity to identify Environmental Values (EVs) and Water Quality Objectives (WQOs) and demonstrate how they are achieved through the provision of site-based stormwater management plans (SBSMP).
- (7) SBSMP must aim to :
  - (a) address both quality and quantity control issues at pre-development (approval) stage;
  - (b) integrate permanent stormwater management features into overall development landscape plan;
  - (c) identify legal point(s) of discharge (these need to be identified before development approval is given);
  - (d) address ecological protection issues that are influenced by the management of stormwater (e.g., waterway corridor vegetation and habitat management issues);
  - (e) identify clearly pollutants of concern and their sources for both the construction and operational phases of development
  - (f) be updated and submitted for post-approval (operational works) stages, which will include Sediment and Erosion Control Plans (ESCP);
- (8) The format of SBSMP is to be determined along with the WQOs at a pre-development meeting, however, they can be generally in accordance with Brisbane City Council Subdivision and Development Guidelines Part C – Water Quality Management Guidelines.
- (9) The water quality objectives for low risk developments are usually achieved by best practice standards. Low catchment risk developments would provide controls such as in pit silt traps (e.g., Ecosol RSF 100 or equivalent) and sediment and erosion control measures pre- and post-construction.

#### SC6.3.5.2.2 Erosion and sediment control

Erosion and Sediment Control must be designed in accordance with the recommendations contained within the Environment Protection Agency's (EPA) – *Guideline – EPA Best Practice Urban Stormwater Management – Erosion and Sediment Control* and International Erosion Control Association's (IECA) – *Best Practice Erosion & Sediment Control* and 'Queensland Urban Drainage Manual' (QUDM).

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### SC6.3.5.3 Lawful point of discharge

#### SC6.3.5.3.1 General

- (1) QUDM defines the lawful point of discharge as:
 

*'A point of discharge of stormwater from an allotment that is considered to satisfy the requirements specifically outlined with the Queensland Urban Drainage Manual'*
- (2) Council's criteria for determining the lawful point of discharge are based on the QUDM. The criteria are as follows:
  - (i) Will the proposed development alter the site's stormwater discharge characteristics in a manner that may substantially damage a third party property?
    - a. If not, then no further steps are required to obtain tenure for a lawful point of discharge (assuming any previous circumstances and changes were lawful);
    - b. If there is a reasonable risk of such damage, then consider issue (ii) or (iii);
  - (ii) Is the location of the discharge from the development site under the lawful control of Council or other statutory authority from whom permission to discharge has been received? This will include a park, watercourse, drainage or road reserve, stormwater registered drainage easement, or land held by local government (including freehold land). Council will require information about the potential impact of the site's stormwater discharge characteristics on third party properties (particularly those downstream of the proposed discharge point) before it will consent to the discharge entering its land;
    - a. If so, then no further steps are required to obtain tenure for a lawful point of discharge;
    - b. If not, then consider issue (iii). A land owner or regulator may require that the developer obtain an authority to discharge as described in (iii) in order for the stormwater to ultimately flow to a location described in (ii);
  - (iii) An authority to discharge over affected properties will be necessary. In descending order of certainty, an authority may be in the form of:
    - a. Dedication of a drainage reserve or park;
    - b. A registered easement for stormwater discharge/works;
    - c. Written discharge approval via a formal agreement.
- (3) Developer/Applicant should refer to Section 3 of QUDM when assessing the potential damage and nuisance that may be caused by the proposed development. It is the Developer/Applicant's responsibility to not cause nuisance, rather than the regulator's responsibility to assess and condition works to prevent a nuisance. Further, as outlined in QUDM any assessment of the potential adverse impacts of stormwater changes on other properties should not only consider the current usage of the land, but also the value and/or potential of the land to be developed for future uses.

#### SC6.3.5.3.2 Due Diligence Assessment

- (1) The Developer/Applicant must submit to Council the Due Diligence Assessment undertaken as per Section 3.5 of QUDM. This will include determining the pre-development drainage situation. Clearly identifying proposed drainage works and determining the changes in volume, rate, frequency, duration, velocity, location and quality of the stormwater runoff. The assessment will also provide evidence that the post-development discharge can be managed without causing an actionable nuisance.
- (2) The Developer/Applicant is to notify Council where the pre-development drainage analysis has identified deficiencies in the existing drainage system. Older design standards and changes in modelling techniques (i.e., ARR87 to ARR16) may have resulted in parts of the drainage network no longer being able to cater for the design storm flows. Council will consider these issues as per Section 13.1 of QUDM.

#### SC6.3.5.3.3 Easements

- (1) The extent of an easement is determined by the necessity to obviate an actionable nuisance. Hence, this issue needs to be determined early in the development process.

Accordingly, it is beneficial to have a pre-submission meeting to determine the likelihood of a nuisance issue.

- (2) Generally, where an easement is required over downstream properties, Council will require the Developer/Applicant to obtain an in-principle agreement from effected property owners. The in-principle agreement would note the characteristics of the flow, the proposed solution, and the necessity for registration of easement(s) (prior to submission of the operational works approval).
- (3) Council has a standard instrument of easement for use by developers for Drainage (pipes) and Open Cut Drainage (open drains) for use by developers; a copy of the instrument can be made available upon request.

#### SC6.3.5.4 Flood studies

- (1) Development within the Flood Hazard Area will require a Flood Hazard Assessment and Mitigation Report as described in Section SC6.5.3.5. To aid in the development of this report and/or the Due Diligence Assessment (see SC6.3.5.3.2), Council has the following flood studies and their respective models:
  - (a) Burnett River Flood Study (GHD, 2013) – 1D/2D TUFLOW model;
  - (b) Kolan River and Gin Gin Creek (GHD, 2014) – 1D/2D TUFLOW model;
  - (c) Baffle Creek Flood Study (O2, 2014) - only draft report available;
  - (d) Burrum, Cherwell, Isis, Gregory River Flood Study – (GHD, 2015) – 1D/2D XPSWMM Model;
  - (e) Saltwater Creek Flood Study (Cardno, 2010) – 1D/2D XPSWMM Model;
  - (f) Bundaberg Creek Flood Study (Cardno, 2013) – 1D/2D XPSWMM Model;
  - (g) McCoys Creek Flood Study (GHD, 2015) - 1D/2D XPSWMM Model;
  - (h) Bundaberg Coastal Small Streams (BMT WBM, 2014) - 1D/2D XPSWMM Model;
  - (i) Apple Tree Creek Flood Study (Cardno 2004) – HEC-RAS Model;
  - (j) Palmer and O'Connell Creeks Drainage Study (GHD, 1997) – HEC-RAS Model;
  - (k) Non-urban Creeks and Overland Flow Path Flood Study – 2D TUFLOW Model; and
  - (l) Storm Tide Flood Study (BMT WBM, 2013) – only report available.
- (2) Copies of the flood studies and models are available on request.
- (3) New flood studies are commissioned regularly by Council. The Developer/Applicant should check for the availability of new flood studies prior to undertaking any modelling works.

#### SC6.3.5.4.1 Design programs

- (1) Council prefers the submission of major drainage studies undertaken by the following programs: XPSWMM, XPRAFTS, TUFLOW and HEC\_RAS.
- (2) The preferred hydrology for the major storm event involving larger catchment is the listed in **Section SC6.3.5.8.3 (Infiltration factors initial and continuing losses)**.

#### SC6.3.5.4.2 Minor Hydraulic Designs

Council has the ability to check design's undertaken in: 12D, XPDRAINS and XPSTORM. Refer also to Section **SC6.3.5.10.10 (Drainage calculation presentation)** for standard of presentation.

#### SC6.3.5.5 Design storms

**Table SC6.3.6.5.1 (Design storms for major and minor drainage systems)** provides the design storms for developments within the Bundaberg Regional Council local government area.

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**Table SC6.3.6.5.1 Design storms for major and minor drainage systems**

		Design Storm
<b>Major Drainage System</b>		100 year ARI (1% AEP) plus Climate Change
<b>Minor Drainage System</b>		
Development Category (QUDM)	BRC Planning Scheme – Zone	ARI (AEP)
Central business and commercial	Principal centre zone, Major centre zone, district centre zone, Local centre zone, Neighbourhood centre zone, Specialised centre zone	10 year ARI (10% AEP)
Industrial	Industry zone, High impact industry zone	10 year ARI (10% AEP)
Urban residential high density	High density residential zone	10 year ARI (10% AEP)
Urban residential low density	Medium density residential zone, Low density residential zone, Emerging community zone, Limited development zone, Community facilities zone	5 year ARI (18% AEP)
Rural Residential	Rural residential zone, Sport and recreation zone	2 year ARI (39% AEP)
Open space – parks, etc.	Rural zone, Open space zone, Environmental management and conservation zone	1 year ARI (63% AEP)
Roadway Criteria		ARI (AEP)
Major Road (i.e., Arterial, Sub-arterial, Trunk Collector (Suburban), Industrial Collector, Principal Rural Road)	Table Drain/Kerb & Channel	10 year ARI (10% AEP) <sup>(1)</sup>
	Cross Drainage (Culverts)	50 year ARI (2% AEP) <sup>(2,3)</sup>
All other Roads	Kerb and Channel	Use relevant Development Category above
	Cross Drainage (if Rural Culverts <sup>(4)</sup> )	10 year ARI (10% AEP) <sup>(3)</sup>

Notes—

- The design storm for Major Road overrides the Development Category design storm
- Designer must ensure that the 100 year ARI (1% AEP) backwater does not enter properties upstream. In addition the downstream face of the causeway embankment may need protection where overtopping is likely to occur and d/v checks must still be below maximum levels
- may change if the Roadways is deemed to be part of Council's emergency evacuation route
- Rural cross drainage requirement may be reduced to 2 year ARI (39% AEP) where risk level is medium in 50 year ARI (2% AEP) flood event as defined in SCARM 73. See also Section SC6.3.5.10.7.2 for further guidance on emergency evacuation routes.

**SC6.3.5.6 Catchment hydrology – rainfall intensity**

- Rainfall intensity-frequency-duration (IFD) data used must be in accordance with the following:
  - The IFD data stated within an adopted flood study from SC6.3.5.4 are to be used for developments utilising these existing adopted flood models. These IFD data will generally be consistent with ARR 1987; or
  - Where a new flood model is required the IFD data is to be obtained from the Bureau of Meteorology and is to utilise ARR 2016. These IFD are available here: <http://www.bom.gov.au/water/designRainfalls/revise-ifd/>.



### SC6.3.5.7 Catchment Hydrology – rational method design details

#### SC6.3.5.7.1 Coefficient of runoff

The fraction impervious for various development types must be in accordance with QUDM except as specifically mentioned in **Table SC6.3.6.7.1.1 (Fraction impervious – QUDM Table 4.5.1 exceptions)**.

**Table SC6.3.6.7.1.1 Fraction impervious – QUDM Table 4.5.1 exceptions**

Development Category	Fraction impervious (fi)
Urban Residential –	
High Density	0.9
Medium Density	0.75
Low Density	0.5

Note—refer to the planning scheme for the definition of the development category.

#### SC6.3.5.7.2 Time of concentration

- (1) The standard inlet times depicted in Table 4.6.1 QUDM may be used or alternatively sheet flow times are to be determined using Friend's Equation with the addition of pipe and channel flow times determined in accord with sections 4.6.7 and 4.6.8 of QUDM.
- (2) For sheet flow lengths outside the limitations of the Friend's Equation and for rural catchments, the time of concentration shall be calculated using the Bransby Williams or modified Friend's Equation (refer QUDM 4.6.11).

### SC6.3.5.8 Catchment hydrology – runoff method – design details

#### SC6.3.5.8.1 Temporal patterns – ARR 1987

The temporal patterns stated within an adopted flood study from SC6.3.5.4 are to be used for developments utilising these existing flood models. These temporal patterns will generally be consistent with ARR 1987.

#### SC6.3.5.8.2 Ensemble temporal patterns - ARR 2016

Where a new flood model is required the 10 ensemble temporal patterns from ARR 2016 are to be analysed (see Book 2, Chapter 5, Section 5, ARR 2016). These ensemble temporal patterns have been chosen to represent the variability in observed patterns. The median temporal pattern (i.e., 6th highest flow rate out of 10 ensemble temporal patterns) is to be used for design.

#### SC6.3.5.8.3 Infiltration factors initial and continuing losses

- (1) Hydrological data modelling should be based on the following:
  - (a) Routing Method – Laurenson (do not calculate B unless specifically approved),
  - (b) Infiltration Method – Uniform Loss –generally will be as follows:
    - (i) *Urban and Rural Impermeable* – initial 0 mm/h, absolute continuing 0 mm/h;
    - (ii) *Urban permeable* – initial 0 mm/h, absolute continuing 2.5 mm/h;
    - (iii) *Rural permeable* – initial 0 mm/h, absolute continuing 2.5 – 3.5 mm/h;
  - (c) Manning Roughness – impermeable 0.014, permeable 0.025 – 0.035 (this value may be adjusted to suit).
- (2) The above values allow for an embedded critical rainfall event occurring within a saturated catchment – which anecdotally represents the critical event within Bundaberg.

### SC6.3.5.9 General design considerations

#### SC6.3.5.9.1 Minimum grade on allotments

For minimum grade on allotments see section SC6.3.10.1.

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#### SC6.3.5.9.2 Overland flow paths

- (1) An overland flow path is defined as follows:
  - (a) Where a piped drainage system exists, the path-of-travel of the floodwaters which exceed the capacity of the underground drainage system,
  - (b) Where no piped drainage system (or the outlet to the system) or other form of defined watercourse exists, the path taken by surface runoff from higher parts of the catchment. This does not include a watercourse or gully with well defined banks.
- (2) Overland flow paths must have velocity\*depth not greater than 0.4 m<sup>2</sup>/s in high risk areas and 0.6 m<sup>2</sup>/s elsewhere.
- (3) Any proposed development, especially those involving filling, needs to take account of existing or created overland flow paths and make due provision in the design. Overland flow paths must be clearly indicated on the drawings and supported by calculations, cross sections and plan layouts shown on the approved engineering drawings with due consideration of freeboard.
- (4) Developments within any overland flow paths are generally not permitted unless the Developer/Applicant can satisfactorily demonstrate compliance with all the flood immunity freeboard and trafficability (especially d\*v issues and emergency evacuation routes) requirements set out in this document.
- (5) In residential subdivisions, overland flow paths must be located in roadways, parks (in a combined park and drainage reserve) or pathways.
- (6) No overland flow paths will be permitted through urban allotments – unless specifically approved by Council. Where the overland flow path is approved such path must be covered by an easement with the preferred tenure i.e., easement or reserve, to be determined by Council.
- (7) In site developments such as apartment buildings or townhouses where the sites are filled to provide suitable falls to the roadway, the Developer must pay particular attention to the preservation of existing overland flow paths, the obstruction of which may cause flooding or ponding of stormwater on adjoining properties.
- (8) Where Overland flow paths should be located through commercial/industrial development such paths must be located along and through the car park/driveways and must be protected by an easement.

#### SC6.3.5.10 Outlets – point of discharge – under control of Council

- (1) The Developer/Applicant should not assume that drainage channels, overland flow paths, drainage outlets, energy dissipaters or stormwater detention/polishing basins will automatically be permitted in public space (newly created Council asset or existing Council asset).
- (2) Prior to the design of any stormwater discharge facility into Council controlled land, the Developer/Applicant should consult with the Council's development engineers to ensure that Stormwater outlets in any public space (existing or newly created Council asset) must be addressed at the development approval (conceptual design) stage.

##### SC6.3.5.10.1 Tidal Effects

Tidal levels must be in accordance with Council's storm tide model and QUDM.

##### SC6.3.5.10.2 Pipe Considerations

###### SC6.3.5.10.2.1 Standard Alignment

The standard alignment for stormwater drainage lines is given in Council Standard Drawing R1050 – Public Utilities Typical Service Conduit Alignment.

###### SC6.3.5.10.2.2 Standard Requirements

Pipes used may be either reinforced concrete or fibre reinforced concrete type and have the following properties:

- (a) Minimum pipe sizes:
  - (i) Low flow pipes 300mm diameter (unless inter-allotment drainage);
  - (ii) Other 300mm diameter – refer QUDM - Minimum pipe sizes;
  - (iii) Between manholes - 375mm diameter;
- (b) Minimum desirable grade refer QUDM;
- (c) Minimum Class 3 within roadways,
- (d) Minimum clear cover shall be 600mm to subgrade in all instances, unless approved otherwise by a Council development engineer;
- (e) Box culverts shall be precast reinforce concrete and shall have cast in-situ bases with subsurface drainage outlets at 15-10m intervals.

SC6.3.5.10.2.3 Start HGL and Maximum Flows

- (1) Start HGL will be, the maximum of, 150 mm below the invert of the kerb and channel (when entering an existing pit) otherwise, in accordance with QUDM – Tailwater levels.
- (2) Where a Development Approval promulgates a point of discharge into an existing inlet pit, the capacity of the pipe up to 100 year ARI (1% AEP) must be limited to the development's proportional area percentage of the inlet capacity of the pit at 5 year ARI (20% AEP) (or value given in **Table SC6.3.6.5.1 (Design storms for major and minor drainage systems)**).

SC6.3.5.10.3 Access Chambers

- (1) Manhole or access chamber spacing shall be in accordance with Section 7.6 of QUDM.
- (2) Where a pre-cast gully pit is provided as an access chamber the chamber shall be constructed to the invert of the pipe.
- (3) Combined access chamber/gully pits shall only be used up to a 600mm RCP.
- (4) Chambers may be pre-cast or cast insitu concrete boxes, or pre-cast FRC or RCPs. Chambers may only be used for inter-allotment drainage below 300 mm diameter. Minimum dimensions of the pits are provided in **Table SC6.3.6.10.3.1 (Inter-allotment chamber pit dimensions)**. For inter-allotment drainage pits, junctions or changes in direction for pipes over 300 mm refer standard drawings for further details.

**Table SC6.3.6.10.3.1 Inter-allotment chamber pit dimensions**

Minimum Depth to Invert	Boxes – Internal Dimensions (mm)	FRC or RCP Systems
< 900 mm	600*600 <sup>(1)</sup>	600 mm Diameter
> 900 mm	600*900 <sup>(1)</sup>	750 mm Diameter

Note—<sup>(1)</sup> Minimum wall thickness 100 mm all cast insitu boxes

- (5) FRC and RCP systems shall be constructed by embedding the lower precast shaft section into a wet cast-insitu concrete base. Cut outs of pipe penetrations shall be made using concrete saws/drills in such a manner as to minimise damage to the adjacent pipe materials.
- (6) Lids to cast-insitu manholes shall be light duty in allotments, gardens etc., and heavy duty elsewhere. Close fitting cast iron galvanised steel or concrete infill type (Gatic Light Duty, Polycrete Broadstel or similar) of approximately the same internal dimensions as the manhole.
- (7) Lids to FRC and RCP manholes shall be the manufacturers' proprietary concrete or concrete infill type.
- (8) Infill concrete shall be 25 MPa.
- (9) Lids must match finished surface ground slope and level.

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#### **SC6.3.5.10.4 Pipe junctions – instead of access chambers**

Branch pipe connections are allowed without an access chamber subject to the following:

- (a) Branch size 150 mm on 450 – 900 mm pipe,
- (b) Branch size 300 mm on 900 – 1500 mm pipe,
- (c) Rocla (or equivalent) saddle slope junction is to be used,
- (d) Intercept angle is to be not less than 45 degrees in the direction of flow and always in direction of flow.

#### **SC6.3.5.10.5 Stormwater inlet pits**

- (1) Field inlet pits are to be constructed in accordance with the Standard Drawings all pits must be designed to accommodate a 50 percent blockage factor on the inlet calculations, unless the field inlet has a depression on all four sides as indicated on Council Standard Drawing D1002.
- (2) Council has approved the use of lip in line (with grate) drainage pits unless the pit is located in or near a bus crossing, refer Standard Drawings for further pit details.

#### **SC6.3.5.10.6 Floodways/open channels**

- (1) Floodways and open channels should generally be designed in accordance with section 9 of QUDM. Unless specifically approved otherwise Council requires open channels and floodways to be designed in accordance with the following:
  - (2) Concrete low flow invert 1.2 metres wide falling to a type 3 MRD drive over kerb or equivalent (ignore effect on manning n),
  - (3) Side slopes not greater than 1 in 6 unless approved by a Council development engineer,
  - (4) Fall towards invert of 1 in 100 minimum in trapezoidal cross section,
  - (5) Minimum fall of the channel is 0.1 percent, however, isolated seepage/French drains will be required at not less than 250 metre intervals,
  - (6) Landscaping and tree planting to facilitate minimal visual impact of the open drain.
  - (7) An open channel with critical or supercritical conditions is not acceptable. The velocity should be limited to less than 90% critical velocity in the major storm event (or Froude less than 0.8). The maximum velocity allowed in an unlined channel is set out in QUDM Section 8.07 for earth and vegetated channels and should not exceed 2 m/s unless approved by the relevant Council development engineer.
  - (8) Have velocity\*depth not greater than 0.4 m<sup>2</sup>/s in high risk areas and 0.6 m<sup>2</sup>/s elsewhere.
  - (9) Channel velocity checks should assume that downstream undersized drainage structures, such as culverts, will be upgraded to current design standards at some time in the future. The afflux caused by any roadway crossing over a watercourse should not affect the adjoining properties.

#### **SC6.3.5.10.7 Flow depths (freeboard) and flooded width limitation**

##### *SC6.3.5.10.7.1 Urban (including industrial and commercial)*

- (1) The flow depth and width limitations given in QUDM are adopted. However, the lower value of 0.4 m<sup>2</sup>/s must be adopted for all lateral drainage conditions or where loss of life situation occurs for longitudinal drainage conditions.
- (2) Freeboard given in Figure 7.3.1 for QUDM is also adopted, however, where an existing situation has a freeboard greater than the value given in QUDM the existing freeboard must be maintain, unless specifically approved by the relevant Council development engineer.

##### *SC6.3.5.10.7.2 Emergency evacuation routes*

At least one identified emergency exit route must be designed to the following considerations - derived in accordance with SCARM 73 (CSIRO 2000):

- (a) Medium Level Hazard – Adjusted Hazard Estimate for the 100 year ARI (1% AEP) event,
- (b) Low Level Hazard – Adjusted Hazard Estimate for the 50 year ARI (2% AEP) event.

#### SC6.3.5.10.8 Detention basins

- (1) It should be noted that *ad hoc* detention basins in public land are not a preferred drainage solution and may not be used without the prior approval of Council.
- (2) Detention basins shall be designed in accordance with Section 5 of QUDM and to criteria nominated by Development Approval.
- (3) Other conditions pertaining to the design and construction of detention basins are given as follows:
  - (a) Basins must be visually and physically integrated into the parkland. Landscape plans are to be supplied as part of the operational works approval,
  - (b) All batter slopes less than 1(V):6(H),
  - (c) Provision of concrete invert connecting all inlets to outlets – designed to accommodate the load of Council's maintenance equipment,
  - (d) Provision of 1.5% crossfall to detention basin floor and 0.7% if pipes or underground storage,
  - (e) Provision of appropriate signage and depth markers,
  - (f) Provision of safety grilles on outlets,
  - (g) All outlet structures shall be designed to allow egress by small children.
- (4) Major detention systems, as determined by Council, on private land (on-site stormwater detention basin) will only be permitted in developments pertaining to material change of use such as Community Titles Scheme, commercial and industrial developments where such basin is covered by an appropriate easement and maintenance plan.
- (5) The detailed design submission must be prepared and certified by an RPEQ suitably qualified in the field of drainage/hydraulic investigations. The following information must be included in the submission:
  - (a) Calculations for each storage – major basins must be undertaken by an approved program using the documented runoff routing method described in this development manual,
  - (b) Where WSUD components are proposed the water depth must be limited to under 500 mm with maximum extended detention depth of not greater than 300 mm,
  - (c) Calculations verifying that the flow paths/floodways, drainage systems and any overflow weirs have sufficient capacity – to cater for the design storm event,
  - (d) Design plans and engineering plans.
- (6) Underground detention facilities are not a preferred drainage solution and may not be used without the prior approval of Council. However, in the event that an underground detention storage system is required, the design should address a number of public health, maintenance and pollution issues. The storage should be self-cleaning, well ventilated, does not cause accumulation of noxious gas, and facilitate easy maintenance and inspection. The design should incorporate the following requirements:
  - (a) The base has a suitable fall to the outlet (minimum grade 0.7%) and is appropriately shaped to prevent permanent ponding;
  - (b) Provision of a minimum 600 mm x 1000 mm maintenance access opening. The lifting weight of the grated lid should not exceed 20 kg;
  - (c) Installation of step irons to storage pits greater than 1.2 m depth;
  - (d) Where the storage is not sufficiently deep (< 1.2 m), access grates should be placed at the extremities of the tank and at intervals not exceeding 3 m. This should allow

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any point in the tank to be flushed or reached with a broom or similar implement, without the need to enter the tank;

- (e) The minimum clearance height for accessible tanks is 1.2 m. Tanks less than 0.75 m high must be precast to avoid difficulties with removing formwork;
- (f) To enable visual observation of the entire base of the storage pit, at least 30% of the roof surface area should be grated. Grates should be a minimum of 600 mm wide by 1000 mm long, and arranged in a continuous lengths along the storage pit. Both the access point and the grated areas should be secured to prevent public access.

**SC6.3.5.10.9 Scour protection***SC6.3.5.10.9.1 General*

All outlets shall be designed to incorporate scour protection or energy dissipaters in accordance with QUDM.

*SC6.3.5.10.9.2 Energy dissipaters*

Energy dissipation shall be designed in accordance with QUDM section 8.6.

*SC6.3.5.10.9.3 Outlet channel*

- (1) Deemed to comply criteria for energy dissipation in outlet channels are as follows:
  - (a) Slope between 0.3% and 0.6%,
  - (b) Minimum length of outlet channel 10 metres long,
  - (c) Outlet channel velocity to conform to QUDM,
  - (d) Outlet channel to discharge to a quiescent water body or spread out evenly over flat well grassed ground with a slope no steeper than 3%.
- (2) Detailed hydraulic calculations are required for outlet channel that do not satisfy the above criteria.

**SC6.3.5.10.10 Drainage calculation presentation**

- (1) Calculations for rational method pipe design are to be presented in accordance with QUDM. Care must be taken to ensure that partial area effects are determined in the programs and that the dynamic values are calculated in accordance with QUDM.
- (2) All calculations are to be accompanied with catchment plans and other manual calculation sufficient to facilitate checking and approval of plans for minor and major storms.
- (3) The design hydraulic grade line is to be shown on the pipe longitudinal sections and where the pipes are flowing part full the grade line shall be adjusted to the upstream obvert of the part full pipe.

**SC6.3.5.10.11 Drainage reserves and easements**

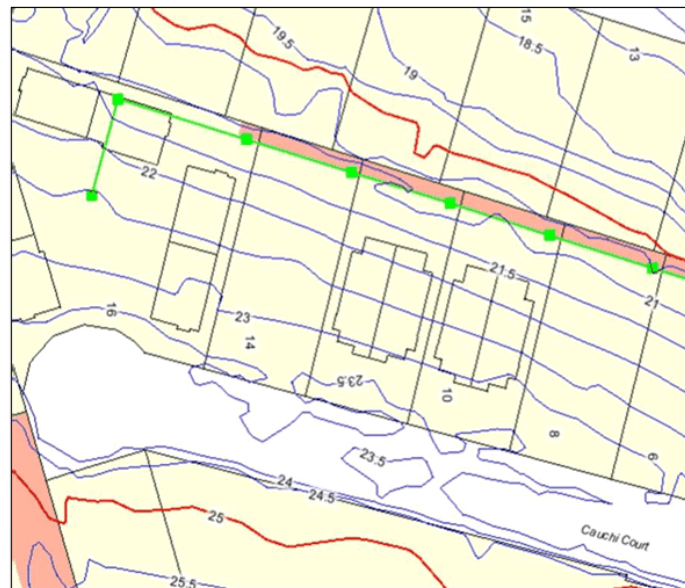
The minimum widths of drainage reserves and easements are presented in **Table SC6.3.6.10.11.1 (Drainage reserve and easement considerations)**.

**Table SC6.3.6.10.11.1 Drainage reserve and easement considerations**

Description	Title	Minimum Widths
Inter-allotment drainage	Easement	Min 3.0 metres, where pipe is > 300 mm and shared with sewerage increase to 3.5 metres
Road drainage piped through private property without an overland flow path	Easement	The greater of - 3.0 metres or pipe(s) width plus 1.0 metre either side
Overland flow path – either with or without underground drainage component	Reserve or Easement	The greater of – 4.0 metre or sufficient drain width to contain 100 year ARI (1% AEP) plus freeboard in accordance with Table 9.03.1 of QUDM plus minimum 2.5 metre for linear access roads where requested

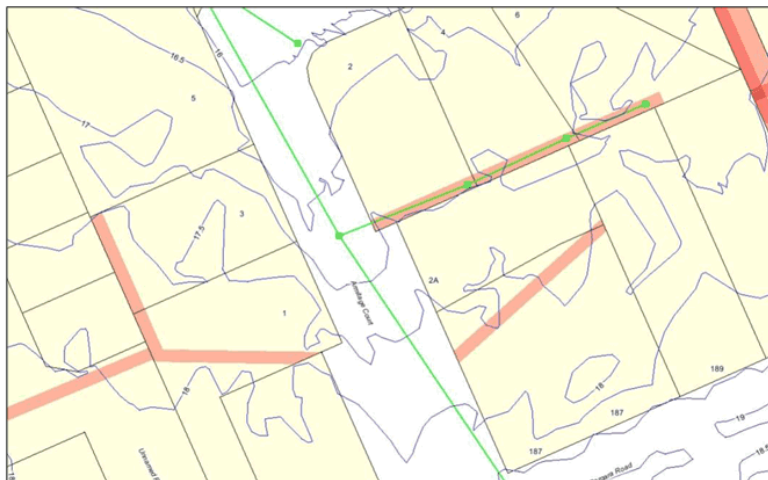
**SC6.3.5.11 Inter-allotment Drainage**

- (1) Inter-allotment drainage must be provided to:
- Residential/Rural Residential/Village and Township lots where land is developed on the high side and any part of the lot does not drain to the kerb frontage, refer **(Figure SC6.3.2 (Inter-allotment Drainage (stormwater shown as green lines))**).
  - Residential/Rural Residential/Village and Township lots where developed land is the lower land and upper land has been developed prior to lower land, refer **Figure SC6.3.3 (Inter-allotment Drainage - Lower Land Development (note new lots were 2, 4, 6))**.

**Figure SC6.3.2 Inter-allotment Drainage (stormwater shown as green lines)**

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**Figure SC6.3.3 Inter-allotment Drainage - Lower Land Development (note new lots were 2, 4, 6)**



- (2) Inter-allotment drainage systems must be designed to cater for 100 year ARI (1% AEP) (with Climate Change) flows unless specifically approved otherwise by Council's development engineer.

#### **SC6.3.5.12 Construction**

##### **SC6.3.5.12.1 Backfilling and bedding**

- (1) Backfilling and bedding will be in accordance with AS 3725. Guidance is also given in Austroads Part 5: Drainage Design.
- (2) Where backfill is 5mm spalls taken to a minimum 150mm above the pipe, every third EB may be replaced with geotextile band.

#### **SC6.3.6 Open space, public parks and land for community facilities**

This section defines the technical requirements for design and construction/preparation of the open space, public parks and land for community facilities. This section should be read in conjunction with Section 4.3 of the Planning Scheme which lists the desired standard of service for trunk public parks and land for community facilities. This policy is based on the Bundaberg Regional Council Parks and Open Space Study (Ross Planning, 2012).

##### **SC6.3.6.1 Reference documents**

The planning and design of open space, public parks and land for community facilities within the Bundaberg Regional Council local government area must be undertaken in accordance with the current edition of the following key reference documents, unless specifically outlined in this section or other Council references dictate otherwise:

- (a) The following Australian Standard:
- (i) AS4685:2004 (Part 1 to 6) sets out the general and specific requirements for playground equipment;
  - (ii) AS/NZS 4422: 1996 Playground Surfacing – Specifications, Requirements and Test Methods;
  - (iii) AS/NZS 4486.1: 1997 Playgrounds and Playground Equipment - Part 1: Development, Installation, Inspection, Maintenance and Operation;
  - (iv) AS2155: 1982 Playgrounds: Guide to Siting and to Installation and Maintenance of Equipment;



- (v) AS2555: 1982 Supervised Adventure Playgrounds - Guide to Establishment and Administration;
  - (vi) AS 1428: 1992 Design for Access and Mobility;
  - (vii) AS1158.3.1 Prime Public Lighting Code;
  - (viii) AS4282 Control of Obtrusive Effects of Outdoor Lighting;
  - (ix) AS1798 Lighting Poles;
  - (x) AS3000 & 3008 Cabling.
- (b) Crime Prevention through Environmental Design: Guidelines for Queensland, Part A: Essential features of safer places, Queensland Government, 2007.
- (c) Bundaberg Regional Council – Standard Drawings – **Appendix SC6.3A (Standard drawings list)**.

### SC6.3.6.2 Hierarchy and classifications

- (1) The open space hierarchy is divided into two main categories:
- (a) Trunk public parks and land for community facilities that caters for higher order recreation, sport and community facilities.
  - (b) Non-trunk open space that caters for lower order recreational uses, cultural uses and nature reserves.
- (2) The classifications are shown in Table SC6.3.7.2.1 (Open space hierarchy).

**Table SC6.3.7.2.1 Open space hierarchy**

Classification	Sub-type	Description
<b>Trunk</b>		
Recreation Park	Local	These parks provide a limited range of recreation opportunities for local residents. These parks contain basic infrastructure for recreation use, but generally cater for short visits only.
	Neighbourhood	Larger sized recreation parks providing a significant range of facilities and activity spaces for recreation. These parks have facilities to cater for large groups and are appealing to a range of users. They can service several suburbs or a whole town depending on population density and are fairly well known destinations for those people living within their catchment.
	Regional	Major recreation parks that offer a wide variety of opportunities to a broad cross-section of the local government area's population and visitors. These parks are generally large in size, embellished for recreation and/or sport, well-known amongst residents and are major destinations.
Sport Park	Neighbourhood	Neighbourhood sports parks are suitable for local fixtures but may not have the quality of playing surface or amenities of a Regional-level facility. The facilities would be of a significant standard but may not comply with State regulations for the sport.
	Regional	Regional sports facilities could comfortably host regional (or potentially State) competitions. Factors such as quality of playing surface, amenities and canteen availability and lighting standards (where lights are provided) have been considered.
Land for Community Facilities	Neighbourhood and Regional	Land for community buildings such as libraries, public pools and halls.

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Classification	Sub-type	Description
<b>Non-trunk</b>		
Linear Park	Local	Local linear parks are most commonly used to link residential areas to neighbourhood scale pedestrian links (either in linear parks or major pedestrian multi-modal routes). The land contains infrastructure to facilitate recreation use, primarily a formed path. Drainage
	Neighbourhood	These linear corridors are embellished to provide pedestrian linkages that connect recreation facilities, other types of open space, residences, community infrastructure and commercial areas or form a circuit. The land contains infrastructure to facilitate recreation use, including a formed path and offers an attractive recreation setting. Drainage
Iconic/Civic Park	Neighbourhood	Local civic parks are either landscaped areas such as town entrance statements or offer some amenity in terms of function such as monument/memorial parks and lookouts. They provide little, to no, recreation opportunities.
	Regional	An iconic landmark property used for general purpose, recreation or civic ceremony, which features high use by the neighbourhood community and its visitors. Assessed on values including iconic representation, recreational appeal, visibility, location and heritage significance. These properties may include a monument and provide unique facilities for civic events, festivals, major community events, families and people of all ages, and are considered significant landmarks in their own right.
Nature Park	Neighbourhood	These properties are planned and managed to protect environmental values, but may also include basic facilities that enable passive use, including seating, pathway or cycleway.
	Regional	A property primarily used for an ecological or conservation purpose, usually being the protection of an area of significant environmental value, protecting and enhancing biodiversity by providing habitat for flora and fauna, including wildlife movement corridors and riparian zones.

## Schedule 6 – Planning Scheme Policies

### SC6.3.6.3 Trunk open space infrastructure desired standards of service

Desired Standards of Service (DSS) is the level of open space that Council strives to provide as a minimum to all residents across the local government area. DSS can be categorised under four broad measures and are explained in more detail in the LGIP tables listed below:

- (a) Rate of land provision for public park and land for community facilities (see LGIP Table 4.4.5.2);
- (b) Accessibility standard (see LGIP Table 4.4.5.3);
- (c) Land characteristics (see LGIP Table 4.4.5.4);
- (d) Standard facilities/embellishments for parks (see LGIP Table 4.4.5.5).

### SC6.3.6.4 Waterways and foreshore land

- (1) The Developer must provide land for open space purposes along all waterways, wetlands, natural drainage lines and foreshores to protect environmental processes and natural drainage systems and facilitate public access.
- (2) Any Reconfiguration of Lot within the Central Coastal Urban Growth Area (as shown in Figure 7.2.1 (Central Coastal Urban Growth Area Structure Plan Concept)) must dedicate open space along the foreshore to provide a continuous linear park from the Burnett

Heads to Elliott Heads. This important recreational corridor will provide any missing links in the coastal Principal Pathway as shown in the LGIP mapping (i.e., LGIP-TNP-14, LGIP-TNP-17, LGIP-TNP-21 and LGIP-TNP-26). In addition, Council requires a road between this open space and development.

#### **SC6.3.6.5 General treatment and preparation of site**

The following treatment and preparation of the site is required by Council:

- (a) All existing structures and associated fixtures are removed from the site;
- (b) Wells are filled and sealed;
- (c) Bores are registered and upgraded and maintained for future use;
- (d) Clearing of part or entire site as directed by Council's representative. No clearing of vegetation is to be carried out before a Council representative has inspected the site and approved such works.
- (e) Levelled as directed by Council to provide a final landform suitable for ease of maintenance and practical use by the public. Earthworks may be required to:
- (f) Re-profiling of existing dam/s, filling of minor depressions or, as a batter to approved roadworks:
- (g) Provide a 1 in 80 cross-fall on playing areas/ovals, 1 in 6 maximum batter slopes, catch drains and scour protection.
- (h) Sufficient topsoil is provided in order to support the growth of flora that is compatible with the proposed use of the site;
- (i) Turf grass used within the parkland areas is cut from a weed free environment and is to have no viable weed seed within the turf grass.
- (j) Installation of an extruded concrete hard edge to all planted/revegetated areas which adjoin turfed/grass seeded areas;
- (k) All declared and noxious weeds and trees are removed from the site as directed by Council's representative.

#### **SC6.3.6.6 Bollards**

- (1) Bollards are to be provided along road frontages to open space to limit vehicular access. Bollards may also be required in association with infrastructure such as playground equipment as directed by a Council representative.
- (2) Bollards are to be constructed as per Council's standard drawing R1061 (see **Appendix SC6.3A (Standard drawings list)**). Where bollards are not incorporated within a footpath, an edge restraint is to be used between the posts (see ER2 on standard drawing R1020). The maximum spacing between bollards is as follows:
  - (a) 1.5m when used to limit vehicular access,
  - (b) 3m for all other areas (must be approved by Council's development engineer).

#### **SC6.3.7 Landscaping**

##### **SC6.3.7.1 General requirements**

- (1) Landscaping should be designed to be environmentally responsive and enhance the appearance of the development by:
  - (a) Being of an appropriate scale relative both to street reserve width and to the size and nature of the development;
  - (b) Incorporating significant existing vegetation, where possible being sensitive to site attributes such as streetscape character and natural landform;
  - (c) Maintaining existing vegetation (where possible);

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- (d) Taking into consideration views, micro-climatic conditions and drainage;
  - (e) Maximising areas suitable for on site infiltration of stormwater;
  - (f) Allowing adequate lighting and pedestrian and vehicular safety;
  - (g) Effectively screening storage and service areas, such as garbage collection areas, from views outside the site, and provided with a suitable irrigation system fitted with an approved backflow prevention device.
- (2) In addition, where possible landscaping for residential development should:
- (a) Improve privacy and minimise overlooking between dwelling and/or rooming units,
  - (b) Provide an adequate screen to incompatible development on adjoining land,
  - (c) Integrate and form linkages with parks, reserves and transport corridors.

**SC6.3.7.2 Landscape Plans**

- (1) The local government's standards are—
- (a) for applications seeking a preliminary approval for a material change of use or reconfiguring a lot—a *Landscape Concept Plan* is to be submitted;
  - (b) for applications seeking a development permit for reconfiguring a lot resulting in an increase in the number of lots—a *Limited Landscape Plan* is to be submitted; and
  - (c) for applications seeking a development permit for a material change of use—a *Full Landscape Plan* is to be submitted.
- (2) The local government may require the information to assess the application or in approving the application, subject the approval to a condition requiring that landscaping be carried out in accordance with satisfactory landscaping plans.

**Table SC6.3.8.2.1 Landscape plan standards**

Specific Information Required	Type of landscape plan		
	Concept	Limited	Full
Landscape areas defined	✓	✓	✓
Existing vegetation identified		✓	✓
Growth form and purpose of vegetation identified	✓	✓	✓
Surface treatments, fencing and other hardscape elements identified		✓	✓
Locations and species to be planted – plotted to scale		✓	✓
Additional details as shown in Section SC6.3.7.3			✓

**SC6.3.7.3 Additional information for full landscape plans**

- (1) General information:
- (a) date;
  - (b) scale (1:100 is preferred);
  - (c) north point;
  - (d) project description and location;
  - (e) client's name, address and contact number;
  - (f) designer's name, address and contact number.
- (g) General site and design information:
- (h) extent of landscape areas;
  - (i) existing and proposed building and landscaped areas (where applicable);
  - (j) property boundaries, adjacent allotments, roads and street names;

- (k) location of drainage, sewerage and other underground services and overhead power lines;
  - (l) location and name of all existing trees, clearly nominating those trees which are to be removed;
  - (m) soil type (e.g., sand, clay, loam) and condition (e.g., well drained, low lying);
  - (n) locality plan, showing site boundaries in relation to adjacent properties and streets;
  - (o) vehicle movement areas, bin storage areas, vehicle and bin washdown areas, and service and utility areas.
- (2) Landscape area calculation:
- (a) calculation of the area of landscaping (measured in square metres) proposed as a means of complying with any applicable code;
  - (b) calculation of the area of landscaping (measured in square metres) disaggregated into component parts, including:
    - (i) garden beds;
    - (ii) turfed or grassed areas;
    - (iii) paved pedestrian areas;
    - (iv) nature conservation areas;
    - (v) effluent land application areas; and,
    - (vi) water areas.
  - (c) calculation of the square metre area of landscaping actually provided broken down into turfed and planted areas.
- (3) Detail design information:
- (a) surface treatment e.g. paving, mulch, turf, roadway;
  - (b) edge treatments, particularly garden edges;
  - (c) plant schedule including botanical name, quantity and staking;
  - (d) location and species of proposed plants;
  - (e) planting bed preparation;
  - (f) subgrade treatment of planting beds in areas of compaction, particularly involving vehicle parking areas.
  - (g) details and soil depths of planter boxes and podiums;
  - (h) mounding, contouring, levelling or shaping of the surface levels, particularly around areas of changes of levels;
  - (i) surface and subsurface drainage and collection points;
  - (j) method of erosion control on slopes steeper than 1:4;
  - (k) position of external elements, e.g. seats, bollards, bins, lights, walls and fences;
  - (l) fence height, material and finish;
  - (m) irrigation systems;
  - (n) paving type if area includes public footpaths;
  - (o) the arrangements proposed to be made for the future maintenance of the landscaping.

#### SC6.3.7.4 Acceptable plant species

The list of approved:

- (a) Street trees are shown in **Appendix SC6.3C (Approved street trees)**.
- (b) Coastal trees are shown in **Appendix SC6.3D (Approved coastal trees)**.

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- (c) Open forest and woodland species are shown in **Appendix SC6.3E (Approved open forests and woodland species)**.
- (d) Shrubs and vines forest species are shown in **Appendix SC6.3F (Approved shrubs and vine forests species)**.
- (e) Species for banks of saltwater watercourses are shown in **Appendix SC6.3G (Approved species for banks of saltwater watercourses)**.
- (f) Species for banks of freshwater watercourses are shown in **Appendix SC6.3H (Approved species for banks of freshwater watercourses)**.
- (g) Small tree and tall shrub species are shown in **Appendix SC6.3I (Approved small trees and tall shrubs species)**.

#### **SC6.3.7.5 Unacceptable plant species**

The unacceptable plant species are shown in **Appendix SC6.3J (Unacceptable plant species)**.

#### **SC6.3.7.6 Composts and mulches**

The use of composts and mulches must comply with the following standards to ensure weeds and weed seed are not spread:

- (a) Australian Standard AS 4454 (2012). Composts, Soil Conditioners and Mulches.
- (b) Australian Standard AS 4419 (2003). Soils for Landscaping and Garden Use.

#### **SC6.3.7.7 Landscaping within road or drainage reserves**

Landscaping works that are not triggered in accordance with the Landscaping Code but are associated with road construction; including acoustic fences, or associated with drainage reserves must be prepared by a registered landscape architect and be approved as part of the Operational Works process.

##### **SC6.3.7.7.1 Planting areas and street trees**

###### *SC6.3.7.7.1.1 Planting areas*

- (1) Planting areas (or garden beds) on the verge/footpath will only be approved at feature locations or where the design of the site lends itself to a planting area or landscaped area. High maintenance plants will not be accepted. The planting area will usually consist of a tree, shrub and ground cover layer and must not impede important sight lines and be designed with CPTED (Crime Prevention Through Environmental Design) guidelines in mind.
- (2) Planting areas within the verge must usually not exceed 1.0 metre in width. All planting areas are to be contained within an approved garden edge.

###### *SC6.3.7.7.1.2 Plant characteristics*

Form, texture and colour of plants play an essential role in creating character and a unified landscape theme. Plant selection is to take into account location and site specific environmental conditions, such as soil type. The selection of plants should also reflect the purpose/function required, e.g., to screen an undesirable feature such as a pump station. The inclusion of indigenous species as the core element is promoted with remainder of planting made up of appropriate native species with inclusion of some non invasive exotic species for colour and interest considered.

###### *SC6.3.7.7.1.3 Maintenance aspects*

Maintenance aspects which would need to be considered within the design process would generally include:

- (a) The provision of long life plants;

- (b) Species chosen must be appropriate for the location and planting area provided. Adequate space must be provided to allow for root growth within the space, and not into adjacent surfaces /structures;
- (c) Minimum water and pruning;
- (d) No interference with existing services (above or below ground), signage, street lighting, footpaths, kerb and channel, structures, road pavement surfaces etc;
- (e) Sub-surface drainage from medians and traffic islands are to discharge into a sealed pipe system.

#### SC6.3.7.7.1.4 Street trees general

Proposed street trees should be in keeping with the following:

- (a) Significant existing trees are to be identified and incorporated within parkland and road reserve where possible. Prior to Council accepting these trees as an asset at Off Maintenance, the developer will be required to provide an Arborist report (at no cost to Council) outlining the current condition and long term viability of the trees.
- (b) The use of same species where possible creating avenue planting. Incorporation of individual feature trees at focal points like roundabouts, medians and main collector roads etc. Designing in this way can assist in way finding within a development.
- (c) Species chosen should reflect the local character of the area and where possible, use existing species which are appropriate for the available space allowing for future growth including root development and canopy spread.
- (d) Planting techniques should incorporate containment of root growth where necessary. Setback from kerb should be sufficient to enable safe access and egress for parked vehicles and not impede visibility at driveway crossovers and pedestrian crossings etc. Consideration must also be given to service location, street lights and traffic signage when planning the positioning of trees.

#### SC6.3.7.7.1.5 Street tree locations

- (1) Planting is to be avoided in the following situations:
  - (a) Where the footpath is less than 3 ~~meters~~~~metres~~ wide. Where an existing street footpath containing trees and shrubs contradicts this, than discretion maybe exercised to vary this provision in accordance with the other elements of this policy.
  - (b) Where kerb and channel has not yet been constructed, except with the written permission of the Council. The situation where this provision will be varied would be where the Council has an approved street design, or has determined a standard location of services/kerb and channelling for streets of a certain theme.
  - (c) Within 3 ~~meters~~~~metres~~ of and invert crossing, driveway, electricity pole, fire hydrants, water valves and inspection boxes.
  - (d) Within 7.5 ~~meters~~~~metres~~ of a street light.
  - (e) Within 1 ~~meter~~~~metre~~ to the back of kerb or any service to minimise conflict with such utilities with an absolute minimum of 600 mm.
  - (f) Within 7.5 ~~meters~~~~metres~~ of the property line for driveway access for the property.
  - (g) Within 20 ~~meters~~~~metres~~ of the property line for an access street intersection.
  - (h) Within 40 ~~meters~~~~metres~~ of the property line for a collector street intersection.
  - (i) Within 55 ~~meters~~~~metres~~ of the property line for a trunk collection street intersection.
  - (j) Within the sight triangle as defined by the aforementioned distance/footpath width. Trees and shrubs may be planted outside the sight triangle if no conflict with access drives or services is generated.
  - (k) Under any overhead powerlines **unless** trees are of an approved type.
- (2) Trees should be planted at a least 1 tree per allotment or on average 1 tree every 20 ~~meters~~~~metres~~, whichever is lesser.

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SC6.3.7.7.1.6 *Street tree characteristics*

- (1) This section outlines the preferred characteristics of the proposed street trees that are to be considered when selecting species for utilisation within the road reserve. The species are to be approved by Council and are to be in keeping with the following points:
- (a) Minimum stock size - *General* - is to be minimum 45 litre bag.
  - (b) Minimum stock size - *High Profile Location* - is to be minimum 100 litre bag.
  - (c) Tree is to demonstrate a strong single leader with no bifurcation of the trunk.
  - (d) Tree is to show good trunk taper and calliper and be self supporting without the assistance of stakes (stakes being required for the establishment period).
  - (e) Tree is to have a minimum clear trunk of 1.2 ~~meters~~ ~~metres~~ as to maintain sightlines.
  - (f) Trees are **not** to be pot bound. Pot bound specimens are to be rejected.
  - (g) Any pruning has been carried out in accordance with AS 4373 – *Pruning of Amenity Trees*.
  - (h) Trees are to be true to form, disease and pest free and in vigorous healthy condition.
- (2) Tree is to be planted in accordance with best practice. Street tree species are selected in accordance with approved list shown in **Appendix SC6.3C (Approved street trees)**. An approved Root Barrier treatment to be installed where required by Council.
- (3) Note it is expected that only one type of tree would be used per street treatment zone and any other tree must be specifically approved by the relevant Council development engineer.
- (4) The 'Land Management Manuals' published by the Department of Environment and Resource Management must be referenced by Consultants to assist in plant species selection, planning strategies, design and site management decisions with regard to local environment and soil types.

SC6.3.7.7.1.7 *Removal and reinstatement*

- (1) The Council may approve requests from property owners for removal of trees and shrubs within the road reserve within the following guidelines:
- (a) The request shall be made by the owner of the property having frontage to the footpath. Where the request is made by any other person, it shall be accompanied by the written consent of the property owner in which the tree fronts.
  - (b) The request shall clearly state the reasons for the removal. Matters to which Council shall give due consideration include:
    - (i) The species of tree or shrub;
    - (ii) Damage to the applicant's land and improvements;
    - (iii) Death or disease of tree or shrub;
    - (iv) Danger to person's using the road reserve;
    - (v) Interference with visibility of traffic.
  - (c) Where, in the opinion of the Council, the complaint could be alleviated by other means, the removal of tree or shrub shall not be approved until such remedies have been applied.
  - (d) Where practical, a tree or shrub which is removed shall be replaced, by the applicant/owner, with an advanced tree or shrub of an approved species.
- (2) All trees and shrubs within the road reserve, whom so ever planted, are considered the property of Council. Any interference with such trees and shrubs other than in strict compliance with the provisions of the policy shall be regarded as an offence for which a person may be prosecuted.



**SC6.3.7.7.2 Traffic islands**

- (1) Landscaping of medians, traffic control devices etc. is to be carried out in accordance with the Main Roads Landscape Manual. Any proposals are to be documented in a landscape plan and submitted for approval. Medians and islands that will be planted must be designed to accommodate landscape works by providing:
  - (a) Adequate site preparation and soil depths,
  - (b) Root Barriers where needed,
  - (c) Conduit for future tap connection,
  - (d) Sub-soil drainage discharging to an enclosed pipe system.
- (2) Plant selection should take into account:
  - (a) Sight paths at intersections and speed control devices,
  - (b) Tree form, shape and location within the road reserve must not encroach into the space required for a vehicle to pass through a traffic control device.

**SC6.3.7.7.3 Planting of batters****SC6.3.7.7.3.1 Batters less than 1H in 6W**

These batters can easily be mown and therefore maybe approved as being grassed. Each project will be assessed on a project by project basis with site location, accessibility, purpose and surrounding character being taken into account regarding the acceptability of grass as opposed to planting.

**SC6.3.7.7.3.2 Batters Greater than 1H in 6W**

These batters are not easily mown and therefore easily maintained landscape is required. Site location, accessibility, purpose and surrounding character will be taken into account when selecting plant species. Generally, these batters are densely planted and mulched with a suitable edge treatment installed. Very steep batters are to be constructed using a combination of retaining walls and gently sloped planting areas. Surface drainage should be managed by redirecting away from steep batters as to reduce erosion and batter destabilisation. Where there is a possibility of erosion, alternative mulching treatments are to be considered such as hydromulching or biodegradable matting product such as *Jutemat*.

**SC6.3.7.7.4 Irrigation systems within road reserve**

Irrigation systems proposed for installation within the road reserve are not to be installed on a permanent basis. If proposed, an irrigation plan accompanying the landscape plans is to be submitted to Council for approval.

**SC6.3.7.7.5 Entrance features and fencing**

- (1) Marketing features to the entry of a developments such as waterfalls, fountains, flagpoles, ornate entrance walls/structures, landscaping and the like are to be contained within the private property boundary and are not to protrude onto any footpath, road reserve etc.
- (2) Proposed fencing/acoustic fencing to the street frontage of a development is to be constructed within the private property boundary. The fencing is to have a maximum lineal run of no more than 20 ~~meters-metres~~ without articulation. These articulations are to be setback a minimum of 1.5 ~~meters-metres~~ into the block to provide an adequate planting area for soft landscaping to improve the aesthetics of the development frontage.

**SC6.3.8 Electrical and Lighting****SC6.3.8.1 General**

- (1) Electrical Reticulation and Street Lighting shall be designed and installed to the requirements of the Electrical Safety Act 2002, Regulations and associated Australian Standards. All work shall be designed, constructed, supervised and certified by competent electrical engineers qualified to undertake such work. All lighting must be the

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most energy efficient lighting available in the National Electricity Market Load Tables for Unmetered Connection Points (AEMO 2015). LED lights are Council's preferred technology, other types of lightings must be approved by Council's Development Engineers.

**SC6.3.8.2 Urban and Rural Residential reticulation**

- (1) Underground electrical reticulation to each and every lot shall be provided in all new residential, commercial and industrial developments unless otherwise agreed to by Council.
- (2) Where minor subdivisional development occurs within an area which has existing overhead reticulation, Council may approve overhead connection subject to Ergon approval.
- (3) Conduit location and alignments shall be in accordance with the following requirements:
  - (a) Shared trenching with telephone reticulation at road crossings and on footpaths is permissible;
  - (b) No sharing of trenches is to occur with water reticulation;
  - (c) Crossing of existing roads are generally to be bored;
  - (d) Council's senior development engineer may approve open trenching to roads below collector standard dependent on the condition of the existing pavement and surfacing or where subsoil conditions or site specific constraints prohibit the use of boring equipment;
  - (e) Road crossings are to be at right angles to the road centre line;
  - (f) Electrical crossings are generally to be to the opposite boundary to water service crossings; and
  - (g) Electrical crossings are not permitted within the area defined as an intersection under the *Traffic Regulations 1962*, unless on standard 0.3 metre to 0.9 metre alignment of protected intersecting property line.
- (4) Electrical pillar locations shall be in accordance with the following requirements:
  - (a) Pillars shall be located at side boundaries wherever possible;
  - (b) Pillars shall be located on alternative boundaries to water hydrants;
  - (c) No pillars shall be located on truncated boundaries at intersections; and
  - (d) Placement of pillars on tangent points may be accepted if necessary.
- (5) Pad mount transformers shall be located within the road reserve fronting proposed or existing parkland or drainage reserves unless otherwise approved by Council.
- (6) A Certificate of Electricity Supply from Ergon Energy is to be submitted to Council prior to approval of a plan of subdivision. A property note may be entered in Council's system to alert the property owner or prospective purchasers that the property may not be serviced by electricity until a Certificate of Acceptance for the development has been issued by Ergon Energy and it is energised.

**SC6.3.8.3 Rural reticulation**

- (1) Electrical reticulation will generally not be required for sustainable rural lots, or lots created from a rural boundary realignment. Where electricity is not provided at the time of subdivision, a property note may be entered in Council's system to alert the property owner or prospective purchasers that –
 

*At the time of its creation, Council did not require this lot to be connected to the reticulated electricity network. The owner and potential purchasers should investigate whether the lot has since been connected to the network or if alternative power arrangements have been made. Connecting to the reticulated electricity network provided by Ergon Energy or another provider is only one way of providing electricity to this lot.*

- (2) Electrical reticulation will be required for new lots that are not deemed sustainable for rural production, and which are not created from a rural boundary realignment, unless otherwise agreed to by Council.
- (3) Council will generally accept overhead supply to rural allotments, however the developer shall install underground supply where required by Ergon Energy.
- (4) Where electrical reticulation is required, a Certificate of Electricity Supply from Ergon Energy is to be submitted to Council prior to approval of a plan of subdivision. A property note may be entered in Council's system to alert the property owner or prospective purchasers that the property may not be serviced by electricity until a Certificate of Acceptance for the development has been issued by Ergon Energy and it is energised.
- (5) For the purposes of this Policy, any lot that does not comply with the 100 hectare minimum area shall be considered unsustainable for rural production purposes, unless otherwise accepted as being sustainable for rural production through Council's assessment of the reconfiguring a lot application. To remove any doubt, any rural lot likely to be used primarily as a rural home site, is not considered sustainable for rural production.

#### SC6.3.8.4 Street lighting design requirements

##### SC6.3.8.4.1 General

All works are to be designed to the requirements of the following Ergon Energy standards and approval:

- (a) Australian Standard Code of Practice AS1158.2005,
- (b) Queensland Department of Main Roads requirements and approvals for State Controlled roads,
- (c) Bundaberg Regional Council requirements.

##### SC6.3.8.4.2 Street lighting requirements

**Table SC6.3.9.4.2.1 (Lighting standards for various road classifications)** references street lighting requirements against road classifications.

**Table SC6.3.9.4.2.1 Lighting standards for various road classifications**

Zones/Uses	Road Type	Street Lighting Standard
<i>Residential</i>	Access Place	P4
	Access Street	P4
	Collector (Neighbourhood)	P4
	Trunk Collector (Suburban)	V4
<i>Commercial</i>	All	P2
<i>Industry</i>	All	P4

##### SC6.3.8.4.3 Street lighting in rural/ village/ township residential areas

Street lighting requirements for rural residential developments will be assessed on a case by case basis, but will generally be designed with 'flag' lighting at intersections and at other locations determined on safety issues. The standard for a Village/Township collector will be nominated with the development approval.

##### SC6.3.8.4.4 Pedestrian and bikeway pathway lighting

- (1) Lighting of pedestrian and bikeway pathways between streets is to be achieved by arranging for a street light to coincide with the walkway entrance, such that the light is visible from every point within the walkway.
- (2) Lighting of pedestrian and bikeway pathways will be assessed on a case by case basis and will generally be in accordance with the relevant Australian Standards.

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#### **SC6.3.8.4.5 Open space lighting**

Lighting of open space and park areas will be undertaken on a case by case basis.

#### **SC6.3.8.4.6 Pedestrian crossings and refuge lighting**

Pedestrian crossings and refuges shall be lit to the requirements of AS1158.4 *"Supplementary Lighting at Pedestrian Crossings"*.

#### **SC6.3.8.4.7 Intersection and roundabout lighting**

Intersections and roundabouts shall be lit to the requirements of AS1158.1 *"Vehicular Traffic Lighting"*.

#### **SC6.3.8.4.8 Alignment of street lighting**

- (1) Where underground power is provided, the light pole location is to generally be 600 mm behind the back of kerb.
- (2) Street light poles are to be located at side boundaries wherever possible.
- (3) Street light poles shall not be located adjacent to water crossings.
- (4) Offset of one (1) metre from physically located conduits is acceptable provided access to properties is not affected.

#### **SC6.3.8.4.9 Lighting materials**

All lighting poles and fittings shall comply with the following Australian Standards:

- (a) AS1158 - "The lighting of urban roads and other public thoroughfares";
- (b) AS1798 - "Lighting poles and bracket arms - preferred dimensions";
- (c) AS3771 - "Road lighting luminaries with integral control gear";
- (d) AS4065 - "Concrete poles for overhead lines and street lighting".

#### **SC6.3.8.4.10 Turtle friendly lighting**

Within an identified Sea Turtle Sensitive Area (as shown on the Coastal protection overlay map), all street lighting, park lighting and outdoor lighting shall be the most energy efficient, dark sky compliant, and amber lighting available in the National Electricity Market Load Tables for Unmetered Connection Points (AEMO 2015). Dark sky compliant lighting prevents light from escaping upward, where necessary lights may be shrouded to direct light down and away from the beach (e.g., aeroscreen light fittings).

#### **SC6.3.8.4.11 Process**

At the time of seating of the Plan of Survey, Council will accept that satisfactory arrangements have been made for the supply of electricity if a letter from Ergon Energy verifying such arrangements, is provided.

#### **SC6.3.8.4.12 Controls**

Electrical reticulation and street lighting shall be assessed during the Operational Works stage of a development.

### **SC6.3.9 Environmental requirements**

#### **SC6.3.9.1 Dust**

Dust control measures must include minimising exposure of site areas, staging of earthworks and setting wind speed limits for site operation. Where works are considered to be operating in high winds or causing a sufficient dust nuisance, Council shall require development works to cease until conditions are favourable.

**SC6.3.9.2 External surfaces**

A Developer must ensure that during construction the external pavement surfaces are swept or washed regularly and maintained in good condition.

**SC6.3.9.3 Erosion and sediment control**

Erosion and sediment control must be designed in accordance with the recommendations contained within the Environment Protection Agency's (EPA) – *Guideline – EPA Best Practice Urban Stormwater Management – Erosion and Sediment Control* and International Erosion Control Association's (IECA) – *Best Practice Erosion & Sediment Control* and 'Queensland Urban Drainage Manual' (QUDM).

**SC6.3.9.4 Protection of vegetation**

- (1) The identification and protection of trees on or in close proximity to a development site must be in accordance with AS4970 – Protection of trees on development sites. Trees requiring pruning are to be pruned in accordance with AS4373 - Pruning of amenity trees and must be agreed with Council's development engineer prior to commencement of works. No earthworks must be undertaken within the Tree Protection zone of protected vegetation or vegetation to be retained.
- (2) The development site must be cleared of all weeds listed in the following documents or as otherwise specified in a weed management plan for the site:
  - (a) Land Protection (Pest and Stock Route Management) Regulation 2003;
  - (b) Council's Pest Management Plan;
  - (c) Invasive Naturalised Plants in Southeast Queensland, alphabetical by genus (Queensland Herbarium, 2002).
- (3) The developer is to prevent the establishment of potential weeds as well as the spread of weeds and other pests through the movement of soil, weed seeds and contaminants through machinery, vehicular, building materials and other vectors.

**SC6.3.10 Earthworks****SC6.3.10.1 General**

General earthworks must be as follows:

- (a) The minimum fall on residential or rural residential must be 1 in 200 to the street or other approved stormwater lawful point of discharge;
- (b) The minimum fall on commercial or industrial allotments must be 1 in 400 to the street or other approved stormwater lawful point of discharge;
- (c) A testing regime must be submitted for approval with the operational works approval.

**SC6.3.10.2 Batter treatment**

Batter treatments must comply with the following:

- (a) Cut and fill batters must not exceed 1 in 6 in urban drains on overflow drainage paths (except rural road table drains where 1 in 4 is acceptable) which in all areas unless specifically approved otherwise;
- (b) The toe of any fill batter and the top of any cut batter must be a minimum 300mm clear of the boundary line of an adjoining property.
- (c) In certain circumstances it may be advantageous to construct cut or fill batters on adjoining property. In these situations, permission from adjoining property owner/s and Council's development engineer will be required.
- (d) Batter treatments are preferred to retaining walls in parkland and other public owned lands (see **Section SC6.3.10.3 (Retaining walls and structures)**).

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### SC6.3.10.3 Retaining walls and structures

Retaining walls must be designed in accordance with the following:

- (a) In residential areas, retaining walls and structures over 1.5 metres in height are to be stepped 1.0 metre (horizontally) for each 1.5 metres in height to a maximum height of 3.0 metres and landscaped appropriately, unless approved specifically otherwise;
- (b) Retaining walls over 1.5 metres require approval by Council in the Development Approval;
- (c) All retaining walls and structures abutting existing or proposed road reserves, parkland or other public owned lands must be contained within the proposed allotments, unless approved specifically otherwise;
- (d) Design drawings for retaining walls and structures higher than 0.9 metres or subject to surcharge loadings must be certified by a RPEQ for compliance with AS4678- Earth-retaining structures.

### SC6.3.10.4 Suitable material for embankments and earthworks (allotment fill)

Material suitable for earthworks and embankments will be as follows:

- (a) In *Roads (Embankment and leads)* – refer to Austroads Part 4I: Earthworks Materials
- (b) *Allotment Earthworks* – refer to AS3798 with further qualifications:
  - (i) No rock within 600 mm of finished surface – with rock defined as stone with a dimension greater than 2/3 the layer thickness;
  - (ii) In top 600 mm of fill - not greater than 20 percent retained on 37.5 mm sieve;
  - (iii) Any fill that is defined as Moderately Expansive in Table 3.2 of Austroads 4I: Embankment Materials (2009, p.10) is deemed to be unsuitable, unless specifically approved for use by the relevant Council development engineer.

### SC6.3.11 Telecommunications

- (1) The Developer is required to enter into an agreement with a telecommunications infrastructure provider for the provision of telecommunications infrastructure to the development as per the Telecommunications Act 1997. More information about the Developer's responsibilities under the Telecommunications Act 1997 is available at <https://www.communications.gov.au/policy/policy-listing/telecommunications-new-developments>.
- (2) Telecommunications conduits (fibre-ready pit and pipe) will be required for all new developments unless the development is exempt from the requirement to install fibre-ready pit and pipe under Part 20A of the Telecommunications Act 1997. The Developer will be required to provide evidence to Council that the development complies with any relevant exemption criteria. Information about the exemption process is available at <https://www.communications.gov.au/policy/policy-listing/exemption-pit-and-pipe-requirements>.
- (3) The provision of connectivity and all other works (including operational works approvals) shall be entirely at the Developer's expense unless otherwise arranged under contract with the telecommunications infrastructure provider.

### SC6.3.12 Gas supply

The Developer is encouraged to enter into an agreement with a gas distribution authority for the provision of a gas supply network within the development (e.g., especially commercial and industrial developments within existing gas supply service areas).

### SC6.3.13 Operational works, construction, inspection, maintenance and bonding procedures

This section outlines the responsibilities, requirements and obligations on Developers and their consultants when undertaking operational works within the Bundaberg Regional Council local government area. The intent is to streamline the process of finalising a project to the 'on maintenance' and 'off maintenance' stages.

#### SC6.3.13.1 General

- (1) The working hours for construction activities are only permitted between 7:00am and 5:00pm, Monday to Friday, unless otherwise approved by Council's development engineers.
- (2) The location of all existing infrastructure services must be identified before operational works commence.
- (3) Consultation with Council 's development engineers is encouraged, especially in areas involving design variations and certification this will assist in the early identification and resolution of matters and issues that may cause delays where a compliance assessment process is required (ROL - obtaining signed survey plans).
- (4) Road closures must be undertaken in accordance with Bundaberg Regional Council's road closure policy.
- (5) Asignit software must be used if works require the erection of traffic control signs on the road reserve. Asignit software is used to manage the documentation and reporting of roadworks, road closures (including signage placement), floods and other traffic events on Council's road network. It will also provide reporting to Council when internal staff, suppliers and contractors are working on Council's road network. Council provides Asignit software and training free of charge. Please contact Asignit directly at [admin@asignit.com](mailto:admin@asignit.com) or through their website [www.asignit.com](http://www.asignit.com) for the software to be delivered to your business. Prior to commencing work in the road reserve, Traffic Management Control Plans must be uploaded to the Asignit system and confirmation sent to [development@bundaberg.qld.gov.au](mailto:development@bundaberg.qld.gov.au).
- (6) Public Liability Insurance must be maintained at the greater of the value given in the contract or \$20 Million

#### SC6.3.13.2 Works supervision and responsibilities

- (1) The Developer must engage the services of suitably qualified professionals to ensure all development work is designed and constructed to;
  - (a) the engineering standards set out in this Planning Scheme Policy;
  - (b) all relevant Australian Standards and Building Codes;
  - (c) approved drawings and nominated standard drawings; and
  - (d) the requirements outlined within all relevant technical specifications.
- (2) The Developer must appoint a Developer's Superintendent to be the single point of contact for Council during the operational works. Typically, the Developer's Superintendent will be the civil Supervising Engineer or main civil contractor (i.e., Principal Contractor). The Developer's Superintendent has the following responsibilities:
  - (a) Overall management, control and operation of the construction site;
  - (b) Coordinating the development of the Construction Management Plan (see SC6.3.13.3);
  - (c) Ensuring compliance with the Construction Management Plan;
  - (d) Coordinating the supervision, construction and certification of all engineering, building, landscaping and minor works;
  - (e) Coordinating Council inspections and testing;

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- (f) Coordinating resolution for non-conforming works;
  - (g) Implementing complaint management procedures;
  - (h) Coordinating meetings and record keeping (i.e., minuting meetings);
  - (i) Coordinating all reporting and submission of all as-constructed information.
- (3) Where operational works requires engineering certification, the following responsibilities apply:
- (a) The Developer must appoint a Supervising Engineer, who is a Registered Professional Engineer of Queensland (RPEQ), for each area of engineering requiring certification. For example, a development requiring both electrical and civil works will require a Civil Supervising Engineer (RPEQ Civil) and an Electrical Supervising Engineer (RPEQ Electrical) in accordance with the Professional Engineers Act 2002. Each Supervising Engineer is responsible for the supervision and certification of engineering works in their respective engineering field.
  - (b) The Supervising Engineer is responsible for developing a Quality Plan (including inspection and test plans). The Supervising Engineer is responsible for compliance with the Quality Plan.
  - (c) A construction superintendent may be nominated or appointed by a Supervising Engineer but must be supervised by the Supervising Engineer at all times throughout the construction period. The Supervising Engineer is to take full responsibility for all construction work related to the infrastructure they are certifying.
- (4) Where operational works requires building certification, the Developer must appoint a licensed Building Certifier to ensure works are designed and constructed to appropriate building standards.
- (5) Where operational works requires landscape works, the Developer must appoint a suitably qualified person to ensure works are designed and constructed to the approved landscape plan.
- (6) Council's development engineers are available to provide advice on the level of supervision required for development works.

**SC6.3.13.3 Construction Management Plan**

- (1) The purpose of the Construction Management Plan (CMP) is to ensure:
- (a) the operational works are undertaken in a safe and efficient manner,
  - (b) minimise the impact on surrounding properties,
  - (c) protects the environment,
  - (d) maintains the levels of service of existing infrastructure, and
  - (e) ensures new infrastructure is built to an appropriate quality.
- (2) The CMP will include
- (a) Key Contact Information,
  - (b) Construction Program,
  - (c) Safety Plan,
  - (d) Environmental Management Plan,
  - (e) Quality Plans, and
  - (f) Traffic Management Plan.
- (3) The level of detail in the CMP will depend on the scope of the operational works. It is unlikely that one consultant will provide all components of the CMP, however, it is the responsibility of the Developer's Superintendent to coordinate the development of the entire document.



**SC6.3.13.3.1 Key Contact Information**

- (1) The Key Contact Information will include the following:
  - (a) Developer's Superintendent (name and contact details);
  - (b) List of all Supervising Engineers (name, contact details, RPEQ details, engineering area and scope of works under their supervision)
  - (c) Principal Contractor (name and contact details);
  - (d) A list of nominated site personnel and contact details;
  - (e) Workplace Health and Safety Officer/Contact (name and contact details).
- (2) Depending on the scope of the operational works the additional contacts may also be required:
  - (a) Building Certifier/s (name and contact details);
  - (b) Landscape Consultant (name and contact details);

**SC6.3.13.3.2 Construction Program**

- (1) The Construction Program will be a broad overview of the significant milestones and their respective timings. The Construction Program should allow Council to program its staff to provide inspection and testing.
- (2) The Construction Program will include two (2) sets of A3 "for construction" drawings incorporating any changes required by the Operational Works Approval. These drawings are to be provided in ADAC compliant XML files too.

**SC6.3.13.3.3 Safety Plan**

Council encourages a culture of safe working environments and procedures. A Safety Plan must be completed for a construction 'workplace' in accordance with the Work Place Health and Safety Act 2011. The CMP must clearly state that a Safety Plan has been completed for the workplace. The CMP must include an extract from the Safety Plan that outlines the induction process for Council staff entering the workplace. If requested the Safety Plan must be made available to Council at any time during the works.

**SC6.3.13.3.4 Environmental Management Plan**

The Environmental Management Plan must be completed in accordance with the Environmental Protection Legislation. The Environmental Management Plan must be submitted with the CMP for Council's information. The Environmental Management Plan will include the following:

- (a) Hours of work;
- (b) Access and site restrictions;
- (c) Procedures to ensure that the external road surfaces remain in a clean state, free of detritus generated from the site,
- (d) Noise and vibration;
- (e) Air quality, dust and odour;
- (f) Acid sulphate soils;
- (g) Cultural Heritage;
- (h) Management of adjacent fauna;
- (i) Storage of fuel and other hazardous goods;
- (j) Fuelling and maintenance of vehicles and equipment;
- (k) Disposal of waste (including fuel, oil, chemicals and sewage);
- (l) Disposal of excess spoil;
- (m) Water quality and surface water runoff;
- (n) Management of Site Dewater;

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- (o) Sedimentation and erosion control;
- (p) Stockpile management;
- (q) Re-vegetation and reinstatement of disturbed areas;
- (r) Management of weeds and pests;
- (s) Waste management;
- (t) Handling and reporting of complaints and environmental incidents (including dispute resolution procedures).

**SC6.3.13.3.5 Quality Plans**

- (1) The Quality Plans must be completed for all works being undertaken as part of the operational works. The Quality Plans may cover a range of activities where different levels of supervision and certification are required.
- (2) For contributed assets (i.e., future Council assets), Quality Plans must be submitted for Council's approval with the CMP. The Quality Plan for contributed assets will include the following:
  - (a) Details of who is responsible for supervision and certification of each component of the works (e.g., engineer, building certifier and/or landscape architect);
  - (b) Inspection and Test Plans (ITP) for all relevant components of the works. The ITPs must include the proposed test frequencies and Council inspection hold points as listed in section SC6.3.13.4. This will include provision on the ITP to allow Council's inspectors to sign attendance at hold points (see SC6.3.13.4.1);
  - (c) For all other assets, the CMP must state who is responsible for the Quality Plans of these assets. If requested the Quality Plans must be made available to Council at any time during the works.

**SC6.3.13.3.6 Traffic Management Plan**

The Traffic Management Plan (TMP) must be completed in accordance with the requirements of the Manual for Uniform Traffic Control Devices (MUTCD). The TMP and supporting Traffic Guidance Scheme (TGS) must be submitted with the CMP for Council's information and feedback. The TMP must be undertaken by a qualified Traffic Management Designer (TMD) and uploaded to the ASignit system and with a confirmation sent to [development@bundaberg.qld.gov.au](mailto:development@bundaberg.qld.gov.au).

**SC6.3.13.4 Council Inspections and testing standards**

It is the responsibility of the Supervising Engineer to arrange all inspections, testing and certifications. The Supervising Engineer must be present during all Council inspections. Council officers will not deal directly with Contractors.

**SC6.3.13.4.1 Inspections (Council Hold Points)**

- (1) Provide at least 48 hours notice for Council officers to inspect:
  - (a) Placement of reinforcement, formwork and areas of construction jointing prior to pouring of all concrete;
  - (b) Installation of root barriers and trees;
  - (c) All pavement layer proof rolls (i.e., sub-grade, sub-base and base);
  - (d) All prepared pavement prior to prime (i.e., after brooming);
  - (e) Location of each electrical light pole within the works;
  - (f) Bedding, pipelaying and backfilling for water supply, sewerage and stormwater drainage features, including sewer points of connection, water service connections and stormwater connections to existing network;
  - (g) Pressure testing for all water and sewerage mains segments;
  - (h) Sewerage and stormwater access chambers for the following:

- (i) Prior to pouring/placement of access chamber bases;
- (ii) Formwork/placement for access chambers prior to pouring;
- (iii) Vacuum testing for wastewater access chambers.

#### SC6.3.13.4.2 Testing

- (1) The Supervising Engineer is responsible for ensuring all works are tested in accordance with the appropriate standards. All costs associated with testing are to be borne by the Developer.
- (2) Tests may include, but are not limited to, the following:
  - (a) Closed circuit television (CCTV) report and footage of all sewerage and stormwater infrastructure prior to the commencement of the maintenance period and again prior to the conclusion of the maintenance period;
  - (b) Vacuum testing of the required proportion of sewerage access chambers as per the relevant standard;
  - (c) Proof rolls and compaction testing of all pavement layers (i.e., sub-grade, sub-base and base) as per the relevant standard;
  - (d) Geotechnical tests and quality/uniformity of fill tests for all earthworks.

#### SC6.3.13.4.3 Tag and Bag Procedure for Partial Water Services

- (1) Provide at least 2 weeks notice for Council officers to organise tags for partial water services.
- (2) Provide at least 48 hours notice for Council officers to undertake Tag and Bag of partial water services. Prior to contacting Council, the Developer's Superintendent is to ensure the following:
  - (a) Sterilisation and pressure testing of all water mains associated with the partial service have been undertaken;
  - (b) the partial services are live;
  - (c) lots to be serviced are at their finished surface level; and
  - (d) final survey and pegging of all lots is completed.

#### SC6.3.13.5 On-Maintenance Report

- (1) The Developer's Superintendent is required to provide an On-Maintenance Report prior to acceptance of on-maintenance. This report must include the following:
  - (a) Certification signed by the relevant Supervising Engineer/s (i.e., an RPEQ for each area of engineering) that all works have been undertaken, completed and inspected in accordance with:
    - (i) the operational works approval,
    - (ii) the relevant conditions of any higher order Material Change of Use approval or Reconfiguring a Lot approval, and
    - (iii) requirements of Bundaberg Regional Council Planning Scheme Policy for Development Works and associated standard drawings.
  - (b) Certification signed by the relevant Supervising Engineer/s (i.e., RPEQ) confirming any variations to the design that result in Operational Work being outside of design tolerance will not result in a failure of the Operational Work to perform as intended by the design;
  - (c) "As Constructed" information as listed in Section SC6.3.13.7. Including certification signed by a engineering or cadastral surveyor confirming the "As Constructed" information has been collected and documented in accordance with standard industry practice and is accurate to within 20mm.
  - (d) Certification of building work signed by a licensed Building Certifier.

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- (e) Certification that landscape works are constructed as per the approved landscape plan by the landscape architect/designer.
- (f) Completed quality plans, including:
  - (i) A plan identifying where and when inspections and testing occurred;
  - (ii) All ITPs associated with contributed assets (any variations from the ITPs submitted at pre-start should be justified);
  - (iii) Test results from CCTV for all sewerage and stormwater infrastructure (including WSA compliant Infrastructure Condition Reports and all CCTV data);
  - (iv) Test results from pressure testing water and sewerage mains;
  - (v) Road compaction testing and proof test rolling results; and
  - (vi) All tests associated of earthworks including drawing/s identifying fill depth and location on the site.
- (2) If required, an exceptions report with rectification timeframes will be provided by the Developer's Superintendent to Council after the inspection.

#### **SC6.3.13.6 Amendment to approved drawings**

The relevant Council development engineer must approve all design variations on a project. Where amendments are carried out without Council approval, the change is to be substantiated by the Developer's Superintendent. Council reserves the right to order variations to the works where they don't meet design standards provided in this Planning Scheme Policy. Where rectification works are required, such works will be carried out at the Developer's expense.

#### **SC6.3.13.7 As Constructed information**

##### **SC6.3.13.7.1 Minor projects**

- (1) *Electronic* - collated "As Constructed" information is required as follows:
  - (a) Formatted as AutoCAD 2004 or later 'model space',
  - (b) Scaled to 1 unit = 1 metre,
  - (c) Tied to a minimum of two permanent survey marks with 2nd order horizontal accuracy (MGA94 Zone 56 coordinates) or better (to enable linking of the "As Constructed" information to Council's GIS system),
  - (d) With finished surfaces (spot heights and contours) to 5m outside the plan area of the Operational Work,
  - (e) With separate layers for each type of infrastructure (water main, water service, electricity, telecommunication, lighting, stormwater drainage, roadwork, sewerage, footpath within the plan area of the Operational Work,
  - (f) That highlights infrastructure within the plan area of the Operational Work that has not been affected by the Operational Work and therefore may not be accurately located,
  - (g) Compiled using AutoCAD's eTransmit function resulting in one file (\*.zip) that contains all "As Constructed" information relevant to the Operational Work and all plot style tables, font maps, etc that are necessary to successfully extract the eTransmit file and access the "As Constructed" information.
- (2) Hard Copies - Two (2) complete sets of scale drawings on A1 or A3 paper, complete with annotations and amendments, presented in a clear & legible form.
- (3) PDF Copies – 'As Constructed' signed drawings in .pdf format

##### **SC6.3.13.7.2 Major projects - as design as construct (ADAC) submission**

- (1) Electronic - Council has adopted the ADAC system of presentation of 'as constructed' information for major projects. Refer to Council's Guidelines on the Implementation of ADAC for Major Projects with the Bundaberg Regional Council Local Government Area.

- (2) Hard Copies - Two (2) complete sets of scale drawings on A1 or A3 paper, complete with annotations and amendments, presented in a clear & legible form.

#### SC6.3.13.8 Pre-start procedure

- (1) A pre-start meeting must be held on site prior to any works commencing. The following people are required to attend the pre-start meeting:
- Developer's Superintendent (i.e., Single point of contact for works)
  - Supervising Engineer/s (i.e., Civil RPEQ and other RPEQs as required - see SC6.3.13.2)
  - Principal Contractor (i.e., Main Civil Contractor)
  - Council's representatives (i.e., Development Engineer and Technical Officer), and
  - Developer (where appropriate).
- (2) At least 48 hours notice must be given prior to the pre-start meeting. This notice will include the submission of a CMP for approval (see SC6.3.13.3). Where the components of the CMP cannot be completed before the pre-start meeting, the Developer's Superintendent must seek approval to provide an incomplete CMP.
- (3) The Developer's Superintendent is responsible for organising and minuting the pre-start meeting. The draft minutes are to be forwarded to the Council for approval within one week of the meeting. Once approved, the Developer's Superintendent is responsible for distribution of the approved minutes to all attendees of the pre-start meeting.

#### SC6.3.13.9 On-Maintenance procedure

##### SC6.3.13.9.1 On-Maintenance meeting and inspection

- (1) An On-Maintenance meeting must be held on site prior to commencing the maintenance period. The following people are required to attend the On-Maintenance meeting:
- Developer's Superintendent (i.e., Single point of contact for works),
  - Supervising Engineer/s (i.e., Civil RPEQ and other RPEQs as required - see SC6.3.13.2),
  - Principal Contractor (i.e., Main Civil Contractor),
  - Council's representatives (i.e., Development Engineer and Technical Officer), and
  - Developer (where appropriate).
- (2) At least 48 hours notice must be given prior to the On-Maintenance meeting. This notice will include the submission of an On-Maintenance Report for approval (see SC6.3.13.5).
- (3) The Developer's Superintendent is responsible for organising and minuting the On-Maintenance meeting. The draft minutes are to be forwarded to the Council for approval within one week of the meeting. Once approved, the Developer's Superintendent is responsible for distribution of the approved minutes to all attendees of the On-Maintenance meeting.

##### ~~SC6.3.13.9.2 — General (security) performance bond and maintenance bonds~~

- ~~(1) Council at its discretion may accept a Performance Bond to provide surety of completion of outstanding works. The Performance Bond must be to a value of 1.3\* the value of the expected works. Generally, Bank Guarantees will NOT be accepted as a Performance Bonds.~~
- ~~(2) Where Performance bonds are for a considerable amount of monies Council will consider a staged reduction of the bond monies.~~
- ~~(3)(4) The Developer is required to submit a Maintenance Bond to the value of 5% of the total construction cost of Operational Work, including all variations, or \$2,000, whichever is higher. This bond will be held by the Assessment Manager until the Operational Work is~~

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~~accepted 'Off Maintenance'. The maintenance bond may be in the form of an unconditional Bank Guarantee.~~

**SC6.3.13.9.3 SC6.3.13.9.2 Works accepted On-Maintenance**

Council will provide written confirmation that a project has been accepted On-Maintenance. The letter may include a list of outstanding minor works.

**SC6.3.13.9.4 SC6.3.13.9.3 On-Maintenance period**

- (1) The On-Maintenance period for a project will generally be 12 months except for bioretention areas which will have a period of 24 months. The On-Maintenance period may be extended in part or in whole where outstanding works have not been finished or maintenance is undertaken by the contractor, delaying acceptance of the Operational Work Off-Maintenance.
- (2) The On-Maintenance period is to commence on the date nominated in Council's On-Maintenance acceptance letter and is to conclude on the date nominated in the Council's Off-Maintenance acceptance letter. During the On-Maintenance Period, the Developer's Superintendent must:
  - (a) Ensure Operational Work is maintained at no cost to Council;
  - (b) Footpaths, street trees and landscaping, drainage reserves and Parks are kept in a tidy manner by seeding and mowing; and
  - (c) Ensure defects (if any) are rectified within a reasonable time (generally 2 weeks from when they are identified).
- (3) The On-Maintenance period is between Council and the Developer should not be confused with any Defects Liability Period that may exist.

**SC6.3.13.10 Off-Maintenance procedure**

Prior to the Operational Work being accepted Off-Maintenance:

- (a) Ensure grass coverage of at least 80% (per square metre) is obtained over all public access land,
- (b) Confirm with Council's representative that temporary erosion and sediment control measures are no longer required and, if warranted, arrange for their disposal, and
- (c) Ensure any defects (if any) raising during the maintenance period are rectified.

**SC6.3.13.10.1 Off-Maintenance meeting and inspection**

- (1) An Off-Maintenance meeting must be held on site prior to Council accepting the Operational Work as Off-Maintenance. The following people are required to attend the 'Off Maintenance' meeting:
  - (a) Developer's Superintendent (i.e., Single point of contact for works),
  - (b) Supervising Engineer/s (i.e., Civil RPEQ and other RPEQs as required - see SC6.3.13.2),
  - (c) Principal Contractor (i.e., Main Civil Contractor),
  - (d) Council's representatives (i.e., Development Engineer and Technical Officer), and
  - (e) Developer (where appropriate).
- (2) At least 48 hours notice must be given prior to the Off-Maintenance meeting. This notice will include the following:
  - (a) Confirmation signed by the Supervising Engineer (i.e., RPEQ) that all infrastructure are in a satisfactory condition;
  - (b) Identification of remedial works undertaken during the maintenance period (including test reports if required);
  - (c) Final test results from CCTV for all sewerage and stormwater infrastructure (including WSA compliant Infrastructure Condition Reports and all CCTV data);

- (3) The Developer's Superintendent is responsible for organising and minuting the Off-Maintenance meeting. The draft minutes are to be forwarded to the Council for approval within one week of the meeting. Once approved, the Developer's Superintendent is responsible for distribution of the approved minutes to all attendees of the Off-Maintenance meeting.

#### **SC6.3.13.10.2 Works accepted Off-Maintenance**

Council will provide written confirmation that the operational works have been accepted Off-Maintenance.

#### **SC6.3.13.11 Bonding**

##### **SC6.3.13.11.1 Preliminary**

Bonding is the lodgement of a financial security to Council by the Developer in one or more of the following circumstances:

- (a) to cover all development construction works during the maintenance period;
- (b) as security to ensure the completion and fulfilment of specific conditions/works;
- (c) to cover the costs of uncompleted works to enable early approval of the plan of survey or commencement of a use.

##### **SC6.3.13.11.2 Performance Bonds**

- (1) Council may require a Performance Bond to provide surety of completion and fulfilment of works or conditions of approval and/or mitigate risk of damage to Council infrastructure or the environment. The bond may be required as a condition of approval or at the discretion of the Council.
- (2) The Performance Bond must be to a value of 130% of the value of the expected works.
- (3) Performance Bonds are refundable once the development is formally accepted On-Maintenance.
- (4) Where Performance Bonds are for a considerable amount of monies Council will consider a staged reduction of the bond monies.
- (5) Where the conditions/works are not completed to the satisfaction of Council and in accordance with any relevant standards, the bond may be forfeited to cover the costs of the works and/or repairs to Council infrastructure.

##### **SC6.3.13.11.3 Maintenance Bonds**

- (1) The Developer is required to submit a Maintenance Bond to Council to guarantee satisfactory maintenance of the works and rectification of defective works during the maintenance period.
- (2) The Maintenance Bond must be to the value of 5% of the total construction cost of Operational Work, including all variations, or \$2,000, whichever is higher.
- (3) The Maintenance Bond will be held by the Assessment Manager until the Operational Work is accepted Off Maintenance.

##### **SC6.3.13.11.4 Uncompleted Works Bonds**

- (1) In general, Council requires all works to be completed prior to the approval of the plan of survey. However, where exceptional circumstances exist, Council may accept a bond to secure uncompleted works associated with reconfiguring a lot to enable early approval of the plan of survey.
- (2) Council will generally only accept an uncompleted works bond (to enable approval of the plan of survey or commencement of the use) where the following works have been completed (where applicable):-
  - (a) 100 percent of bulk earthworks are completed and stabilised to the local government's satisfaction;

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- (b) Where for works associated with reconfiguring a lot, 100 percent of works within the proposed lots must be completed to the local government's satisfaction;
  - (c) All major stormwater drainage works must be completed to the local government's satisfaction;
  - (d) An appropriately qualified surveyor has certified that the roads are within the correct alignment, where applicable;
  - (e) 100 percent of sewerage and water supply works, including external and internal reticulation, are completed to the local government's satisfaction;
  - (f) All testing results and "As Constructed" information of the completed works is provided to the local government's satisfaction;
  - (g) Certificate of Electrical Supply must be provided to the local government;
  - (h) An agreement has been entered into between the Developer and a telecommunications infrastructure provider for the provision of telecommunications infrastructure to the development;
- (3) The uncompleted works bond must be to a value of 130% of the value of the estimated uncompleted works costs, or \$2000, whichever is higher.
- (4) The Developer must lodge a formal request with Council which must include the following (where applicable):
- (a) The relevant bond submission form;
  - (b) Certification signed by the relevant Supervising Engineer (i.e. RPEQ) which must include the following (where applicable):
    - (i) A fully priced bill of quantities detailing the works completed and the works still outstanding;
    - (ii) Written confirmation that the completed works have been constructed on the correct alignments and to the required standards, in accordance with the conditions of the development approval; and
    - (iii) Written confirmation that all works and services will be completed and operational within 3 months of the date of approval of the plan of survey or commencement of the use, or further period agreed to by Council.
- (5) After the bond submission is reviewed, Council will confirm agreement of the proposed security bond amount with the Developer.
- (6) Where Council agrees to accept an uncompleted works bond, prospective purchasers of the land or part of the land the subject of the uncompleted works bond must be advised of the relevant uncompleted works (including a description of the uncompleted works) through a special condition in the contract of sale for the land. A property note may also be entered in Council's system to alert prospective purchasers of the relevant uncompleted works.
- (7) Upon satisfactory completion of all works and acceptance of the works On-Maintenance, the uncompleted works bond will be released by Council. The Developer must submit to Council the relevant request for bond release form.
- (8) Where the works are not completed to the relevant standard within a reasonable timeframe (generally not more than 3 months from approval of the plan of survey or commencement of the use), the bond may be forfeited to cover the cost of the works.

#### SC6.3.13.11.5 Form of security bonds

- (1) The security bond given is to be in the form of either: -
- (a) Cash (held in Trust); or
  - (b) Bank guarantee.
- (2) Bank Guarantees must be:
- (a) Unconditional and irrevocable;



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- (b) Exclude a termination date;
- (c) Be financial security from either:
  - (i) An Authorised Deposit-Taking Institution (ADI) with a minimum Long Term Credit Rating of BBB with Standard & Poor's (or equivalent rating agencies); or
  - (ii) An Authorised Insurer with a Standard & Poor's rating of A+ or better; and
- (d) Detail the full and correct name of the Developer, the real property description(s), relevant development approval number(s) and the purpose of the security bond(s).

## Schedule 6 – Planning Scheme Policies

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### Appendix SC6.3A Standard drawings list

Council's standard drawings are shown in **Table SC6.3A.1 (Standard drawings)**.

**Table SC6.3A.1 Standard drawings**

Drawing Number	Description
<b>Roads - Bundaberg Regional Council</b>	
R1002	Residential Roads – Optional Type Plans & Cross Section to suit WSUD
R1004	Typical Cross Sections – Industrial Collector and Access Street
R1010	Driveways – Residential Driveway Slabs
R1011	Driveways – Industrial and Commercial Driveway Slabs – Two Way Access
R1012	Driveways – Rural and Urban Accesses Requiring Culverts – No Kerb and Channel
R1013	Driveways - Rural and Urban Accesses – No Kerb and Channel
R1014	Driveways – Residential Invert Crossings (Layback & Standard Kerb & Channel)
R1015	Driveways – Residential Invert Crossing – Steep Driveways
R1016	Driveways – Residential Driveway Slabs for Brown Streets
R1020	Kerb and Channel – Kerbs, Channels and Inverts – Profiles and Dimensions
R1021	Kerb and Channel – Kerb and Channel Drainage Connections
R1030	Footpaths and Cycle Paths – Concrete Strip Footpaths
R1031	Footpaths and Cycle Paths – Bicycle Deflection Rail
R1032	Footpaths and Cycle Paths – Chicane Entrance Treatment
R1040	Signage – Street Name Sign and Post
R1041	Signage – Sign – Footings and Locations
R1042	Signage – Location Plan or Rural Addressing Number Post
R1043	Signage – Bus Stop Sign Details
R1050	Public Utilities – Typical Service Conduit Alignment
R1051	Public Utilities – Conduit/Service Road – Crossing Details
R1060	Road Edge Guide Posts and Bollards – Posts Types and Spacings
R1061	Road Edge Guide Posts and Bollards – Standard Bollard Treatment with 4 PVC Casing
R1062	Road Edge Guide Posts and Bollards – Standard Bollard Treatment
R2001	Road Type cross sections – Urban Road – Sub-arterial
R2002	Road Type cross sections – Urban Road – Trunk Collector
R2003	Road Type cross sections – Urban Road – Collector Street
R2004	Road Type cross sections – Urban Road – Access Street
R2005	Road Type cross sections – Urban Road – Access Place
R2006	Road Type cross sections – Urban Road – CBD/Commercial Access
R2007	Road Type cross sections – Urban Road – Industrial Collector
R2008	Road Type cross sections – Urban Road – Industrial Access
R3001	Road Type cross sections – Rural Road – Principal Rural Road
R3002	Road Type cross sections – Rural Road – Collector Roads
R3003	Road Type cross sections – Rural Road – Access Roads
R3004	Road Type cross sections – Rural Road – Unsealed Roads
<b>Roads - Institute of Public Works Engineering Australasia Queensland Division (IPWEAQ) Standard Drawings</b>	
SEQ R - 090	Kerb Ramp – Ramped Pedestrian Crossings
SEQ R - 091	Kerb Ramp – Ramped and Cut Through Treatments for Pedestrian Crossings Slip Lanes and Medians
SEQ R - 092	Kerb Ramp – Installation of TGSI's on Ramped Kerb Crossings (Sheet 1 of 2)
SEQ R - 093	Kerb Ramp – Installation of TGSI's on Ramped Kerb Crossings (Sheet 2 of 2)
SEQ R - 094	Kerb Ramp – Locations and Configurations
SEQ R - 140	Subsoil Drains - Detail

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Drawing Number	Description
SEQ R - 142	Subsoil Drains – Access Points
SEQ R – 180	Typical Bus Stop layout
SEQ R – 181	Typical Bus Stop layout – Guidelines for the Layout of a Rural Bus Stop
<b>Stormwater - Bundaberg Regional Council</b>	
D1001	Field Inlet - Filed Inlet/Grated Gully Pit – Profiles and Dimensions
D1002	Field Inlet -Field Inlet pit Dome Top Cover Partially Submerged Inlet
R1002	Residential Roads – Optional Type Plans & Cross Section to Suit WSUD
37133	WSUD – Bioretention – Infill Sites
<b>Stormwater - IPWEAQ</b>	
SEQ D-010	Stormwater Access Chamber Details – 1050 – 2100 diameter
SEQ D-014	Manhole Frame – (Roadway and Non-Roadway) - 1050 to 1500 diameter
SEQ D-018	Manhole Riser Details – (Roadway)
SEQ D-019	Manhole Cover – (Roadway) – 1050 – 1500 diameter
SEQ D-020	Manhole Cover – (Non Roadway) – 1050 – 1500 diameter
SEQ D-021	Manhole Cover Concrete Infill – (Pedestrian Traffic) – 1050 – 1500 diameter
SEQ D-060	Drainage Pits Kerb inlet – Kerb in Line General Arrangements
SEQ D-061	Drainage Pits - Kerb Inlet – Precast Lintel Details
SEQ D-062	Drainage Pits – Kerb Inlet – Grate and Frame
SEQ D-082	Drainage Details – Culvert Inlet Screens
D-0011	Access Chamber – Roof Slabs – Dia 1050 - 2100
D-0012	Access Chamber – Roof Slabs – Dia 1500 Extended 600 and 900
D-0013	Access Chamber – Roof Slabs – Rectangular Standard Reinforcement
D-0017	Access Chamber – Roof Slabs – Rectangular Fabric Reinforcement
D-0030	Excavation, Bedding and Backfill of Stormwater Drainage Pipes
D-0031	Excavation, Bedding and Backfill of Precast Box Culverts
D-0040	Sediment Control Devices – Sediment Fence – Entry/Exit Sediment Trap
D-0041	Sediment Control Devices – Kerb and Field Inlets – Check Dams & Straw Bale Bank
D-0080	Inlets and Outlets to Stormwater Drains (Concrete)
D3201	Residential Property Access Standard Box Culvert Base Slabs
D3202	Residential Property Access Standard Box Culvert Wings/Headwalls
<b>Water and wastewater - WBBROC</b>	
WBB-GEN-1100-1	General Standard Drawing – Water Supply, Sewerage, Vacuum Sewerage and Pressure Sewerage Legend
WBB-SEW SET	Sewerage Standard Drawing Set
WBB-SPS SET	Sewage Pump Station Standard Drawing Set
WBB-WAT SET	Water Supply Standard Drawing Set
<b>Open space, public parks and land for community facilities</b>	
16566	Picnic shelter shed
16567	Picnic shelter table and seating
16568	Picnic table with roof
16478-S01	Picnic shelter – layout and construction details
<b>Tree Planting Details – Bundaberg Regional Council</b>	
P6111	Standard Street Planting Details - Typical detail – Road shoulder planting
P6211	Standard Street Planting Details - Typical detail – Back of kerb planting
P6311	Standard Street Planting Details - Typical detail – Tree protection requirements

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## Appendix SC6.3B Street and park naming procedure

### SC6.3B.1 Park names

- (1) Park names shall reflect respected persons and families who have made a significant contribution to the well being of the region where the park is located. The Council at its sole discretion may determine contrary to this requirement.
- (2) The Council shall consider suggestions from developers of new parks for park names.

### SC6.3B.2 Street names

- (1) Street names shall reflect aspects of the area they are located, including historical names. The Council at its sole discretion may determine contrary to this requirement.
- (2) Council's order of preference in allocating street names shall be:
  - (a) Historical Persons/Historical Place Names,
  - (b) Other relevant aspects (e.g., local flora and fauna),
  - (c) Themed Street Names.
- (3) The Council shall consider up to 3 suggestions per street from Developers of new streets for street names.
- (4) The Council will consider developments where street and park names follow a particular theme.
- (5) Street names shall be nouns and generally contain one (1) word. Composite words may be acceptable when they supplement the primary name. Names shall be unique and unambiguous to the Bundaberg Regional Council Local Government Area.
- (6) Where a street is extended, the new section created will retain the name of the extended street.

### SC6.3B.3 Definition of terms

**Table SC6.3B.3.1 (Street name – Nomenclature description)** provides the road definitions which apply in the naming of streets.

**Table SC6.3B.3.1 Street name – Nomenclature description**

Type	Definition
<b>Road</b>	An Arterial, Sub Arterial, Trunk Collector, Collector Road;
<b>Street</b>	An Arterial, Sub Arterial, Trunk Collector, Collector or Access Road;
<b>Drive</b>	Collector or Access Road of substantial length;
<b>Avenue</b>	A tree lined Collector or Access Road;
<b>Boulevard</b>	A Collector or Access Road with significant landscape;
<b>Terrace</b>	Collector or Access Road with significant topographical features;
<b>Crescent</b>	A Loop Road;
<b>Circuit</b>	A Loop Road that rejoins itself;
<b>Way</b>	Similar to Drive or Avenue;
<b>Lane</b>	A narrow public right of way of reserve width;
<b>Court</b>	A cul-de-sac less than 100 metres in length;
<b>Close</b>	A cul-de-sac less than 100 metres in length;
<b>Place</b>	A cul-de-sac greater than 100 metres in length.

### SC6.3B.4 Process of approval of names of park or streets

The process for approval of Park and Street names is as follows:

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- (e) Council will keep a list of suggested names for streets which will be updated when requests are received from the public. The list will be available to developers and the public on request;
- (f) Prior to the sealing of a Plan of Survey creating a road, the developer shall submit 3 suggested road names for each new street in their development;
- (g) Prior to the sealing of a Plan of Survey creating a park, the developer may submit a suggested park name for each new park in their development;
- (h) For "themed" developed the developer shall submit a list of potential street and park names for the entire development prior to the sealing of the Plan of Survey for Stage 1 of the development;
- (i) The Council will consider suggested street and park names at its Planning and Development Committee Meetings guided by this Policy;
- (j) The Council has the sole right to determine street and park names;
- (k) The developer will be advised of Council's chosen street and park names and shall provide appropriate signage in accordance with the relevant policies and guidelines.

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### Appendix SC6.3C Approved street trees

The following is a list of approved street trees for developments in the Bundaberg Regional Council area.

**Table SC6.3E.1 Approved street trees (not under powerlines)**

Botanical Name	Common Name	Use	Comments
<i>Agathis robusta</i>	Kauri Pine	Rural Street Tree	Large tree, Pine like in form, large fruit when mature makes this unsuitable for urban location.
<i>Banksia integrifolia</i>	Coastal Banksia	Coastal Street Tree	Gnarled form, Yellow flowers, woody seed pods.
<i>Brachychiton acerfolius</i>	Illawarra Flame Tree	Urban/Rural Street Tree	Deciduous tree to approximately 15m, red flowers in spring/summer. Best suited to larger road reserve.
<i>Brachychiton rupestris</i>	Qld Bottle Tree	Urban/Rural Street Tree	Semi deciduous tree to 15m. Large swollen bottle trunk a feature. Creamy flowers in spring/summer. Best suited to larger road reserve.
<i>Buckinghamia celsissima</i>	Ivory Curl	Urban Street Tree	Masses of creamy flowers
<i>Callistemon viminalis</i>	Weeping Bottlebrush	Urban/Rural Street Tree	Masses of red flowers, weeping in form, can look untidy.
<i>Cupaniopsis anacardiodes</i>	Tuckeroo	Coastal Street Tree	Lime green foliage, orange berries, lollipop form, mature specimens have buttressed trunk.
<i>Elaeocarpus eumundii</i>	Eumundi Quandong	Urban/Rural Street Tree	Med rainforest tree, red new growth a feature, columnar in form.
<i>Elaeocarpus obovatus</i>	Hard Quandong	Urban/Rural Street Tree	Med rainforest tree, small cream flowers followed by blue berries, peach coloured new growth a feature.
<i>Flindersia australis</i>	Crows Ash	Urban/Rural Street Tree	Green foliage, woody seed pods, columnar in form, many mature specimens within Bundaberg streetscape.
<i>Grevillea baileyana</i>	White Oak	Urban/Rural Street Tree	Masses of white/cream flowers, Lobbed leaves with gold undersides.
<i>Harpullia pendula</i>	Tulipwood	Urban Street Tree	Lime green foliage, orange berries, light coloured bark, many examples within the Bundaberg streetscape.
<i>Hymenosporum flavum</i>	Native Frangipani	Urban/Rural Street Tree	Narrow evergreen tree to 10m. Fragrant yellow flowers in spring. Grows in sun or shade, prefers good quality well drained soil. Does not like to be too exposed.
<i>Lophostemon confertus</i>	Brush Box	Rural Street Tree	Dense crown of shiny leaves, Columnar in habit
<i>Stenocarpus sinuatus</i>	Qld Firewheel Tree	Urban/Rural Street Tree	Tall evergreen tree 15-20m tall. Variable dark green leaves. Orange red flowers in summer. Best suited to larger road reserve
<i>Syzygium luehmannii</i>	Small Leaved Lilly Pilly	Urban Street Tree	Dense tree requiring lift pruning within streetscape, red berries, red/pink new growth a feature.

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Botanical Name	Common Name	Use	Comments
<i>Waterhousea floribunda</i>	Weeping Lilly Pilly	Urban/Rural Street Tree	Bushy tree, weeping habit, white/cream flowers followed by berries, found naturally along creek lines.

Table SC6.3E.2 Approved street trees (under powerlines)

Botanical Name	Common Name	Use	Comments
<i>Acmena hemilampra</i>	Satin Ash	Urban Street Tree	Cream flowers followed by white berries. Lush green tree, Can require periodic lift pruning.
<i>Acronychia imperforata</i>	Fraser Island Apple	Coastal Street Tree	
<i>Alectryon coriaceus</i>	Beach Birds Eye	Coastal Street Tree	
<i>Backhousea myrtifolia</i>	Grey Myrtle	Urban/Rural Street Tree	
<i>Backhousea citriodora</i>	Lemon Scented Myrtle	Urban/Rural Street Tree	Small tree, creamy flowers, lemon scented leaves used in cooking
<i>Corymbia ptychocarpa</i>	Swamp Bloodwood	Urban/Rural Street Tree	Small tree, large leaves flowers Pink or Red (Winter/Spring)
<i>Elaeocarpus reticulatus</i>	'Prima Donna' cultivar	Urban/Rural Street Tree	Small evergreen tree, this cultivar has small pink frilled flowers
<i>Phaleria clerodendron</i>	Scented Daphne	Urban/Rural Street Tree	Small tree to 6m large, glossy green leaves. White fragrant flowers on trunk and branches predominantly in summer.
<i>Xanthostemon chrysanthus</i>	Golden Penda	Urban Street Tree	Small evergreen tree. Bright yellow pom pom flowers a feature.

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### Appendix SC6.3D Approved coastal trees

The following is a list of approved coastal trees for developments in the Bundaberg Regional Council area.

**Table SC6.3F.1 Approved coastal trees development**

Botanical Name	Common Name	Comments
<i>Araucaria cunninghamii</i>	Hoop pine	Very tall and erect pineshaped tree with symmetrical branches. Frost tender.
<i>Banksia integrifolia</i>	Coast banksia	Shapely tree with large dull green leaves with white underneath. Strongly scented yellow flowers in thick dense spikes
<i>Banksia serrata</i>	Red honeysuckle	Small tree with hard, toothed leaves. Widely cultivated as a coastal ornamental. Bird attractant.
<i>Callistemon viminalis</i>	Weeping bottlebrush	A large shrub or small tree 3-8m high with a graceful, weeping appearance that produces brilliant red flowers in spring and early summer.
<i>Callitris columellaris</i>	Coast cypress pine	A tall dense, evergreen pine that can be cut back to form a dense hedge. Prefers deep sandy loams.
<i>Casuarina equisetifolia</i>	Coast she-oak	Small she-oak with sparse drooping needle-like foliage. Highly resistant to wind and salt spray and grows on raw sand.
<i>Cupaniopsis anacardioides</i>	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
<i>Eucalyptus ptychocarpa</i>	Swamp bloodwood	A small spreading ornamental tree bearing masses of spectacular crimson, pink or white flowers. Has large leathery leaves.
<i>Eucalyptus tereticornis</i>	Blue gum	Eucalypt with smooth bluey grey trunk with irregular blotches. An important hollow producing tree. Flowers used by native birds and bats and leaves used by koalas.
<i>Eucalyptus tessellaris</i>	Moreton Bay Ash	A tall, slender, attractive eucalypt with smooth, white bark on the upper trunk and hard, chunky, tessellated bark around the base. White flowers attract parrots.
<i>Eugenia reinwardtiana</i>	Beach cherry	Shrub to 3m producing edible red fruits about 2cm in diameter.
<i>Harpullia pendula</i>	Tulipwood	Shade tree with large, glossy leaves and clusters of yellow flowers followed by red or yellow seed cases containing two shiny black seeds. Widely used as a street tree on a variety of soils where it rarely exceeds 10m.
<i>Leptospermum petersonii</i>	Lemon-scented teatree	Bushy shrub to 5m bearing masses of white flowers. Excellent for hedges and screens. Grows on most soil types.
<i>Livistona decipiens</i>	Weeping cabbage palm	Tall native palm with a dense head of fan-shaped leaves and slender trunk. Requires warm conditions for best growth and moist, shady conditions when young.
<i>Melaleuca dealbata</i>	Silver-leafed paperbark	Common tree on coastal creeks north of Maryborough. Greyish green leaves that fade to red with age. Bears white flowers attractive to birds and bees.
<i>Melaleuca leucadendra</i>	Broad-leaved tea-tree	Weeping tree with a fairly straight trunk covered with layers of papery white bark. Bird attracting when in flower.



### Appendix SC6.3E Approved open forests and woodland species

The following is a list of approved open forests and woodland species for developments in the Bundaberg Regional Council area.

**Table SC6.3G.1 Approved open forest and woodland species**

Botanical Name	Common Name	Comments
<i>Acacia disparrima</i> ( <i>syn aulacocarpa</i> )	Hickory wattle	Small fast growing tree with a height range of 6-20m. Produces sweetly scented yellow flowers in autumn. Good pioneer species widely used by native wildlife.
<i>Acacia maidenii</i>	Maiden's wattle	Small, compact, fast growing wattle bearing yellow flowers.
<i>Alphitonia excelsa</i>	Soap tree or red ash	Tree with a layered, spreading canopy and leaves distinctly white on the underside. Fast growing and widely used by native fauna.
<i>Casuarina littoralis</i>	Forest oak	Small tree usually with a conical shape and branches characteristically curving upwards. Usually found on stony or sandy soils.
<i>Corymbia citriodora</i>	Lemon-scented gum	A clean, straight tree of graceful appearance with smooth pinkish grey trunk. Leaves have a strong lemon scented smell when crushed. Food tree for greater gliders.
<i>Corymbia intermedia</i>	Pink bloodwood	A medium to tall tree covered with brownish-chunky bark. Flowers used by fruitbats and lorikeets.
<i>Eucalyptus tereticornis</i>	Blue gum	Eucalypt with smooth bluey grey trunk with irregular blotches. An important hollow producing tree. Flowers used by native birds and bats and leaves used by koalas.
<i>Eucalyptus tessellaris</i>	Moreton Bay Ash	A tall, slender, attractive eucalypt with smooth, white bark on the upper trunk and hard, chunky, tessellated bark around the base. White flowers attract parrots.
<i>Grevillea banksii</i>	Red flowered silky oak	An attractive small shrub with heads of red or white blooms and fern-like foliage.
<i>Lophostemon confertus</i>	Brush box	Tree with a dense crown of dark green, shiny leaves often used for street and park planting as a shade tree.
<i>Lophostemon suaveolens</i>	Swamp mahogany	A medium sized tree with rough, flaky bark and attractive white flowers. Fast growing and suitable for wet soils.
<i>Melia azedarach</i>	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.

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### Appendix SC6.3F Approved shrubs and vine forests species

The following is a list of approved shrubs and vine forests species for developments in the Bundaberg Regional Council area.

**Table SC6.3H.1 Approved shrubs and vine forest species**

Botanical Name	Common Name	Comments
<i>Alchornea ilicifolia</i>	Holly bush	Shrub or small tree with sharply toothed, stiff leathery leaves.
<i>Alectryon connatus</i>	Bird's eye alectryon	Small tree with young parts and flowers densely hairy. Pale blue-green colour under the leaves.
<i>Aphananthe philippinensis</i>	Rough-leaved elm	Small to medium-sized tree with rough-surfaced leaves and branchlets, and prickly toothed leaves.
<i>Bridelia leichhardtii</i>	Small-leaved brush ironbark	Shrub or small tree with small leaves and red fruit 4-5mm across.
<i>Canthium coprosmoides</i>	Coast canthium	Tall shrub or small tree with orange-red 2-lobed fruit 8mm across.
<i>Cassine melanocarpa</i>	Black olive plum	Small tree with thick and leathery leaves with shiny black fruit 1 ½ - 2 ½ cm across.
<i>Cleistanthus cunninghamii</i>	Cleistanthus	Small tree with branchlets having raised protuberances. Fruit a 3-lobed capsule.
<i>Clerodendrum floribundum</i>	Lolly bush	Small tree or shrub with branchlets often purplish. Attractive black fruit are seated in a bright red petal like calyx.
<i>Cupaniopsis anacardioides</i>	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
<i>Drypetes deplanchei</i>	Yellow tulip	Medium sized tree with young leaves sharply toothed. Fruit a red/orange coloured drupe.
<i>Ficus obliqua</i>	Small-leaved Moreton Bay fig	Tall tree growing to 40m. Fruit a yellow to orange coloured fig. Fruit eaten by birds.
<i>Flindersia australis</i>	Crows ash	Large shade tree reaching to about 18m in open plantings. Foliage is dark green in a dense rounded crown. An excellent shade and avenue tree native to Queensland.
<i>Flindersia collina</i>	Leopard ash	Queensland native tree with slender trunk and glossy green crown and white flowers. Trunk has leopard like blotches. Ideal as a medium sized shade tree.
<i>Harpullia pendula</i>	Tulipwood	Shade tree with large, glossy leaves and clusters of yellow flowers followed by red or yellow seed cases containing two shiny black seeds. Widely used as a street tree on a variety of soils where it rarely exceeds 10m.
<i>Jagera pseudorhus</i>	Foambark	Small tree with capsules covered with rusty brown irritating hairs, splitting into 3 segments. Seeds eaten by ground-dwelling native fauna.
<i>Melia azedarach</i>	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.
<i>Mischocarpus pyriformis</i>	Yellow pear-fruit	Medium tree with yellow/orange, pear-shaped capsules. Slow growing.
<i>Pleiogynium timorense</i>	Burdekin plum	Medium to large tree with a large, spreading crown that produces an edible reddish purple plum.
<i>Rapanea variabilis</i>	Muttonwood	Small tree to about 5m. Produces mauve to blue small drupes about 5mm in diameter. Has attractive foliage and decorative fruit.

### Appendix SC6.3G Approved species for banks of saltwater watercourses

The following is a list of approved species for banks of saltwater watercourses within developments in the Bundaberg Regional Council area.

**Table SC6.3I.1 Approved species for banks of saltwater watercourses**

Botanical Name	Common Name	Comments
<i>Acacia disparrima</i> (syn <i>aulacocarpa</i> )	Hickory wattle	Small fast growing tree with a height range of 6-20m. Produces sweetly scented yellow flowers in autumn. Good pioneer species widely used by native wildlife.
<i>Alphitonia excelsa</i>	Soap tree or red ash	Tree with a layered, spreading canopy and leaves distinctly white on the underside. Fast growing and widely used by native fauna.
<i>Callitris columellaris</i> *	Coast cypress pine	A tall dense, evergreen pine that can be cut back to form a dense hedge. Prefers deep sandy loams.
<i>Casuarina equisetifolia</i> *	Coast she-oak	Small she-oak with sparse drooping needle-like foliage. Highly resistant to wind and salt spray and grows on raw sand.
<i>Casuarina glauca</i>	Swamp oak	Fast growing sheoak native of saline and wet sites but used for windbreaks and shelter belts in heavy soils. Seeds eaten by pigeons.
<i>Clerodendrum floribundum</i>	Lolly bush	Small tree or shrub with branchlets often purplish. Attractive black fruit are seated in a bright red petal like calyx.
<i>Cupaniopsis anacardioides</i>	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
<i>Eucalyptus tereticornis</i>	Blue gum	Eucalypt with smooth bluey-grey trunk with irregular blotches. An important hollow-producing tree. Flowers used by native birds and bats and leaves used by koalas.
<i>Eucalyptus tessellaris</i>	Moreton Bay Ash	A tall, slender, attractive eucalypt with smooth, white bark on the upper trunk and hard, chunky, tessellated bark around the base. White flowers attract parrots.
<i>Ficus opposita</i>	Sandpaper fig	Small tree with sandpaper rough leaves. Figs eaten by native birds.
<i>Glochidion ferdinandi</i>	Coast glochidion	Small densely growing tree to 10m. Green to red roundish, ribbed capsule.
<i>Jagera pseudorhus</i>	Foambark	Small tree with capsules covered with rusty brown irritating hairs, splitting into 3 segments. Seeds eaten by ground-dwelling native fauna.
<i>Livistona decipiens</i>	Weeping cabbage palm	Tall native palm with a dense head of fan-shaped leaves and slender trunk. Requires warm conditions for best growth and moist, shady conditions when young.
<i>Melia azedarach</i>	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.
<i>Pleiogynium timorense</i>	Burdekin plum	Medium to large tree with a large, spreading crown that produces an edible reddish purple plum.

Note— \* Found mainly in coastal river areas rather than saltwater river areas.

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### Appendix SC6.3H Approved species for banks of freshwater watercourses

The following is a list of approved species for banks of freshwater watercourses within developments in the Bundaberg Regional Council area.

**Table SC6.3J.1 Approved species for banks of freshwater watercourses**

Botanical Name	Common Name	Comments
<i>Acacia disparrima</i> ( <i>syn aulacocarpa</i> )	Hickory wattle	Small fast growing tree with a height range of 6-20m. Produces sweetly scented yellow flowers in autumn. Good pioneer species widely used by native wildlife.
<i>Alphitonia excelsa</i>	Soap tree or red ash	Tree with a layered, spreading canopy and leaves distinctly white on the underside. Fast growing and widely used by native fauna.
<i>Clerodendrum floribundum</i>	Lolly bush	Small tree or shrub with branchlets often purplish. Attractive black fruit are seated in a bright red petal-like calyx.
<i>Cupaniopsis anacardioides</i>	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
<i>Eucalyptus tereticornis</i>	Blue gum	Eucalypt with smooth bluey-grey trunk with irregular blotches. An important hollow-producing tree. Flowers used by native birds and bats and leaves used by koalas.
<i>Ficus coronata</i>	Creek sandpaper fig	Small fig growing along creek banks. Fruit edible, purplish and hairy.
<i>Glochidion sumatranum</i>	Cheese tree	Small to medium fast growing tree. Fruits are flattened and fluted similar to round cheese.
<i>Jagera pseudorhus</i>	Foambark	Small tree with capsules covered with rusty brown irritating hairs, splitting into 3 segments. Seeds eaten by ground-dwelling native fauna.
<i>Leptospermum polygalifolium</i>	Wild may	Slender, twiggy shrub with small, narrow scented leaves and white flowers.
<i>Melaleuca quinquenervia</i>	Paper bark	Medium sized-tree that likes wet and wallum-like areas. Birds, bats and ants feed on the nectar.
<i>Melia azedarach</i>	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.
<i>Pleiogynium timorense</i>	Burdekin plum	Medium to large tree with a large, spreading crown that produces an edible reddish-purple plum.
<i>Waterhousea floribunda</i>	Weeping cherry	Excellent spreading tree with decorative yellow flowers and dense green foliage. Suited to moist soils. Fruit attractive to birds and bats.

### Appendix SC6.3I Approved small trees and tall shrubs species

The following is a list of approved small trees and tall shrubs species for developments in the Bundaberg Regional Council area.

**Table SC6.3K.1 Approved small tree and tall shrub species**

Botanical Name	Common Name	Comments
<i>Barklya syringifolia</i>	Barklya, Golden shower tree	Slow growing, very showy, evergreen small tree with heart-shaped leaves. Bears masses of brilliant, yellow flowers in early summer.
<i>Buckinghamia celsissima</i>	Ivory curl	Showy small tree bearing masses of grevillea-like white flowers. Excellent tree for avenue planting. Rarely exceeds 6m in amenity plantings.
<i>Callistemon polandii</i>	Red bottlebrush	A bushy small tree growing to 5m that is noted for its long lasting 9cm long, bright red, gold-tipped flowers.
<i>Callistemon Viminalis</i>	Weeping bottlebrush	A large shrub or small tree 3-8m high with a graceful, weeping appearance that produces brilliant red flowers in spring and early summer.
<i>Eucalyptus ptychocarpa</i>	Swamp bloodwood	A small spreading ornamental tree bearing masses of spectacular crimson, pink or white flowers. Has large leathery leaves.
<i>Euodia muelleri</i>	Little euodia	Small tree to about 5m. Colourful reddish-pink flowers grow from trunk.
<i>Harpullia pendula</i>	Tulipwood	Shade tree with large, glossy leaves and clusters of yellow flowers followed by red or yellow seed cases containing two shiny black seeds. Widely used as a street tree on a variety of soils where it rarely exceeds 10m.
<i>Leptospermum petersonii</i>	Lemon-scented tea-tree	Bushy shrub to 5m bearing masses of white flowers. Excellent for hedges and screens. Grows on most soil types.
<i>Melaleuca leucadendra</i>	Broad-leaved tea-tree	Weeping tree with a fairly straight trunk covered with layers of papery white bark. Bird attracting when in flower.
<i>Melaleuca viridiflora</i>	Red-flowering tea-tree	Medium sized paperbark that has pale lemon to pink and occasionally red flowers.
<i>Pittosporum rhombifolium</i>	White pittosporum	Usually grows to about 6m in cultivation. Has a dense crown of glossy, dark green, toothed leaves and small white flowers which produces clusters of orange berries in winter.
<i>Xanthostemon chrysanthus</i>	Golden penda	Small tree that occurs in coastal north Qld. Flowers are bright yellow, very prominent and bird attracting. Excellent specimen tree where ample moisture is available.

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### Appendix SC6.3J Unacceptable plant species

The following plant species are unacceptable for landscaping within the Bundaberg Regional Council area.

**Table SC6.3L.1 Unacceptable plant species**

Botanical Name	Common Name
<i>Acacia farnesiana</i>	Mimosa Bush
<i>Acalypha sinensis</i>	Chinese Acalypha
<i>Acetosa sagittata</i>	Rambling Dock
<i>Agave americana</i>	Century Plant
<i>Agave sisalana</i>	Sisal
<i>Agave vivipara</i> var. <i>vivipara</i>	Sisal
<i>Ageratina adenophora</i>	Crofton Weed
<i>Ageratina riparia</i>	Mistflower
<i>Ageratum houstonianum</i>	Blue Billygoat Weed
<i>Alternanthera philoxeroides</i>	Aligator Weed
<i>Anredera cordifolia</i>	Madeira Vine, Lamb's Tail, Potato Vine
<i>Araujia horotum</i>	White Moth Vine
<i>Ardisia crispa/crenata</i>	Coral Berry, Ardisia
<i>Ardisia humilis</i>	Spice Berry
<i>Arecastum</i> (syn. <i>Syagrus</i> ) <i>romanzoffianum</i>	Cocos Palm
<i>Aristolochia elegans</i>	Dutchman's Pipe or Calico Flower
<i>Arunda donax</i>	Giant Reed
<i>Asclepias curassavica</i>	Red Cotton Bush
<i>Asparagus africanus</i>	Asparagus fern
<i>Asparagus (Myrsiphullum) asparagoides</i>	Bridal Creeper
<i>Asparagus densiflora</i>	Asparagus fern
<i>Asparagus plumosus</i>	Ferny Asparagus
<i>Baccharis halimifolia</i>	Groundsel Bush
<i>Bidens pilosa</i>	Cobbler's Pegs
<i>Brachiaria decumbens</i>	Signal Grass
<i>Brachiaria multica</i>	Para Grass
<i>Bryophyllum delagoense</i> (Syn. <i>B. diagamontianum</i> x <i>tubiflorum</i> )	Mother-of-Millions Hybrid
<i>Bryophyllum pinnatum</i>	Live Plant
<i>Bryophyllum tubiflorum</i>	Mother-of-Millions
<i>Caesilpinia decapetala</i>	Thorny Poinciana
<i>Callisia fragrans</i>	Purple Succulent
<i>Canna species (indica and generalis)</i>	Canna Lilly
<i>Cardiospermum grandiflorum</i>	Balloon Vine
<i>Cascabela thevitia</i> syn. <i>Thevitia peruviana</i>	Yellow Oleander
<i>Cassia coluteoides</i>	Easter Cassia
<i>Catharanthus roseus</i>	Pink Periwinkle
<i>Celtis sinensis</i>	Chinese Elm, Chinese Celtis
<i>Cenchrus calculatis</i>	
<i>Cenchrus echinatus</i>	Mossman River Grass
<i>Cestrum parqui</i>	Cestrum
<i>Chloris gayana</i>	Rhodes Grass
<i>Chrysanthemoides monilifera</i> subsp. <i>rotunda</i>	Bitou Bush
<i>Cinnamomum camphora</i>	Camphor Laurel
<i>Commelina benghalensis</i>	Hairy Wandering Jew

## Schedule 6 – Planning Scheme Policies

SC6.3 Planning scheme policy for development works

Botanical Name	Common Name
<i>Conyza bonariensis</i>	Flax-leaf Fleabane
<i>Conyza canadensis</i>	Canadian Fleabane
<i>Conyza sumatrensis</i>	Tall Fleabane
<i>Corymbia torelliana</i>	Cadaga or Cadaghi
<i>Cynodon dactylon</i>	Bahama Grass / Green Couch
<i>Cyperus brevifolius</i>	Mullumbimy Couch
<i>Cyperus involucratus</i>	African Sedge
<i>Cyperus rotundus</i>	Nut Grass
<i>Desmodium intortum</i>	Green-leaved Desmodium
<i>Desmodium uncinatum</i>	Silver-leaved Desmodium
<i>Digitaria eriantha</i>	Pangola Grass
<i>Duranta erecta</i>	Duranta, Blue Sky Flower
<i>Eichornia crassipes</i>	Water Hyacinth
<i>Eleusine indica</i>	Crowsfoot Grass
<i>Eragrostis curvula</i>	African Lovegrass
<i>Erythrina crista-galli</i>	Cockspur Coral Tree
<i>Eugenia uniflora</i>	Brazilian Cherry
<i>Euphorbia cyathophora</i>	Painted Spurge
<i>Euphorbia heterophylla</i>	Milk Weed
<i>Furcraea foetida</i>	Cuban Hemp
<i>Furcraea selloa</i>	Hemp
<i>Gleditsia triacanthos (+ all ornamental varieties)</i>	Honey Locust Tree
<i>Gloriosa superba</i>	Glory Lilly
<i>Gomphocarpus physocarpus</i>	Balloon Cotton Bush
<i>Gymnocoronis spilanthoides</i>	Senegal Tea
<i>Hymenachne amplexicaulis</i>	
<i>Hypoestes phyllostachya</i>	Polka-dot Plant
<i>Impatiens walleriana</i>	Balsam
<i>Ipomoea cairica</i>	Mile a Minute
<i>Ipomoea indica</i>	Morning Glory
<i>Juncus articulatus</i>	Jointed Rush
<i>Koeleruteria elegans</i>	Golden Rain Tree
<i>Lantana camara var. camara</i>	Lantana
<i>Lantana montevidensis</i>	Creeping Lantana
<i>Leucaena leucocephala</i>	Leucaena
<i>Ligustrum lucidum</i>	Privet Broad Leaf
<i>Ligustrum sinense</i>	Privet Small Leaf, Chinese Privet
<i>Lilium formosanum</i>	Taiwan Lily
<i>Lonicera japonica</i>	Japanese Honeysuckle
<i>Ludwigia ochoualis</i>	
<i>Lycium ferocissimum</i>	African Boxthorn
<i>Macfadyena unuis-cati</i>	Cats Claw Creeper
<i>Macroptilium atropurpureum</i>	Siratiro
<i>Macrotyloma axillare</i>	Perrenia Horse Gram
<i>Melinis minutiflora</i>	Molasses Grass
<i>Melinis repens</i>	Red Natal Grass
<i>Mimosa pudica</i>	Common Sensitive Plant
<i>Murraya paniculata cv. Exotica</i>	Murraya, mock orange
<i>Myriophyllum aquaticum</i>	Parrot's Feather
<i>Nasella neessiana</i>	Chilean Needle Grass

## Schedule 6 – Planning Scheme Policies

SC6.3 Planning scheme policy for development works

## Schedule 6 – Planning Scheme Policies

Botanical Name	Common Name
<i>Neonotonia wightii</i>	Glycine
<i>Nephrolepis cordifolia</i>	Fish bone fern
<i>Nymphaea caerulea subsp. zanzibarensis</i>	Blue Lotus
<i>Ochna serrulata</i>	Ochna, Mickey Mouse Bush
<i>Oenothera drummondii subsp. drummondii</i>	Beach evening Primrose
<i>Olea africana</i>	African Olive
<i>Olea europea</i>	Olive
<i>Optunia spp.</i>	Drooping Pear Tree, prickly pears
<i>Oxalis corniculata</i>	Creeping Oxalis, Yellow Wood Sorrell
<i>Panicum maximum</i>	Green Panic / Guinea Grass
<i>Parkinsonia aculeata</i>	Jerusalem Thorn
<i>Paspalum conjugatum</i>	Paspalum
<i>Paspalum dilatatum</i>	Paspalum
<i>Paspalum mandiocanum</i>	
<i>Paspalum notatum</i>	Bahia Grass
<i>Passiflora edulis</i>	Passion Fruit
<i>Passiflora foetida</i>	Stinking Passion Vine
<i>Passiflora suberosa</i>	Corky Passion Vine
<i>Passiflora subpeltata</i>	White Passion Fruit
<i>Parthenium hysterophorus</i>	Parthenium Weed
<i>Paulownia spp</i>	Paulownia
<i>Pennisetum alopecuroides</i>	Swamp Foxtail
<i>Pennisetum clandestinum</i>	Kikuyu Grass
<i>Pennisetum purpureum</i>	Elephant Grass
<i>Pennisetum setaceum</i>	African Fountain Grass
<i>Phyla canescens</i>	Condamine Couch / Lippia
<i>Phyllostachys aurea</i>	Fishpole Bamboo
<i>Phytolacca octandra</i>	Inkweed
<i>Pinus caribaea</i>	Caribbean Slash Pine
<i>Pinus elliotii</i>	Slash Pine
<i>Pistia stratiotes</i>	Water Lettuce
<i>Prosopis pallida</i>	Algaroba
<i>Prunus munsoniana</i>	Wild Goose Plum
<i>Psidium guajava</i>	Guajava, Guava
<i>Pueraria lobata</i>	Kudzu
<i>Pyrostegia venusta</i>	Flame Vine
<i>Rhaphiolepis indica</i>	Indian Hawthorn
<i>Ricinus communis</i>	Castor Oil Plant
<i>Rivina humilis</i>	Spice Berry
<i>Rorippa nasturtium-aquaticum (syn. Nasturtium officinale)</i>	Watercress
<i>Rubus bellobatus</i>	Kittatinny Blackberry
<i>Rubus discolor (R. fruticosus complex)</i>	a Blackberry
<i>Rubus ellipticus</i>	Yellow Berry
<i>Rubus fruticosus</i>	Blackberry
<i>Ruellia malacosperma</i>	Ruellia
<i>Ruppia maritima</i>	Sea Tassel
<i>Salvia coccinea</i>	Red Salvia
<i>Salvinia molesta</i>	Salvinia
<i>Sansevieria trifasciata</i>	Mother in Laws Tongue



SC6.3 Planning scheme policy for development works

Botanical Name	Common Name
<i>Scheffera actinophylla</i>	Umbrella Tree
<i>Schinus molle</i>	Pepper Tree
<i>Schinus terebinthifolia</i>	Broad Leafed Pepperina Tree, Pepper Tree
<i>Senecio madagascariensis</i>	Fire Weed
<i>Senecio tamoides</i>	Canary Creeper
<i>Senna pendulina</i>	Easter cassia, Winter senna
<i>Senna septentrionalis (syn. floribunda)</i>	Arsenic Bush
<i>Setaria sphacelata</i>	South African Pigeon Grass
<i>Sida rhombifolia</i>	Paddy's Lucerna
<i>Solanum erianthum</i>	Tobacco Bush
<i>Solanum hispidum</i>	Giant Devil's Fig
<i>Solanum mauritianum</i>	Wild tobacco tree
<i>Solanum seaforthianum</i>	Brazilian nightshade
<i>Solanum torvum</i>	Devil's Fig
<i>Solidago canadensis var. scabra</i>	Canadian Goldenrod
<i>Spathodea campanulata</i>	African Tulip Tree
<i>Sphagneticola (syn. Wedelia) trilobata</i>	Singapore Daisy
<i>Sporobolus africanus</i>	Paramatta Grass
<i>Sporobolus fertilis</i>	Giant Paramatta Grass
<i>Sporobolus jacquemontii</i>	American rat's tail Grass
<i>Stylosanthes scabra</i>	Shrubby Stylo
<i>Tagetes minuta</i>	Stinking Roger
<i>Stenolobium stans</i>	Yellow Bells, Yellow Bell Flower
<i>Themada quadrivalvis</i>	Grader Grass, Thatch Grass
<i>Thunbergia alata</i>	Black-eyed Susan
<i>Thunbergia grandiflora</i>	Blue Thunbergia
<i>Tithonia diversifolia</i>	Mexican Sunflower
<i>Tradescantia albiflora</i>	Wandering jew
<i>Tradescantia zebrina</i>	Zebrina
<i>Triumfetta rhomboidea</i>	Chinese Burr
<i>Verbesina enceloides</i>	Crownbeard
<i>Xanthium spinosum</i>	Bathurst Burr

## Schedule 6 – Planning Scheme Policies

**Item****24 November 2020****Item Number:**

K2

**File Number:****Part:**

PLANNING

**Portfolio:**

Planning &amp; Development Services

**Subject:**

Proposed Amendment to the Bundaberg Regional Council Planning Scheme 2015

**Report Author:**

Evan Fritz, Manager Strategic Planning

**Authorised by:**

Stephen Johnston, Chief Executive Officer

**Link to Corporate Plan:**

Our Environment - 2.3 Sustainable built and natural environment - 2.3.3 Review and consistently enforce local laws, the planning scheme, and other associated environment and public health legislation to ensure they meet community standards.

**Background:**

Temporary Local Planning Instrument (TLPI) No. 1 of 2019 (Bargara Building Height and Sea Turtle Sensitive Area) was introduced by the Planning Minister on 30 May 2019. The purpose of TLPI 1/2019 is to provide greater certainty and transparency to building heights at Bargara and to protect sea turtles from the adverse impacts of artificial lighting caused by development on coastal land. The TLPI has effect for two years, unless repealed sooner.

The introduction of TLPI 1/2019 followed the Planning Minister's decision on 21 December 2018 to call in, reassess and re-decide the Esplanade Jewel development at Bargara. The Minister's call in and subsequent TLPI were in response to concerns with the planning scheme provisions for building height in the High-density residential zone at Bargara. These concerns primarily related to the certainty and transparency of the current planning scheme provisions for building height and the impacts of increased building height on the character and amenity of the area, and on sea turtles (including impacts from artificial lighting).

A temporary local planning instrument (TLPI) addresses matters where there is a significant risk of serious adverse cultural, economic, environmental or social conditions, and where any delay involved in amending Council's planning scheme to address the matter would increase the risk. There is an expectation from the State that Council should address the risks that led to the making of the TLPI, through an amendment to the planning scheme.

The sea turtle sensitive area component of the TLPI was addressed and incorporated in the planning scheme as part of a scheme amendment adopted by Council on 21 January 2020, which took effect on 10 February 2020.

It is now proposed that Council amend the planning scheme to address that part of the Minister's TLPI relating to building height for development in the High-density residential zone at Bargara.

Previous discussions with Council in relation to this matter have indicated a preference that any amendment should be informed by any learnings or outcomes from the Reducing Urban Glow Project. This project was originally expected to be completed mid-year but has seen some delays which mean that the project is not yet finalised.

Given there is unlikely to be sufficient time to prepare the amendment and complete the amendment process before the Minister's TLPI lapses on 30 May 2021, it is recommended that Council also request that the Minister extend or remake the TLPI, to extend its effect by a minimum of 12 months.

It is recommended that the amendment follow the process set out in the Minister's Guidelines and Rules (MGR) for making or amending a planning scheme, under section 20 of the *Planning Act 2016*.

In accordance with the MGR, the amendment process involves the following –

- decide to amend planning scheme
- prepare amendment and give material to the Planning Minister
- State interest review and Minister's approval to publicly consult
- public consultation for a minimum 20 business days
- review submissions and decide how to proceed
- submit amendment for Minister's approval
- adopt amendment (subject to Minister's approval).

#### **Associated Person/Organization:**

Queensland Treasury (Planning Group); Treasurer and Minister for Infrastructure and Planning (Cameron Dick MP).

#### **Consultation:**

Public consultation of the proposed planning scheme amendment will need to be undertaken at the relevant time, in accordance with requirements of the *Planning Act 2016* and the Minister's Guidelines and Rules (MGR).

#### **Chief Legal Officer's Comments:**

The *Planning Act 2016* identifies circumstances where a landowner may be entitled to compensation for reduced value of interest in land (arising from a change to Council's planning scheme). A decision to prepare an amendment to the planning scheme does not give rise to any such compensation.

#### **Policy Implications:**

The proposed amendment to the Bundaberg Regional Council Planning Scheme would seek to address matters identified in the Minister's TLPI as detailed in the report.

**Financial and Resource Implications:**

Council's 2020/21 budget includes appropriate allocation of resources to undertake the proposed amendment.

**Risk Management Implications:**

There appears to be no risk management implications.

**Human Rights:**

There appears to be no human rights implications.

**Attachments:**

Nil

**Recommendation:**

**That:**

- a) pursuant to the *Planning Act 2016* and the Minister's Guidelines and Rules, Council decide to make an amendment to the Bundaberg Regional Council Planning Scheme.
- b) the Chief Executive Officer be authorised to write to the Planning Minister to request an extension of Temporary Local Planning Instrument No. 1 of 2019, as it relates to building heights at Bargara, for a minimum of 12 months to allow sufficient time for the amendment to be prepared and adopted in accordance with the Minister's Rules and Guidelines.

**Item****24 November 2020****Item Number:**

K3

**File Number:****Part:**

PLANNING

**Portfolio:**

Planning &amp; Development Services

**Subject:**

Proposed Minor Amendment to the Bundaberg Regional Council Planning Scheme 2015

**Report Author:**

Evan Fritz, Manager Strategic Planning

**Authorised by:**

Stephen Johnston, Chief Executive Officer

**Link to Corporate Plan:**

Our Environment - 2.3 Sustainable built and natural environment - 2.3.3 Review and consistently enforce local laws, the planning scheme, and other associated environment and public health legislation to ensure they meet community standards.

**Background:**

Isis Central Sugar Mill Company Limited (ICSM) has recently contracted Council in relation to proposed alterations to its cane rail and truck loading/unloading facility on land described as Lots 2, 3 and 6 on W39500 located at Goodwood Road and Browns Road, Childers.

The subject land is included in the Community facilities zone under Council's Planning Scheme. The zone provides for community-related uses, activities and facilities (publicly or privately owned), including for example, schools, hospitals, transport and communication networks and utility installations.

Given the range of uses covered by this zone, Council's zoning maps include Community facilities zone annotations to reflect the existing or intended use of land and to help regulate development in the zone. The list of Community facilities zone annotations is outlined in the Administrative definitions at Schedule 1 of the Planning Scheme. The planning scheme does not assign an annotation to every lot included in the Community facilities zone.

The use of land for a cane railway and associated loading and unloading facility is defined in the Planning Scheme as a Utility installation, namely –

*“The use of premises for –*

*... (c) a transport service; or*

*... (e) a maintenance depot, storage depot or other facility for a service stated in paragraphs (a) to (d)."*

While the subject land has been used for a cane railway and associated loading and unloading facility for some time, its use is not currently reflected as an annotation in the Planning Scheme. To correctly recognise this existing use, it is proposed that Council amend the Planning Scheme zone maps to include on an annotation over the subject land, namely annotation 14 - Utility installation.

The proposed amendment is considered to be a minor amendment pursuant to the Minister's Guidelines and Rules (MGR). Specifically, the change is considered to be of a minor nature that does not include zoning changes.

The Planning Scheme makes any change of use in the Community facilities zone Code assessable where consistent with an annotation (and where not otherwise specified as Accepted development). As such, while the amendment does not propose to change the assessment tables in Part 5 of the Planning Scheme, it will by virtue of the proposed annotation, lower the level of assessment for the annotated use (Utility installation) from Impact assessment to Code assessment.

Importantly, the amendment will not remove the need for an application or assessment against the relevant assessment benchmarks in the Planning Scheme.

The proposed planning scheme amendment reflects the existing and historic lawful use of the subject land for a cane railway and associated loading and unloading facility. The amendment will also ensure the ICSM can make changes to this facility to adapt and respond to changing circumstances, while ensuring any development will still require an application and assessment by Council.

In further support of the proposed amendment, it is noted that –

- land adjoining the subject land is included in the Industry zone, in which development for a Utility installation is also Code assessable;
- any changes to the ICSM cane railway and associated loading and unloading facilities in this location would potentially reduce or avoid an increase in trucks hauling cane through the Childers main street (along the Bruce Highway/ Churchill Street).

Being a minor amendment, the proposed amendment does not require State interest review and does not require public notification. If Council decides to adopt the proposed amendment, a notice of adoption will be published and notice will be given to the State in accordance with the requirements of the MGR.

**Associated Person/Organization:**

Queensland Government (Planning Group); Planning Minister.

### Consultation:

Given the nature of minor amendments, and the requirements set out under the Minister's Guidelines and Rules (MGR), Council is not required to publicly consult on minor amendments. Council is required to publish a notice of any decision to adopt a minor amendment, in accordance with requirements of the *Planning Act 2016* and the MGR.

### Chief Legal Officer's Comments:

The *Planning Act 2016* identifies circumstances where a landowner may be entitled to compensation for reduced value of interest in land (arising from a change to the Council's planning scheme). The proposed minor amendment is unlikely to give rise to a reduced value of interest in land.

### Policy Implications:

The proposed amendment to the Bundaberg Regional Council Planning Scheme is of a minor nature.

### Financial and Resource Implications:

Council's 2020/21 budget includes appropriate allocation of resources to undertake the proposed amendment.

### Risk Management Implications:

There appears to be no risk management implications.

### Human Rights:

There appears to be no human rights implications.

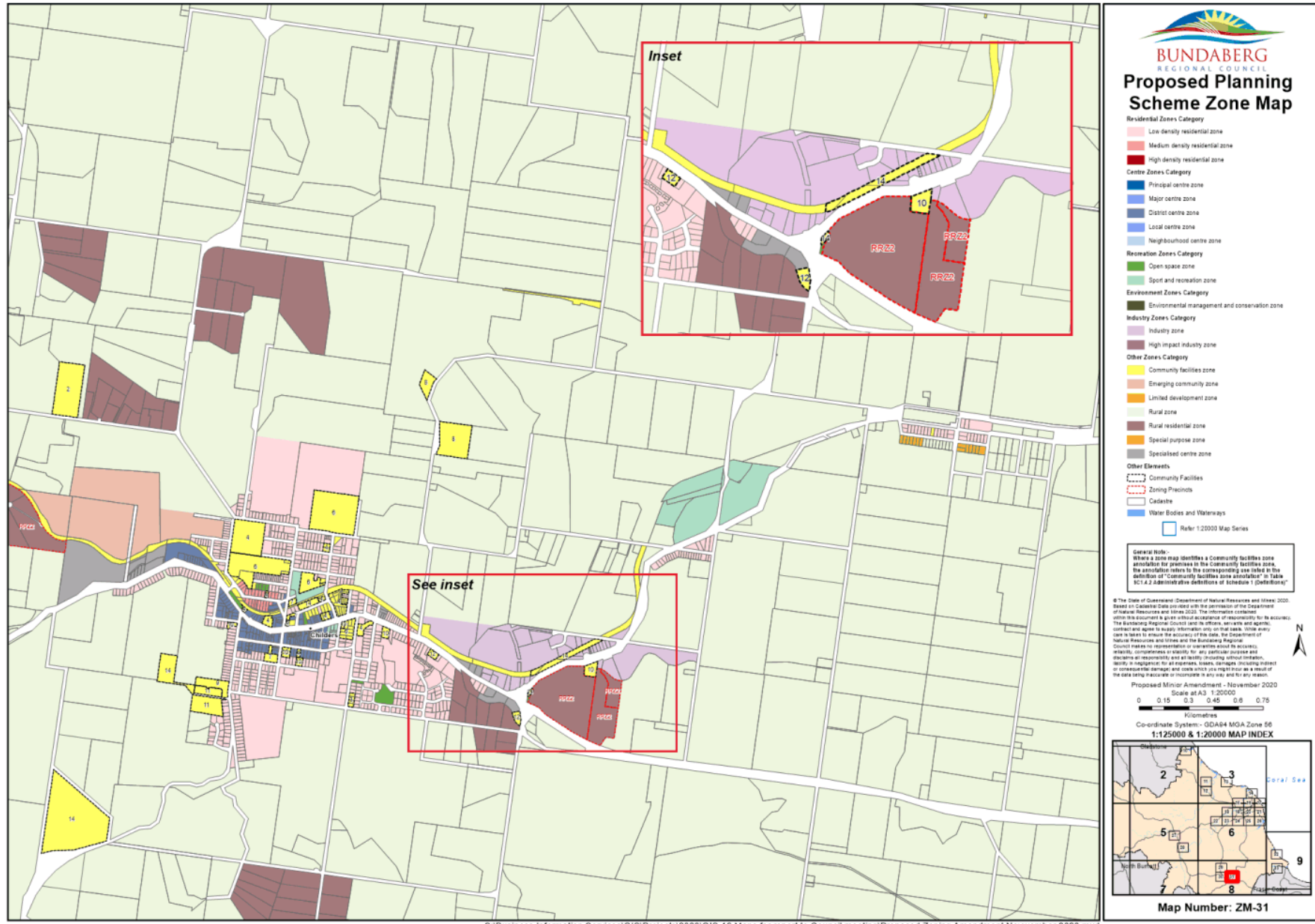
### Attachments:

- ↓1 Proposed Amended Zone Maps ZM-8 and ZM-31

### Recommendation:

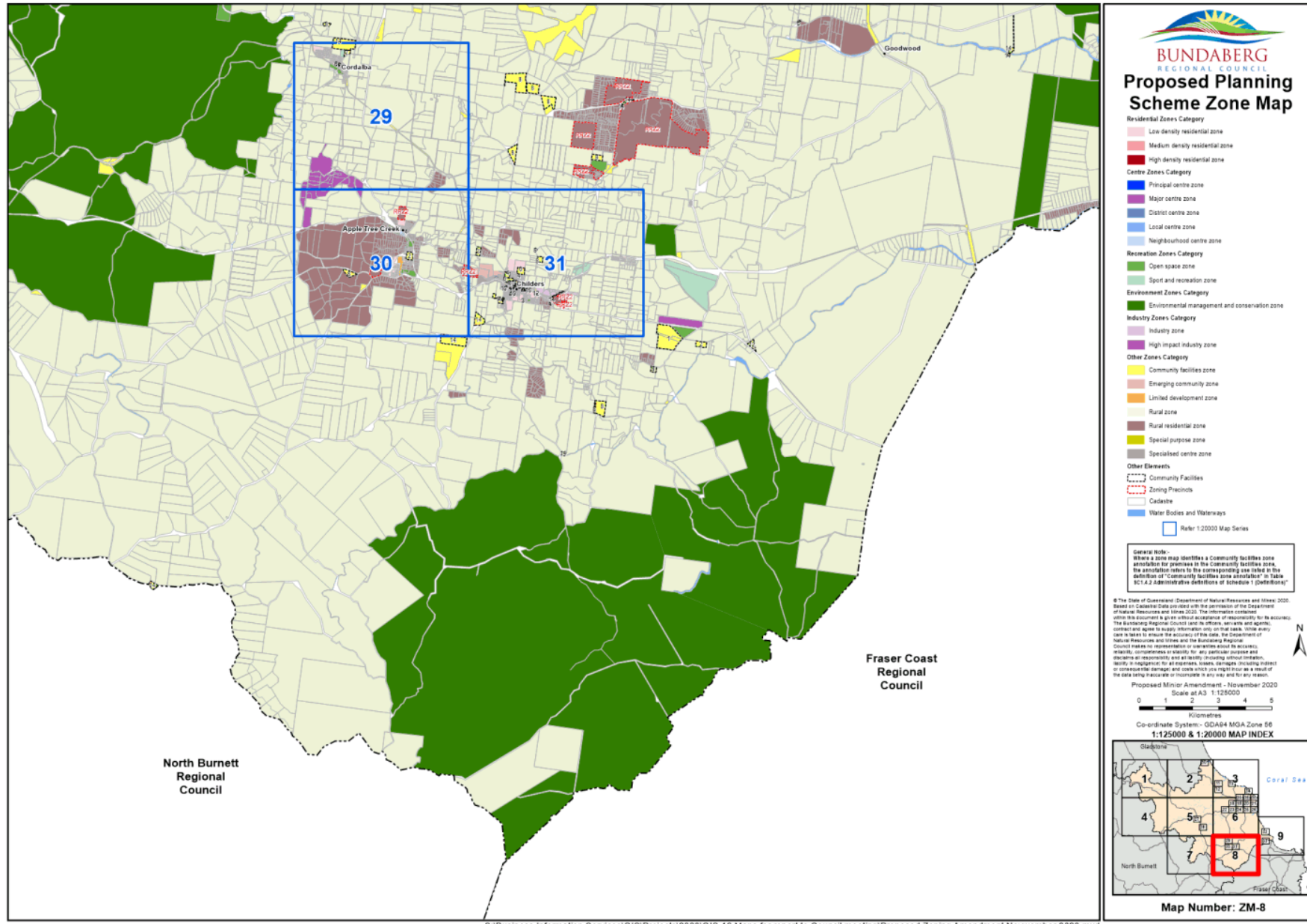
**That pursuant to the *Planning Act 2016* and the Minister's Guidelines and Rules, Council:**

- a) decide to make a minor amendment to the Bundaberg Regional Council Planning Scheme (Zone Maps ZM-8 and ZM-31 at Schedule 2 of the Planning Scheme), to add Community facilities zone annotation 14 – Utility installation to Lots 2, 3 and 6 on W39500 located at Goodwood Road and Browns Road, Childers; and**
- b) decide to adopt the proposed minor amendment and incorporate the amended Zone Maps into the Bundaberg Regional Council Planning Scheme, effective 4 December 2020.**



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**Item****24 November 2020****Item Number:**

K4

**File Number:****Part:**

PLANNING

**Portfolio:**

Planning &amp; Development Services

**Subject:**

Planning Scheme Policy for Agricultural Buffers

**Report Author:**

Hugh Byrnes, Strategic Planning Officer

**Authorised by:**

Stephen Johnston, Chief Executive Officer

**Link to Corporate Plan:**

Our Environment - 2.3 Sustainable built and natural environment - 2.3.3 Review and consistently enforce local laws, the planning scheme, and other associated environment and public health legislation to ensure they meet community standards.

**Background:**

Council at its meeting held 25 August 2020 formally resolved to prepare a Planning Scheme Policy for Agricultural Buffers, in accordance with the requirements of the Planning Act and the Minister's Guidelines and Rules. The new policy seeks to:

- provide guidance for the design, construction and ongoing maintenance of agricultural buffers to minimise conflicts between agricultural operations and sensitive land uses (e.g. residential uses and urban development);
- inform the design of new residential development proposed adjacent to agricultural land uses to limit impact on lawful agricultural operations;
- provide appropriate design considerations and maintenance advice to ensure buffers are effective in mitigating off-farm impacts adjacent to sensitive land uses; and
- support applicants in satisfying the requirements of the planning scheme, and to assist development assessment officers in their assessment of new development applications that require agricultural buffers.

Following Council's resolution, Council officers undertook public consultation of the proposed policy for at least 20 business days, from 11 September 2020 to 13 October 2020, which resulted in eight properly made submissions. Consultation activities included:

- consultation commenced with a public notice published in Bundaberg Now on 11 September 2020;

- email to the local development industry and agricultural sector representative groups on the 11 September 2020;
- meeting and presentation to the Isis Canegrowers Board on 23 September 2020;
- meeting with the Managing Director of Bundaberg Fruit and Vegetable Growers on 29 September 2020;
- reminder email to the local development industry and agricultural sector representative groups on 21 September 2020; and
- the period to make a submission closed on 13 October 2020.

Submissions were received from:

- Department of Agriculture and Fisheries and Department of Natural Resources, Mines and Energy;
- agricultural representative groups (three submissions);
- development industry representatives (two submissions); and
- a local developer (one submission).

A summary of the submissions, including draft responses, is included at Attachment 1. As a result of matters raised in submissions several minor changes have been made to the policy and the example covenant document.

A copy of the proposed policy, with changes made in response to submissions, is included at Attachment 2. It is considered that the changes made have not resulted in the proposed policy being significantly different to the version released for public consultation.

#### **Associated Person/Organization:**

State Government (Planning Group); Planning Minister.

#### **Consultation:**

Public consultation of the proposed planning scheme amendment was undertaken in accordance with requirements of the *Planning Act 2016* and the Minister's Guidelines and Rules. Furthermore, consultation with key industry stakeholders was undertaken through the development of the policy.

#### **Chief Legal Officer's Comments:**

The *Planning Act 2016* identifies circumstances where a landowner may be entitled to compensation for reduced value of interest in land (arising from a change to Council's planning scheme). It is unlikely that the proposed planning scheme policy would give rise to any such compensation.

#### **Policy Implications:**

The proposed policy will provide clearer guidance for the design, construction, maintenance, and ownership of vegetated agricultural buffers for urban and residential development that adjoins agricultural land or existing agricultural uses. The policy recommends Council enter into covenants with developers to apply over land where agricultural buffers are to be constructed.

**Financial and Resource Implications:**

Council's 2020/21 budget includes appropriate allocation of resources to undertake the proposed planning scheme policy amendment.

**Risk Management Implications:**

There appears to be no risk management implications.

**Human Rights:**

There appears to be no human rights implications.

**Attachments:**

- ↓1 Submission summary attachment
- ↓2 Proposed Planning Scheme Policy for Agricultural Buffers
- ↓3 Proposed Example Covenant Document

**Recommendation:**

**That pursuant to the *Planning Act 2016* and the Minister's Guidelines and Rules, Council:**

- a) adopt the Planning Scheme Policy for Agricultural Buffers incorporating changes as a consequence of submissions made through public consultation, noting that the changes have not resulted in the policy being significantly different to the version released for public consultation.**
- b) make an administrative amendment to Part 1, Table 1.2.5 Planning Scheme Policy of the Planning scheme to reflect the adoption of the Planning Scheme Policy for Agricultural Buffers: and**
- c) incorporate the policy into the Bundaberg Regional Council's Planning Scheme, effective 4 December 2020.**

## Attachment 1 – Proposed Planning Scheme Policy for Agricultural Buffers Submissions Summary

Ref	Submission Summary	Response
1	<ol style="list-style-type: none"> <li>1. Requests further clarification within the policy that the rural zone is where agricultural activities should be supported, and that nuisances such as dust, smoke, noise, and odour are a natural consequence of living within an agricultural area.</li> <li>2. Include references to ALC Class A and B land within the policy rather than just reference to existing agricultural activities. Confirming that the policy should protect land that may not be under agricultural production but has the capacity to be.</li> <li>3. Amend the definition of Environmental weed within the example covenant to include species listed within the Wide Bay Burnett Regional Biosecurity Plan 2017-2022.</li> </ol>	<ol style="list-style-type: none"> <li>1. Agree, the policy has been amended to provide further clarification about potential impacts from agricultural activities within the rural zone.</li> <li>2. Agree, the policy has been amended to provide clarification that the policy applies to development adjoining land included within the Class A and B areas.</li> <li>3. Agree, the definition of Environmental Weed within the example covenant document has been amended.</li> </ol>
2	<ol style="list-style-type: none"> <li>1. Agricultural buffers should continue to be designed on a case by case basis.</li> <li>2. The proposed policy should consider predominant wind direction to determine whether a buffer is required, or a reduced standard apply.</li> </ol>	<ol style="list-style-type: none"> <li>1. The policy will provide 'deemed to comply' solutions that will be suitable in most cases where a buffer is required. This does not prevent an applicant proposing an alternative buffer that addresses the requirements of the State Planning Policy, prepared by a suitably qualified consultant (i.e. agricultural scientist or environmental consultant).</li> <li>2. Disagree. While residential development located to the north and west of an agricultural activity may be at a higher risk from some nuisances due to the prevailing wind direction, the sensitive land use is still required to be protected when the wind is non-existent or blowing from an infrequent direction. Additionally, the wind direction alone does not determine the cause of nuisance. Nuisances such as light have no connection to wind direction.</li> </ol>
3	<ol style="list-style-type: none"> <li>1. Requests that the buffer is to apply when adjoining land within the ALC Class A and B areas whether the adjoining land is under agricultural production or not.</li> <li>2. Requests that the policy should apply for MCU and ROL applications.</li> <li>3. Requests that the policy specify that fences cannot be located across the buffer area to allow for effective and efficient maintenance.</li> <li>4. Amend the example covenant to specify that the buffer type is required to transition type to reflect the changed adjoining agricultural use (e.g. from sugarcane to tree crops).</li> </ol>	<ol style="list-style-type: none"> <li>1. Agree, the policy has been amended to provide clarification that the policy applies to development adjoining land included within the Class A and B areas.</li> <li>2. Agree, the buffer applies for all sensitive land uses establishing adjoining an agricultural activity or agricultural land. Through the application of PO6 of the Nuisance code the proposed policy will apply to all sensitive land uses. A future major amendment of the Planning Scheme could provide further clarification on when the policy applies.</li> <li>3. Council believes the imposition of a covenant on each property that includes a buffer is sufficient to ensure the buffer is effective and is maintained. To ensure the buffer functions as intended, Council will endeavour to limit the number of property boundaries (and fences) that may create breaks or gaps in any buffer. A note has been added to section SC6.6.3.1.5 to provide guidance to minimise property boundaries within the buffer area.</li> <li>4. The imposition on a private landowner to transition the buffer located on their land due to the changing nature of the adjoining agricultural practices is considered impractical. The standard wording of the example covenant has however been altered to provide flexibility to the landowner to voluntarily enhance/convert the buffer located on their property to a Type B buffer where the cropping activity changes to taller horticultural crops such as tree crops. It is noted, the type of buffer associated with the sensitive land use does not restrict the farmer's ability to change the cropping use, e.g. from sugar cane to tree crops.</li> </ol>

Ref	Submission Summary	Response
4	<ol style="list-style-type: none"> <li>1. Questions the need for the different buffer types A and B due to their similarities.</li> <li>2. Agrees with the establishment and maintenance periods.</li> <li>3. Suggests the inclusion of additional species to be included within the suggested plant species list. The submitter suggests the inclusion of <i>Syzygium</i> species.</li> </ol>	<ol style="list-style-type: none"> <li>1. Disagree, buffer Type A was introduced to limit the cost of establishing a buffer when the additional height and density is not required. The imposition of conditions on development is a balance between minimising impacts and what is reasonable, Council considers this is a reasonable approach to limit costs on development with the relevant information at the time of consideration.</li> <li>2. Agree, the establishment and on-maintenance periods were introduced due to buffers in the past not being properly established and therefore being non-effective.</li> <li>3. Agree, the species list has been expanded to include <i>Syzygium austral</i>.</li> </ol>
5	<ol style="list-style-type: none"> <li>1. Requests that more clarification be provided within the policy for when the policy applies and when a buffer is required.</li> <li>2. Requests the policy detail when a buffer is required to transition from one type to another as a result of changing agricultural practices on the adjoining land.</li> <li>3. Requests that a buffer should not be imposed for any material change of use for an agribusiness that is part of an existing farm activity.</li> <li>4. Requests it be a requirement that signage be included within the buffer area to delineate the no build' area for future landowners (SC6.6.4.1.1(5))</li> <li>5. Requests clarification as to whether the 100mm of mulch is required as establishment or continually maintained to this standard? (SC6.6.5.2)</li> <li>6. Suggests that the monitoring reports and maintenance logbooks be submitted yearly rather than every 6 months. (SC6.6.6.1(5))</li> </ol>	<ol style="list-style-type: none"> <li>1. Agree, changes have been made to the policy to provide further clarification of the circumstances when the policy is to be applied.</li> <li>2. The imposition on a private landowner to transition the buffer located on their land due to the changing nature of the adjoining agricultural practices is considered impractical. The standard wording of the example covenant has however been altered to provide flexibility to the landowner to voluntarily enhance/convert the buffer located on their property to a Type B buffer where the cropping activity changes to taller horticultural crops such as tree crops. It is noted, the type of buffer associated with the sensitive land use does not restrict the farmer's ability to change the cropping use, e.g. from sugar cane to tree crops.</li> <li>3. The policy does not apply to agricultural related uses. It applies to urban uses proposing to locate adjacent to an existing or potential agricultural use. It should be noted, there are existing planning provisions that require buffers and separation distances that apply to intensive agricultural uses. The policy does not propose to alter these outcomes.</li> <li>4. Disagree, Council believes the imposition of a covenant is sufficient to regulate the buffer area.</li> <li>5. Agree, the requirement to keep the vegetated areas of the buffer covered in mulch has been added to SC6.6.5.3 of the policy and section 4.1 of the standard covenant document.</li> <li>6. Agree, as a consequence of submissions Council has amended the reporting from 6 months to annually.</li> </ol>
6	The submitter endorses the Queensland Farmers Federation submission.	See response to Submission 3 above.
7	<ol style="list-style-type: none"> <li>1. The Supporting Technical Reports do not demonstrate that there is a need for a new or changed policy.</li> <li>2. The Council's engagement appears biased by not adequately consulting the development sector.</li> <li>3. The proposed policy is unlikely to be any more effective than the current policy approach.</li> <li>4. The project has not examined the planning schemes or policies of other local governments.</li> <li>5. Community education: That the application of buffers is not effective and that community education about the potential nuisances of living within a farming area would be more effective in reducing complaints.</li> </ol>	<ol style="list-style-type: none"> <li>1. Disagree, through the application of buffer requirements within the current planning instruments Council determined that its interpretation and implementation was inadequate and that an updated policy was required. Furthermore, Council considers the changing practices and crop types of the local agricultural sector warranted a policy review.</li> <li>2. Disagree, the local UDIA branch was offered the same opportunities as representatives of the agricultural sector. Prior to the development of the proposed policy the Council's consultants met with the President of the UDIA Bundaberg Branch to discuss their concerns. The matters raised by the UDIA representative are included in the supporting report.</li> </ol> <p>Additionally, the local development industry was alerted to the public notification of the proposed policy with an invitation to meet with Council officers. Other than an email from an engineering firm asking a technical question, no industry representatives took the opportunity to discuss the policy.</p>

Ref	Submission Summary	Response
	<p>6. The policy could be simplified by not distinguishing between a static and transitional buffer.</p> <p>7. The proposed policy uses uncertain language to the extent that it is unlikely to provide clear direction.</p> <p>8. That the proposed policy cannot operate properly until the Council amends its planning scheme.</p> <p>9. There are practical and legal challenges to implementing the policy.</p> <p>10. The Council should not, and cannot, use covenants.</p>	<p>3. Disagree, the use of vegetated buffers is an established practice in minimising nuisances from adjacent agricultural uses. Vegetated agricultural buffers have been used in Queensland since 1992 and the policy proposes limited changes to the physical components of the buffer. Where the proposed policy differs from previous and current planning instruments is that it provides clarity regarding vegetation establishment, ownership, and governance.</p> <p>4. A review of other planning instruments in Queensland, undertaken prior to commencing the project, indicated that there was generally a lack of guidance and direction on agricultural buffers beyond what has been contained in the current and previous versions of the SPP.</p> <p>5. Agree in part. The implementation and regulation of agricultural buffers as part of development is only one component of limiting nuisance associated with agricultural practices within the region, particularly relating to minimising complaints. Education and continual improvement of agricultural practices are also elements that need continual improvement. However, the establishment and management of agricultural buffers is the only component able to be regulated by planning instruments.</p> <p>6. The intent of the different buffer types and when they apply is clearly explained within the proposed policy. The inclusion of a transitional buffer type was to minimise nuisance while minimising costs on the developer in certain circumstances. These transitional buffers will be best implemented in a staged development where the balance parcel is to continue under agricultural production or when an adjoining parcel is currently earmarked for development by a planning instrument. The submitter's expectation that a sensitive land use endure nuisances from an adjoining agricultural use for 20 or more years (to use the Coral Gardens example provided) because the agricultural use will eventually be developed is not realistic and does not align with community expectations, nor does it satisfy the State Planning Policy.</p> <p>7. Disagree, Council considers that the general terms referenced are used within a specific context and do not undermine the outcomes of the proposed policy.</p> <p>8. Disagree, however Council has made a minor change to section SC6.6.2 in response to this submission to provide further clarification about the application of the policy.</p> <p>While the assessment benchmarks in the planning scheme may benefit from review and refinement to reflect the new policy, the planning scheme and new policy will operate effectively until Council undertakes any such scheme amendment. For development involving sensitive land uses that adjoin agricultural land/practices, an applicant may apply the policy to demonstrate compliance with PO6 of the Nuisance code in the Planning Scheme. While the Reconfiguring a lot code will continue to refer to the SPP Guideline, the proposed policy provides a local policy position that Council believes addresses the SPP to provide a fit for purpose solution for Applicants, in lieu of having to undertake a first principles assessment. However, an Applicant is welcome to provide a first principles assessment against the SPP that demonstrates compliance with its outcomes. In this situation Council will assess the Applicant's alternative proposal with all relevant information available and in accordance with the relevant planning legislation.</p>

Ref	Submission Summary	Response
		<p>9. The submitter has raised a number of points regarding how the policy will be implemented. The below considers each point raised:</p> <p><u>'On-establishment', 'on-maintenance' and 'off-maintenance'</u> The inclusion of an establishment period is key to ensuring the buffer is established and is a key outcome of the policy. The establishment period recognises that vegetation takes longer to establish than other constructed components of a development where a traditional 'on-maintenance / off-maintenance' process is sufficient.</p> <p><u>Inspections and reporting</u> As a consequence of submissions Council has amended the reporting from 6 months to annually.</p> <p><u>Suitably qualified person</u> Like any vegetation required within a development, a landscape specialist (e.g. landscape architect or landscape designer) is suitably qualified to undertake the required reporting.</p> <p><u>Change of buffer types post establishment</u> The note within section SC6.6.3.3 has been amended to provide further clarity that a buffer is not required to be upgraded as a result of changed agricultural activities, but does not restrict a land owner from upgrading should they wish to.</p> <p><u>No build areas within the buffer extent</u> The no build area is important for the protection of the vegetation within the buffer to ensure proper root growth. The no build area also protects any structure or infrastructure from root intrusion.</p> <p><u>Responsibility for establishment</u> Section SC6.6.5.2 has been amended. Reference to establishment has been removed to avoid confusion with the establishment period.</p> <p><u>Terminology</u> Permeability, weediness, or density are terms commonly used by landscape specialists. Like many planning outcomes, enforcement may not be as clear as some people may like, however the nature of vegetation is that each plant does not grow to the same extent and at the same rate. Council believes that the policy is specific enough for implementation and enforcement.</p> <p>10. Disagree, Council considers that a covenant is the best mechanism to protect and manage agricultural buffers and a covenant is the best and most upfront approach to inform potential landowners of their obligations associated with a buffer. Council's legal team has confirmed that a covenant can be used in this situation.</p>
8	1. Supports a localised approach that updates the current policy. Furthermore, agrees the current	<p>1. The submitter's support for an updated and localised approach is noted.</p> <p>2. The local UDIA chapter was offered the same opportunities as representatives of the agricultural sector. Prior to the development of the proposed policy the Council's consultants met with the</p>



Ref	Submission Summary	Response
	<p>policy and implementation requires greater consistency.</p> <p>2. Stakeholder engagement: The submitter believes that not enough consultation has been undertaken with the development industry representatives.</p> <p>3. Covenant: The submitter believes the imposition of a covenant to be onerous on a developer and future landowners. The submitter argues that increased community education and property notes will achieve a better outcome.</p> <p>4. Recommends that Council improve the assessment benchmarks on vegetated buffers in the planning scheme to clarify where/how development conditions for buffers will be applied, and that Council continue to engage with industry on the design and establishment of buffers.</p>	<p>President of the UDIA Bundaberg Branch to discuss their concerns. The matters raised by the UDIA representative are included in the supporting report.</p> <p>3. Disagree, Council believes that a covenant is the best mechanism to protect and manage agricultural buffers and a covenant is the best and most upfront approach to inform potential landowners of their obligations associated with a buffer. Council's legal team has confirmed that a covenant can be used in this situation.</p> <p>4. While the assessment benchmarks in the planning scheme may benefit from review and refinement to reflect the new policy, the planning scheme and new policy will operate effectively until Council undertakes any such scheme amendment. As with all aspects of the planning scheme, Council will monitor performance of the new policy, and particularly whether agricultural buffers provided as part of development are better achieving the outcomes sought under the planning scheme and the State Planning Policy.</p>
9	<p>Additional comments made by stakeholders during consultation sessions but not raised in a formal submission:</p> <p>1. Bamboo can often be a source of complaint due to noise and vermin. Following the establishment of the native vegetation the landowner should be able to remove the bamboo.</p>	<p>1. Agreed, however the bamboo must be replaced with native vegetation ensuring the total width and permeability of the vegetated area is maintained. The policy and accompanying covenant have been amended to suit.</p>

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## SC6.6 Planning scheme policy for agricultural buffers

### SC6.6.1 Purpose

- (1) The purpose of this planning scheme policy is to:-
- (a) Provide guidance for the design, construction and ongoing maintenance of agricultural buffers to minimise conflicts between agricultural operations and sensitive land uses (e.g. residential uses and urban development).
  - (b) Inform the design of new residential development proposed adjacent to agricultural land uses in order to limit impact on lawful agricultural operations.
  - (c) Provide appropriate design considerations and maintenance advice to ensure buffers are effective in mitigating off-farm impacts adjacent to sensitive land uses.
  - (d) To support applicants in satisfying the requirements of the planning scheme, and to assist development assessment officers in their assessment of new development applications that require agricultural buffers.

### SC6.6.2 Application

- (1) This policy applies to development that requires the establishment of an agricultural buffer to satisfy the requirements of the *State Planning Policy Guideline: State Interest—Agriculture*.
- Editor's Note—Council will consider this policy where a proposal adjoins an existing agricultural activity, and when adjoining land that could foreseeably be used for agriculture, including land identified as ALC Class A and B or within the Rural zone.
- (2) This policy provides supporting requirements to assist in achieving acceptable outcomes within the Bundaberg Regional Council Planning Scheme (planning scheme) and is read in conjunction with the planning scheme.

### SC6.6.3 What is an agricultural buffer?

Separation areas and buffers are commonly used as part of effective land use planning and conflict management against incompatible land uses. Agricultural buffers provide an area of separation between conflicting agricultural, residential and sensitive land uses and are typically vegetated to form a physical and visual barrier.

Agricultural operations are regulated by specific environmental laws and codes. Regulations vary between agricultural industries and seek to protect specific environmental values. While these regulations do deal with mitigating impacts to surrounding environments, they are not specific to management of impact to interfacing residential and sensitive land uses. It is therefore necessary to consider how the land use regulatory framework provides guidance on how to manage this type of impact between uses. The requirement for vegetated buffers on the encroaching land use is an effective method of mitigation.

Agricultural operations can generate various off-farm impacts such as dust, smoke, ash, noise, smell, light, contaminants, chemical spray drift and irrigation overspray. These agricultural activities can be intermittent, seasonal, or continual.

Where development for a residential or sensitive land use is introduced into an area where agricultural operations exist then the residential or sensitive land use should include an appropriate buffer that mitigates the risk to amenity, health and safety that may arise from the interface with the established agricultural activities.

Agricultural buffers are incorporated into the design of the proposed development to limit impact to the existing agricultural activity.

Agricultural buffer design, size and suitability will vary depending on the agricultural operations and impacts it is mitigating. This policy provides design considerations and provisions to ensure an agricultural buffer is suitable and effective for its context.

SC6.6 Planning scheme policy for agricultural buffers

### SC6.6.3.1 Agricultural buffer characteristics and design considerations

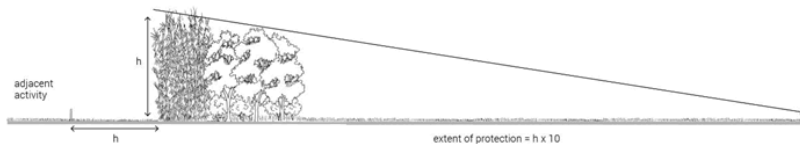
#### SC6.6.3.1.1 General

- (1) Buffer design is influenced by the critical farming operations that can generate off-farm impacts on adjacent urban land.
- (2) Various agricultural practices and industries have divergent off-farm impacts that need to be considered when designing buffers that are suitable and effective.
- (3) This section outlines the general attributes that need to be considered when designing and implementing a buffer, including buffer height, width, density and length.

#### SC6.6.3.1.2 Buffer height

- (1) The height of a buffer determines the level of protection given to the leeward side of the buffer. The height of the buffer will offer protection downwind for approximately ten (10) times the buffers height.
- (2) Due to the potential for the buffer to cast shade or draw away water and nutrients from the production area, the height of the buffer will typically influence the distance it should be located away from the production area.

Figure SC6.6.3A Buffer height effect (indicative only - not to scale)



#### SC6.6.3.1.3 Buffer width

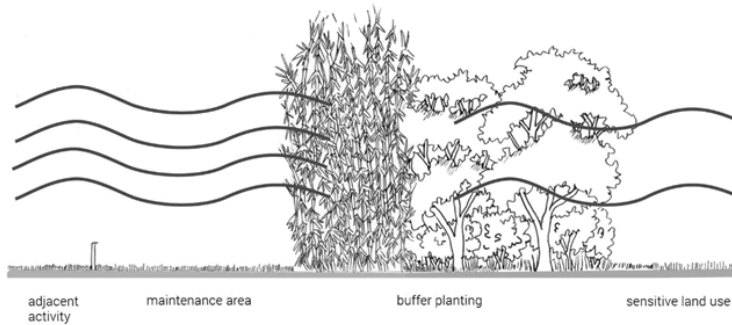
- (1) The width of a buffer includes the overall distance of planting and maintenance access, between the property boundary (production area) and the protected zone (sensitive land use).
- (2) The buffer width should provide adequate room to facilitate multiple rows of vegetation to effectively mitigate pollutants.
- (3) The vegetation is made up from two components:
  - (a) Rows of quick growing vegetation to establish an initial screen; and
  - (b) Multi-layered rows of longer-term trees and shrubs that give a thicker and more effective buffer to the adjacent sensitive land use.
- (4) The overall buffer width is dependent on the density of planting which relates specifically to the agricultural use of the adjacent production area.

#### SC6.6.3.1.4 Buffer density

- (1) The density of planting within a buffer is relative to the agricultural use located on the adjacent land and what potential off-farm impacts are being produced.
- (2) Density of planting should be multi-layered to ensure particulate matter within the air is effectively captured by foliage. Layering of planting decreases the risk of undesirable wind tunnels through the buffer.
- (3) The buffer should be permeable and planted to allow air flow to pass through. Appropriate permeability reduces undesirable turbulence on the leeward side of the buffer.
- (4) Permeability of approximately 50% is desired to provide adequate protection of downwind areas.

- (5) Density of the planting will influence the eventual growth height of the buffer. Vegetation that is planted closer together (denser) will compete against each other for access to light and nutrients, and will therefore grow taller, increasing the buffer's effectiveness.

**Figure SC6.6.3B Buffer density effect (indicative only - not to scale)**

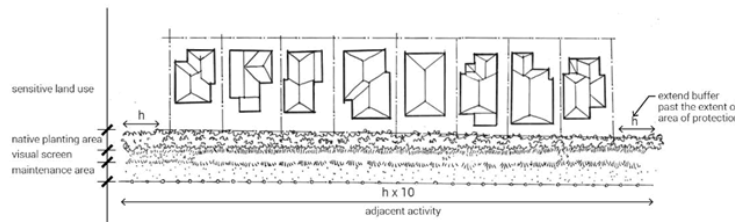


**SC6.6.3.1.5 Buffer length**

- (1) Buffer length refers to the linear length of the buffer to its furthest extent.
- (2) Vegetated buffers act as windbreaks. Longer windbreaks are more effective than shorter, as there is an increased level of turbulence at each end of a windbreak. Where practicable, the buffer should extend past any area that is requiring protection.
- (3) The length and height of the buffer determines the overall extent of the protection area. It is optimal for the buffer to be at least ten (10) times longer than its height, where possible.

Editor's Note—To reduce the number of breaks in the buffer planting, lot layout and design should minimise the number of boundaries that traverse the buffer area.

**Figure SC6.6.3C Buffer length effect (indicative only - not to scale)**



**SC6.6.3.2 Buffer types**

Selecting the most appropriate and effective buffer type depends on the stage of development, land use, and type of agricultural production that is occurring on the adjacent land. Generally, agricultural buffers fall into two main categories: Static buffers and Transitional buffers.

**SC6.6.3.2.1 Static buffer**

A Static buffer is:-

- (1) Located on a defined urban edge, as a permanent buffer between agricultural uses, ALC Class A and B land, and an urban settlement area.
- (2) Multi-layered with staggered rows of trees and shrubs to provide protection from the agricultural production area and increase the visual amenity and aesthetic of the buffer.
- (3) Comprised of various species of trees and shrubs. Planting should be established at a density relative to the adjacent agricultural use.

SC6.6 Planning scheme policy for agricultural buffers

#### SC6.6.3.2.2 Transitional buffer

A Transitional buffer is:-

- (1) Located on a transitional development front rather than a defined urban edge.
- (2) Used to provide interim buffering and separation between staged urban development and an existing agricultural production area.
- (3) To protect continuing agricultural operations until the agricultural land is developed for urban uses.
- (4) Temporary and requires vegetation to be established quickly to provide effective protection to the sensitive land use from the adjacent agricultural use.
- (5) Comprised of fast-growing species (i.e. clumping bamboo) to establish a visual screen and physical barrier to mitigate against amenity impacts and airborne particulates from the agricultural production area.

#### SC6.6.3.3 Agricultural buffer classifications

Specific design considerations and provisions have been provided for Static and Transitional buffers as they relate to development situations, agricultural uses and off-farm impacts requiring mitigation. The buffer classification, buffer type, design features and context in which to implement the buffer, are specified in **Table SC6.6.3.3.1 Agricultural buffer classifications** and their respective cross sections are shown in **section SC6.6.4**.

Buffers and separation distances associated with intensive Rural uses should be implemented in accordance with the setbacks specified in **Table 9.2.15.3.3** of the Rural uses code in the planning scheme.

**Table SC6.6.3.3.1 Agricultural buffer classifications**

Buffer classification	Applicable context	Design features
<b>Static Buffers</b>		
Buffer Type A	Adjacent to Cropping (Sugar Cane & Horticultural Crops)	<ul style="list-style-type: none"> <li>• Achieve a lower density of planting within the tree and shrub zone</li> <li>• Designed to achieve a minimum height of 8 to 10 metres</li> <li>• Achieve two staggered rows of planting to lessen competition between planting</li> </ul>
Buffer Type B	Adjacent to Cropping (Orchards)	<ul style="list-style-type: none"> <li>• Achieve a higher density of planting within the tree and shrub zone</li> <li>• Designed to achieve a minimum height of 10 to 12 metres</li> <li>• Achieve three staggered rows of planting to increase competition between planting</li> </ul>
Buffer Type C	Adjacent to Cane Railway	<ul style="list-style-type: none"> <li>• Achieve an appropriate visual screen</li> <li>• No requirement for additional planting but is accepted when static</li> </ul>
<b>Transitional Buffers</b>		
Buffer Type C	All types, where not otherwise specified above.	<ul style="list-style-type: none"> <li>• Uses a fast-growing plant species to establish a buffer</li> <li>• Achieves a visual screen and appropriate buffer to mitigate against off-farm impacts</li> <li>• No requirement for additional planting</li> </ul>

## Notes –

- (1) A landowner may amend the characteristics of particular buffer type if the adjacent agricultural use changes or new practices and operational off-farm impacts occur. The buffer may evolve its design to provide more effective mitigation. For example, a buffer may be established to mitigate off-farm impacts from sugar cane production and thus have a lower plant density. If the agricultural use changes from sugar cane to orchards, the buffer density may be increased to provide more effective protection (i.e. transitioning from Buffer Type A to Buffer Type B).
- (2) A landowner may remove the bamboo within buffer types A and B if it causes nuisance (e.g. noise or vermin) only when the native vegetation component of the buffer is fully established (i.e. height and density). The bamboo must be replaced with an additional row of native vegetation to ensure the width of the vegetated area of the buffer is retained.

**SC6.6.4 Buffer attributes and design**

- (1) The purpose of this section is to provide guidance on the design and construction of agricultural buffers under the planning scheme.
- (2) The design and construction of an agricultural buffer should be undertaken in accordance with the applicable buffer classification specified in this policy.
- (3) Where an alternate solution is proposed an applicant should demonstrate that the proposed solution effectively achieves the design features of the required buffer type, as specified in **Table SC6.6.3.3.1**.

**SC6.6.4.1.1 Buffer attributes**

Buffer attributes are the components that make up the vegetated buffer and its allocated setbacks. Buffer attributes are the elements of a buffer that are required to establish a complete and effective agricultural buffer.

- (1) *Adjacent activity* refers to the land use and activity that is occurring adjacent to the encroaching sensitive land uses. This may include and agricultural production area, cane railway etc.
- (2) *Maintenance area* refers to the 10 metre strip of turf and/or low grasses that is directly abutting the adjacent activity, and allows access to the boundary fencing and buffer for maintenance. This area also provides appropriate separation from the adjacent activity (agricultural use) which ensures that buffer planting does not compete with or impact on adjacent crops (e.g. shade, competing for water or nutrients) and assists in managing potential fire hazards.
- (3) *Visual screen* refers to the two staggered rows of clumping bamboo that establish a fast growing visual screen.
- (4) *Native planting area* refers to the multi-layered planting of mixed trees and shrubs that are slower growing and provide further mitigation and aesthetic value to the buffer.
- (5) *No build area* refers to the area between the buffer and the sensitive land use (development) which is to remain free of infrastructure and any built structures above or below ground. This separation area is required to allow the uninhibited establishment of the buffer vegetation. This separation also mitigates potential impacts from the vegetated buffer on built infrastructure, including damage from invasive and aggressive root systems, or in instances where a tree may be compromised and falls in a storm, cyclone, flood etc. The no build area should also be used to provide access to the buffer for maintenance on the sensitive land use side.

It is recommended that no infrastructure, either above or below ground, is permitted within the whole extent of the buffer including the maintenance area and no build zone.

Design provisions for each attribute have been provided in the following sections by buffer classification.

**SC6.6.4.2 Buffer Type A**

Buffer Type A is intended to provide a suitable buffer to adjacent sugar cane and horticultural crops.

SC6.6 Planning scheme policy for agricultural buffers

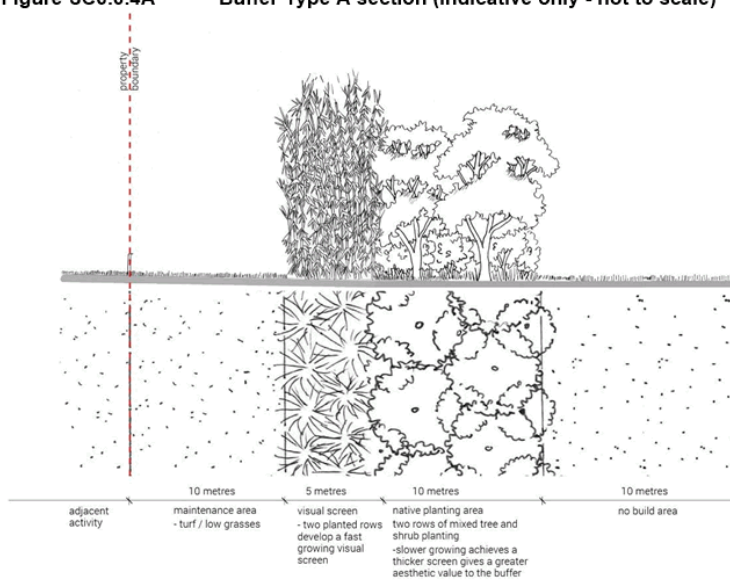
This buffer allows for lower density and a reduced height. Planting in conjunction with the bamboo screening should achieve appropriate mitigation from off-farm impacts.

Buffer Type A is to be designed, constructed and maintained in accordance with **Figure SC6.6.4A** and the provisions set out in **Table SC6.6.4.2.1**.

**Table SC6.6.4.2.1 Buffer Type A requirements**

Buffer classification	Buffer attributes	Minimum width
Buffer Type A	Maintenance area	10m
	Visual screen	5m 2 staggered rows of planting
	Native planting area	10m 2 staggered rows of planting
	No build area	10m

**Figure SC6.6.4A Buffer Type A section (indicative only - not to scale)**



Schedule 6 – Planning Scheme Policies

**SC6.6.4.3 Buffer Type B**

Buffer Type B is intended to provide a suitable buffer to taller horticultural crops such as orchards.

This buffer allows for a higher density of planting in the multi-layered tree and shrub zone to increase the overall height of the buffer.

Buffer Type B is to be designed, constructed and maintained in accordance with **Figure SC6.6.4B** and the provisions set out in **Table SC6.6.4.3.1**.

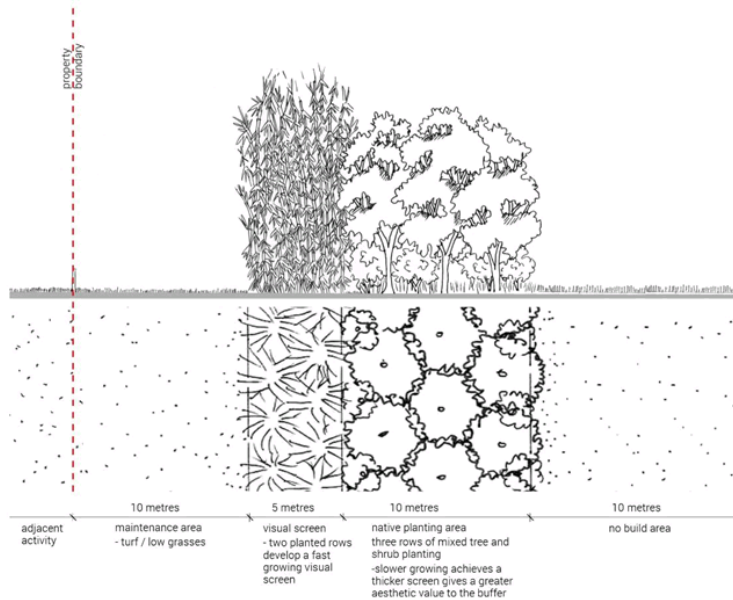
**Table SC6.6.4.3.1 Buffer Type B requirements**

Buffer classification	Buffer attributes	Minimum width
Buffer Type B	Maintenance area	10m
	Visual screen	5m



Buffer classification	Buffer attributes	Minimum width
		2 staggered rows of planting
	Native planting area	10m
		3 staggered rows of planting
	No build area	10m

Figure SC6.6.4B Buffer Type B section (indicative only - not to scale)



**SC6.6.4.4 Buffer Type C**

Buffer Type C is intended to provide a permanent visual buffer to cane railway tram lines, to assist in mitigating light and dust.

Buffer Type C is also intended to be used for transitional development fronts where a temporary buffer is required due to future stages of development occurring.

This buffer allows for two rows of fast-growing planting to provide an initial physical barrier and visual screen to adjacent land uses. The screen should provide visual amenity whilst also mitigating against airborne particulates from adjacent agricultural uses. There is no requirement for additional planting of trees and shrubs, as they are slower to establish and will provide minimal mitigation from these adjacent uses in the temporary timeframe they are in place.

Where the planning scheme requires acoustic attenuation relating to the cane railway, Buffer Type C may be used in conjunction with such infrastructure (i.e. acoustic fencing), not in lieu of one another.

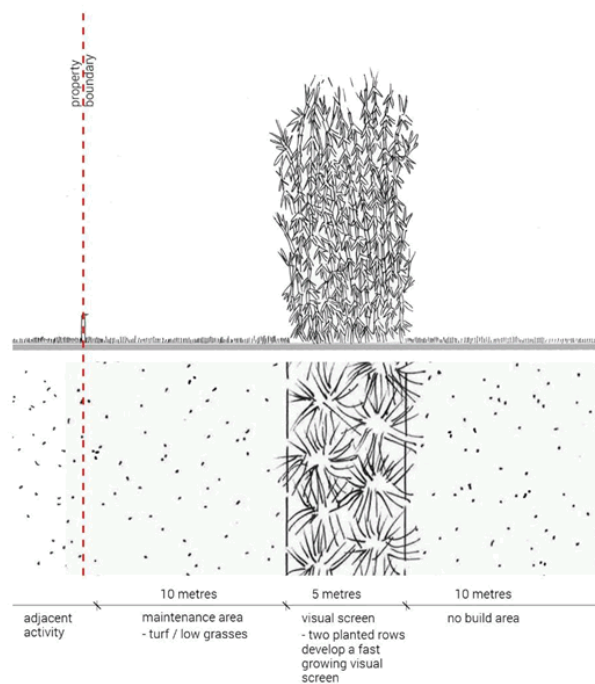
In instances where a buffer is required near an intersection with a road, the buffer should not adversely impact upon the provision, operation and maintenance of infrastructure and should demonstrate compliance with safe intersection sight distance (Austroads).

Buffer Type C is to be designed, constructed and maintained in accordance with **Figure SC6.6.4C** and the provisions set out in **Table SC6.6.4.4.1**.

SC6.6 Planning scheme policy for agricultural buffers

**Table SC6.6.4.4.1 Buffer Type C requirements**

Buffer classification	Buffer attributes	Minimum width
Buffer Type C	Maintenance area	10m
	Visual screen	5m 2 staggered rows of planting
	Native planting area	N/A
	No build area	10m

**Figure SC6.6.4C Buffer Type C section (indicative only - not to scale)****SC6.6.5 General requirements****SC6.6.5.1 Recommended plant species**

The recommended plant species are shown in **Appendix SC6.6A (Recommended buffer plant species)**.

- (1) The plant species of a buffer are related to the type of agricultural use, so that the off-farm impacts can be effectively mitigated.
- (2) Using native species within an agricultural buffer is advised as these perform better in the local conditions and require less maintenance. Effective buffer growth resulting from the use of native species can also result in less pest and disease attack within these buffers due to their local adaptation.
- (3) Species used for agricultural buffers must be able to achieve branching from their base through the full height of the plant to achieve the visual screen requirements.

- (4) Plant species with insignificant flowers and fruits are preferred as they attract less amounts of birds, bats, or other wildlife that may in turn feed on, or adversely affect the adjacent crop.
- (5) A mixture of species is recommended to be planted within buffers to provide a variety of plant shapes and increase buffer aesthetic. Varied plant shapes also reduce the likelihood of gaps within the buffer which mitigates infiltration of particulate matter.

#### SC6.6.5.2 Buffer establishment

An agricultural buffer is required to be planted in accordance with the below before building approval is granted or endorsement of a survey plan.

- (1) Buffer planting should be mulched to a depth of 100mm with aged forest or sugar cane mulch to minimise moisture loss from the soil profile as well as suppress weed growth.
- (2) Clumping bamboo should be established first and in two staggered rows ten (10) metres from the property boundary of the agricultural use. Each clump of bamboo will be two (2) to three (3) metres in diameter and should achieve a uniform screen.
- (3) Tree and shrub planting would be installed as tube stock to promote maximum potential growth and establishment to allow the appropriate density to be achieved for the buffer classification.
- (4) Lower density planting should establish two staggered rows of trees, with shrubs and groundcover planting.
- (5) Higher density treatment requires three rows of staggered tree planting. Layered tree planting is to be inter-planted with shrubs.
- (6) Groundcovers should be established on the outer edge to assist in the containment of weeds and other contaminants that may encroach into the planted area.
- (7) Pioneer tree species are to be established in conjunction with the tree planting to achieve plant densities in less time. Over time, planting of additional trees and shrubs may be required to replace these pioneer species.
- (8) Buffers are to be established in accordance with the recommended plant species shown in **Appendix SC6.6A (Recommended buffer plant species)**.

#### SC6.6.5.3 Buffer maintenance

The establishment of buffer planting, like any other cover crop, requires watering, fertilising and weeding. Following establishment, maintenance is required to all buffer types for them to remain effective. Buffers should be appropriately designed and constructed to avoid time consuming and costly maintenance requirements, whilst achieving their maximum desired effect of mitigating land use conflicts.

Buffer maintenance includes:-

- (1) Maintaining the required buffer characteristics such as height, width, length, and density of each buffer type is required to ensure the effectiveness of the buffer is maintained.
- (2) Buffers require pruning and thinning on an annual basis to maintain a 50% density so that their effectiveness is maximised.
- (3) Buffers are required to be watered during dry periods to maintain good buffer growth.
- (4) Mulch levels are to be maintained to reduce weed growth and retain moisture.
- (5) Fertilising prior to the growing season will assist in maintaining the health and vigour of the buffer.
- (6) Buffers require maintenance and management in terms of litter build up, noxious weed and pest control. Buffers should remain weed free to prevent the build-up of weed species that can cause infestation of agricultural production areas as well as other neighbouring land uses.
- (7) Appropriate access strips are provisioned for on either side of the buffer to allow for maintenance activities to be carried out.

SC6.6 Planning scheme policy for agricultural buffers

- (8) Ongoing maintenance such as replanting may be required over time to maintain buffer characteristics.

#### SC6.6.5.4 Buffer aesthetics

The visual appearance of buffers can be enhanced by increasing the level of detail and interest within them, providing improved amenity to residential development.

Buffer aesthetics includes:-

- (1) Clumping bamboo (initial visual screen) presents a relatively flat visual aesthetic. Multi-layered buffer planting used in conjunction with the bamboo presents an elevation with more variety and texture.
- (2) The plant species recommended in **Appendix SC6.6A (Recommended buffer plant species)** achieve variety in colour, texture and form within the buffer.
- (3) To achieve a greater aesthetic for buffers that are in highly visible areas, such as a road frontage, the layered planting should be orientated to face the road.
- (4) Where a buffer is located along a property boundary, it is appropriate for the bamboo to be established ten (10) metres from the agricultural area property boundary and the layered planting to be orientated to the residential use to provide enhanced amenity.

#### SC6.6.6 Buffer tenure and responsibility

Once a buffer is established, they are to be protected by a defined tenure arrangement and responsibility for ongoing maintenance.

- (1) The preferred tenure hierarchy of the ownership, management and responsibility of buffers are as follows:
  - (a) Developer owned (e.g. within a balance parcel);
  - (b) Owned by the sensitive land use (e.g. within private residential lot);
  - (c) Council trustee/ownership.
- (2) Buffers should be protected by way of property covenant placed on the title of land and remain the responsibility of the landowner.  
 Editor's Note—Council has produced a standard covenant template, this document will be made available on request.
- (3) Ongoing maintenance requirements should be imposed by way of development approval conditions and property covenant.
- (4) Where buffers are proposed within land to be dedicated to Council (i.e. road reserve, open space or drainage corridor) they will be the responsibility of Council.

#### SC6.6.6.1 Establishment and maintenance periods

- (1) The developer is responsible for the establishment of the agricultural buffer.
- (2) Generally, the establishment and maintenance periods for an agricultural buffer is two (2) to five (5) years.
- (3) The Developer must arrange annual inspections to be undertaken by Council officers to ensure ongoing establishment and maintenance requirements are being carried out.
- (4) After initial planting, the buffer is to be put 'On-Establishment' for a minimum period of two (2) years. During this time, the buffer must be maintained in accordance with **SC6.6.5.2 Buffer establishment** and **SC6.6.5.3 Buffer maintenance** to ensure it is establishing well, actively growing, kept fertilised, provided with mulch, watered and weeded as necessary.
- (5) Annual monitoring reports and maintenance logbooks should be submitted to Council, including photos of both sides of the buffer.
- (6) A final inspection should be undertaken by Council at the end of the two (2) year establishment period.

- (7) Prior to the buffer being accepted On-Maintenance:
  - (a) Ensures minimum of 40% permeability has been achieved by the buffer. Permeability measurements will be taken at heights of 2 metres and 4 metres.
  - (b) Ensures weediness of buffer is no more than 10%.
- (8) Once Council has confirmed the buffer has been properly established, the buffer can be declared On-Maintenance.
- (9) The Maintenance period will generally not exceed three (3) years.
- (10) Prior to the buffer being accepted Off-Maintenance:
  - (a) Ensures minimum 50% permeability has been achieved by the buffer. Permeability measurements will be taken at heights of 2 metres and 4 metres.
  - (b) Ensures weediness of buffer is no more than 1%.
  - (c) Ensures any dead, dying or underperforming plants are replaced.
- (11) In the instance where the buffer does not satisfy items (7) and (10) the relevant period will be extended by a timeframe agreed that is suitable to bring the buffer to standard.

#### **SC6.6.6.2 On-going responsibility**

- (1) Once Council has confirmed criteria in **SC6.6.6.1 Establishment and maintenance periods** has been met, the buffer can be declared Off-Maintenance and is no longer the responsibility of the Developer.
- (2) Once Off-Maintenance the responsibility of the buffer is the landowners.
- (3) Covenant conditions over the buffer for its protection and maintenance should be complied at all times. This is a matter that may be enforced by Council, particularly where buffers are not maintained and their effectiveness is diminished, often leading to complaints.

Appendix SC6.6A Recommended plant species for buffers

**Appendix SC6.6A Recommended plant species for buffers**

The following is a list of recommended plant species for agricultural buffers in the Bundaberg Regional Council area.

**Table SC6.6A.1 Recommended plant species for buffers**

Botanical name	Common name	Spacing
<b>Bamboo species</b>		
<i>Bambusa oldhamii</i>	Sweet Shoot Bamboo	1 per 2.5m
<i>Bambusa textilis gracilis</i>	Slender Weaver's Bamboo	
<i>Bambusa malingensis</i>	Sea Breeze Bamboo	
<b>Pioneer species (tree planting)</b>		
<i>Acacia disparrima</i>	Hickory Wattle	1 per 3m
<i>Acacia maidenii</i>	Maiden's Wattle	
<i>Macaranga tanarius</i>	Macaranga	
<b>Shrub species</b>		
<i>Callistemon pallidus</i>	Lemon Bottlebrush	1 per 5m to infill gaps between tree planting
<i>Buckinghamia celcissima</i>	Ivory Curl Tree	
<i>Callistemon viminalis</i>	Weeping Bottlebrush	
<i>Callistemon pollandi</i>	Gold Tipped Bottlebrush	
<i>Corymbia ptychocarpa</i>	Swamp Bloodwood	
<i>Leptospermum polygalifolium</i>	Wild May or Tooton	
<b>Groundcover species</b>		
<i>Lomandra longifolia</i>	Spiny Headed Mat Rush	1 per 1m
<i>Lomandra hystrix</i>	Green or Creek Mat Rush	
<i>Dianella caerulea</i>	Paroo Lily	
<b>Low density buffer tree planting</b>		
<i>Glochidion ferdinandi</i>	Cheese Tree	1 per 4m
<i>Jagera pseudorhus</i>	Foam Bark	Note: High density planting species can also be used in the low density planting area.
<i>Callistemon viminalis</i>	Weeping Bottlebrush	
<b>High density buffer tree planting</b>		
<i>Casuarina equisetifolia</i>	Coastal She-Oak	1 per 3m
<i>Casuarina glauca</i>	Swamp She-Oak	
<i>Melaleuca dealbata</i>	Blue Paperbark	
<i>Melaleuca leucodendra</i>	Weeping Paperbark	
<i>Melaleuca viridifolia</i>	Broad-leafed Paperbark	
<i>Syzygium austral</i>	Brush Cherry, Scrub Cherry, Creek Lilly-polly, Creek Satinash, or Watergum	
<i>Syzygium leumannii</i>	Riberry	

QUEENSLAND TITLES REGISTRY  
Land Title Act 1994 and Land Act 1994

**COVENANT**

**FORM 31** Version 3  
Page 1 of 1

	<i>Dealing Number</i>		
	<b>OFFICE USE ONLY</b>	<b>Lodger</b> (Name, address, E-mail & phone number) BUNDABERG REGIONAL COUNCIL PO BOX 3130 BUNDABERG QLD 4670 TEL: 1300 883 699 ceo@bundaberg.qld.gov.au	<b>Lodger Code</b>
<b>Privacy Statement</b> Collection of information from this form is authorised by legislation and is used to maintain publicly searchable records. For more information see the Department's website.			

**1. Covenantor**

<b>2. Description of Covenant / Lot on Plan</b>	<b>Title Reference</b>
COVENANT # ON SP#####	

**3. Covenantee**  
BUNDABERG REGIONAL COUNCIL

**4. Description of Covenant** (include reference to relevant section of legislation)  
PURSUANT TO SECTION 97A(3)(c) OF THE LAND TITLE ACT 1994 AND THE TERMS OF THE ATTACHED SCHEDULE

**5. Execution**

The Covenantor being the registered owner of the lot described in item 2 covenants with the Covenantee in respect of the covenant described in item 4 and:- \*the attached schedule; \*the attached schedule and document no. ....; document no. ....

\* delete if not applicable

**Witnessing officer must be aware of his/her obligations under section 162 of the Land Title Act 1994**

.....signature		
.....full name		
.....qualification	/ /	.....
<b>Witnessing Officer</b>	<b>Execution Date</b>	<b>Covenantor's Signature</b>
<small>(Witnessing officer must be in accordance with Schedule 1 of Land Title Act 1994 eg Legal Practitioner, JP, C Dec)</small>		

.....signature		
.....full name		
.....qualification	/ /	.....
<b>Witnessing Officer</b>	<b>Execution Date</b>	<b>Covenantee's Signature</b>
<small>(Witnessing officer must be in accordance with Schedule 1 of Land Title Act 1994 eg Legal Practitioner, JP, C Dec)</small>		

Title Reference [Title Reference]

## BACKGROUND

The purpose of this Agricultural Buffer Covenant is to provide a legal agreement between the owner and the Bundaberg Regional Council to work together to provide long term retention on private land of the vegetated buffer to agricultural land. Within the buffer Council generally only permits indigenous species of vegetation, however other species are in some instances seen as being more appropriate.

This covenant specifically relates to the implementation of the criteria in the Bundaberg Regional Council Planning Scheme Policy for Agricultural Buffers, Schedule 6.

### 1. DEFINITIONS

In this Covenant the following words have the following meanings:

“**Act**” means the *Land Title Act 1994*.

“**Agricultural Buffer Vegetation**” means that vegetation within the Covenant Area that conforms to the conditions of the Development Approval.

“**Condition**” means the provisions applied by Bundaberg Regional Council to develop the Lots or the Material Change of Use.

“**Council**” means Bundaberg Regional Council, the Covenantee name in Item 3 of the Form 31.

“**Covenant**” means the terms of this document.

“**Covenant Area**” means an area to which this Covenant applies as described in Item 2 of the Form 31.

“**Development Approval**” means the approval granted by the Council pursuant to the *Planning Act 2016* in respect of an Application for a Material Change of Use or Reconfiguring of Lot [Development Approval Reference Number].

“**Dispute Notice**” means a notice given by one party to the other pursuant to Clause 7 of this Covenant.

“**Environmental Weed**” means all weed species listed in the:

- Declared plants under the *Land Protection (Pest and Stock Route Management) Act 2002* and *Sub-ordinate Regulation 2003*;
- Listed plant species within Appendix SC6.3J – Unacceptable plant species within the Planning Scheme Policy for Development Works;
- Listed plant species within Bundaberg Regional Council’s Biosecurity plan 2018 – 2023;
- Declared local pest under Local Law No. 3 – Community and Environmental Management 2011 and Subordinate Local Law No.3 – Community and Environmental Management 2011; and
- Wide Bay Burnett Regional Biosecurity Plan 2017-2022.

“**Form 31**” means the Queensland Land Registry Form 31 Covenant attached.

“**Indigenous Vegetation**” means native vegetation which historically has naturally occurred in the local area.

“**Legislative Instrument**” means an instrument in writing that is a legislative character and that was made in the exercise of a power delegated by the Queensland Parliament.

“**Lot**” means each of the Lots described in Item 2 of the Form 31.

“**Native Fauna**” means native animals which historically have naturally occurred in the local area.



**Title Reference** [Title Reference]

“**Owner**” means the covenantor described in Item 1 of the Form 31 and includes in the case of a corporation its successors in title and assigns and in the case of a natural person or persons their successors in title and each of their executors, administrators and assigns.

“**Planning Scheme**” has the meaning given in the *Planning Act 2016* as amended.

“**Planning Scheme Policy**” has the meaning given in the *Planning Act 2016* as amended.

“**Vegetation**” means any tree, shrub, bush, vine, grass, or other living or dead plant material on the Covenant Area other than existing structures such as fences and poles existing at the time when this Covenant came into force and timber imported into the Covenant Area to be used for maintenance of such existing structures. The term excludes any plant species defined as an Environmental Weed.

**2. COVENANT**

This Agricultural Buffer Covenant relates to the conservation and maintenance of all Vegetation within the Covenant Area pursuant to Section 97A(3)(b)(i) of the *Land Title Act 1994*.

**3. ACKNOWLEDGEMENTS**

3.1 The parties acknowledge and agree that:

- (a) The registration of the Covenant is a condition of a Development Approval;
- (b) This Covenant is intended to ensure compliance with the relevant Condition(s) of the Development Approval that established the requirement for the Covenant over this property; and
- (c) The key objective of the Covenant is to retain and enhance the Agricultural Buffer Vegetation within the Covenant Area(s).

**4. OWNER'S OBLIGATION**

4.1 The Owner must, unless otherwise agreed in writing by the Council, fully and effectively observe and comply with the obligations, to the satisfaction of Council, as follows:

- (a) The Owner must comply with the Condition(s) of the Development Approval that established this Covenant.
- (b) The Owner must comply with the Covenant.
- (c) The Owner must take responsible measures to only use, or allowed to be used, the Covenant Area in such a manner that maintains and protects the Agricultural Buffer Vegetation within the Covenant Area(s).
- (d) The Owner must notify the Council in writing of any substantial damage to vegetation within the Covenant Area(s) (whether by natural occurrence or otherwise) within 14 days of the damage occurring. The Owner is required to replant if there has been substantial damage to the vegetation within the Covenant Area(s) with replanting to occur within 2 months if caused by a natural occurrence or 30 days in any other circumstance from the damage occurring or as agreed.
- (e) The Owner must:
  - i. replace dead, damaged or dying Vegetation;
  - ii. manage for fire protection, including reduction of litter build up;
  - iii. ensure access for Council Officers to the Vegetation;
  - iv. water Vegetation during dry periods to maintain good growth;

**Title Reference** [Title Reference]

- v. maintain mulch levels; and
  - vi. ensure the buffer Vegetation does not shade adjacent cropping land for a significant period in the morning or afternoon.
- (f) The Owner must not introduce, or allow to be introduced, and take reasonable measures to remove, any Vegetation in the Covenant Area which is:
- i. not indigenous Vegetation, unless agreed to by Council or specified by Condition(s) of the Development Approval; or
  - ii. an Environment Weed.
- (g) The Owner must not, or permit another person to, have either placed or present or store in the Covenant Area the following: fill, soil, rock, rubbish, ashes, garbage, waste or other material that is foreign to the Covenant Area and does not reflect the conditions of growth naturally encountered by the Vegetation of the Covenant Area.
- (h) The Owner must not do, or permit another person to do, anything on the Lot which, in the Council's reasonable opinion, may adversely affect the Covenant Area.
- (i) The Covenant Area must not be grazed by non-native animals (e.g. cattle, sheep, goats, pigs etc.).
- (j) If deemed necessary by Council officers, non-native animals are to be excluded from the Covenant Area by appropriate fencing.
- (k) The Owner must not, or permit another person to, have a fixture, improvement or structure placed, constructed or erected in the Covenant Area.
- (l) The Owner must remove any fixture, improvement or structure from the Covenant Area within 30 days of its presence becoming known to the Owner and any damaged vegetation resulting from the installation or removal of the fixture, improvement or structure is to be replanted within 60 days.
- (m) Unless pruning in accordance with the Condition(s) of the Development Approval, the Owner must not, or permit another person to, have Vegetation in the Covenant Area trimmed, pruned, lopped, poisoned, harvested, picked, cut down, mown, moved, removed, grazed by domestic stock or in any way damaged or destroyed, whether by act or omission.
- (n) The Owner must not, or permit another person to, have a trail, path, fence, access or access way made, laid out or other constructed element in the Covenant Area.
- 4.2 In the event that an exercise of the obligations in clause 4.1 are found to be inconsistent with the relevant provisions of any approval given under any Legislative Instrument or the Planning Scheme, the Legislative Instrument or Planning Scheme approval shall prevail to the extent of the inconsistency.
- 4.3 Notwithstanding Clause 4.1(g), if Indigenous Vegetation in the Covenant Area poses a serious risk to human safety, including bushfire risk:
- (a) The Indigenous Vegetation may be cut or trimmed so as to remove the risk with the prior written consent of the Council whose consent shall not be unreasonably withheld provided an Arborist report is included to support the facts where required; and
  - (b) The Indigenous Vegetation which is cut or trimmed must be left in the Covenant Area so that natural regeneration processes may occur, unless it would, in the Council's reasonable opinion, constitute a fire hazard;

**Title Reference** [Title Reference]

- (c) Any claim of bushfire risk must be supported by a Bushfire Management Plan produced by a relevantly qualified consultant, and the plan must be approved by Council Officers before any clearing occurs.
- 4.4 The owner may amend the Agricultural Buffer Vegetation characteristics of the Covenant Area if the adjacent agricultural use changes or new practices and operational off-farm impacts occur. The buffer may evolve its design to provide more effective mitigation only.
- Example—a buffer may be established to mitigate off-farm impacts from sugar cane production and thus have a lower plant density. If the agricultural use changes from sugar cane to orchards, the buffer density may be increased to provide more effective protection (i.e. transitioning from Buffer Type A to Buffer Type B).
- 4.5 For the avoidance of doubt, the obligations under this clause 4 strictly rest with the Owner and are continuing obligations on the Owner, and continue to apply to the Owner notwithstanding that the Owner may not actually occupy the Land.
- 5. POWERS OF ENTRY**
- 5.1 The Owner must permit the Council and its members, officers, agents, employees, contractors and subcontractors and other persons authorised by it at all times, upon having given reasonable notice to the Owner, to enter into and upon the Lot with all necessary plant and equipment for the following purposes:
- (a) Examining, inspecting, testing and monitoring that state and condition of the Covenant Area;
- (b) Ascertaining whether the obligations of the Owner in Clause 4 have been duly performed and fulfilled;
- (c) Subject to Clause 7, making good any breach of the obligations of the Owner under Clause 4, at the cost and expense of the Owner;
- (d) Exercising the Council's rights under Clause 7.
- 6. NOTICE BEFORE ENTRY**
- The Council must give reasonable notice of intention to enter the Covenant Area(s) except in cases of emergency or where the Council believes on reasonable grounds that the delay in giving notice is prejudicial to its rights or responsibilities.
- 7. REMEDY FOR NON-COMPLIANCE**
- 7.1 In the event of non-compliance with the obligations in Clause 4, the Council may issue a written notice requiring the Owner to rectify the non-compliance ("the Rectification Notice").
- 7.2 The Owner must comply with the Rectification Notice within 14 days of the issue of the Rectification Notice or such other reasonable time period as may be specified in the Rectification Notice, regardless of whether or not the Owner is responsible for the non-compliance.
- 7.3 In the event that the Owner fails to comply with the Rectification Notice within the time allowed in accordance with Clause 7.2, the Council may, by itself or by an agent or contractor, enter the Covenant Area, perform any planting, replanting, rehabilitation or remedial work or anything else to restore the Agricultural Buffer Vegetation harmed or damaged by the non-compliance, and recover the costs performing the work as a debt from the Owner payable on demand.
- 8. DEFAULT BY OWNER**
- 8.1 If the Council form the view that the Owner has breached this Covenant, the Council agrees to proceed in accordance with Clause 9.
- 8.2 The Council may exercise its power under the *Planning Act 2016* and any other statutory provisions in the event of a breach of this Covenant.

**Title Reference** [Title Reference]

- 8.3 The Owner shall not be responsible for any damage to the Covenant Area caused by any natural occurrence or otherwise caused by something beyond the control of the Owner, however the Owner must replant and maintain the Covenant Area within 2 months or other time period agreed to in writing by Council.
- 8.4 The Owner is liable only for breaches of this Covenant which occur while the Owner is the registered owner of any interest in the Lot and then only to the extent of the interest.

**9. SETTLEMENT OF DISPUTES**

- 9.1 This Clause shall apply to any dispute between the parties of this Covenant.
- 9.2 Any dispute as to the performance of this Covenant or arising out of this Covenant, which cannot be resolved by agreement between the parties, must be clearly identified in a Dispute Notice served by one party on the other party.
- 9.3 Within five (5) days of the date of the Dispute Notice, the parties must meet to discuss the dispute and its possible determination.
- 9.4 The parties may within seven (7) days of meeting in accordance with Clause 9.3 agree to refer the dispute to mediation.
- 9.5 If the parties agree to mediate in accordance with Clause 9.4, then the parties may either:
- (a) Appoint a mediator agreed by the parties; or
  - (b) Where the parties fail to agree to the appointment of a mediator within the period referred to in Clause 9.4, request for the President for the time being the Queensland Law Society Incorporated to nominate a mediator which the parties must then appoint as the mediator.
- 9.6 The costs of any mediator appointed under Clause 9.5 must be borne equally by the parties.
- 9.7 If any dispute notified under Clause 9.2 remains unresolved, then at any time after fourteen (14) days after the date of a Dispute Notice, and whether before or after reference of a dispute to a mediator under the Clause 9.5, either party may institute proceedings in the appropriate court for determination of the dispute.
- 9.8 The parties may mutually agree in writing to extend any time period specified in Clause 9.
- 9.9 Clause 9 of this Covenant does not prevent the Owner or the Council from obtaining any injunctive declaratory or other interlocutory relief from a court, which may be urgently required.

**10. SERVICE**

- 10.1 A notice is sufficiently made, given or served by a party if left at or forwarded by prepaid post in an envelope addressed to the other party or any of them (where there are more persons than the one person comprising the other party) at the address of that party.
- 10.2 A notice if sent by prepaid post is deemed to have been made, given or served at the time when in the due course of the post it would be delivered at the address to which it is directed whether or not it is actually received.
- 10.3 In proving service of a notice made, given or served by the Council it is only necessary for the Council to certify to that effect under the hand of the Chief Executive Officer.
- 10.4 A notice given by a party must be:
- (a) In writing; and

**Title Reference** [Title Reference]

(b) Signed by the party, an officer of that party or the solicitor for that party.

10.5 A party receiving a notice is not obliged to enquire as to the authority of the person signing the notice.

**11. COVENANT RUNS WITH THE LAND**

This Covenant burdens the Lot and runs with the Lot and binds the successors in title to the Lot and to any parcel into which that Lot is reconfigured by any means.

**12. NO EFFECT ON RATES AND CHARGES AND COMPLIANCE WITH LAWS**

12.1 For the avoidance of doubt, nothing in this Covenant:

- (a) Affects the liability of the Owner to pay all taxes, rates, charges and levies lawfully imposed in respect of the Lot and comply with all relevant laws (including the Planning Scheme applying to the Lot); or
- (b) Imposes a liability on the Council to make a monetary payment to the Owner in the form of compensation or otherwise.

**13. REGISTRATION**

13.1 The Owner shall do everything necessary at the Owner's expense to ensure that this Covenant is registered against the title to the Lot within one (1) month after the execution of this Covenant by Council.

13.2 The Council shall do everything necessary (including executing any documents) to give effect to this Covenant.

**14. WAIVER**

14.1 No waiver by the Council of any breach by the Owner of any of the provisions of this Covenant shall be implied against the Council or be otherwise effective unless it is in writing under the hand of the Chief Executive Officer.

14.2 A single or partial exercise or waiver of a right relating to this document will not prevent any other exercise of that right or any other right.

**15. LACHES AND DELAY**

No laches or delay by the Council at any time or times in enforcing any of its rights, powers and the like under this Covenant prejudice or affect those rights or powers.

**16. SEVERANCE**

If any provision of this Covenant cannot be given effect or full force and effect by reason of statutory invalidity that provision shall be severed or read down but so as to maintain and uphold so far as possible the remaining provisions of this Covenant.

**17. ENUREMENT**

The Covenant binds the parties to it and their respective successors, assigns, heirs, executors and administrators.

**18. NO OBLIGATIONS ON COUNCIL**

The rights given to the Council by this Covenant are permissive only and nothing in this Covenant imposes any duty of any kind on the Council to anyone or obliges the Council to perform any act or incur any expense for any of the purposes set out in this Covenant.

Title Reference [Title Reference]

**19. TIME**

Time shall, in all cases, be of the essence of this Covenant.

**20. CONFLICT**

Nothing in this Covenant will limit any right given to the Council pursuant to any easement or other document granted to or that benefits the Council in the Covenant Area registered before or after the creation of this Covenant.

**21. INTERPRETATION**

21.1 The headings and Preamble in this Covenant are for convenience only and do not affect its interpretation.

21.2 References to:

- (a) The singular includes the plural and plural includes the singular;
- (b) One gender includes each other gender;
- (c) A person includes a body corporate;
- (d) A party includes the party's executors, administrators, successors and any assignee of this Agreement.



**Item**

**24 November 2020**

<b>Item Number:</b>	<b>File Number:</b>	<b>Part:</b>
K5	522.2018.89.1	PLANNING

**Portfolio:**

Planning & Development Services

**Subject:**

Material Change of Use for Mixed Use Development (Burnett Harbour Marina Village) - Office, Shop, Food and Drink Outlet, Indoor Sport and Recreation, Short Term Accommodation and Multiple Dwellings - 67 Harbour Esplanade, Burnett Heads

**Report Author:**

Sarah Watts, Principal Planner

**Authorised by:**

Michael Ellery, Group Manager Development

**Link to Corporate Plan:**

Our Environment - 2.3 Sustainable built and natural environment - 2.3.3 Review and consistently enforce local laws, the planning scheme, and other associated environment and public health legislation to ensure they meet community standards.

**Summary:**

<b>APPLICATION NO.</b>	522.2018.89.1
<b>PROPOSAL</b>	Material Change of Use for Mixed Use Development (Burnett Harbour Marina Village) - Office, Shop, Food and Drink Outlet, Indoor Sport and Recreation, Short Term Accommodation and Multiple Dwellings
<b>APPLICANT</b>	BH Developments QLD Pty Ltd
<b>OWNER</b>	Gladstone Ports Corporation Limited
<b>PROPERTY DESCRIPTION</b>	Lots 1, 2 and 3 on SP157913
<b>ADDRESS</b>	67 Harbour Esplanade, Burnett Heads
<b>PLANNING SCHEME</b>	Bundaberg Regional Council Planning Scheme 2015
<b>ZONING</b>	Community Facilities Zone
<b>OVERLAYS</b>	Acid Sulfate Soils Flood Hazard Steep Land Coastal Management
<b>LEVEL OF ASSESSMENT</b>	Impact
<b>SITE AREA</b>	14.6087 ha

<b>CURRENT USE</b>	Chandlery, VMR and Marine berths currently under construction
<b>PROPERLY MADE DATE</b>	15 January 2019
<b>STATUS</b>	The 35 business day decision period ended on 5 June 2020
<b>REFERRAL AGENCIES</b>	Not applicable
<b>NO. OF SUBMITTERS</b>	40
<b>PREVIOUS APPROVALS</b>	Development approval number 325.2012.36591.001 originally approved on 13 May 2013 for 273 wet berth Marina and associated facilities, café/restaurant, administration, marine based commercial/retail and office uses) and Caretakers dwelling and associated Prescribed Tidal Works. The applicant has started undertaking the works associated with the wet Marina berths
	Extension to Relevant Period for 4 years application number 325.2012.36591.002 approved on 16 May 2017 extending the relevant period of the above application until 16 May 2021.
	Application for a Minor change to development approval (325.2012.36591.001) application number 526.2020.219.1 approved on 2 November 2020 for Material Change of Use for General Business ( <b>318</b> wet berth Marina and associated facilities, café/restaurant, administration, marine based commercial/retail and office uses) and Caretakers dwelling and associated Prescribed Tidal Works
<b>SITE INSPECTION CONDUCTED</b>	6 February 2019
<b>LEVEL OF DELEGATION</b>	High

## 1. INTRODUCTION

### 1.1 Proposal

The submitted application seeks a Development Permit for a Material Change of Use of Premises for the first stage of the development which comprises the following:

- Building A - Offices, Yacht club, shops, restaurants and bar with a total GFA of 1202m<sup>2</sup>.
- Building B - Short term accommodation (28 units), shops and offices (GFA of commercial uses 648m<sup>2</sup>)
- Building C - Shops, Restaurants, offices and bars with a GFA of 1484m<sup>2</sup>.
- Building D – Multiple dwelling units and Short term accommodation (36 units)
- Building E – Multiple dwelling units and Short term accommodation (24 units)
- Building F - Multiple dwelling units (24 units).
- Heights vary between 1-2 storeys (building A & B) 3 storeys (building C) and 4-5 storeys (building D, E & F)



The proposal is to undertake a landmark development on a unique site. The applicant seeks to create a landmark development for the Bundaberg Region incorporating a master planned harbour village precinct with retail, office, club, café, recreation, short and long term accommodation uses in a marina setting. The applicant contends that these activities will occur in attractive, architecturally designed buildings that range in height from single level to five levels.

The applicant further states:

*The site is unique because it is the only navigable marine gateway to Bundaberg. As a landmark development, the Marina Village will provide a lifestyle choice, business investment choice and recreation/leisure choice that is not currently available in the region. In conjunction with the associated marina development, it will be a magnet for the national and international cruising fraternity. It will inject tourists and their business into Burnett Heads specifically and Bundaberg generally with consumable and investment dollars.*

The proposal can be summarised as follows:

- 1) The creation of a commercial centre located adjacent to the existing public parking area, boat ramp and jetty. It comprises a compact grouping of single, two and three storey buildings sited along the water's edge. Activities proposed in this cluster of three buildings include -
  - a. Building A (closest to the existing carpark) – ground floor convenience store, chandlery, fashion, gifts/souvenirs; first floor yacht club; second floor offices.
  - b. Building B – ground floor; broker, real estate, café/bakery and administration to the serviced rooms at first and second floor levels.
  - c. Building C – ground floor takeaway, retail and restaurant with outdoor dining pavilion; first floor offices, gymnasium with spa. Buildings A and B will be connected by a large atrium that defines the public entrance to the village centre and the marina.
- 2) Three apartment buildings are distributed along the waterfront to the east of the commercial centre. These are four and five level residential buildings available for both permanent occupation and short-term accommodation. The buildings are angled in plan shape and offset from each other to create an interesting and sinuous built edge. All apartment buildings have underground car parking.
- 3) A foreshore promenade footpath extends for the full harbour frontage of the development site. Public pathways connect Harbour Esplanade to the promenade. The plans identify 'Road Access Subject to Future DNRME Approval' in relation to vehicle access to the road that serves the public boat ramp, jetty and parking area. This road occurs over Lot 4 on SP190481, a 1.959ha reserve for recreation. Whilst use of this road in association with public recreation facilities (e.g. boat ramp, jetty) is understood to be acceptable under the recreation reserve status, use of this road in association with a commercial development is understood to be unacceptable.

Vehicle access from the development site to this road is therefore contingent upon the developer, Bundaberg Regional Council, Gladstone Ports Corporation and the Department of Natural Resources, Mines and Energy agreeing to change part of the recreation reserve to a road reserve. In the interim, the proposal has

been designed and assessed by officers without consideration of this potential future access, with ingress and egress proposed only to the Harbour Esplanade.

The below table highlights the specific parameters of the proposed development:

Component/s	Non GFA (m <sup>2</sup> )	GFA (m <sup>2</sup> )	Number of units	Number of bedrooms	Height in storeys
<b>Building A</b>					<b>3</b>
<u>Ground floor</u>					
Shops		300			
<b>Marina amenities</b>	129				
Core/ toilets/ services	32				
<u>Level 1</u>					
Yacht Club - Restaurant		345			
Core/Toilets/Services	101				
Balcony - Outdoor Dining		220			
<u>Level 2</u>					
Commercial - Office		337			
Core/Toilets/Services	100				
Balcony - Private	60				
<u>Total</u>	422	1202			
<b>Building B</b>					<b>3</b>
<u>Ground level</u>					
Offices		172			
Reception/Lobby/ Office					
Shops - Broker, Real Estate & Café/Bakery		283			
Marina Management		62			
<u>Level 1</u>					
Guest suites		464	14	14	
<u>Level 2</u>					
Guest suites		464	14	14	
<b>Building C</b>					<b>1-2</b>
<u>Ground floor</u>					
Restaurant		212			
Dining Pavilion		114			
Outdoor dining	206				
Shops		322			
Take away food		212			
Core/ services/toilets/mall	181				
<u>Level 1</u>					
Gym/spa		327			
Office		297			
Core/services	147				
<b>Building D – Residential Apartments and Short Term Accommodation</b>					

Apartments	715	4528	36	90	5
<b>Building E – Residential Apartments and Short Term Accommodation</b>					
Apartments	504	2870	24	44	5
<b>Building F – Residential Apartments and Short Term Accommodation</b>					
Apartments	504	2870	24	44	5
<b>Overall Total of Residential Apartments</b>	1723	10268	84	178	

Parking is proposed at grade for buildings A-C and within basements for building D-F with visitor parking located at ground level for these buildings.

All apartments open out onto terraces or balconies and possess northern aspect, ranging from north-east to north-west. Building footprints are configured to conceal the core and services. Internal lobbies are glazed and naturally lit and naturally ventilated. AC condensers are screened from view on the southern elevations. Proposed construction is generally of reinforced concrete foundations and floor slabs, rendered concrete masonry and rendered concrete external walls with concrete and metal roofs. Exterior materials are to be predominantly glass, natural stone, prefinished aluminium, painted concrete, cement render and prefinished steel.

In addition, required subtropical design measures imposed under the Queensland Development code, the design includes the following measures:

- Natural cross ventilation
- Fixed sun shading of selected glazing and adjustable screening
- Passive thermal design for ventilation, heating and cooling
- Viridian Comfort Plus Neutral glass (clear) for window glazing generally
- Use of solar panels
- Natural ventilation and lighting of all rooms where possible
- Deep soil zones for groundwater recharge and establishment of vegetation

The applicant's submitted landscape plan and BDA's architectural plans show extensive landscaping along Harbour Esplanade, within all above-ground car parking areas, in between buildings and along the proposed promenade footpath and footpaths leading from Harbour Esplanade to the promenade footpath.

Subsequent and separate to the submitted application, the development of stage 2 is currently undergoing assessment. Stage 2 of the Marina development is for a Preliminary Approval (Variation Request) for (Mixed Use Development - Burnett Harbour Marina Village) - Resort Complex (including: ancillary shop, restaurant, bar, recreation and conference facilities), Short Term Accommodation and Multiple Dwellings.

## 1.2 Site Description

The subject land includes parts of Lot 1, 2 and 3 on SP157913 and is identified as 'Mixed Use - Boat Harbour' in the Burnett Heads Harbour Precinct of the Bundaberg Port Authority Land Use Plan. Lot 1 has an area of 14.6ha and, and expect for the public car park/boat ramp area located on 4 on SP157913 which does not form part of the submitted application, all but encompasses the landward edge of the boat harbour (and open space where the existing public amenities building is located). The development permit application is proposed over an area of 24,140m<sup>2</sup>.

The subject site is improved with a two-storey masonry building and workshop that was formerly part of the Burnett Heads Marina. The workshop is no longer in use, the ground floor chandlery has been abandoned but the upstairs caretaker's residence remains in use. The adjoining hard stand yard has most vessels removed and the marina per se has been dismantled.

Also on the site are a number of unused accommodation 'dongas', the Bundaberg Volunteer Marine Rescue (VMR), the now abandoned Blue Water Club (under Lease 709722713) and a secure boat storage area (under Lease 709722690). The site has an existing boat hardstand (for 27 boats) and an associated slip, ramp and service pontoon.

The subject land is flat, ground level hovers around RL3.0mAHD and the site is void of vegetation. The site is not mapped as containing State Planning Policy biodiversity wetland values or vegetation and habitat values or conservation area values. The site is within a coastal management district and much, of the land is within an erosion prone area.

Part of the site is located within the Flood hazard area—Level 1 Queensland floodplain and as identified in the Planning Scheme, the site is affected by the coastal management district, erosion prone area and medium and high storm tide inundation areas

The land is zoned Community Facilities Zone within the Bundaberg Regional Council Planning Scheme 2015.

To the north and west of the commercial precinct of the Burnett Harbour Marina Village is Lot 4 on SP190481. This is a Crown Reserve for recreation purposes under the trustee of Gladstone Ports Corporation and contains a road, public parking, trailer parking and boat ramp. The northern face for the balance residential component of the development permit area is the boat harbour.

To the east of the development permit area is, for all practical purposes, unimproved land (and the preliminary approval land). On the southern side of Harbour Esplanade are detached dwellings from Finucane Street to Moss Street. These properties are included in the Medium density residential zone.

The subject site is located approximately 400 meters west of the existing Burnett Heads Town centre to which Council has recently undertaken substantial streetscape

works as a result of detailed local area planning. In conjunction with these streetscape works Council has recently constructed a multi modal pathway along Harbour Esplanade to the Burnett Heads central business district to connect the site to the CBD and to the Port area across Wallace Creek to the west of the site.

In February 2017 the Queensland Government declared the Bundaberg State Development Area (SDA), which is located at the Port of Bundaberg. The Port of Bundaberg is expected to play a significant role as a catalyst for the future growth of the Wide Bay Burnett region. The SDA is expected to provide a location for regionally significant economic activities and preserve strategic port land for the long term.

### 1.3 Background

On 16 May 2013, Council granted a development permit for-

- (1) Material change of use for General Business (273 wet berth marina and associated facilities, café/restaurant, administration, marine based commercial, retail and office uses) and Caretaker's Dwelling; and
- (2) Material change of use for Environmentally Relevant Activity (ERA 63 – Sewerage Treatment); and
- (3) Lot reconfiguration for Subdivision by Lease; and
- (4) Operational work for Prescribed Tidal Work (ramp, pontoon, piles, rock revetment, dredging, demolition and reclamation).

On 16 May 2017, Council extended the relevant period of this approval to 16 May 2021. Dredging for the marina birth has commenced.

In conjunction with the assessment of the subject application, the applicant lodged a change to the existing approval to introduce staging, with the view that only stage 1 would be completed under the existing approval. The changes approved on 3 November 2020 incorporated the following:

**1. Deliver land-based facilities in a two-stage process rather than as a single stage as follows;**

***First Stage:***

Retain the existing buildings (commercial building and amenities building) and re-purpose the commercial building. Increasing and improving landscaping.

***Second Stage***

*Demolish the re-purposed buildings and develop the land as approved under Development Permit No.325.2012.36591.1.*

**2. Change the marina by-**

- (1) Increasing the number of berths to three hundred and eighteen (318).
- (2) Modifying the layout of the marina (but not increasing the marina footprint).
- (3) Introducing five (5) substages of stage 1 stages viz Stage 1 - 38 berths, Stage 2 - 58 berths (cumulative), Stage 3 - 102 berths, Stage 4 - 140 berths, Stage 5 - 318 berths.

**3. Change the two wet lease areas**

The minor change seeks an expansion of Lease BU to 3.689 hectares and Lease BV to 3.9 hectares.

## 2. ASSESSMENT PROVISIONS

### 2.1. Assessment Benchmarks

The following are the benchmarks applying for this development:

<b>Benchmarks applying for the development</b>	<b>Benchmark reference</b>
<b>Zone Code:</b> Community Facilities Zone	Bundaberg Regional Council Planning Scheme 2015
<b>Local Plan:</b> Central Costal Urban Growth Area Structure Plan	Bundaberg Regional Council Planning Scheme 2015
<b>Overlay Code</b> <ul style="list-style-type: none"> <li>• Acid sulfate soils overlay code</li> <li>• Biodiversity areas overlay code</li> <li>• Coastal protection overlay code</li> <li>• Flood hazard overlay code</li> <li>• Steep land (slopes &gt; 15%) overlay code</li> </ul>	Bundaberg Regional Council Planning Scheme 2015
<b>Use Code</b> <ul style="list-style-type: none"> <li>• Business uses code</li> <li>• Multi-unit residential uses code</li> <li>• Sales office code</li> </ul>	Bundaberg Regional Council Planning Scheme 2015
<b>Other Development Code</b> <ul style="list-style-type: none"> <li>• Landscaping code</li> <li>• Nuisance code</li> <li>• Transport and parking code</li> <li>• Works, services and infrastructure code</li> </ul>	Bundaberg Regional Council Planning Scheme 2015
<b>Planning Scheme Policy/ies</b> <ul style="list-style-type: none"> <li>• Planning scheme policy for development works</li> <li>• Planning scheme policy for waste management</li> </ul>	Bundaberg Regional Council Planning Scheme 2015
<ul style="list-style-type: none"> <li>• Development Assessment Requirements</li> </ul>	State Planning Policy

### 2.2. Relevant Matters

The following matters were given regard to or assessment carried out against, in undertaking the assessment of this development application.

<b>Other relevant matters to the assessment of the development under section 45(5)(b)</b>
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Burnett Heads Town Centre Local Plan – September 2017
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<b>Other relevant matters to the assessment of the development under section 45(5)(b)</b>
Gladstone Ports Corporation Master Plan for the Burnett Heads Boat Harbour Precinct
Port of Bundaberg Landuse Plan 2009
Draft Port of Bundaberg Land Use Plan 2020
Draft - Gladstone Ports Corporation Vision Precinct outlook
Development Approval 325.2012.36591.001, as amended.

### **3. ISSUES RELEVANT TO THE APPLICATION**

The application has been assessed against all applicable codes identified in the assessment benchmark column as required by section 5.3.3 (4)(a) of the Planning Scheme.

The following matters have been identified as being relevant to the assessment of the application:

#### **Consistency with Strategic Planning Intent**

The proposed material change of use is subject to assessment against the Central coastal urban growth area structure plan and the relevant codes of the Planning Scheme to ensure that the proposed use will achieve the intended character for the locality. An assessment was provided by the applicant, which articulated that the proposal is able to comply the local plan provisions.

The Purpose and overall outcomes of the Central coastal urban growth area structure plan code states that

- (t) *development of the Burnett Heads Boat Harbour and adjacent foreshore:-*
  - (i) *provides for an integrated resort development with a range of tourism and related uses including function and entertainment facilities, hotel, retail, residential and marina related businesses; and*
  - (ii) *sensitively responds to and integrates with the Burnett Heads town centre and broader township of Burnett Heads;*

The proposal is for a mixed used development that incorporates resort style accommodation and a range of tourism uses including a yacht club and function facilities.

The proposed development is considered to sensitively respond to the existing Burnett Heads town centre by providing a range of uses that complement rather than conflict with the uses located within the existing CBD.

The development provides pedestrian connectivity to the CBD and is located within comfortable walking distance. As discussed in further detail below it will be conditioned that the proposal not include a supermarket to direct residents and visitors to utilise the existing businesses already provided for within the CBD.

It is considered the proposal meets the purpose and overall outcomes of this code.

### Settlement Pattern

With reference to Performance outcome (PO) PO1 of the Central coastal urban growth area structure plan code for the pattern of settlement and land use structure, Figure 7.2.1 of the Planning Scheme ('Structure plan concept') shows the site as being designated Burnett Heads Marina development site.

As discussed above, the proposed development is for a mixed-use development that directly supports the adjoining Burnett Heads Marina that has a previous approval for 318 wet berths (approved under application number 325.2012.36591.1 and 526.2020.219.1). The development proposes multiple residential dwelling options ranging from short stay accommodation to multiple dwelling units that could be used for either permanent residents or short stay. Buildings range in height from 2 storeys to 4-5 storeys in height. The proposed buildings are of high quality design and are considered to meet outcome (b) of this PO.

With the Burnett Heads Town Centre being redeveloped and Council recently extending the sewer network to Burnett Heads (in close proximity of the site), it is considered that the proposed development is occurring within the expected sequence of development of the area. The proposal is also consistent with local area detailed structure planning that, although not formally part of the Planning Scheme, was adopted by Council in 2017.

As discussed in further detail below, the site is within the Coastal Hazard Area. However, it is considered that appropriate conditions can be imposed so that the proposal protects people and property from the potential impacts of coastal hazards.

It is considered the proposal is consistent with the settlement pattern intended for the subject site.

In terms of PO2 – PO5, the proposal includes upgrades to Harbour Esplanade and the provision of a bus bay. This will improve connectivity between the greater port area and the Burnett Heads township. Furthermore, a pedestrian linkage along the water front of the harbour site is provided, which is to remain owned by the developer and with the provision of an access easement, allow for the general public to access the site and link up with existing pathways within Burnett Heads. A pedestrian path is also proposed along Harbour Esplanade and through the site at multiple locations to Harbour Esplanade for residents/ customers/ guests.

PO6- PO8 relate to Activity Centres within the Central Coast Urban Growth Area. In regards Activity Centres, the applicant states within their submitted material that the development:

*Creates a community focal point in Burnett Heads that we believe will complement rather than compete with existing businesses. Not dissimilar to Bargara, we see the juxtaposition of two different types of commercial centres emerging in Burnett Heads. The Burnett Harbour Marina Village will provide leisure shopping with a predominance of marina-related commercial and community activity eg chandlery, boat brokerage, yacht club, pavilion dining. Conversely, the Burnett Heads CBD will always provide the daily and weekly*



*shopping needs of the local and transient population. The Burnett Harbour Marina Village will draw people to Burnett Heads by water and by road which will benefit local businesses through the injection of external funds.*

Officers agree that the uses proposed as part of the development are a different offering to the businesses located within the Burnett Heads Town Centre. Furthermore, through good pedestrian connections as shown on submitted plan titled *Pedestrian Network* drawing 4.16, Issue A, dated 2 October 2019, it is considered that the proposal would benefit the existing town centre by bringing additional residents and visitors to the area. It is recommended that a condition of approval be include that no supermarket is to locate within the proposed development to alleviate any potential for future commercial conflict and to direct residents and visitors to utilise these existing serviced located within the Burnett heads town centre.

PO25 – 29 are specifically related to development of the Burnett Heads Boat Harbour development site. PO25 requires development to include a mix of uses which, as discussed above, is provided by the proposal. It also requires that these uses are located amongst open space areas which are accessible to the public, connection opportunities for the existing community, and manages conflicts between land uses though design elements, buffering and other separations measures.

The proposed buildings include sizable areas of landscaping in between buildings with pedestrian connections accessing the water and Harbour Esplanade. The proposed development is orientated towards the harbour and away from adjoining residential uses with the non-residential uses being located at the north-western portion of the site. It is officers view that the proposal meets PO25.

PO26 requires that development of the subject site creates a definable local character that attracts local, national and international visitors, incorporates subtropical architecture and landscaping, is sensitive to the interface with the existing community, provides continuous public access along the foreshore, provides activity nodes along the foreshore and provides active frontages which relate to the waterfront promenade, Harbour Esplanade and the extensions of Moss and Somerville Streets.

The applicant has stated within the design intent for the proposal that:

*The urban form of the Burnett Harbour Marina Village has been designed as a linear cluster of buildings spread along the shoreline with each end clearly defined by a principal node.*

*In overall shape, massing and composition, the built form has been developed from an analysis of the physical landform, the existing built form and the envisaged use, character and density in this part of Burnett Heads.*

*Organic in its shape, the built form pattern respects and follows the line of the existing waterfront edge. In this way the linear structure of the village wrapping around the harbour, maintains a natural and meaningful relationship with both the landform and the ocean.*

Officers agree that the proposed development has been designed to incorporate a definable character differing from existing coastal nodes within the Region and focusing along the Marina. The multiple dwelling unit buildings D, E and are all orientated to be sited to attain a predominately northerly aspect and all units include large balconies and other subtropical design. Buildings with a westerly aspect include screening on this aspect to protect the amenity of residents and guests. Exterior materials are to be predominantly glass, natural stone, prefinished aluminium, painted concrete, cement render and prefinished steel. The proposal is required to meet standard sustainability measures under the Queensland Development code, but the proposal includes measure in excess of the minimum requirements as described in the above proposal section of this report. It is considered that these design features will result in attractive and unique buildings that create a unique character for the area. In regard to PO26 it is considered that the proposed design meets this outcome.

PO 28-29 relate to movement networks in the vicinity of the Burnett Heads town centre and Boat harbour development site. These Performance outcomes relate to provision of an efficient, functional and integrated movement network for both pedestrians and cars. As discussed above, pathways are proposed along the waterfront, Harbour Esplanade and in between proposed buildings creating corridors for pedestrians and cyclists in and around the subject site and the existing town centre as well as the greater costal pathway network. Furthermore, upgrades to Harbour Esplanade will be required including the provision of a bus bay. The development of the subject site will not prejudice any proposed connectivity upgrades around the Burnett Heads town centre. It is considered the development complies with or can be conditioned to comply with these PO's.

### **Planning Scheme Zoning**

The subject site is zoned community facilities zone. The purpose of the zone is to

*provide for community-related uses, activities and facilities, whether publicly or privately owned, including, for example:*

- (a) educational establishments;*
- (b) hospitals;*
- (c) transport and telecommunication networks;*
- (d) utility installations.*

It should be acknowledged that this zoning is historically been because the site forms part of the greater Bundaberg Port area, is owned by Gladstone Port Company and presumably because Volunteer Marine Rescue (VMR) service locates on the subject site. The subject site was zoned Communities Zone under the superseded Burnett Shire Planning Scheme 2006. This zoning was carried over to the current Planning Scheme as the detailed local area planning had not been completed prior to the commencement of the Bundaberg Regional Council Planning Scheme 2015. Since the site was original designated "community" both Gladstone Ports Corporation and Council have undertaken more detailed land-use planning related to the site, which are considered to provide more contemporary guidance on the intended use of the land.

### Gladstone Ports Corporation Landuse Plan and Precinct Outlook

To give further context to the long-term vision of the Port Land the “Masterplan for the Burnett Heads Riverfront and Boat Harbour Precincts plan” is considered a relevant mater. Within this document it is stated:

*The two areas, facing north-east onto the river and ocean, represent a unique opportunity to develop a world-class and environmentally in-tune residential and commercial development, providing much-needed employment and investment opportunities for the Bundaberg region. Key features (of the Master Plan include) improved riverfront and marina access, new public and green space, and new shopping, business and residential opportunities, providing significant economic and lifestyle benefits for the region.*

The Port of Bundaberg Land Use Plan 2009 included the subject land in the ‘Mixed Use (Boat Harbour)’ precinct which anticipated a range of commercial and residential land uses. The release in September 2013 of the Master Plan continued the expectation that the subject land would be used for commercial and residential purposes.

It is also identified within the Port land use plan that the subject site is mapped as Non-strategic port land and is stated “*Areas adjoining Burnett Heads that are surplus to the demand for industrial development and have been strategically identified as being preferable for accommodating higher-order residential, commercial and community uses*”.

In conclusion, the proposed mixed use development is considered to align with the Gladstone Ports strategic planning for the site and will not prejudice any port activities or existing community activities located on the subject site. A condition of approval will require that construction of the stage located where the existing VMR building is, is not undertaken until such time the new VMR premises is operational.

### Burnett Heads Local Area Plan 2017

The Burnett Heads local Area plan acknowledged that the current zoning of the subject site was due to previous zoning within the Burnett Shire Planning Scheme 2006. However, it recommends the site’s zoning be amended to “Identify the marina site as a key development site with provisions to encourage a well designed mixed-use development that is integrated into the broader Burnett Heads community”.

It is further stated the vision for the subject site as follows:

*The strategic foreshore location, scale and significant development capacity of the Burnett Heads Marina offers a significant opportunity to be a catalyst development site for the Bundaberg Region, particularly tourism related development. The development of this site will provide opportunity for a new integrated resort development with a range of related uses including function and entertainment facilities, hotel, retail, tourist attractions, residential, and marina related businesses.*

It is considered this planning supports the use of the site as proposed by the submitted application.

### Previous Development approval

It is also relevant to note that the previous development application for a Material change of use for General Business (218 wet berth marina and associated facilities, café/restaurant, administration, marine based commercial, retail and office uses) and Caretaker's Dwelling. This was deemed to comply with the Community uses zoning of the land at that time.

### Business uses

The relevant assessment benchmark for the commercial component of the proposal is the Business Uses Code. The purpose of the Business uses code is to ensure that business uses and other centre activities are developed in a manner consistent with the Bundaberg Region Activity Centre Network and are of a high quality design which reflects good centre design principles and appropriately responds to local character, environment and amenity considerations. This is achieved through a number of overall outcomes which require business uses to be consistent with and reinforce the Bundaberg Region Activity Centre Network, incorporates building and landscape design that responds to the character of the particular local area, along with being integrated into its surrounds and reflects high quality town centre design, streetscape and landscaping principles and avoiding or mitigating adverse impacts upon the amenity, privacy or environmental quality of nearby residential uses.

### Role and function of centre

PO1 of the Code relates to the role and function of Activity centres. The Bundaberg Region Activity Centre Network is derived from the Economic Development theme within the Strategic Framework of the Planning Scheme. Burnett Heads Town Centre is an identified Local centre, and the greater Bundaberg Port area is identified as a Specialised activity centre. The subject site sits in between the Port and Town Centre but is not identified as an Activity Centre. Guidance on compliance should therefore be sort by the broader outcomes of this strategic outcome. Within this theme it is states:

- (c) *for the Bundaberg Region, its position as the gateway to the southern Great Barrier Reef provides opportunities for the expansion of the tourism and lifestyle industries as a key platform to maximise the sustainable utilisation of the region's natural attractions and attributes.*
- (f) *The economic development of the region is maximised through the identification of a well-defined activity centre network. This network identifies the primary locations for employment and enterprise areas in the region, provides for the co-location and clustering of business and industries to generate synergies and economies of scale, and maximises the utilisation of existing and planned infrastructure and transport networks to provide opportunities for growth in industry, commercial, tourism and rural activities.*

It is also stated within the specific outcomes of this theme that “*Development does not undermine or compromise the activity centre network either by proposing centre activities outside of an activity centre or by proposing a higher order or larger scale of uses than intended for a particular activity centre*”.

The proposed development provides for both office accommodation for marine based tourism experiences (eg Lady Musgrave Experience) and short-term residential accommodation (in the form of serviced rooms and serviced apartments). It is considered that these uses help achieve outcome (c) above. Although not located within an identified activity centre it is considered that because of the sites unique offering that it further advances the strategic outcome and does not take away from the existing local centre and that the Burnett Heads Local Centre will benefit with additional business and tourists being brought to the local area through the proposed development. As discussed above it will be conditioned that no supermarket be established within the development to alleviate any potential conflict with the Burnett Heads Local Centre.

The proposed uses are not considered to negatively impact on the higher services provided by the Burnett Heads Town Centre and existing major, district and local centres.

#### Relationship of building to streetscape and public realm

PO's PO2- PO5 of the Business uses code relate to Building mass and composition. Although the commercial buildings primarily address the foreshore promenade, the use of windows and balconies to the western and southern elevations introduces an articulation or modulation of the buildings to the Harbour Esplanade. The ground floor uses are designed to activate the adjoining public promenade. It is considered that the buildings engage with the public realm either actively (eg active café shopfront) or passively (eg windows). All buildings have identifiable entrances from Harbour Esplanade.

The proposed buildings define the street with enhanced footpaths and landscaping both through the development from Harbour Esplanade and along the waters edge that are designed to encourage active streets and create attractive public spaces as would be expected with a Marina village.

Car parking areas are well landscaped from Harbour Esplanade and at grade car parking has been minimised with the provision of basements car parking for some buildings. Street trees are proposed along Harbour Esplanade to assist in softening the built form proposed.

#### Building mass and composition.

In terms of building design and compliance with benchmarks, consideration is given to Performance outcomes six (PO6) of the Business uses code. The outcome requires:

*The business use is in a building that enhances and complements the character and amenity of streets and neighbouring premises via a built form that:*

- (a) maintains some area free of buildings at ground level to facilitate pedestrian movement and other functions associated with the building;*
- (b) ensures access to attractive views and prevailing cooling breezes; and*
- (c) reduces the apparent scale and bulk of buildings, to the extent practicable.*

In regards to the above, the applicant has made representations that the proposal complies as the site cover for the portion of the site relevant for this application is 24.85%, street setbacks and side setbacks comply with the acceptable outcomes and

buildings A and B, which include business uses on the first floor, are separated via an atrium with the maximum building length of 32 metres. Given compliance has been demonstrated with all of the relevant Acceptable Outcomes it is considered that the proposal complies with PO6.

#### Building features and articulation

The business uses are to be in a building which provides visual interest through form and façade design and semi-enclosed public spaces complementing the adjoining indoor spaces. Within the submitted material the applicant states *“BDA Architecture plans show commercial buildings of different heights with articulated elevations and a palette of external finishes. This combination creates visual interest”*. Officers agree with these representations and it is considered that the proposed business uses take advantage of the aspect over the marina, while also presenting to the street and providing areas protected from weather, consistent with the subtropical climate of the Region.

#### Environmental management and amenity

The planning scheme requires that a proposed business use is not to unreasonably impact upon the amenity or environmental quality of its environs and especially nearby residential premises and their use of indoor and outdoor areas. In response to Council’s information request the applicant has stated that hours of operation of the business uses will be limited as follows:

- (1) The operating hours of the yacht club shall be restricted to 8:00am to 9:00pm Sunday, 8:00am to 10:00pm Monday to Thursday, 8:00am to midnight Friday and Saturday.
- (2) The operating hours of Cafes/Restaurants shall be restricted to 6:00am to 11:00pm seven (7) days a week.
- (3) No amplified music from the yacht club, cafés or restaurants is to be discernible immediately outside of a sensitive receptor (including short term accommodation and multiple dwelling units)-
  - (a) After 5:00pm Sunday.
  - (b) After 8:00pm Monday to Thursday.
  - (c) After 10:00pm Friday and Saturday.

It is recommended that the above operational parameters be included as conditions of approval. Other conditions relating to waste management and hours related to loading and unloading should also be imposed to ensure all requirement relating to environmental management and amenity are adhered to.

It is also noted that notwithstanding any condition of this development permit, all uses the subject of this development permit are required with the acoustic quality objectives of the Environmental Protection (Noise) Policy 2019.

#### Safety and security

The planning scheme requires that development is to contribute to a safe and secure pedestrian environment through a number of outcomes including providing for casual surveillance, orienting the upper level windows so they overlook the street and public spaces. The outcomes also require that development provides entrances to businesses that are clearly defined and visible from the street, car park and pathways,

adequate lighting and sightlines, an active face to the street by generous provision of openings, avoidance of blank exposed walls and robust, durable materials. The proposed design incorporates separation between buildings allowing view lines from Harbour Esplanade to the subject site. The majority of the business uses, although will have entrances from harbour Esplanade, will be focused around the waterfront. All residential uses, as well as the large outdoor area of proposed Yacht Club, incorporate balconies overlooking the water which allows for casual surveillance. Standard conditions in relation to identifiable entrances, lighting and construction material are recommended to be imposed to further meet this requirement.

### **Residential uses**

The guiding benchmark for residential uses for both short term accommodation and permanent residential accommodation is the Multi-unit residential uses code. The purpose of the Multi Unit Residential Code is to ensure multi-unit residential uses are of a high quality design and appropriately respond to local character, environment and amenity conditions. It is considered that the proposal can comply, or can be conditioned to comply with the requirements of Multi Unit Residential Code as discussed below.

### **Site suitability**

The development is located on a large greenfield lot with a development area in excess of 2.41ha. The use is located on a site which is of a configuration which is capable of accommodating the development in terms of parking and access, private open space and on-site servicing.

The proposed dwellings are sited and designed to take account of the views, the setting and site context (views to the Burnett Heads Boat Harbour). These vistas create an attractive environment for the residents, with the design of the buildings providing a positive contribution to the character of the Burnett Heads Boat Harbour and local area.

Buildings are to be designed to consider their relationship to street, public space and private open space. As discussed above, all dwellings provide balconies overlooking the proposed pedestrian pathway located along the waters edge. Each of the residential buildings have clearly defined entrances to both Harbour Esplanade and the pedestrian pathway. At grade car parks for visitors are set within landscaping to provide both screening to Harbour Esplanade and shade for vehicles. Residents car parking is provided within basements under each residential building.

Within the submitted application material the applicant has stated that the total site cover for the portion of the site that the development is located is 24.85%. The overall design of the buildings, separation between buildings and articulation assist in ensuring that the development not appear bulky when viewed from Harbour Esplanade.

The submitted plans show setbacks to Harbour Esplanade range from 22.8m to 37.0m. These are considered to represent generous setbacks and demonstrate that the subject site is large enough to accommodate the range of proposed uses and buildings.

### **Building Height**

The community facilities zone does not specify a maximum building height. Performance outcome PO6 states that *“Development accommodates the specific operational, functional and locational needs of the particular use, whilst being of a building height, scale, appearance and intensity that is compatible with existing and intended development in the surrounding area and adjacent zones”*.

As discussed above, the zoning of the site for Community uses is not reflective of the envisioned long-term use of the land. A zoning that is closer aligned with the envisioned higher density mixed use of the land is the High Density Residential Zone. Within this zone the maximum height anticipated in similar coastal areas is 5 storeys. The related Performance outcome in this zone states that *“Development has a medium-rise built form that is compatible with the existing and intended scale and character of the surrounding area”*.

Given the nature and context of the site does not entirely align with either the Community Facilities Zone or the High Density Residential uses zone, other relevant matters which commentate on building height are considered appropriate to provide guidance on this matter.

One of these relevant matters is the Burnett Heads Local Area Plan 2017 as it considers what is appropriate for the intended use of the site whilst taking into consideration the surrounding area and the future planning for these areas. Within the Burnett Heads Local Area Plan it is stated that:

*Development of the Burnett Heads Marina delivers architecturally significant built forms which... are of a height and scale that makes efficient use of land, is consistent with planned infrastructure, and respects the interface with the adjacent Town Centre;*

Building heights nominated in Map 6 for the Marina development site are indicative and are illustrative of the preferred layout and development orientation. Within this map the building heights for the area proposed by the subject development is 5 storeys. The Burnett Heads Local Area plan was subject to significant community consultation and the feedback from this consultation was that the Burnett Heads community were generally supportive of the heights within the plan.

The applicant has submitted shadow diagrams for the proposed development demonstrating that no overshadowing will occur to existing residents along Harbour Esplanade as a result of the development. The buildings are also well designed and separated to mitigate any overlooking and privacy issues. Conditions regarding privacy are recommended to be imposed.

As discussed above it is considered the proposed building are all of high-quality design, are responsive to the site and are well separated from any existing residential dwellings. It is therefore considered that the heights proposed comply with the intent of the planning scheme and other relevant planning benchmarks in relation to height



### **Density and Floor Area**

Similar to building height, as the subject site is located within the Community facilities zone this zoning does not specify residential densities. When considering what are appropriate densities for the site, the High Density Residential zone within the Planning Scheme is considered an appropriate equivalent zone as discussed above as are the further relevant matters being the Burnett Heads Local area plan 2017 and the Draft - Gladstone Ports Corporation Vision Precinct outlook. The High density residential code anticipates densities of 110 dwellings per hectare. Although the Burnett heads local area plan does not specify densities for the site it gives guidance on what might be appropriate when considered in the surrounding context. The surrounding areas envision densities mixed between medium density to high densities with densities between 200 per hectare and 50 per hectare. The applicant has provided the following representations in regards to densities

*Map 4 'Ultimate Densities' anticipates a dwelling density of 110 dwellings per hectare and therefore anticipates 132 dwellings occurring over the eastern portion of the subject land. Map 6 'Alternative Building Heights and Setbacks' anticipates these apartments occurring in five (5) storey buildings. The proposal respects these desired outcomes by proposing eighty-four (84) apartments in buildings having a maximum of five (5) storeys.*

*Map 4 'Ultimate Densities' anticipates a commercial floor space of some 5,400 square metres. The proposal respects this desired outcome by proposing 410sqm of commercial floor space (which includes tourist accommodation in the form of serviced rooms).*

Officers agree that the proposed densities and floor areas are consistent with the Burnett heads local area plan as well as the Draft - Gladstone Ports Corporation Vision Precinct outlook when taking into account that both the business uses and residential uses meet the applicable requirements within the Planning Scheme.

### **Footpaths**

The material originally submitted with the application showed a boardwalk along the waters edge. Officers requested further detail within its Information Request in regards to future tenure, maintenance, revetment wall condition and management responsibility. The applicant has stated the following in their response to Information Request, "*it is proposed to construct a concrete pathway landward of the rock revetment wall. The applicant has no objection to a condition to this effect*". Within the information response material, the applicant also states that they wish to retain the portion on the land with the footpath, but provide public access via access easements.

Within Councils adopted Local Area Plan for Burnett Heads, it is discussed that a key outcome for the site is a "*foreshore for everyone*". It is further discussed that development of the subject site is to "*provide a promenade for the full length of the waterfront that is accessible by the community*". It is recommended that this path is to be wider than a standard footpath and should be something that defines the Burnett Heads Local Area. To create this 'promenade', it is considered that a minimum total width of 10 metres should be provided where abutting building D, E and F and a minimum 5 metres be provided elsewhere, with the path a minimum concrete width of 3.5 metres with wider nodes provided strategically along the promenade to provide for

community interaction. The proposed plans do not clearly depict the width of the corridor left for the waterfront path. The building elevations depict that in some areas the edges of the residential buildings are located 8.8 metres from the site's water edge boundary. However, if these buildings were orientated slightly differently or closer to Harbour Esplanade there would be a large enough corridor for a "promenade footpath".

It is noted that the Strategic Framework within the Planning scheme states that:

- (d) *Development in the Bundaberg Region supports healthy lifestyles and strong communities by maximising accessibility to:-
  - (i) pedestrian, cycle and recreational trail networks;
  - (ii) sport and recreation, community and social facilities and services;
  - and
  - (iii) education and employment opportunities.*
- (e) *Development supports and contributes to the provision of pedestrian, cycle and recreational trail networks to service and link residential development, employment areas, centres, public transport nodes, community facilities and sport and recreational facilities internally within urban areas and externally to the wider open space network of the Bundaberg Region.*

It is also noted Councils mapped Turtle trail abuts the boundary of the subject site.

Given all of the above it is considered both reasonable and relevant to require the recommended footpath corridor. This will require plan amendments which will also be conditioned. The applicant has requested that this footpath remain in their ownership to mitigate any ownership issues to maintain the revetment wall and Marina. It will be conditioned that a right of way easement be placed over the Promenade, allowing public access at all times. Maintenance of this path will remain the owner's responsibility. It is also recommended that public right of way easements be provided over two key foot path connecting Harbour Esplanade to the promenade being the path east of building F and the path in between buildings C and D

### **Landscaping**

The purpose of the Landscaping code is to ensure that landscaping is provided in a manner which is consistent with the desired character and amenity of the Bundaberg Region. Overall outcomes which will achieve this purpose are based upon landscaping that complements and integrates built environment and form, adds to the desired character, minimises energy and water consumption, encourages local plant species and is functional, durable, practical and considers personal safety.

The applicant submitted a Landscape concept plan as part of their response to information request prepared October 2019 by Form Landscape Architects. Within this document, in conjunction with the architectural plans the applicant has proposed landscaping features included dense street trees along Harbour Esplanade, plantings amongst car parking, landscaping features in front of buildings, landscaping along all pathways including along the promenade footpath. Proposed planting range in size from large trees to small shrubs.

The submitted plans do not depict the 3 metres of landscaping to roads in front of at grade car parks. Regarding this issue the applicant states:

*Non-compliance occurs where the site geometry, in conjunction with the atmosphere the project seeks to achieve in the foreshore public spaces, dictates building and therefore car parking locations. Our recommendation is that street front landscaping be augmented by street landscaping and that the Landscape Plan reflect this strategy.*

From the submitted plans it is small areas that will not be able to comply. It is agreed that the dense street trees proposed will not only look attractive but because of their height, will help soften the built form of the proposed buildings. It is recommended a condition be imposed that planting are maximised on the subject site in front of car parks.

Given the above, when considering the Performance Outcomes of the landscaping code it is considered that the proposal complies or can be conditioned to comply with the requirements of the Code. Accordingly, it is considered the proposal is consistent with the purpose of the Code and therefore complies with this element of the assessment criteria.

#### **Open space**

The Strategic Framework theme “Community identity, culture and sport and recreation” lists a key strategic outcome to be achieved across the region as being that “*Communities have access to open space and the opportunity to recreate in a diverse range of settings, which can be safely and conveniently accessed from homes and places of employment*”.

The subject site sits outside of the Priority Infrastructure Area (PIA) as designated within the Local Growth Infrastructure Policy (LGIP) within the Planning Scheme. Therefore, open space for the proposed residents and the additional demand they will create as a result of the development has not been anticipated within the LGIP. Under section 131 of the *Planning Act 2017* it is stated that a Local Government may impose conditions requiring the dedication of additional trunk infrastructure is a development will generate a demand for such infrastructure than the LGIP assumes and if a premises is located outside of a PIA. It is therefore considered appropriated that it be conditioned that the area of land on the western side of Lot 4 and the northern portion of Lot 1 be dedicated to Council as park. It is considered that this will benefit not only the residents of the development, but the broader Burnett heads community. With this dedication, it is considered that the proposal meets the above Strategic framework outcome of the Planning Scheme.

#### **Development Impacts on Nesting Sea Turtles**

The subject site is located in proximity to Mon Repos turtle rookery. The site faces north toward Burnett Heads Boat Harbour and the Burnett River beyond. In the vicinity of the development, turtle nesting beaches include Oaks Beach, Barubbra Island and Mon Repos Beach. At the closest point, the development is located approximately 1.7 km from Oaks Beach, 4.5 km from Mon Repos Beach and approximately 0.65 km from Barubbra Island. Unlike Oaks Beach and Mon Repos Beach, the level of development (e.g. existing housing) between beaches of Barubbra Island and the development is very low. Further, Barubbra Island is located across the Burnett River, in direct line of

sight of the development. This, combined with the shorter distance, makes the beaches of Barubbra Island more exposed to the potential of directly visible light.

The Planning scheme requires applicants to consider this feature and in the most recent Planning Scheme amendments has introduced a Sea Turtle Sensitive area overlay code. Given this code came into effect prior to the subject application entering the decision stage, full weight can be given to this code. Prior to this overlay coming into effect the subject site was still mapped as being within a sea turtle sensitive area with requirements under the Nuisance Code.

To demonstrate compliance with these assessment benchmarks, the applicant engaged Pendoley Environmental to prepare a Marine Turtle Management Plan that was submitted in response to Council's information request. This management plan has been prepared for both the subject development and the development of Stage 2 which is being separately assessed. Within this report the three significant turtle nesting beaches being Oaks Beach, Barubbra Island and Mon Repos Beach are considered. Of the relevant nesting beaches, Mon Repos supports the greatest number of nests each year when considered as a proportion of the total number recorded across the Woongarra Coast. The submitted Turtle management Plan states the following:

*Baseline light monitoring from Barubbra Island, Oaks Beach and Mon Repos Beach indicated that Barubbra Island currently experiences direct visible light and high levels of skyglow emanating from the direction of Bundaberg Port and Marina.*

*Oaks Beach currently experiences some direct visible light from local sources and skyglow from Bundaberg Port and Marina. Mon Repos Beach experiences low direct visible light and low skyglow. The mitigation measures in this report have been prepared with a view to the development not discernibly increasing light levels above this baseline.*

*The impact assessment process, including the development of mitigation measures conducted during the preparation of this report, together with the requirement to conduct a post construction audit to verify compliance with the approved lighting design and regulatory conditions, were done so in line with the National Light Pollution Guidelines (Commonwealth of Australia, 2019) and are considered best practice.*

*To ensure efficacy of proposed mitigation measures, we recommend that during the detailed design phase of the development, qualified turtle biologists collaborate with professionally qualified lighting engineers/designers to further develop and assess mitigation measures based on detailed lighting designs, light models and simulations.*

*Implementation of the proposed mitigation measures as described will prevent the development leading to significant impacts to marine turtle species as assessed against the EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (Commonwealth of Australia, 2013) and will meet relevant priority actions outlined in the Recovery Plan for Marine Turtles in Australia 2017 – 2027 (Commonwealth of Australia, 2017). Accordingly, it is recommended that the regulatory assessors of this proposal apply these mitigation measures within approval conditions.*

The submitted report recommends a total of 30 conditions relating to turtle lighting. These include the following requirements:

- Lighting Management Plans;
- amber lights equal to or lower than 2700k;
- zero % upward waste light output ration;
- motion activated security and walkway lighting during turtle nesting season;
- exterior and interior finishes to be matte and have a maximum reflective value of 30%;
- all indoor lighting to have a corelated colour temperature equal or lower than 2700k;
- apartment down lights to be a built in feature;
- all widow openings will have opaque binds, curtains or shutters fitted;
- in pool lighting to be the minimum required for safe swimming;
- pool decking to be a dark colour;
- pool lighting to be low level amber bollard lighting;
- carpark, driveway and walk way lighting to be intermittent;
- use of true amber emitters and be low level bollard style lighting;
- no construction that requires flood lighting to occur during turtle season;
- a post construction audit to be undertaken and submitted to Council;
- requirements for each Community Management Scheme to incorporate including a Code of Conduct; and
- requirements for the storage of chemicals.

It is considered that with the proposed conditions imposed, the proposed development will meet the purpose and overall outcomes of the Sea turtle overlay Code which is to “*ensure that development does not create harm to sea turtle nesting and sea turtle activity by avoiding adverse impacts generated from artificial lighting*”. With these conditions imposed the proposal will comply with all acceptable outcomes for the code other than AO5 which relates to the screening of development located on land visible to the beach. The related Performance outcome requires that

*Development provides for landscape buffers that:-*

- (a) protect the edges of existing native vegetation or any other areas of environmental significance; and*
- (b) screen the development (including associated artificial light) to a level where it is not visible from the beach or ocean.*

It would not be possible for landscaping to screen the development to Oaks beach and Mon Repos beach to the south given that some of the buildings are 5 stories in height. However, the proposal includes dense streetscape planting of large trees, as well as landscaping within the at grade carparks and in front of buildings that will screen buildings to the south. It will also be conditioned that the applicant plant a landscape buffer in the area conditioned to be dedicated to Council as park to screen Barubbra Island from the development. Landscaping is also proposed and conditioned to be provided within the Promenade footpath corridor along the water’s edge. It is considered that the proposed conditions will fulfill the purpose and overall outcomes of the code and the landscaping both within the site, along Harbour Esplanade and within the area conditioned to be dedicates to Council as park will achieve compliance with the Sea turtle area overlay code.

When the subject application was lodged, sea turtle requirements were located within the Nuisance code. The relevant Performance outcome under this planning scheme PO8 required that:

*Effective measures are implemented during the construction and operation of development to –*

*(a) protect fauna that is sensitive to disturbance from noise, vibration, odour, light, dust and particulates; and*

*(b) limit impacts from artificial lighting on sea turtle nesting areas.*

It is considered that when giving weight to both assessment benchmarks and the recommendations and findings of the Turtle Management Plan that the intent of both codes has been met and the proposal can be conditioned to comply with both codes.

### **Works, Services and Infrastructure Code**

The purpose of the works, services and infrastructure code is to ensure that development works and the provision of infrastructure and services meets the needs of the development, and is undertaken in a professional and sustainable manner.

An assessment of the proposal against the applicable PO's has demonstrated that the proposal generally complies or can be conditioned to comply with the requirements of the Code. Accordingly, it is considered the proposal is consistent with the purpose of the Code and therefore complies with this element of the assessment criteria.

### **Roadworks and Access**

Councils LGIP identifies Harbour Esplanade as a trunk collector. It will be conditioned that Harbour Esplanade be upgraded for the full frontage of the development from the Harbour Esplanade/Donaldson Street intersection (approximate chainage 350) to the Harbour Esplanade/boat ramp access intersection (approximate chainage 750). Trunk collector standard is to be in accordance with BRC's standard drawing R2002.

The submitted Traffic Impact Assessment (TIA) identifies the need for a bus stop to service the proposed development. The desired solution for a bus stop is sealed pavement widening as per the submitted TIA section 8.2 Public Transport figures 8.3, 4 & 5 (PDF pages 517-519 of 655). This bus bay work will be conditioned to be constructed in such a way that it allows for future upgrade of the road if the bus bay is required prior to the overall road.

The submitted plans show an access point from Lot 4 on SP190481 (public boat ramp). This lot does not form part of the submitted application and is owned by GPC as trustee from DNRME for "Land for recreation". The applicant has stated within the submitted material that discussions have commenced with DNRME, GPC and Council to convert this land and associated boat ramp car parking as road reserve. However, there is no certainty that this will occur. In the event this is not dedicated, the applicant will be required to demonstrate to Council that the other 2 accesses along Harbour Esplanade, in particular proposed access 2, can cater for additional traffic loads generated by the development and no further upgrades are warranted past the construction standards already proposed. A condition to this effect is recommended to be imposed. It is also recommended that conditions be imposed that the applicant

amend their plans to delete the shown access onto lot 4, unless prior to the lodgement of operational works that this area is road reserve.

### Carparking

RMA's Traffic Impact Assessment notes two main reductions in car parking numbers. First a cross-utilisation reduction which reflects patrons accessing several uses in the one trip. The National Cooperative Highway Research Program (NCHRP) Enhancing Internal Trip Capture Estimation for Mixed-Use Developments tool was used which identified an overall reduction of approximately 20 % in the AM peak period and 55 % in the PM peak period based on the traffic generation, mix and sizes of the uses contained within the development site.

To be conservative, it is proposed to apply a reduction of 20% to the mixed uses of the development. This reduction is considered appropriate given that visitors and tourists utilising these uses are likely to have a high degree of cross-utilisation between residential and retail / food and drink usages.

The second reduction is for the Marina berth rates. The Australian Standard (AS3962) rate is 0.3 per berth. It is proposed to drop this to 0.15 per berth due to Bundaberg port having a high rate of international recreational craft utilise the port. This means that international craft accessing the port will not have a car therefore not need a car park.

RMA's TIA report notes this was a recommendation from an Executive Officer of the Australian Marine Industries Association to Australian Standards which is under review. This information was given verbally, and no supporting evidence is provided. There is also no evidence to support the reports claim that Bundaberg receives the highest number of international recreational craft per annum on the east coast of Australia. Due to this, the reduction of car parking per berth is not supported. Conditions that require the full number of car parks for the berths are recommended to be imposed.

### Water & Sewerage

The proposed development site adjoins Council's sewerage pump station. The water connection is available anywhere along the existing main and the sewerage connection is to Council's lift station near Moss Street (SE.2008).

Conditions requiring water supply and sanitary drainage suitable for the development permit as lodged are recommended. Services to the proposed VMR relocation site are not included as this is out of the scope of this development application.

It is preferred that the water main (WP.04434) currently located within lot 1 on SP157913 be relocated to the road reserve. Dedication of the land within lot 4 on SP190481 as new road would facilitate the relocation of this main, however the dedication is still being negotiated and may/or may not occur in the future. If this does occur prior to Operational Works being lodged for the development this will be conditioned as part of the operation works application.

### Stormwater

The applicant submitted a Stormwater Management Plan prepared by RMA Engineers. The stormwater management approach for the development is to convey

a portion of the post-developed site runoff towards the Marina with another portion conveyed to existing culverts located under Harbour Esplanade.

Within the submitted technical reports it has been found that no actionable nuisance with quantifiable loss has been identified from the proposed site grading and stormwater discharge concept, derived for the development layout, and generally resembles the existing drainage characteristics within the area and directs flows away from the neighbouring adjacent residential areas.

Within the submitted Stormwater Management Plan it is noted that:

- grades across the proposed carpark allow for suitable cross fall for asphalt pavements;
- grading all stormwater to the boundary of the site ensures stormwater will overflow into the road reserve and not towards the buildings if the network is exceeded;
- the car parks and landscaping can grade away from the buildings to stormwater quality devices located along the property boundaries. The stormwater quality devices can be located at select locations to treat runoff prior to flows discharging off-site;
- the two existing culverts within Harbour Esplanade will require upgrades as part of the development works;
- the stormwater quality devices have been designed in consideration of the highest astronomical tide (HAT). The surface levels of the bioretention basins are at RL2.9m and the invert levels are above RL1.9m (HAT). With the adopted bioretention invert levels and also by adopting salt tolerant plants, as well as flood flaps or back flow prevention devices, the development is taking all practical steps to protect the longevity of the bioretention basins;
- the elevation around buildings also allows for inverts of proprietary stormwater quality devices to be located above HAT, with stormwater outlets including backflow protection for storm surge events;
- basement threshold levels will be set higher than the adopted storm surge levels. This serves to provide a practical measure to reduce the probability of storm surge and flood waters from entering the basements;
- basements are likely to incorporate some drainage, for intercepting flows from ramps and nuisance flows. The discharge arrangement for this would likely be a sump and pump, discharging into the building's stormwater proprietary treatment device (as noted above). This arrangement would therefore not allow backflow surcharging into basements;
- it is understood that some ground water exists in and around the proposed development site. In cases where ground water exists, basements are often designed as per AS 3735 Concrete structure retaining liquids. The basement may also be designed with a secondary system for redundancy. The secondary system may consist of either a membrane or a concrete additive. The exact structural configuration will be further investigated at detailed design; and
- building foundations will be designed in accordance with the relevant Australian Standards, which consider climatic and environmental effects, and subsequently address durability requirements.



It is considered the proposal meets and or can be conditioned to meet all requirements relating to stormwater.

### Land Contamination

The subject site is listed on the State Government's Contaminated Land register. Whilst a referral for this matter was not required, Council requested the applicant undertake assessment regarding potential contamination. In response to Council's information request, the applicant submitted a Preliminary Site Contamination Investigation prepared by FPE. Within this report it was concluded that a number of areas within the development footprint were identified as containing former and existing Areas of Potential Concern (AOPC) relating to contamination.

Given this it is recommended that a conditions be imposed requiring that the applicant provide evidence to Council that all necessary permits for the relevant authorities have been obtained in relation to the Contamination and any required remediation works undertaken to address any potential contaminated land conflicts such that the premises are suitable for the proposed use.

### Coastal Protection Overlay Code

Two key points of discussion in regards to this code are Flooding/ stormtide inundation and the existing revetment wall/ reclaimed land. These are discussed below.

#### *Flooding and Storm Tide*

The RMA stormwater management plan demonstrates the proposed finished floor level (3.9m AHD) of the development is above the storm surge (defined flood event). The design finished surface level is controlled by the storm tide component of the defined flood event. The development includes protection for underground car parking with pump out arrangements to be incorporated into the building design for when stormwater gets into basements.

The development site is elevated between the bay and Wallace Creek so any storm surge that exceeded the design levels will drain to either water body. The revetment wall on the bayside and Harbour Esplanade on the Wallace Creek side protects the development from being undermined by erosion.

For the development proposal to meet all the acceptable outcomes of the flood hazard overlay, the following conditions should be imposed:

- a. Infrastructure should be constructed to resist hydrostatic and hydrodynamic forces protecting them against inundation; and
- b. The development increases the number of people living and working within the flood hazard area therefore an emergency evacuation plan should be submitted.

#### *Revetment Wall and Reclaimed Land*

The development site is partly reclaimed from the tidal bay area that previously extended to Harbour Esplanade. This reclaimed land is dredge spoil from the port shipping lane that has been retained by the revetment wall allowing the fill to consolidate over time.

The applicant submitted to Council a condition report prepared by Lonjac for the revetment wall. The inspection undertaken by Lonjac found that the rock revetment wall between chainages 0 to 68 has been extensively modified due to the adjacent development. It is apparent that over the life of the industrial use, no maintenance has occurred on the wall with deterioration from its existing condition evident.

This section of wall would not meet the original design intent with full re-design and replacement to be conditioned.

Between chainages 68 to 280, minor access points and infrastructure associated with the adjoining industry / services have occurred. These works have modified the typical profile of the Rock Revetment Wall and thus created defects such as dislodgement of the armour rocks, exposure of underlying rock / backfill or lowering of the Rock Revetment crest.

This length of Rock Revetment Wall can be classed as a being in line with the original design intent of the structure with modifications allowing adjacent facilities harbour access which will ultimately need remediation as part of the development. The choice of retention for the development will be based on the described Development Considerations outlined in Section 9 of Lonjac's report.

Conditions will be imposed requiring all recommended remediation works which will protect the development from storm surge from the Boat Harbour.

It should be also noted that the subject application was referred to Queensland Treasury (SARA) as a Concurrence agency for Tidal works or work in a coastal management district. SARA assessed the application against their assessment benchmarks and approved the development with conditions in relation to tidal works and works in a coastal management district.

### **Acid Sulfate Soils Overlay Code**

The purpose of the Acid sulfate soils overlay code is to ensure that the generation or release of acid and associated metal contaminants from acid sulfate soils (ASS) does not have significant adverse effects on the natural environment, built environment, infrastructure or human health.

The purpose of the code will be achieved through the following overall outcome:-

- (a) development ensures that the release of acid and associated metal contaminants into the environment is avoided by either:-*
  - (i) not disturbing acid sulfate soils (ASS) when excavating or otherwise removing soil or sediment, extracting groundwater or filling land;* or
  - (ii) treating and, if required, undertaking ongoing management of any disturbed ASS and drainage waters.*

It is considered that this matter could be adequately dealt with at the time of construction through appropriate mitigation and management methods. Conditions to this affect are recommended to be imposed on the proposed development.

Public Notification

The application was publicly notified for 15 business days in accordance with the requirements of the Planning Act 2016. A total of 40 properly made submissions and 3 not properly made submissions were received. Of these submission 32 submissions were against the proposed development (19 of these being proforma style) and 8 submission in support of the development.

The following matters were raised by submitters:

<b>Matters raised in any submissions</b>	<b>Description of how matters were dealt with in reaching the decision</b>
<p><u>Lighting impacts – Increased light spill</u> The proposed development will result in increased lighting along the coastline, resulting in increased light spill, impacting on sea turtles.</p> <p>The Bundaberg Regional Council has received funding to investigate the sources of urban glow and develop measures to aid in reducing urban glow in relation to sea turtles. Approving a development which would result in increased light spill could jeopardise this funding or negatively impact the reputation of Council.</p>	<p>The submitted Marine Turtle Management plan has recommended a raft of conditions to be imposed as part of any approval and concluded with these conditions imposed that there will be no increase in light spill as a result of the proposed development.</p> <p>All of the recommendations of the Marine Turtle Management Plan have been included within the conditions of approval as well as the Marine Turtle Management Plan listed as an approved document. Addition requirements for landscape buffers within the Harbour Esplanade road reserve, within land to be designated to cancel as park as well as within the waterfront Promenade footpath are also included as conditions for the development.</p>
<p><u>Building height</u> The building height is inconsistent with the existing built form – a maximum of three (3) storeys is suggested.</p>	<p>As discussed in the above report, there is no height limit associated with the Community facilities zone. Officers have assessed the proposal against other relevant matters including the Burnett Heads Local Area Plan and determined that the proposed height are consistent with these relevant matter.</p>
<p><u>Storm tide inundation</u> The development is located along the coastline with the site being impacted by Storm tide inundation and potentially cyclone events. Has this been considered during the design of the building to ensure that the development does not result in a future financial burden to Bundaberg region taxpayers if remedial works are required along the coast line to protect the development?</p>	<p>The application has been assed by both Council and SARA as a concurrency agency and found to comply with the relevant Costal Management benchmarks in accordance with technical reports submitted by the applicant.</p>

<b>Matters raised in any submissions</b>	<b>Description of how matters were dealt with in reaching the decision</b>
<p><u>Impacts on local wildlife and environment</u></p> <p>Proposed development in this location has a risk of being extremely detrimental to local wildlife and the environment, including kangaroos, shorebirds, sea turtles and mangroves.</p> <p>Submissions for the development requested measure be imposed to reduce any potential impacts to sea turtles.</p>	<p>The subject site does not contain any biodiversity areas that are identified by the Planning scheme as a Matter of environmental significance as mapped within the State Planning Policy interactive mapping.</p> <p>As discussed above conditions will be imposed to protect Marine Turtles. The protection of mangroves is legislated under the Environmental Protection Act.</p>
<p><u>Character, visual amenity and building design</u></p> <p>Concern for loss of amenity of the Burnett Heads area and poor building design.</p> <p>Submissions for the development requested that advanced planting be included within a landscape plan.</p>	<p>Officers have assessed building design against criteria within the Planning Scheme and determined that the proposal meets criteria relating to building design and protects the surrounding amenity.</p> <p>The submitted plans include substantial landscaping. The size of planting will be determined when detailed landscape plans are submitted at operational work and planting size determined in conjunction with Councils parks team.</p>
<p><u>Increased traffic</u></p> <p>Concerns regarding the additional increased traffic that will result as part of the proposed development</p>	<p>The submitted traffic report has been assessed and conditions will be imposed requiring road upgrades as required by the Planning Scheme to a Trunk collector standard and the inclusion of a bus bay. Assessment has concluded that with these upgrades, the roads will has sufficient capacity for the proposed development.</p>
<p><u>Noise impacts</u></p> <p>Concerns regarding the additional noise that will be generated as part of the proposed development</p>	<p>Conditions relating to hours of operation for commercial uses and maximum noise levels will be imposed through conditions to mitigate any potential noise impacts.</p>

<b>Matters raised in any submissions</b>	<b>Description of how matters were dealt with in reaching the decision</b>
<p><u>Existing commercial business</u></p> <p>Concerns regarding the existing commercial businesses located within the Burnett Heads CBD and the impact additional approved commercial business will have on the area.</p> <p>Submissions for the development commented that the development will create jobs and bring tourists to the area.</p>	<p>As discussed above the Burnett heads local area plan considered business uses that will not compete with the uses established within the existing Burnett Heads Town Centre. It is considered the proposed uses will add an offering to that already located within Burnett Heads and not take away business from existing uses. It is also recommended that a condition of approval be imposed to restrict the establishment of a supermarket within the site to protect any potential conflict with the Burnett heads town centre.</p> <p>Officers agree that the development will assist the economy of Burnett Heads and the greater Bundaberg Region</p>
<p><u>Sewer</u></p> <p>There is no sewer currently located in this area.</p>	<p>It will be a requirement of any approval that the applicant connect to Council's reticulated sewer network.</p>
<p><u>Density</u></p> <p>The proposed development is inconsistent with the existing land uses.</p>	<p>As discussed above, the proposed densities are considered to comply with densities anticipated under the planning scheme and other relevant assessment matters including the Burnett heads local area plan.</p>
<p><u>Sustainability</u></p> <p>Concerns that the proposed development does not incorporate sustainable design principles.</p>	<p>Officers have assessed the proposed building design against all criteria related to both Business uses and Residential uses which include requirements for sustainable building design and have concluded the proposed building comply with these requirements. Furthermore, the applicant is required to comply with requirements under the Queensland Development Code that relate to sustainability.</p>

Matters raised in any submissions	Description of how matters were dealt with in reaching the decision
<p><u>Open space and recreation areas</u></p> <p>Submissions for the development wanted to see foreshore walking areas and intermittent leisure areas</p>	<p>Conditions relating to the construction of a Promenade footpath located on the waters edge as well as other key pathways that will connect the Promenade to Harbour Esplanade are recommended to be imposed. Tenure by the way of public right of way easements are also recommended to be conditioned.</p> <p>As discussed above it will be conditioned that two areas of the site are dedicated to Council for open space that will create areas for the community to recreate.</p>

#### 4. REFERRALS

##### 4.1 Internal Referrals

Advice was received from the following internal departments:

Internal department	Referral Comments Received
Development Assessment - Engineering	6 November 2020
Water and Wastewater	26 February 2020
Strategic Planning	11 February 2019
Health	21 January 2020
Parks	11 November 2020

Any significant issues raised in the referrals have been included in section 3 of this report.

##### 4.2 Referral Agency/ies

Referral Agency responses were received from the following State agencies:

Agency	Concurrence/ Advice	Date Received	Conditions Yes/No
Queensland Treasury	Concurrence	4 November 2020	Yes

Any significant issues raised have been included in section 3 of this report.

#### 5. PUBLIC NOTIFICATION

Pursuant to the *Planning Act 2016*, this application was advertised for 15 business days from 20 March 2020 until 15 April 2020. The Applicant submitted documentation

on 16 April 2020 advising that public notification had been carried out in accordance with the *Planning Act 2016*. Council received 40 submissions in relation to this development application during this period with 32 being objections and 8 being in support of the proposed development. Any significant issues raised have been included in section 3 of this report.

## **6. DRAFT CONDITIONS**

Draft conditions were issued to the Applicant on 12 November 2020. The Applicant submitted representations to Council on 13 November 2020 relating to the following draft conditions:

- 4 – Approved Plans
- 13 – Use Specific
- 15 – Use specific
- 27 – Hours of operation
- 35 – Open Space
- 36 – Open Space
- 46 - Landscaping
- 50 – Roadworks, Access and Carparking
- 53 - Roadworks, Access and Carparking
- 57- Roadworks, Access and Carparking
- 58 – Pedestrian Connectivity
- Advice note 11 - Promenade Footpath Maintenance
- Property note

After a review of the submitted representations, the following conditions have been amended:

- 4 – Approved Plans- Amended
- 27 – Hours of operation - Amended
- 58 – Pedestrian Connectivity- Amended
- Property note - Amended

The following conditions have remain unchanged:

- 13 – Use Specific
- 15 – Use specific
- 35 – Open Space
- 36 – Open Space
- 46 - Landscaping
- 50 – Roadworks, Access and Carparking
- 53 - Roadworks, Access and Carparking

- 57- Roadworks, Access and Carparking
- Advice note 11 - Promenade Footpath Maintenance

## **7. REASONS FOR DECISION**

The reasons for this decision are:

- The development is consistent with the strategic framework of the Planning Scheme;
- The development complies with, or can be conditioned to comply with, the relevant applicable planning matters including the Planning Scheme and the Burnett Heads Local Area Plan;
- To the extent of any inconsistency with the Community Facilities zone, it is considered that the zoning of the land has been overtaken by events, including the earlier approval of a development application over the site for a marina and associated facilities.
- The development complies with, or can be conditioned to comply with, the High density residential zone code which is more consistent with the stated planning intent for the land and provides more relevant requirements for the type of development applied for;
- The proposed development is considered to be a complementary use to the existing uses approved on and adjacent to the site.
- The proposed development can be adequately serviced by an appropriate level of infrastructure.
- The proposed development protects state and federal matters of environmental significance through imposed conditions and the approved Marine Turtle Management Plan;
- The proposal does not compromise the function or viability of the existing Burnett Heads Town Centre;
- The proposed development is of high-quality design and incorporates substantial landscaping features to soften the built form;
- The development links the Burnett Town Centre to the greater Bundaberg Port Area;
- The development will provide a community benefit to both the Burnett Heads Township and the Bundaberg Region through the provision of additional recreation, open space and increased employment opportunities; and
- The community use located on the subject site (VMR) will be relocated in the local area and the approved use will not commence in the area of the current VMR building until such time this has occurred.



**Findings on material questions of fact**

- The subject site is located in the Community facilities zone of the Bundaberg Regional Council Planning Scheme 2015.
- The Community Facility located on the subject site is to be relocated to another appropriate site within the same community catchment so that there is no loss of this community service
- Other relevant planning matters pertaining to the subject site include the Burnett Heads Local Area Plan and Gladstone Port Corporation's strategic planning documents which have both undergone extensive community consultation and are generally accepted by the local community.
- A previous approval over the site was issued for Material Change of Use for General Business (318 wet berth Marina and associated facilities, café/restaurant, administration, marine based commercial/retail and office uses) and Caretakers dwelling and associated Prescribed Tidal Works under the Burnett Shire Planning Scheme 2006 and dredging for the approved marina berths have commenced.
- The subject site locates between the Bundaberg Port and the Burnett Heads Town Centre
- Bundaberg Regional Council, as the statutory Assessment Manager, undertook assessment of the development application under the benchmarks of the Local categorising instrument.

**Evidence or other material on which the findings were based**

- The development application;
- The Bundaberg Regional Council Planning Scheme 2015;
- The *Planning Act 2016*;
- The *Planning Regulation 2017*; and
- State Planning Policy 2017.
- Burnett Heads Town Centre Local Plan – September 2017
- Gladstone Ports Corporation Master Plan for the Burnett Heads Boat Harbour Precinct
- Port of Bundaberg Landuse Plan 2009
- Draft Port of Bundaberg Land Use Plan 2020
- Draft - Gladstone Ports Corporation Vision Precinct outlook

**Communication Strategy:**

Communications Team consulted. A Communication Strategy is:

- Not required
- Required

**Attachments:**

- ↓1 Locality Plan
- ↓2 Site Plan
- ↓3 Approval Plans
- ↓4 Approval Plans - Turtle Management Plan
- ↓5 Approval Plans - Open Space Plan
- ↓6 Approval Plans - Condition 16 17 Lonjac
- ↓7 Approval Plans - Condition 19 RMA Traffic Impact Assessment
- ↓8 Approval Plans - Condition 32 RMA Stormwater Management Plan
- ↓9 Referral Agency Response
- ↓10 Applicant's Draft Condition Representations

**Recommendation:**

**That the Development Application 522.2018.89.1 detailed below be decided as follows:**

**1. Location details**

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Street address: 67 Harbour Esplanade, Burnett Heads  
 Real property description: Lot 1 on SP157913  
 Local government area: Bundaberg Regional Council

**2. Details of the proposed development**

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Development Permit for Material Change of Use (Mixed Use Development (Burnett Harbour Marina Village) - Office, Shop, Food and Drink Outlet, Indoor Sport and Recreation, Short Term Accommodation and Multiple Dwellings)

**3. Decision**

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Decision details: Approved in full with conditions. These conditions are set out in Schedule 1 and are clearly identified to indicate whether the assessment manager or a concurrence agency imposed them.

The following approvals are given:

	<b>Planning Regulation 2017 reference</b>	<b>Development Permit</b>	<b>Preliminary Approval</b>
Development assessable under the planning scheme, a temporary local planning instrument, a master plan or a preliminary approval which includes a variation approval		<input type="checkbox"/>	<input type="checkbox"/>

**4. Approved plans and specifications**

Copies of the following plans, specifications and/or drawings are enclosed.

<b>Drawing/report title</b>	<b>Prepared by</b>	<b>Date</b>	<b>Reference no.</b>	<b>Version / issue</b>
<b>Aspect of development: All</b>				
Overall Master Plan	BDA	02/10/2019	4.2 - 387700	A
Master plan	BDA	02/10/2019	4.3 - 387700	A
Concept Sketches (1)	BDA	23/10/2018	4.4 - 387700	H
Concept Sketches (2)	BDA	23/10/2018	4.5 - 387700	H
Staging Plan	BDA	02/10/2019	4.6 - 387700	A
Boundary Setback Plan	BDA	02/10/2019	4.7 - 387700	A
Building typology/ Use diagram	BDA	02/10/2019	4.8 - 387700	A
Building Height Diagram	BDA	02/10/2019	4.9 - 387700	A
Waste Typical Basement Plan	BDA	23/10/2018	4.10 - 387700	H
Waste Management Plan	BDA	02/10/2019	4.11 - 387700	A
Visitor Parking	BDA	02/10/2019	4.14 - 387700	A
Traffic Network	BDA	23/10/2018	4.15 - 387700	H
Pedestrian Network	BDA	02/10/2019	4.16 - 387700	A
Streetscapes	BDA	23/10/2018	4.17 - 387700	H
Site section A & B	BDA	23/10/2018	4.18 - 387700	H
Site section C & D	BDA	23/10/2018	4.19 - 387700	H
Site Section E	BDA	23/10/2018	4.20 - 387700	H

Perspective View 1	BDA	23/10/2018	6.2 - 387700	H
Perspective View 2	BDA	23/10/2018	6.3 - 387700	H
Perspective View 3	BDA	23/10/2018	6.4 - 387700	H
Perspective View 4	BDA	23/10/2018	6.5 - 387700	H
Perspective View 5	BDA	23/10/2018	6.6 - 387700	H
Perspective View 6	BDA	23/10/2018	6.7 - 387700	H
Perspective View 7	BDA	23/10/2018	6.8 - 387700	H
Perspective View 8	BDA	23/10/2018	6.9 - 387700	H
Perspective View 9	BDA	23/10/2018	6.10 - 387700	H
Perspective View 10	BDA	23/10/2018	6.11 - 387700	H
Mixed Use Building – Colours and Materials	BDA	23/10/2018	6.12 - 387700	H
Mixed Use Building - Colours and Materials	BDA	23/10/2018	6.13 - 387700	H
Apartment Building – Colours and Materials	BDA	23/10/2018	6.14 - 387700	H
Mixed Use Buildings A & B – Ground Floor Plan	BDA	23/10/2018	7.1 - 387700	H
Mixed Use Building A & B – Level 1 Floor Plan	BDA	23/10/2018	7.2 - 387700	H
Mixed Use Building A & B – Level 2 Floor Plan	BDA	23/10/2018	7.3 - 387700	H
Mixed Use Building A & B – Roof Plan	BDA	23/10/2018	7.4 - 387700	H
Mixed Use Building A & B – Elevations (1)	BDA	02/10/2019	7.5 - 387700	A
Mixed Use Building A & B – Elevations (2)	BDA	02/10/2019	7.6 - 387700	A
Mixed Use Building A & B – Sections	BDA	23/10/2018	7.7 - 387700	H
Retail Building C – Ground Floor Plan	BDA	23/10/2018	7.8 - 387700	H
Retail Building C – First Floor Plan	BDA	23/10/2018	7.9 - 387700	H
Retail Building C – Roof Plan	BDA	23/10/2018	7.10 - 387700	H

Retail Building Elevations (1)	C –	BDA	23/10/2018	7.11 - 387700	H
Retail Building Elevations (2)	C –	BDA	23/10/2018	7.12 - 387700	H
Retail Building Elevations (3)	C –	BDA	23/10/2018	7.13 - 387700	H
Retail Building C – Sections		BDA	23/10/2018	7.14 - 387700	H
Apartment Building Basement Plan	D –	BDA	23/10/2018	7.15 - 387700	H
Apartment Building Ground Floor Plan	D –	BDA	23/10/2018	7.16 - 387700	H
Apartment Building Level 1 Floor Plan	D –	BDA	23/10/2018	7.17- 387700	H
Apartment Building Level 2 Floor Plan	D –	BDA	23/10/2018	7.18 - 387700	H
Apartment Building Level 3 Floor Plan	D –	BDA	23/10/2018	7.19 - 387700	H
Apartment Building Level 4 Floor Plan	D –	BDA	23/10/2018	7.20 - 387700	H
Apartment Building Roof Plan	D –	BDA	23/10/2018	7.21- 387700	H
Apartment Building Elevation (1)	D –	BDA	23/10/2018	7.22 - 387700	H
Apartment Building Elevation (2)	D –	BDA	23/10/2018	7.23 - 387700	H
Apartment Building Elevation (3)	D –	BDA	23/10/2018	7.24 - 387700	H
Apartment Building Elevation (4)	D –	BDA	23/10/2018	7.25 - 387700	H
Apartment Building Section	D –	BDA	23/10/2018	7.26 - 387700	H
Apartment Building Basement Plan	E –	BDA	23/10/2018	7.27 - 387700	H
Apartment Building Ground Floor Plan	E –	BDA	23/10/2018	7.28 - 387700	H
Apartment Building Level 1 Floor Plan	E –	BDA	23/10/2018	7.29 - 387700	H
Apartment Building Level 2 Floor Plan	E –	BDA	23/10/2018	7.30 - 387700	H

Apartment Building E – Level 3 Floor Plan	BDA	23/10/2018	7.31 - 387700	H
Apartment Building E – Level 4 Floor Plan	BDA	23/10/2018	7.32 - 387700	H
Apartment Building E – Roof Plan	BDA	23/10/2018	7.33 - 387700	H
Apartment Building E – Elevation (1)	BDA	23/10/2018	7.34 - 387700	H
Apartment Building E – Elevation (2)	BDA	23/10/2018	7.35 - 387700	H
Apartment Building E – Elevation (3)	BDA	23/10/2018	7.36 - 387700	H
Apartment Building E – Elevation (4)	BDA	23/10/2018	7.37 - 387700	H
Apartment Building E – Section	BDA	23/10/2018	7.38 - 387700	H
Apartment Building F – Basement Plan	BDA	23/10/2018	7.39 - 387700	H
Apartment Building F – Ground Floor Plan	BDA	23/10/2018	7.40 - 387700	H
Apartment Building F – Level 1 Floor Plan	BDA	23/10/2018	7.41 - 387700	H
Apartment Building F – Level 2 Floor Plan	BDA	23/10/2018	7.42 - 387700	H
Apartment Building F – Level 3 Floor Plan	BDA	23/10/2018	7.43 - 387700	H
Apartment Building F – Level 4 Floor Plan	BDA	23/10/2018	7.44 - 387700	H
Apartment Building F – Roof Plan	BDA	23/10/2018	7.45 - 387700	H
Apartment Building F – Elevation (1)	BDA	23/10/2018	7.46 - 387700	H
Apartment Building F – Elevation (2)	BDA	23/10/2018	7.47 - 387700	H
Apartment Building F – Elevation (3)	BDA	23/10/2018	7.48 - 387700	H
Apartment Building F – Elevation (4)	BDA	23/10/2018	7.49 - 387700	H
Apartment Building F – Section	BDA	23/10/2018	7.50 - 387700	H

Typical Apartment Plans – Type A & B	BDA	23/10/2018	7.51 - 387700	H
Typical Apartment Plans – Type C & C1	BDA	23/10/2018	7.52- 387700	H
Typical Apartment Plans – Type C2, C3 & D	BDA	23/10/2018	7.53- 387700	H
Typical Apartment Plans – Type E	BDA	23/10/2018	7.54 - 387700	H
Typical Apartment Plans – Type E1	BDA	23/10/2018	7.55 - 387700	H
Typical Apartment Plans – Type F	BDA	23/10/2018	7.56 - 387700	H
Typical Apartment Plans – Type G & H	BDA	23/10/2018	7.57 - 387700	H
Typical Apartment Plans – Type I & D1	BDA	23/10/2018	7.58 - 387700	H
Typical Short Term Accommodation – Type A and B	BDA	23/10/2018	7.59 - 387700	H
Burnett Harbour Marina Village: Marine Turtle Management Plan	Pendoley Environmental Pty Ltd	21/2/2020	J71001	0
Open Space Plan	Bundaberg Regional Council	11/11/2020	1	A
Traffic Impact Assessment	RMA	14/01/2020	13100	0
Rock Revetment Wall Inspection Report	Lonjac	November 2019	191003 R03	Final
Stormwater Management Plan	RMA	14/01/2020	13100	0

## 5. Conditions

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This approval is subject to the conditions in Schedule 1. These conditions are clearly identified to indicate whether the assessment manager or concurrence agency imposed them.

## 6. Further development permits

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Please be advised that the following development permits are required to be obtained before the development can be carried out:

- All Building Work
- All Plumbing and Drainage Work
- All Operational Work

## 7. Properly made submissions

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Properly made submissions were received from the following principal submitters:

Name of principal submitter	Residential or Business Address	Electronic Address
Andrew Kulibab	8 Chantilly Street Burnett Heads	andybab@hotmail.com
Mark Simpson	22 Shelley Street BURNETT HEADS	masimp@protonmail.com
Dale Sumner	83 Esplanade BARGARA	drkjsun@outlook.com
Margaret Faulkner	14 Harbour Esplanade BURNETT HEADS	faulkner@moranh.net.au
Michael Moller	17 Cypress Street WOODGATE BEACH	mmoller57@gmail.com
Wide Bay Burnett Environment Council Inc (WBEC) C/- Mike Moller	PO Box 97 MARYBOROUGH	manager@wbec.org.au
Noela Shortman	54 Garson Drive BARGARA	noelashortman@hotmail.com
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Peter Shaw	5/72 Quay Street BUNDABERG WEST	thorold598@gmail.com
Rebecca Coulombe	111 Sea Esplanade BURNETT HEADS	rebecca.coulombe14@gmail.com

## 8. Referral agencies for the application

The referral agencies for this application are:

For an application involving	Name of referral agency	Advice agency or concurrence agency	Address
<p><b>Tidal works or work in a coastal management district</b></p> <p>Schedule 10, Part 17, Division 3, Table 6, Item 1</p> <p>Development application for a material change of use that is assessable development under a local categorising instrument, if carrying out the change of use will involve—</p> <p>(a) operational work that—</p> <p>(i) is carried out completely or partly in an erosion prone area in a coastal management district; and</p> <p>(ii) is extracting, excavating or filling 1,000m<sup>3</sup> or more, or clearing native vegetation from an area of 1,000m<sup>2</sup> or more; or</p> <p>(b) building work, carried out completely or partly in an erosion prone area in a coastal management district, if the building work involves increasing the gross floor area on the premises by 1,000m<sup>2</sup> or more</p>	Queensland Treasury	Concurrence Agency	<p>State Assessment and Referral Agency (SARA)</p> <p>E: WBBSARA@dilgp.qld.gov.au</p> <p>P: PO Box 979 Bundaberg Qld 4670</p>

## 9. Currency period for the approval

This development approval will lapse at the end of the period set out in section 85 of *Planning Act 2016*.

## 10. Agreements under Section 49(4)(b) or 66(2)(b) or (c) of the *Planning Act 2016*

There are no agreements about these matters.

## 11. Conditions about infrastructure

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The following conditions about infrastructure have been imposed under Chapter 4 of the *Planning Act 2016*:

Condition/s	Provision under which the condition was imposed
48, 49, 52, 53, 57, 58, 60, 61, 62, 65, 66 & 67	Section 145 – Non-trunk Infrastructure
35, 35, 50 & 51	Section 128 – Trunk Infrastructure

## 12. Rights of appeal

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The rights of applicants to appeal to a tribunal or the Planning and Environment Court against decisions about a development application are set out in Chapter 6, Part 1 of the *Planning Act 2016*. For particular applications, there may also be a right to make an application for a declaration by a tribunal (see Chapter 6, Part 2 of the *Planning Act 2016*).

### Appeal by an applicant

An applicant for a development application may appeal to the Planning and Environment Court against the following:

- the refusal of all or part of the development application
- a provision of the development approval
- the decision to give a preliminary approval when a development permit was applied for
- a deemed refusal of the development application.

An applicant may also have a right to appeal to the Development tribunal. For more information, see Schedule 1 of the *Planning Act 2016*.

### Appeal by a submitter

A submitter for a development application may appeal to the Planning and Environment Court against:

- any part of the development application for the development approval that required impact assessment
- a variation request.

The timeframes for starting an appeal in the Planning and Environment Court are set out in Section 229 of the *Planning Act 2016*.

Schedule 2 is an extract from the *Planning Act 2016* that sets down the applicant's appeal rights and the appeal rights of a submitter.

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## SCHEDULE 1 CONDITIONS AND ADVICES IMPOSED BY THE ASSESSMENT MANAGER

### PART 1A – CONDITIONS IMPOSED BY THE ASSESSMENT MANAGER

NO.	CONDITION	TIMING
<b>GENERAL</b>		
1.	Comply with all conditions of this development approval and maintain compliance whilst the use continues.	At all times unless otherwise stated
2.	Where there is any conflict between the conditions of this Development approval and details shown on the Approved plans, the conditions prevail.	At all times
3.	The full cost of all work and any other requirements associated with this development must be met by the developer, unless specified in a particular condition or Infrastructure agreement.	At all times
<b>APPROVED PLANS</b>		
4.	<p>Submit to and have approved by the Assessment Manager amended plans and/or documents which incorporate the following:</p> <ul style="list-style-type: none"> <li>a. Plans to be amended to provide for a promenade footpath area landward of the seawall within: <ul style="list-style-type: none"> <li>i. a minimum 10m wide corridor clear of lockable structures (e.g. Buildings, fences etc) where adjacent to Building D, E and F; and</li> <li>ii. a minimum 5 metre wide corridor elsewhere.</li> </ul> </li> <li>b. Plans be amended to remove access to Lot 4 on SP190481 (public boat ramp)</li> </ul> <p>Once approved, the amended plans will form part of the Approved plans.</p>	Prior to the submission of an Operational work or Building Work application, or commencement of work, whichever comes first
<b>DEVELOPMENT IN STAGES</b>		
5.	Development is to be carried out in accordance with the stages identified on the Approved plans. Stages do not need to be carried out sequentially, however all relevant infrastructure is to be provided for each stage prior to the commencement of the use for that stage.	As indicated
6.	Buildings D, E and F must not be constructed until a new Volunteer Marine Rescue (VMR) facility servicing the same catchment commences use and all buildings forming part of the existing facility are demolished.	Prior to the commencement of the use for building D, E and F.

<b>USE SPECIFIC</b>		
7.	The street number of the site must be clearly displayed and visible from the primary street frontage.	Prior to the commencement of the use and then to be maintained
8.	Where habitable room windows look directly at habitable room windows in an adjacent dwelling or rooming unit within 3m at the ground floor or 9m at levels above the ground floor. Privacy is protected by: <ul style="list-style-type: none"> <li>a. Window sill heights must be a minimum of 1.5m above floor level</li> <li>b. fixed opaque glazing must be applied to any part of a window below 1.5m above floor level</li> <li>c. fixed external screens</li> </ul>	Prior to the commencement of the use and then to be maintained
9.	Provide one (1) letter box for each dwelling unit plus one (1) letter box for the use of the body corporate or management. All letter boxes must form an integral part to the building / landscape design and must be located on the primary road frontage.	Prior to the commencement of the use and then to be maintained
10.	Communal recreation area/s must be provided as generally shown on the approved plans and are available to residents, guests and their visitors at all times excluding any limitations on hours of operation Note: these facilities are not approved for use by the general public.	At all times
11.	The main entrance to the building must be easily identifiable, and directly accessible from the primary street frontage.	Prior to the commencement of the use and then to be maintained
12.	Provide informational and directional signage where necessary to direct cyclists to bicycle parking spaces and advise the public of their presence.	Prior to the commencement of the use and then to be maintained
13.	Access after hours to loading docks, storage areas, and any basement carparks must be restricted by a security gate, lockable doors, and/or other suitably appropriate means. The basement carparks for the commercial uses must be kept closed and locked at all times while these uses are not operating.	At all times
14.	Ensure the development provides: <ul style="list-style-type: none"> <li>a. entry areas for the residential users of the development. These areas are provided separately from entrances for the non-residential users of the development;</li> </ul>	Prior to the commencement of the use and then to be maintained

	b. clearly marked, safe and secure parking areas for the residential users of the development. These areas are provided separately from parking areas for non-residential users of the development; and security measures such that non-residential users of the development do not have access to areas that are intended for the exclusive use of residents and their visitors to the residential component of the development.	
15.	A supermarket must not establish in any of the approved commercial tenancies.	At all times
<b>BUILDING HEIGHT</b>		
16.	The maximum height of the development must not exceed 5 storeys above ground level in accordance with the approved plans.	At all times
<b>COMMUNITY MANAGEMENT STATEMENT</b>		
17.	Any proposed Community Management Statement required for the development pursuant to the <i>Body Corporate and Community Management Act 1997</i> must be submitted to council for approval at the same time as submission of the plan of subdivision and must accord with the conditions of this Decision Notice.	Prior to the endorsement of Plan of Survey and then to be maintained
<b>BUILDING APPEARANCE</b>		
18.	All air conditioning units or other mechanical equipment must be visually integrated into the design and finish of the building, or otherwise fully enclosed or screened such that they are not visible from the street frontages nor adjoining properties.	Prior to the commencement of the use and then to be maintained
19.	All deck and balcony areas above ground floor must not be enclosed by permanent fixtures such as shutters, louvers, glass panelling or the like, except where required to satisfy any privacy or turtle management condition of this decision notice.	Prior to the commencement of the use and then to be maintained
20.	Building materials and hard surfaces used in landscape or streetscape works must not be highly reflective, or likely to create glare, slippery or otherwise hazardous conditions.	Prior to the commencement of the use and then to be maintained
21.	Unless otherwise approved in writing by the Assessment Manager, the colour palette, materials and finishes used for all buildings must be in accordance with the approved plans with and in particular plans number 6.12 <i>Mixed use Building Colours and Materials</i> , 6.13 <i>Mixed use Building Colours and Materials</i> and 6.14 <i>Apartment Building Colours and Materials</i> .	Prior to the commencement of the use and then to be maintained

<b>CLOTHES DRYING FACILITIES</b>		
22.	Each dwelling unit must be provided with a non-mechanical (natural) clothes drying area, or alternatively, each dwelling unit must have access to a communal outdoor clothes drying area that is fitted with robust clothes lines. Where individual clothes drying areas are provided on balconies, they are to be concealed or screened from public view.	Prior to the commencement of the use and then to be maintained
<b>HOURS OF OPERATION</b>		
23.	The operating hours of the yacht club must be restricted to 8:00am to 9:00pm Sunday, 8:00am to 10:00pm Monday to Thursday, 8:00am to midnight Friday and Saturday.	At all times
24.	The operating hours of Cafes/Restaurants must be restricted to 6:00am to 11:00pm.	At all times
25.	No amplified music from the yacht club, cafés or restaurants is to be discernible immediately outside of a sensitive receptor (including short term accommodation and multiple dwelling units): <ul style="list-style-type: none"> <li>• After 5:00pm Sunday.</li> <li>• After 8:00pm Monday to Thursday.</li> </ul> After 10:00pm Friday and Saturday.	At all times
26.	Any communal pools and recreation facilities associated with the short term accommodation/ multiple dwelling units must be closed from the hours of 10pm- 6am daily.	At all times
27.	Deliveries, loading/unloading activities, and refuse collection must be undertaken between the hours of 6.30am to 6.30pm Monday to Saturday; 9am to 5pm Sunday.	At all times
<b>BUILDING WORK ASSOCIATED WITH THE MCU</b>		
28.	Demolish or relocate all buildings/structures on the site in accordance with the Approved plans, including the removal of all existing concrete slabs, foundations, and the disconnection of services. Where necessary work must be in accordance with a valid approval from the service provider or Building development approval.	Prior to the commencement of use
<b>WASTE MANAGEMENT</b>		
29.	Maintain and operate an adequate waste disposal service, including the maintenance of refuse bins and associated storage areas so as not to cause an environmental nuisance.	At all times
30.	Prepare and submit for approval to the Assessment Manager a Waste management plan for the construction phase of development prior to approval of the first operational works application.	

	The Waste management plan will specifically address the measures proposed to ensure no escape of rubbish from the site to marine waters including Burnett Heads Boat Harbour.	
31.	<p>Prepare and submit for approval to the Assessment Manager a Waste Management Plan in accordance with the applicable Planning scheme codes and the Planning scheme policy for waste management. The plan is to include, but not be limited to, the following:</p> <ol style="list-style-type: none"> <li>a. the waste management process, including the type and size of refuse bins to be utilised (e.g. 240 litre mobile garbage bins, 1m<sup>3</sup> bulk bins) for general waste and recycling</li> <li>b. the location of bin storage areas and collection points</li> <li>c. how waste collection vehicles will be able to safely and effectively access bins</li> <li>d. if bins are to be collected from the kerbside, demonstrate that this location has the capacity to adequately contain the maximum number of bins to be collected on collection day</li> <li>e. how it is proposed to maintain and operate an adequate waste disposal service, including the maintenance of refuse bins and associated storage areas so as not to cause an environmental nuisance.</li> <li>f. specifically address the measures proposed to ensure no escape of rubbish from the site to Burnett Heads Boat Harbour.</li> </ol> <p>Not cause nuisance.</p>	Prior to the commencement of the use and then to be maintained
32.	Development must be carried out in accordance with the approved Waste Management Plan.	At all times
33.	<p>Provide an impervious bin storage area (bin enclosure) for the storage of refuse bins in accordance with the following:</p> <ol style="list-style-type: none"> <li>a. designed so as to prevent the release of contaminants into the environment</li> <li>b. sufficiently sized to accommodate all refuse bins required by the Assessment Manager for the scale of the development</li> <li>c. screened from the road frontage or other public space, and adjoin properties by landscaping or constructed screening</li> <li>d. a suitable hose cock (with backflow prevention) and hoses must be provided at the bin storage area, and wash down to be drained to the sewer and fitted with an approved stormwater diversion valve arrangement</li> <li>e. must be maintained in a clean and sanitary manner</li> </ol>	Prior to the commencement of the use and then to be maintained



<b>ECOLOGY – MARINE TURTLES</b>		
34.	Mitigate the effects of lighting on turtles by doing all things necessary to comply with the Recommended Conditions of Development Approval for Marine Turtle Management contained within appendix C of the approved <i>Marine Turtle Management Plan</i> J71001 dated 20 February 2020.	Prior to the commencement of the use and then to be maintained
<b>OPEN SPACE</b>		
35.	To ensure that sufficient open space is available for use by residents and users of the approved development dedicate in fee simple to the Bundaberg Regional Council for park purposes the area identified on approved plan titled " <i>Open Space Plan</i> ". Prior to the dedication of this park submit to Council a condition report for the existing toilet block and rectify any identified defects to the satisfaction of Council	Prior to the commencement of the first use
36.	Establish a landscape buffer in accordance with condition 46 prior to the park being dedicated to Council.	Prior to the commencement of the first use
<b>OPERATIONAL WORK ASSOCIATED WITH THE MCU</b>		
37.	<p>Ensure all assessable external operational work is carried out in accordance with a development permit for operational work.</p> <p>Ensure all internal operational work that is Accepted development complies with the nominated assessment benchmarks or a Development application for Operational work is submitted to and approved by Council.</p> <p><b>Note:</b> <i>Where Accepted development does not comply with a nominated requirement for accepted development, a Development application for Operational work must be submitted to Council.</i></p>	Prior to the commencement of work
38.	<p>Provide certification from a Registered Professional Engineer of Queensland (RPEQ) that any operational work that is Accepted development has been designed and constructed in accordance with the conditions of this development approval and any other relevant approval issued by Council.</p> <p><b>Note:</b> <i>Council does not require the submission of an operational works development application for work that is nominated as Accepted development where the works comply with the nominated requirements for Accepted development and are certified by a RPEQ.</i></p>	Prior to the commencement of the use

<b>CONSTRUCTION MANAGEMENT</b>		
39.	Unless otherwise approved in writing by the Assessment Manager, ensure no audible noise from work is made: <ol style="list-style-type: none"> <li>a. on a business day or Saturday, before 6:30am or after 6:30pm</li> <li>b. on any other day, at any time.</li> </ol>	At all times during construction
40.	Submit for approval a Construction Management Plan in accordance with section SC6.3.13 of the Planning Scheme Policy for development Works. The plan must also specifically include: <ol style="list-style-type: none"> <li>a. Construction traffic plan requiring construction vehicles to utilise Bonaventure Drive only for site access – ie construction traffic must not use Harbour Esplanade to the east of the site;</li> <li>b. Erosion and sediment control measures;</li> <li>c. Litter, waste and spill management measures;</li> <li>d. Management principles for rock encounter;</li> <li>e. Management of works around a marine environment;</li> <li>f. Dust management; and</li> <li>g. Measures to control dust and noise from any rock breaking that may be required.</li> </ol> <p><b>Note:</b> <i>Submission of the Construction Management Plan must form part of an Operational works application for the first stage of the development.</i></p>	As indicated
41.	Carry out all works on the site in accordance with the approved Construction Management Plan	At all times during construction
42.	Unless otherwise approved by the Assessment Manager, no rock breaking is to be undertaken outside of trenches. No rock crushing is to be undertaken.	At all times during construction
<b>CONTAMINATED LAND</b>		
43.	Provide evidence to the satisfaction of the Assessment Manager that all necessary permits for the relevant authorities have been obtained and any required remediation works undertaken to address any potential contaminated land conflicts such that the premises are suitable for the proposed use.	Prior to the commencement of the use

<b>EARTHWORKS</b>		
44.	<p>Carry out all earthworks in accordance with the approved plans, the applicable Planning scheme codes, and the Planning scheme policy for development works.</p> <p><b>Note:</b>  <i>Earthworks that comply with the applicable requirements for accepted development do not require the submission of an Operational works development application. Where the applicable requirements for accepted development are not met, an Operational works development application must be submitted to Assessment Manager.</i></p>	At all times
45.	<p>Provide to the Assessment Manager certification from a Registered Professional Engineer of Queensland (RPEQ) that the Earthworks have been designed and constructed in accordance with the conditions of this Development approval and any other relevant approval issued by the Assessment Manager.</p>	Prior to the commencement of the use
<b>LANDSCAPING</b>		
46.	<p>Prepare and submit for approval to the Assessment Manager a landscape plan generally in accordance with the details provided in accordance with FORM landscape design intent 190809 dated 29 November 2019. The plan must be prepared in accordance with the applicable Planning scheme codes, the Planning scheme policy for development works, and the conditions of this approval. The plan is to include, but not be limited to the following:</p> <ol style="list-style-type: none"> <li>a. the area set aside for landscaping</li> <li>b. location and name of existing trees</li> <li>c. a plan and schedule of all species which identifies:               <ol style="list-style-type: none"> <li>i. the location and sizes at planting and at maturity</li> <li>ii. the botanical and common names</li> <li>iii. the location of all areas to be covered by turf or other surface materials including pavement</li> </ol> </li> <li>d. measures to ensure that the landscaping will be retained and managed to allow growth to maturity</li> <li>e. details of any landscape structures, including entrance statements</li> <li>f. details of cutting and filling and all retaining structures, fences and associated finishes</li> <li>g. contours or spot levels if appropriate</li> <li>h. fences size and materials</li> <li>i. inclusion of a controlled underground or drip irrigation system. Any such system is to be fitted with an approved testable backflow prevention device</li> </ol>	Prior to the site work commencing and at all times during construction and then to be maintained

	<ul style="list-style-type: none"> <li>j. location of any overhead or underground services that traverse the site e.g. drainage, sewerage, electricity</li> <li>k. property boundary garden/landscape bed edge walls to be provided with sleeper or equivalent retaining walls to contain the garden material within the site.</li> <li>l. Landscaping in front of at grade carparks along Harbour Esplanade to be maximised where space permits</li> <li>m. provide shade trees in car parking areas at a minimum ratio of one (1) tree for every six (6) parking spaces</li> <li>n. vegetated screening of any electrical transformers, bin storage areas and the like from adjacent public spaces</li> <li>o. Any solid screen fence or wall greater than 1.2m in height provided along a street frontage is set behind landscaping strips or articulated by recesses to allow for dense vegetative screening.</li> <li>p. the provision of street furniture within the esplanade promenade footpath area.</li> <li>q. Provision of street trees along Harbour Esplanade as shown on the approved plans.</li> <li>r. Details regarding the interface of the promenade footpath, the Burnett Heads Boat Harbour and the development including provision of street furniture.</li> <li>s. Establish a landscape buffer generally as shown on the approved open space plan this buffer is to be planted in accordance with the Sea turtle sensitive areas overlay code</li> </ul> <p><b>Note:</b> <i>Submission of the landscape plan must form part of an Operational works application.</i></p>	
47.	Provide and maintain landscaping works in accordance with the approved Landscaping plan.	Prior to commencement of the first use and then at all times.
<b>REVETMENT WALL</b>		
48.	<p>Re-design and construct the rock revetment wall between chainages 0 to 68 in accordance with Lonjac's Inspection Report 20086(B) dated 15 November 2019.</p> <p><b>Note:</b> <i>Submission of the detail design must form part of an Operational works application either prior to or accompanying the first stage of the development.</i></p>	As indicated

49.	<p>Remediate the rock revetment wall between chainages 68 to 280 in accordance with Lonjac's Inspection Report 20086(B) dated 15 November 2019.</p> <p>The detailed design must incorporate the considerations outlined in the report (RRWC-01 through to RRWC-08).</p> <p><b>Note:</b> <i>Submission of the detail design must form part of an Operational works application either prior to or accompanying the first stage of the development.</i></p>	As indicated
<b>ROADWORKS, ACCESS, AND CAR PARKING</b>		
50.	<p>Upgrade Harbour Esplanade from the Harbour Esplanade/Donaldson Street intersection (approximate chainage 350) to the Harbour Esplanade/boat ramp access intersection (approximate chainage 750) to trunk collector standard in accordance with Council's standard drawing R2002.</p> <p><b>Note:</b> <i>Submission of the detail design must form part of an Operational works application.</i></p>	Prior to the commencement of use
51.	Provide a sealed bus bay generally as shown in the RMA Traffic Impact Assessment 13101 dated 14 January 2020	As indicated
52.	<p>Provide access, manoeuvring and servicing (waste management) areas in accordance with RMA traffic impact assessment 13101 dated 14 January 2020 (section 7).</p> <p><b>Note:</b> <i>Submission of the detail design must form part of an Operational works application.</i></p>	Prior to the commencement of use and then to be maintained
53.	<p>Car parking, access, and manoeuvring areas must:</p> <ol style="list-style-type: none"> <li>a. provide a minimum of 379 parking spaces;</li> <li>b. provide a minimum of 63 bicycle spaces;</li> <li>c. be designed and constructed in accordance with AS2890 Parking facilities – off-street car parking;</li> <li>d. provide parking spaces for people with a disability in accordance with the Building Code of Australia and AS2890.6 Off-street parking for people with disabilities;</li> <li>e. provide on-site loading, unloading, and manoeuvring for all necessary service vehicles;</li> <li>f. allow all design vehicles to enter and exit the site in a forward gear;</li> <li>g. be constructed and sealed with asphalt;</li> <li>h. be signed and delineated in accordance with the Queensland manual of uniform traffic control devices;</li> </ol>	Prior to the commencement of use and then to be maintained

	<p>i. allow for the provision of fill and/or boundary retaining walls and the containment and management of site stormwater drainage;</p> <p>j. be drained to a legal point of discharge;</p> <p>k. be available free of charge to staff and customers during operating hours; and</p> <p>l. Provide shade trees in car parking areas at a minimum ratio of one (1) tree for every six (6) parking spaces.</p> <p><b>Note:</b> <i>Submission of the detail design must form part of an Operational works application.</i></p>	
54.	Access to the development from the existing boat ramp driveway on Lot 4 on SP190481 is prohibited unless otherwise approved by the Assessment Manager.	At all times
55.	Submit to the assessment manager for approval, an amended Traffic Impact Assessment (TIA) including requirements of condition 54 and any changes to access that are necessary as a result.	As indicated
	<p><b>Note:</b> <i>Submission of the TIA may be submitted prior to or accompanying the Operational works application for the first stage of the development.</i></p>	
56.	Submit an amended car park plan which includes the provision for passenger transport facilities including set down/pick up areas.	Prior to the commencement of use and then to be maintained
	<p><b>Note:</b> <i>Submission of the amended plans and detail design for taxi provisions must form part of an Operational works application.</i></p>	
57.	Ensure all existing and proposed utility services and connections (e.g. electricity, telecommunications, water, and sewerage) are wholly located within the site or within a suitable easement to the satisfaction of the Assessment Manager.	Prior to the commencement of the use
<b>PEDESTRIAN CONNECTIVITY</b>		
58.	Provide the proposed promenade footpath landward of the seawall as illustrated on BDA's Pedestrian Network drawing 4.16, Issue A, dated 2 October 2019. The promenade must be constructed of concrete and be located within a corridor as required by Condition 4(a). All other footpaths are to be provided as indicated on the approved plans and must be kept clear of lockable structures.	Prior to the commencement of use and then to be maintained

	<p><b>Note:</b>  <i>Submission of the detail design must form part of an Operational works application.</i></p>	
59.	<p>Submit a safety assessment for the pedestrian connectivity shown on BDA's Pedestrian Network drawing 4.16, Issue A, dated 2 October 2019, including the main boardwalk. The safety assessment must be in accordance with the Austroads Guide to Road Design - Part 6A - Implementing Road Safety Audits (2019).</p> <p><b>Note:</b>  <i>Submission of the safety assessment and detail design of the pedestrian connectivity must form part of an Operational works application.</i></p>	As indicated
<b>SEWERAGE</b>		
60.	<p>Connect sanitary drainage for the development to Council's sewerage lift station SE.2008 (fronting lot 1 on SP157913 near Moss Street).</p> <p><b>Note:</b>  <i>Sanitary drainage infrastructure must be designed by an appropriately qualified hydraulic consultant to assess the suitability of the sanitary drainage system to cater for the proposed development.</i></p>	Prior to the commencement of the use and then to be maintained
61.	<p>Undertake all necessary upgrades of Council's sewerage infrastructure to ensure other users are not adversely affected by the increased demand on the sewerage system.</p> <p>Prepare and submit for approval to the Assessment Manager detail design of all necessary upgrades of Council's sewerage infrastructure. The design is to:</p> <ol style="list-style-type: none"> <li>a. ensure other users are not adversely affected by the increased demand on the sewage network; and</li> <li>b. be in accordance with the applicable Planning scheme codes and the Planning scheme policy for development works.</li> </ol> <p>All work to Council's sewerage infrastructure must be carried out in accordance with an Operational works approval.</p> <p><b>Note:</b>  <i>Submission of the detail design must form part of an Operational works application.</i></p>	Prior to the commencement of the use and then to be maintained
<b>STORMWATER</b>		
62.	<p>Provide stormwater drainage in accordance with RMA Stormwater Management Plan 13101 dated 14 January 2020.</p> <p><b>Note:</b></p>	Prior to the commencement of the use and

	<i>Submission of the detail design must form part of an Operational works application.</i>	then to be maintained
<b>STORM SURGE</b>		
63.	Ensure the development maintains a minimum finished habitable floor level of 3.9m AHD.	At all times
64.	Submit a Flood Emergency Management Plan to the assessment manager for approval. The plan must be certified by a Registered Professional Engineer of Queensland (RPEQ). The Flood Emergency Management Plan must be prepared in accordance with <i>Australian Disaster Resilience Handbook 7 Managing the Floodplain: A Guide to Best Practice in Flood Risk Management in Australia (AIDR 2017)</i> ; and accompanying guidelines and must detail the following: <ul style="list-style-type: none"> <li>a. nature of the flood threat;</li> <li>b. flooding constraints and flood risks for the site and access/egress of the site (including consideration of any residual flood risk);</li> <li>c. sources of flood intelligence;</li> <li>d. considerations for flood management;</li> <li>e. procedures to manage the flood risk;</li> <li>f. roles and responsibilities before, during and after the flood episodes;</li> <li>g. triggers for plan activation;</li> <li>h. arrangements for education of workers and residents;</li> <li>i. resources needed to shelter in place during a flood episode;</li> <li>j. management of a medical emergency during a flood episode;</li> <li>k. duration of isolation; and</li> <li>l. recovery.</li> </ul>	Prior to the commencement of the use and then to be maintained
65.	Ensure all infrastructure necessary to service the development is designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation from flood waters.	At all times
<b>WATER SUPPLY</b>		
66.	Provide a metered water service, and internal infrastructure as required, to satisfy the firefighting and water supply demands of the development. <b>Note:</b> <i>Water infrastructure must be designed by an appropriately qualified hydraulic consultant to assess the suitability of the water supply system to cater for the proposed development, including firefighting requirements in accordance with AS2419 – Fire hydrant installation.</i>	Prior to the commencement of the use and then to be maintained



67.	<p>Undertake all necessary upgrades of Council's water supply infrastructure to ensure other users are not adversely affected by the increased demand on the water network.</p> <p>Prepare and submit for approval to the Assessment Manager detailed design of all necessary upgrades of Council's water supply infrastructure. The design is to:</p> <ol style="list-style-type: none"> <li>ensure other users are not adversely affected by the increased demand on the water network</li> <li>be in accordance with the applicable Planning scheme codes and the Planning scheme policy for development works</li> </ol> <p>All work to Council's water supply infrastructure must be carried out in accordance with an Operational works approval.</p> <p><b>Note:</b> <i>Submission of the detail design must form part of an Operational works application.</i></p>	Prior to the commencement of the use
<b>EASEMENTS</b>		
68.	Lodge to the State (Titles office) for registration, a public right of way easement over the promenade footpath, and the approved footpaths to the east of building F and in between buildings C and D incorporating the maintenance requirements as conditioned under this approval.	Prior to the commencement of the use
69.	Submit draft easement documentation to the Assessment Manager for endorsement.	Prior to the commencement of the use

**PART 1B – ADVICE NOTES**

NO.	ADVICE	TIMING
<b>GENERAL AMENITY</b>		
1.	Storage of flammable and /or combustible liquids must comply with the minor storage provisions of AS1940 – the storage and handling of flammable and combustible liquids.	At all times
<b>INFRASTRUCTURE CHARGES</b>		
2.	Infrastructure charges notice (331.2020.1181.1) applicable to the development is attached to this Development approval.	At all times
<b>ENVIRONMENTAL HARM</b>		
3.	The <i>Environmental Protection Act 1994</i> states that a person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent	At all times

	<p>or minimise the harm. Environmental harm includes environmental nuisance. In this regard persons and entities, involved in the civil, earthworks, construction, and operational phases of this development, are to adhere to their 'general environmental duty' to minimise the risk of causing environmental harm. Environmental harm is defined by the Act as any adverse effect, or potential adverse effect whether temporary or permanent and of whatever magnitude, duration or frequency on an environmental value and includes environmental nuisance. Therefore, no person should cause any interference with the environment or amenity of the area by reason of the emission of noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash, dust, wastewater, waste products, grit, sediment, oil, or otherwise, or cause hazards likely in the opinion of the administering authority to cause undue disturbance or annoyance to persons or affect property no connected with the use.</p>	
<b>SEWERAGE</b>		
<p>4.</p>	<p>Connection to sewer infrastructure is subject to further approvals. For further information about these requirements, contact Council's Water and Wastewater Infrastructure Planning Technical Support Section on 1300 883 699.</p> <p>No plumbing and drainage works are to commence prior to the issuing of the Plumbing and Drainage Approval by Council.</p>	<p>Prior to the commencement of the use</p>
<b>WATER CONNECTIONS</b>		
<p>5.</p>	<p>Connection to Council's water infrastructure is subject to further approvals. For further information about these requirements, contact Council's Water and Wastewater Infrastructure Planning Technical Support Section on 1300 883 699.</p> <p>Council permits only one water service for each property. This means only one connection to the water main although there may be a potable and fire service feeding from that connection.</p> <p>Arrangements for the installation of any new metered service and sub-meters, or removal of an existing service, must be made with Council's Water and Wastewater Infrastructure Planning Technical Support Section.</p>	<p>Prior to the commencement of the use</p>
<p>6.</p>	<p>Sub-meters must be installed in accordance with the Plumbing and Drainage Act 2018.</p>	<p>Prior to the commencement of the use and then to be maintained</p>

<b>NATURE AND EXTENT OF THE APPROVED DEVELOPMENT</b>		
7.	This decision notice does not represent an approval to commence Building work.	At all times
<b>SUBMISSION OF AMENDED PLANS FOR APPROVAL</b>		
8.	The conditions of this Decision notice require submission of amended plan(s) or report(s) to the Assessment Manager. Address the amended documents to the Assessment Manager and reference 525.2018.10.1. To avoid delays and assessment issues with the Operational works application, it is recommended the amended documents be submitted prior to lodgement of any Operational works application.	Prior to the commencement of the use and then to be maintained
<b>FOOD ACT REQUIREMENTS</b>		
9.	All operators of the approved use will be required to comply with the <i>Food Act 2006</i> and Council's minimum requirements for food premises. All necessary approvals should be obtained from the Environment, regulatory, and public health section of Council. <b>Note:</b> <i>For further information about these requirements please contact Council's Environmental health services section on 1300 883 699.</i>	Prior to the commencement of the use and then to be maintained
<b>NEW ROAD DEDICATION</b>		
10.	Lot 4 on SP190481 (public boat ramp) includes an access handle to Harbour Esplanade. The portion south of the proposed access is intended to be dedicated as new road through negotiation between the developer and the owner (Port Authority). If this land is not dedicated as new road, the access to this handle is proposed to be deleted without compromising the wider traffic management plan.	At all times
<b>PROMENADE FOOTPATH MAINTENANCE</b>		
11.	The maintenance of the Promenade Footpath will be the responsibility of the land owner and not Council and is to be in accordance with easement documentation as required by conditions of this approval.	At all times
<b>TRAFFIC MANAGEMENT</b>		
12.	Council requires the use of Asignit software for documentation and reporting of Traffic management control plans. Developers, Principal Contractors, Sub-	At all times

	<p>contractors, and Suppliers are required to use Asingit software.</p> <p>Council provides Asingit software and training free of charge. Contact Asingit directly at <a href="mailto:adfmin@asingit.com">adfmin@asingit.com</a> for the software to be delivered to your business.</p> <p>Following uploading your Traffic management control plan to the Asingit system, confirmation is to be sent to <a href="mailto:development@bundaberg.qld.gov.au">development@bundaberg.qld.gov.au</a>.</p>	
<b>ACID SULFATE SOILS</b>		
13.	An acid sulfate soils management plan will be required to be submitted as part of an application for Operational Works.	Prior to the submission of the first application for Operational Works
<b>REVETMENT WALL</b>		
14.	Works to be undertaken on the Revetment Wall will require further development approvals for operational works and may require referral to the chief executive for assessment against the State development assessment provisions.	At all times
<b>RATES AND CHARGES</b>		
15.	In accordance with the <i>Planning Act 2016</i> , all rates, charges, or any expenses being a charge over the subject land under any Act must be paid prior to the Plan of Subdivision being endorsed by the Assessment Manager.	Prior to the endorsement of the survey plan
<b>NATURE AND EXTENT OF THE APPROVED DEVELOPMENT</b>		
16.	This decision notice does not represent an approval to commence Building work.	At all times
17.	An Operational Works permit is required to be obtained for all signs and advertising devices associated with the development that do not comply with the self assessable criteria of the Planning Scheme in effect at the time of the proposed works.	At all times
18.	This Decision Notice does not represent an approval to commence Operational Works. Any Operational Works associated with this Material Change of Use or other engineering work proposed on the lot is subject to relevant assessment under the Bundaberg Regional Council Planning Scheme 2015 or the instrument in effect at the time of assessment. This can include works for on-site landscaping, internal vehicle circulation, manoeuvring and	At all times

	car parking areas, on-site stormwater management and access driveways.	
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**PART 1C – PROPERTY NOTES**

**ECOLOGY - MARINE TURTLES**



1.	<p>Development approval 522.2018.89 – Marine Turtles                  The following notation applies to all dwellings and subsequent Body Corporates                  A Marine Turtle Management Plan is approved over the site which includes requirements for owners/ body corporates to reduce artificial light glow. A copy of this plan and associated approved documents are available from Council. Landowners or purchasers are advised to seek further details by contacting Council’s Development Group.</p>
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**PART 2—CONCURRENCE AGENCY CONDITIONS**

Queensland Treasury, by letter dated 4 November 2020 (copy letter attached for information).



Locality Plan















Projection: GDA\_1994\_MGA\_Zone\_56      Date: 13/11/2020 3:00 PM      Scale 1 : 32,000.00      on A4 Sheet

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While every care is taken to ensure the accuracy of this data, the Department of Natural Resources and Mines and the Bundaberg Regional Council makes no representation or warranties about its accuracy, reliability, completeness or stability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.

Author: -Author-

<ul style="list-style-type: none"><li> BRC Boundary</li><li> Special Needs</li><li> Railway</li><li> Temporarily Closed Roads</li><li> Parcels</li><li> Easements</li><li> Leases</li><li> Sealed Easements</li><li> Sealed Plans</li></ul>	<p>Legend</p> <p> </p> <p>Date: 13/11/2020 3:00 PM</p> <p><small>© The State of Queensland (Department of Natural Resources and Mines) 2020. Based on Cadastral Data provided with the permission of the Department of Natural Resources and Mines 2020. The information contained within this document is given without acceptance of responsibility for its accuracy. The Bundaberg Regional Council (and its officers, servants and agents), contract and agree to supply information only on that basis.</small></p> <p><small>While every care is taken to ensure the accuracy of this data, the Department of Natural Resources and Mines and the Bundaberg Regional Council makes no representation or warranties about its accuracy, reliability, completeness or stability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.</small></p>
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89 - Site Plan



Projection: GDA\_1994\_MGA\_Zone\_56

Date: 13/11/2020 2:47 PM

Scale 1:8,000.00

on A4 Sheet

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Author: -Author-







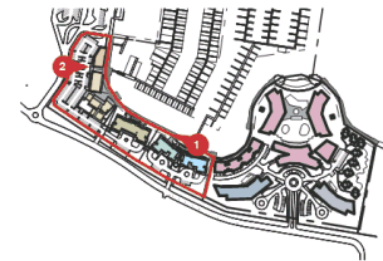
4.4 CONCEPT SKETCHES (1)



BOARDWALK VIEW 1



MARINE VILLAGE VIEW 2



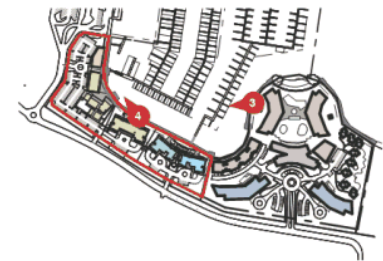
4.5 CONCEPT SKETCHES (2)



HARBOURFRONT VIEW 3



HARBOURFRONT VIEW 4



### 4.6 STAGING PLAN



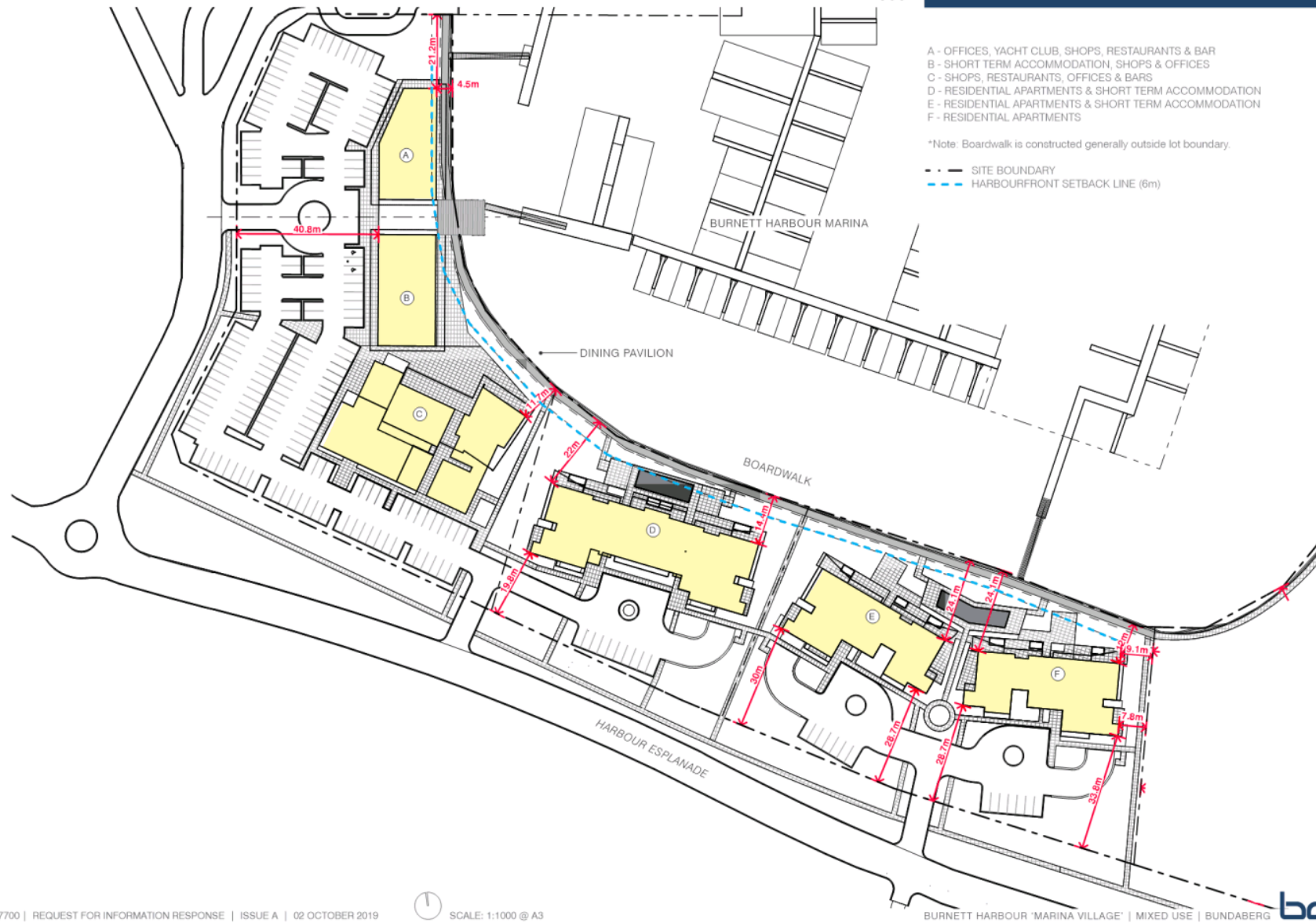
The project provides for a logical step-by-step staging commencing with the main entry, and Building B, which includes ground level offices and retail uses with limited short term accommodation over, and concurrently the first residential building (Building 'D'), which has a separate vehicular entry.

- STAGE 1
- STAGE 2
- STAGE 3
- STAGE 4
- FUTURE STAGES (SEPARATE APPLICATION)

- A - OFFICES, YACHT CLUB, SHOPS, RESTAURANTS & BAR
- B - SHORT TERM ACCOMMODATION, SHOPS & OFFICES
- C - SHOPS, RESTAURANTS, OFFICES & BARS
- D - RESIDENTIAL APARTMENTS & SHORT TERM ACCOMMODATION
- E - RESIDENTIAL APARTMENTS & SHORT TERM ACCOMMODATION
- F - RESIDENTIAL APARTMENTS

SCALE: 1:2000 @ A3

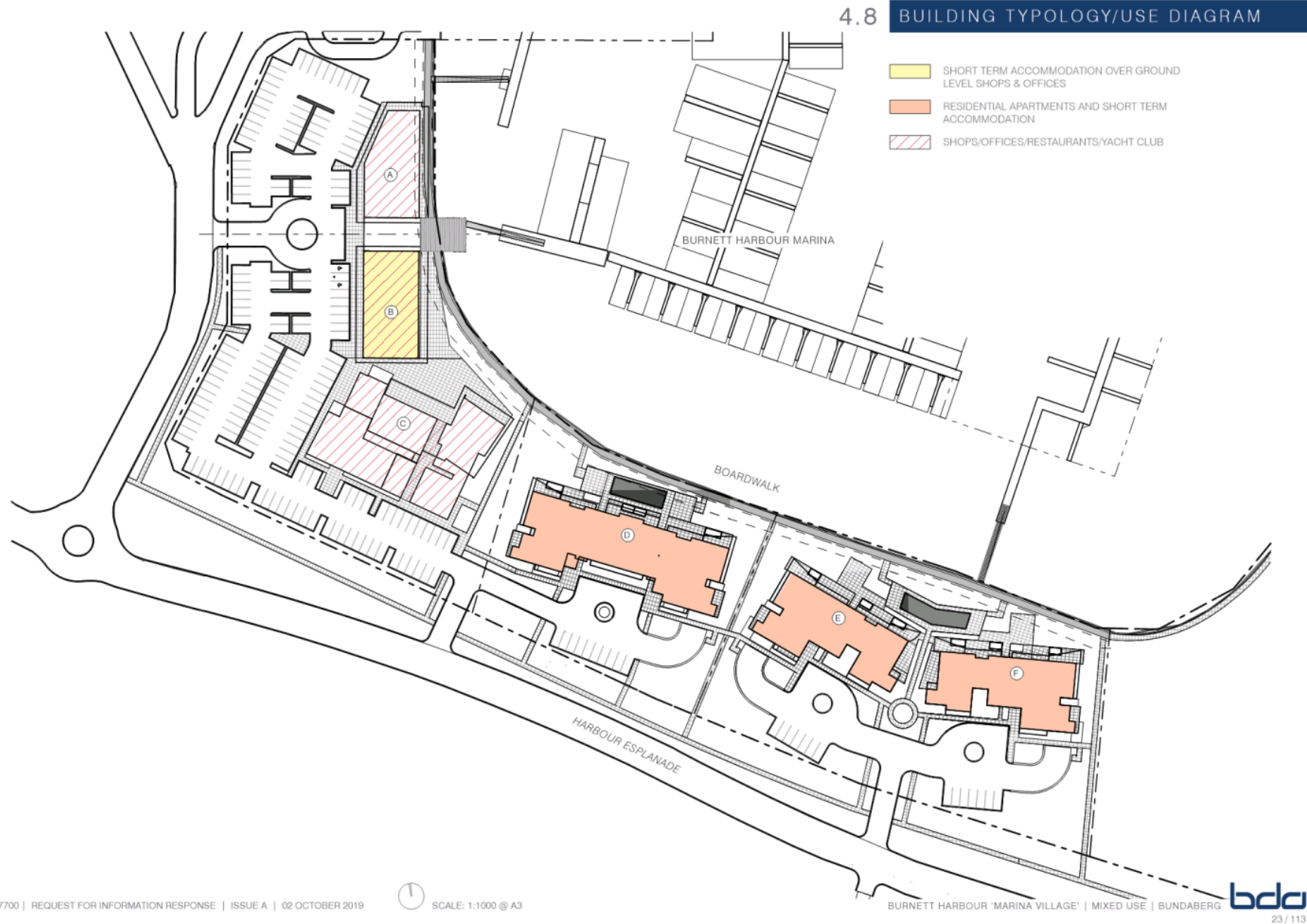
### 4.7 BOUNDARY SETBACK PLAN

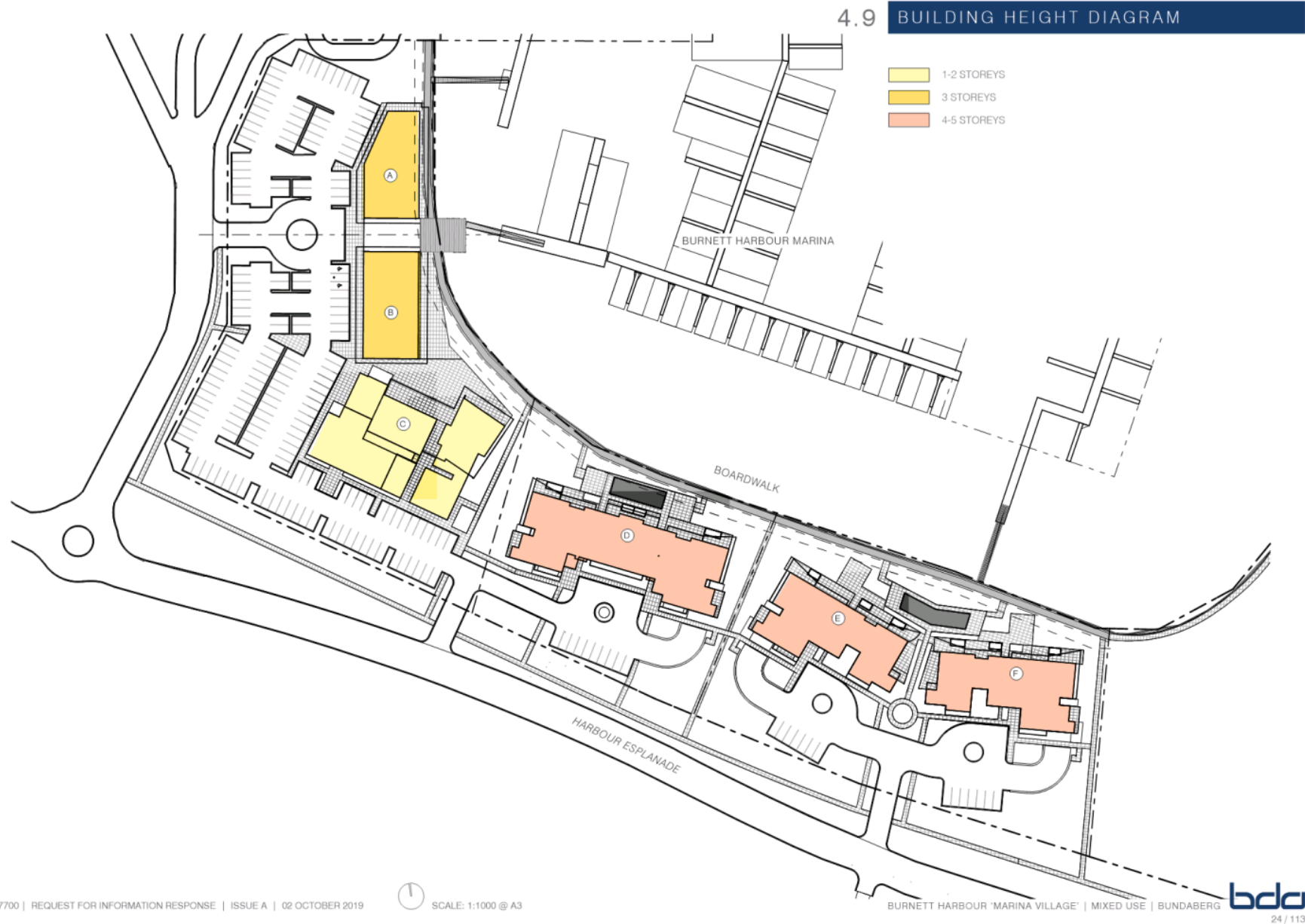


387700 | REQUEST FOR INFORMATION RESPONSE | ISSUE A | 02 OCTOBER 2019

SCALE: 1:1000 @ A3

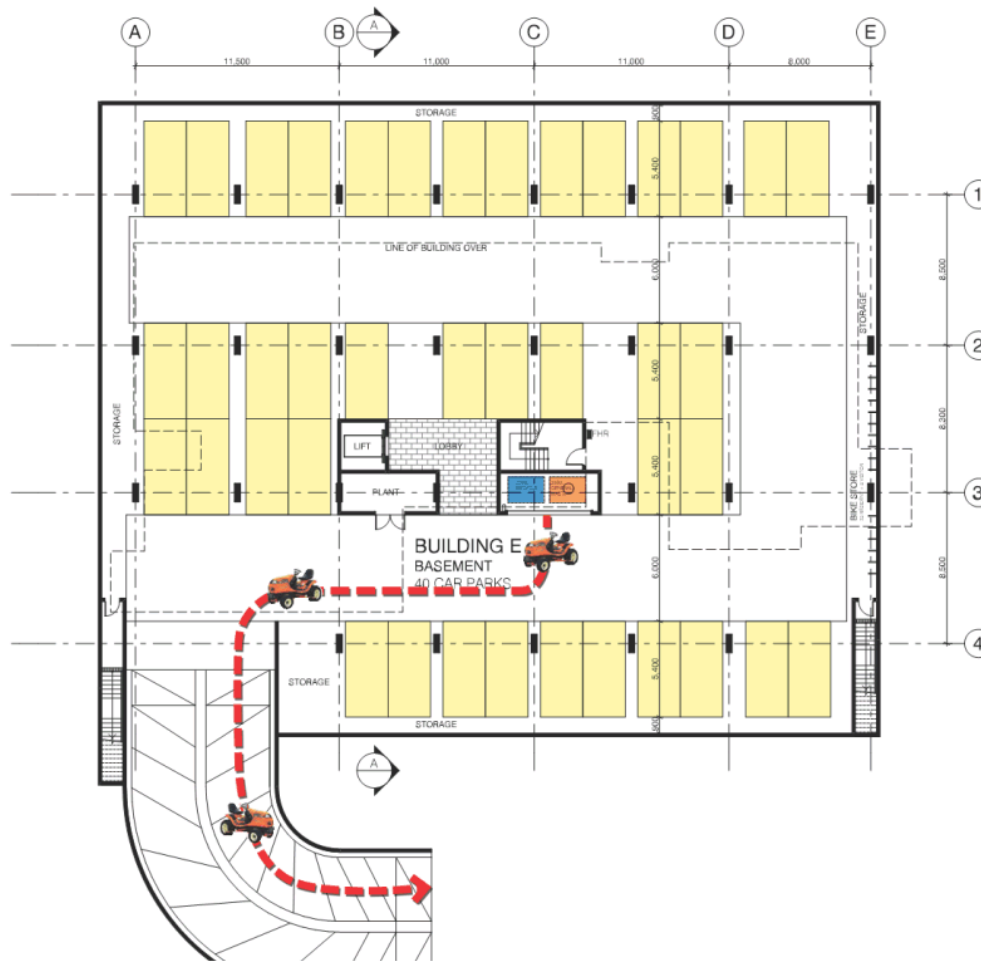
BURNETT HARBOUR 'MARINA VILLAGE' | MIXED USE | BUNDABERG **bda**  
 22 / 113





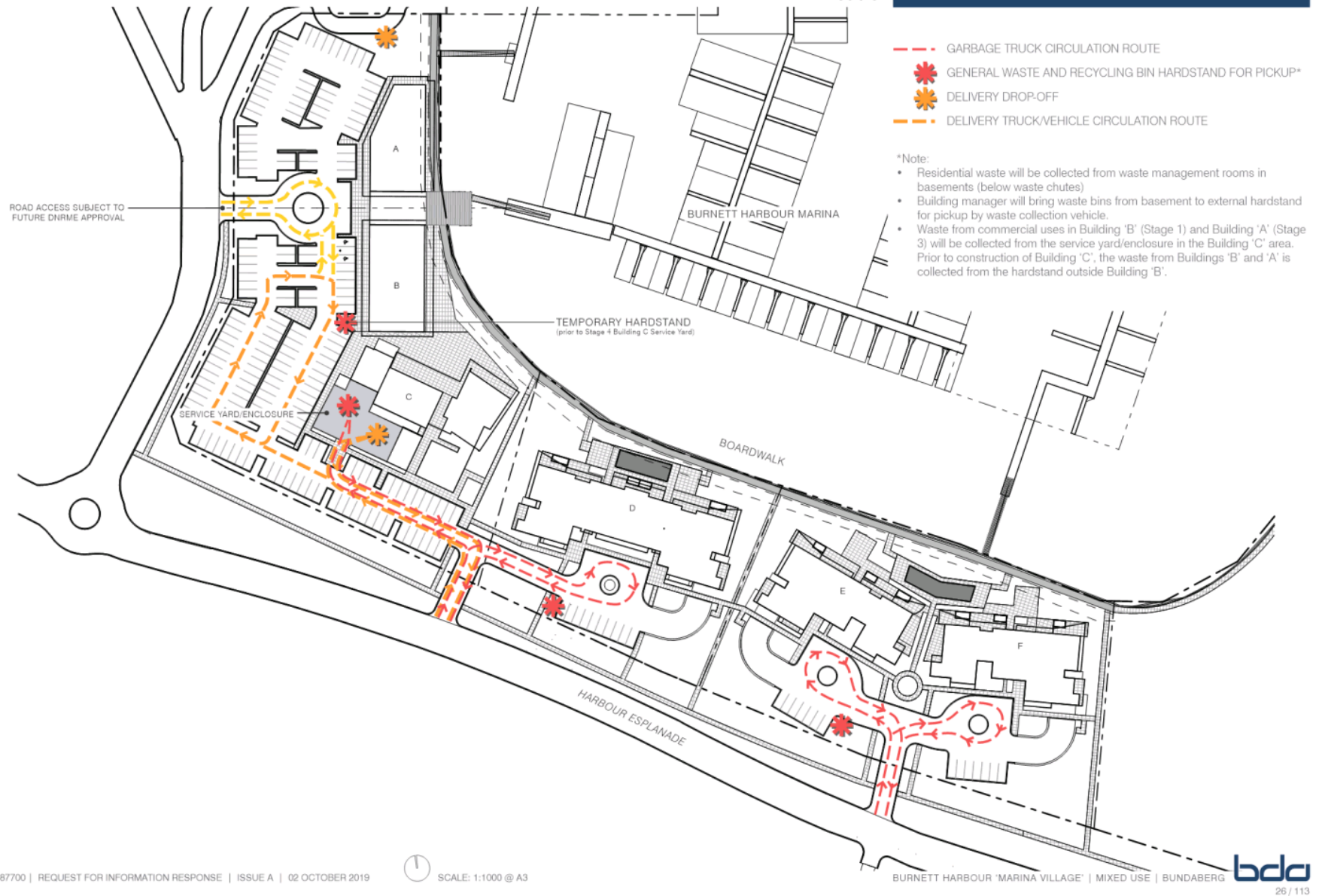


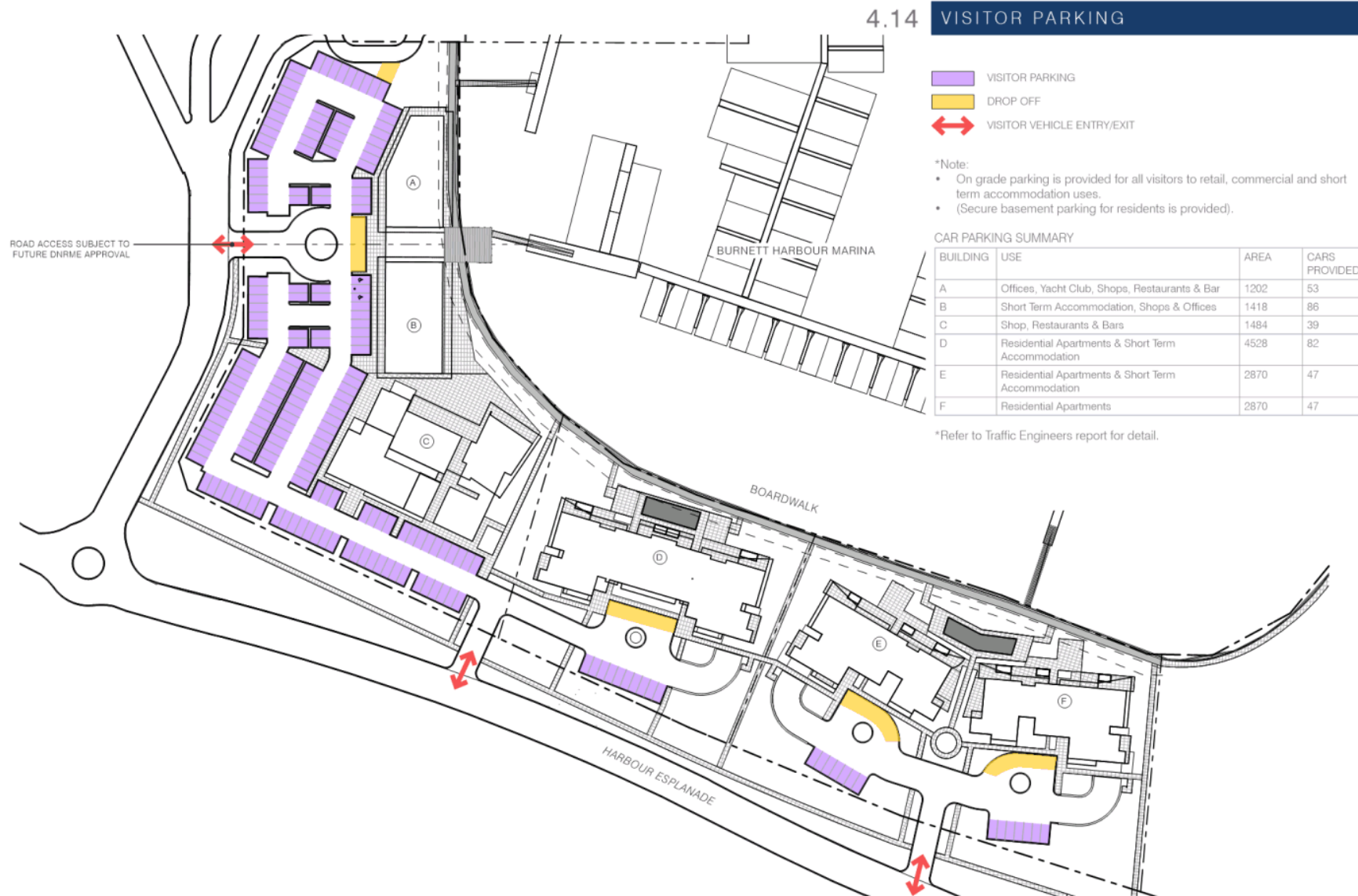
4.10 WASTE TYPICAL BASEMENT PLAN

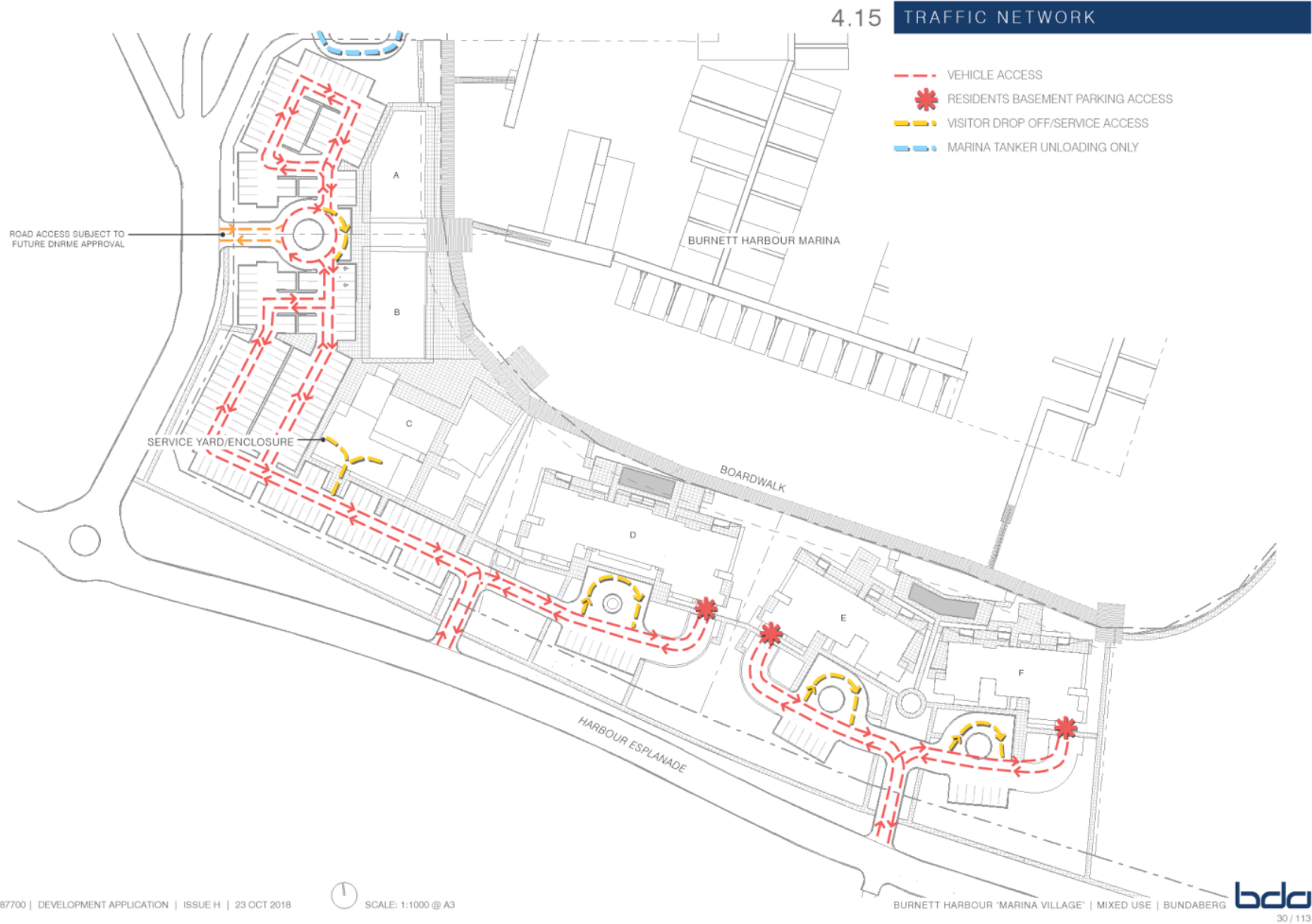


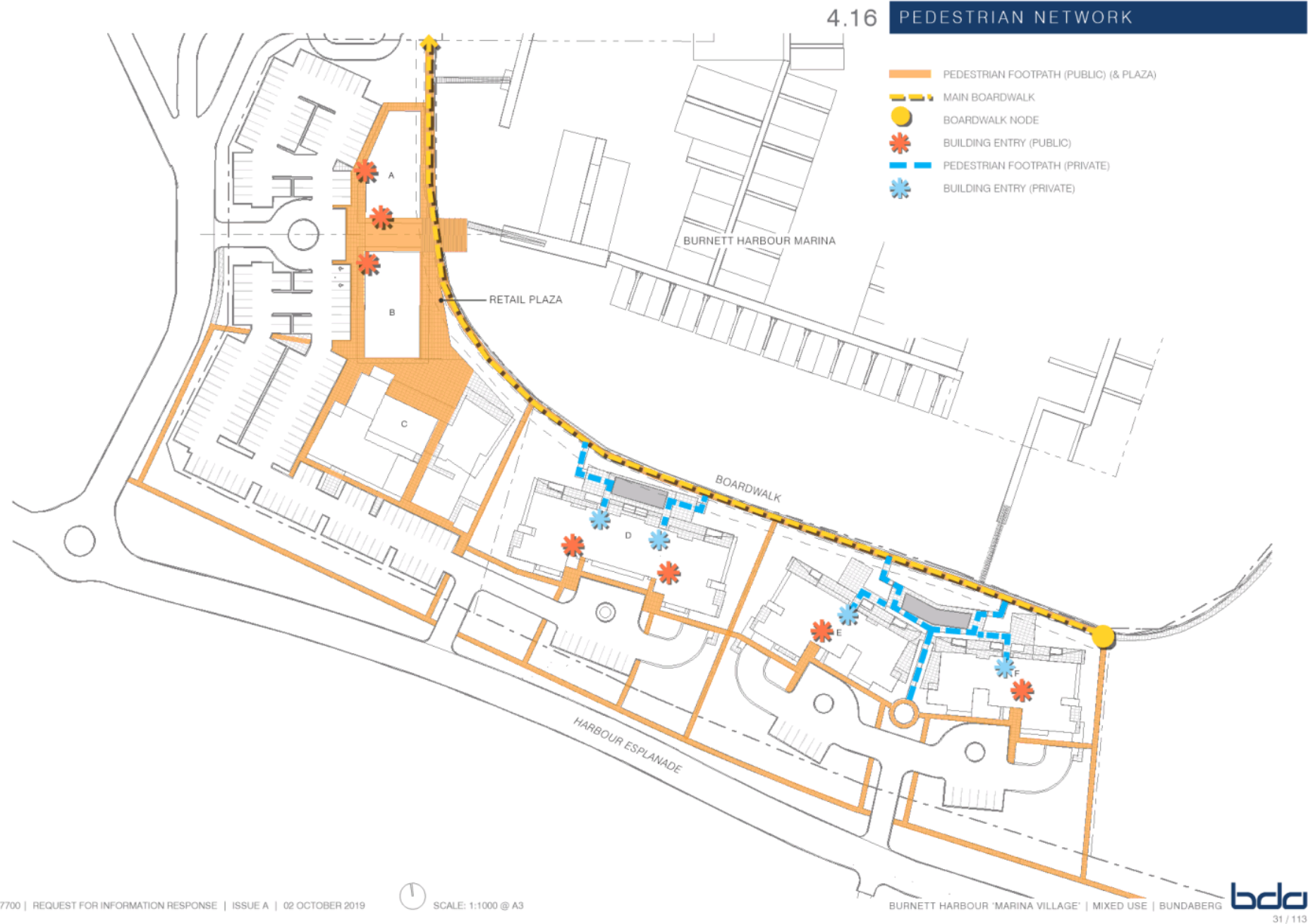
- GENERAL WASTE STORAGE AREA
- RECYCLED WASTE STORAGE AREA
- ➔ PATH OF MANAGERS TRANSFER OF BINS TO PICKUP

4.11 WASTE MANAGEMENT PLAN









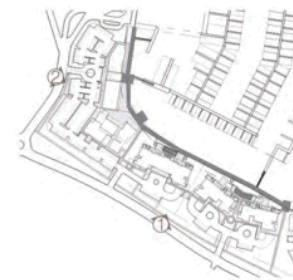
4.17 **STREETSCAPES**



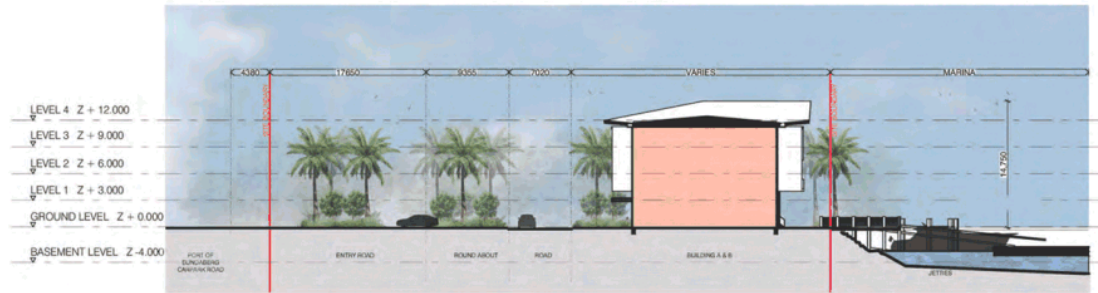
STREETSCAPE 01 - VIEW FROM HARBOUR ESPLANADE LOOKING NORTH-EAST



STREETSCAPE 02 - VIEW FROM MARINA ACCESS ROAD LOOKING EAST



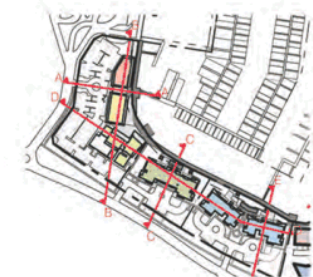
4.18 SITE SECTION A & B



SITE SECTION A-A - BUILDING A/B ATRIUM



SITE SECTION B-B - BUILDING A/B & C



4.19 SITE SECTION C & D



SITE SECTION C-C - BUILDING D



SITE SECTION D-D (PART 1) - BUILDINGS C & D

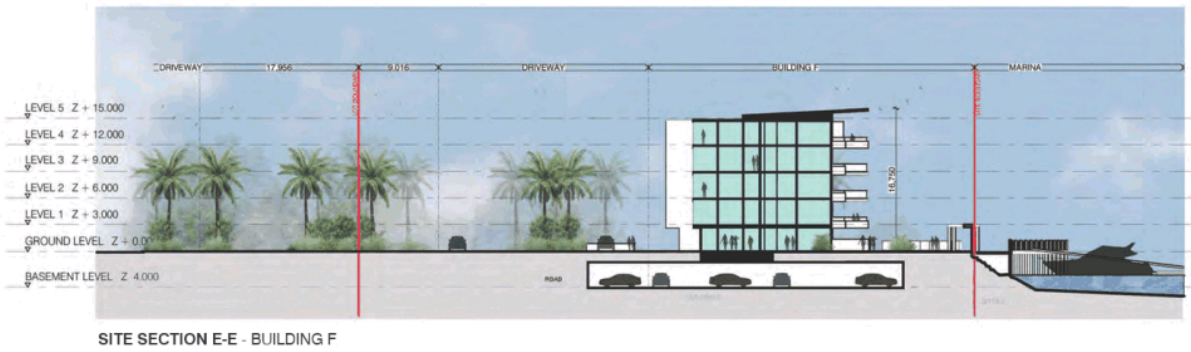


SITE SECTION D-D (PART 2) - BUILDINGS E & F





4.20 SITE SECTION E



SITE SECTION E-E - BUILDING F



6.2 PERSPECTIVE VIEW 1



PERSPECTIVE VIEW BUILDING 'A' - LOOKING SOUTH

6.3 PERSPECTIVE VIEW 2



OVERALL PROJECT PERSPECTIVE VIEW LOOKING FROM CNR HARBOUR ESPLANADE AND MARINA ACCESS ROAD

6.4 PERSPECTIVE VIEW 3



PERSPECTIVE VIEW BUILDING 'D' - FROM HARBOUR ESPLANADE

6.5 PERSPECTIVE VIEW 4



PERSPECTIVE VIEW FROM HARBOUR - BUILDINGS A, B, C, D & E

6.6 PERSPECTIVE VIEW 5



PERSPECTIVE VIEW FROM HARBOUR - BUILDINGS A, B, C, D, E & F

6.7 PERSPECTIVE VIEW 6



PERSPECTIVE VIEW FROM HARBOUR - BUILDINGS A, B, C, D, E & F

6.8 PERSPECTIVE VIEW 7



PERSPECTIVE VIEW FROM BOARDWALK - BUILDINGS D, E, F AND A, B, C



6.9 PERSPECTIVE VIEW 8



ENTRY VIEW TO MIXED-USE BUILDING

6.10 PERSPECTIVE VIEW 9



MARINA VIEW TO MIXED-USE BUILDING

6.11 PERSPECTIVE VIEW 10



AERIAL VIEW OF PROJECT LOOKING SOUTH-EAST

6.12 MIXED USE BUILDING  
COLOURS AND MATERIALS



WALLS

- 1.  Painted Render/R.C. Dulux 'Vivid White'
- 2.  Painted Render Dulux 'Urban Obsession'
- 3.  Stone Natural Sandstone Colour

BALUSTRADES, FRAMES & GLASS

- 4.  Clear Glass Balustrade Powdercoated Silver
- 5.  Solid Upstand Balustrade Dulux 'Vivid White'
- 6.  Black Powdercoated Aluminium window & door frames, clear glass at ground level retail and Grey Body Tinted Glass

ARCHITECTURAL ELEMENTS

- 7.  Plywood Timber Soffit
- 8.  Metal Colorbond Fascia 'Surfmist'
- 9.  Powdercoated Aluminium Louvred Screens, Timber Look
- 10.  Vertical Aluminium Louvre Blades Powdercoated Silver

6.13 MIXED USE BUILDING  
COLOURS AND MATERIALS



WALLS

- |  |   |
|--|---|
| <p>1.  Painted Render<br/>Dulux 'Vivid White'</p> <p>3.  Copper Cladding</p> | <p>2.  Zinc Sheet Cladding</p> |
|--|---|

BALUSTRADES, FRAMES & GLASS

- |  |  |
|--|--|
| <p>4.  Clear Glass Balustrade<br/>Powdercoated Silver</p> | <p>5.  Black Powdercoated<br/>Aluminium window,<br/>door frames, Grey<br/>Body Tinted Glass</p> |
|--|--|


ARCHITECTURAL ELEMENTS

- |   |   |
|---|---|
| <p>6.  Plywood Timber Soffit</p> | <p>7.  Metal Colorbond<br/>Fascia 'Surfmist'</p> |
|---|---|

6.14 APARTMENT BUILDING  
COLOURS AND MATERIALS






WALLS

- 1.  Painted Render Dulux 'Vivid White'
- 2.  Painted Render Dulux 'Urban Obsession'

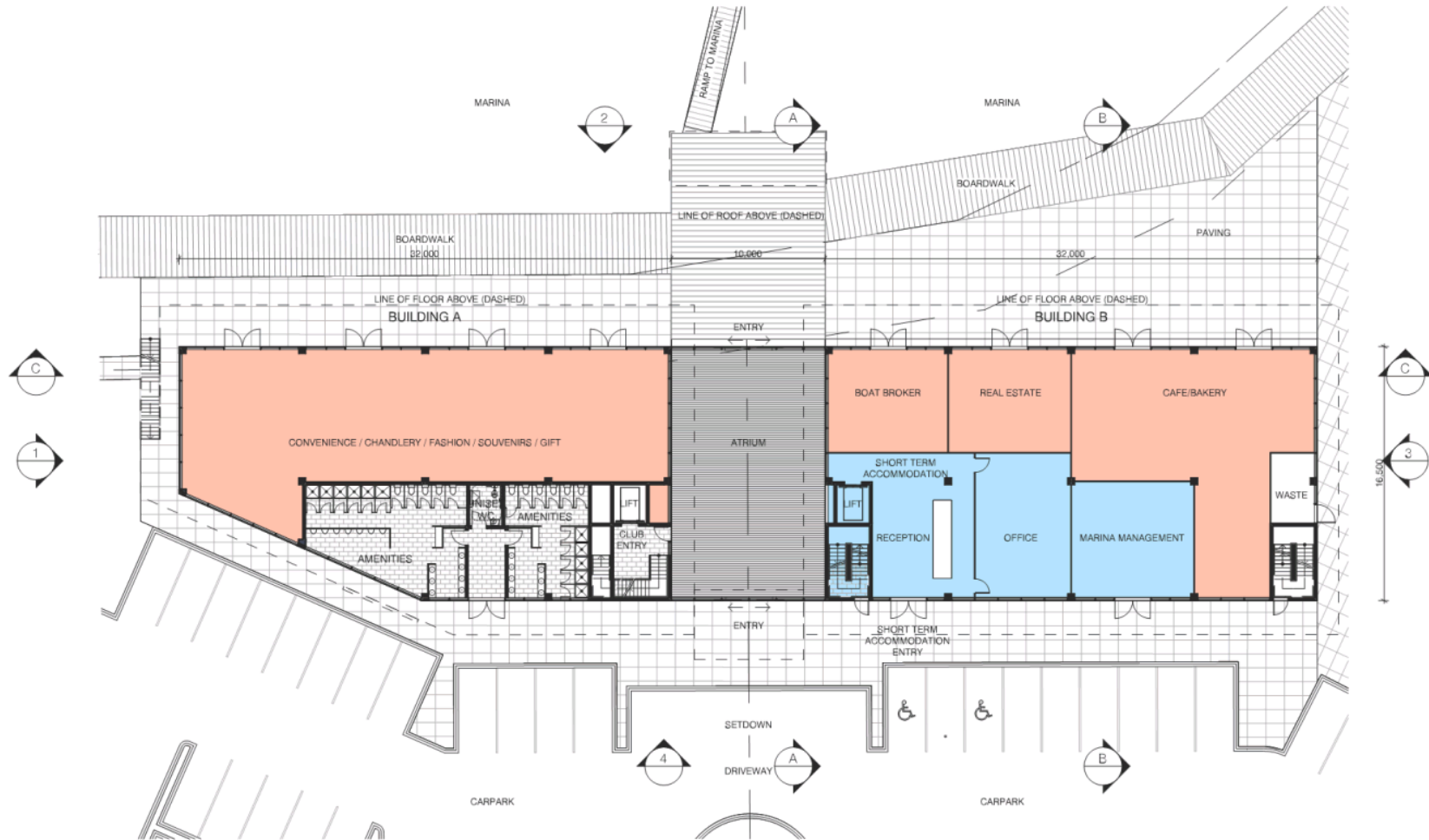
BALUSTRADES, FRAMES & GLASS

- 3.  Clear Glass Balustrade Powdercoated Silver
- 4.  Solid Upstand Balustrade Dulux 'Vivid White'
- 5.  Black Powdercoated Aluminium window, door frames, Grey Body Tinted Glass

ARCHITECTURAL ELEMENTS

- 6.  Plywood Timber Soffit
- 7.  Metal Colorbond Fascia 'Surfmist'
- 8.  Powdercoated Aluminium Screens, Timber Look

7.1 MIXED USE BUILDINGS A & B  
GROUND FLOOR PLAN



387700 | DEVELOPMENT APPLICATION | ISSUE H | 23 OCT 2018

SCALE: 1:200 @ A3

BURNETT HARBOUR 'MARINA VILLAGE' | MIXED USE | BUNDABERG

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7.2 MIXED USE BUILDINGS A & B

LEVEL 1 FLOOR PLAN



DEVELOPMENT SUMMARY  
SHORT STAY ACCOMMODATION

SUITE A	14 Suites (50%)	37.75 m <sup>2</sup> Enclosed 10.75 m <sup>2</sup> Balcony 48.5 m <sup>2</sup> Total
SUITE B	14 Suites (50%)	25 m <sup>2</sup> Enclosed 9.25 m <sup>2</sup> Balcony 34.25 m <sup>2</sup> Total
<b>TOTAL</b>	<b>28 SUITES</b>	
OFFICE	LEVEL 2	337 m <sup>2</sup> Enclosed 60 m <sup>2</sup> Balcony 397 m <sup>2</sup> Total
YACHT CLUB	LEVEL 1	345 m <sup>2</sup> Enclosed 270 m <sup>2</sup> Balcony 615 m <sup>2</sup> Total



7.3 MIXED USE BUILDINGS A & B

LEVEL 2 FLOOR PLAN

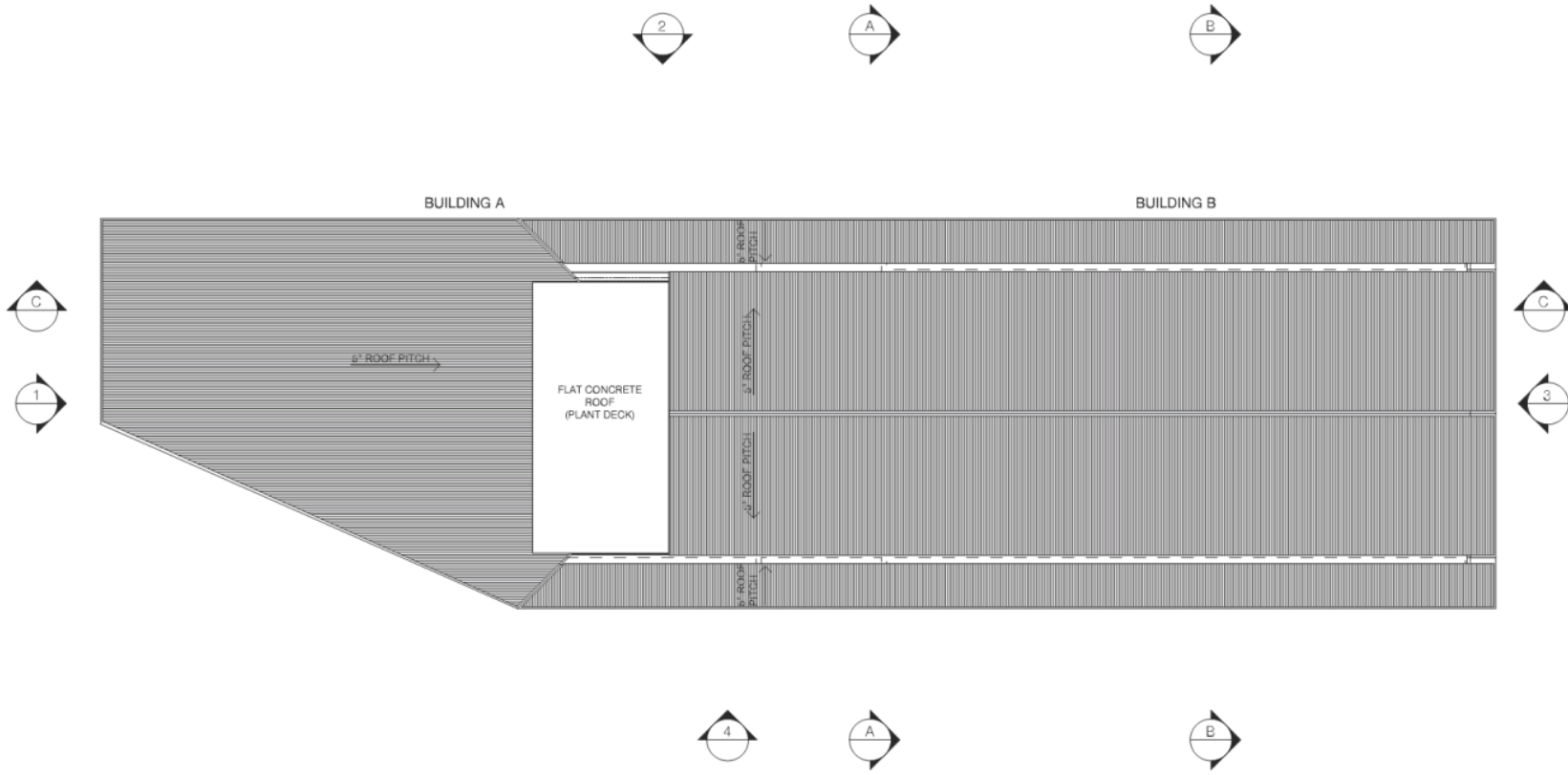


DEVELOPMENT SUMMARY  
SHORT STAY ACCOMMODATION

SUITE A	14 Suites (50%)	37.75 m <sup>2</sup> Enclosed 10.75 m <sup>2</sup> Balcony 48.5 m <sup>2</sup> Total
SUITE B	14 Suites (50%)	25 m <sup>2</sup> Enclosed 9.25 m <sup>2</sup> Balcony 34.25 m <sup>2</sup> Total
<b>TOTAL</b>	<b>28 SUITES</b>	
OFFICE	LEVEL 2	337 m <sup>2</sup> Enclosed 60 m <sup>2</sup> Balcony 397 m <sup>2</sup> Total
YACHT CLUB	LEVEL 1	345 m <sup>2</sup> Enclosed 220 m <sup>2</sup> Balcony 565 m <sup>2</sup> Total

7.4 MIXED USE BUILDINGS A & B

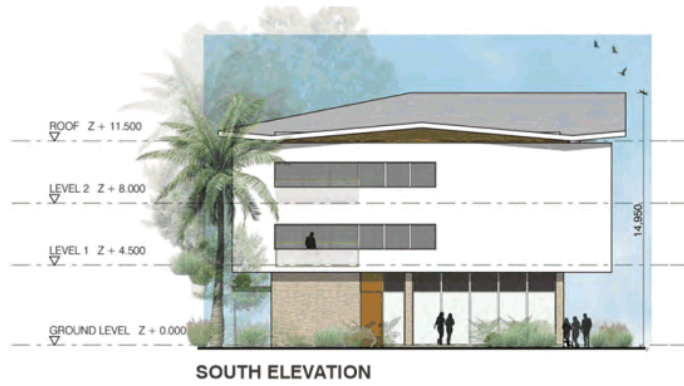
ROOF PLAN



7.5 MIXED USE BUILDINGS A & B  
ELEVATIONS (1)



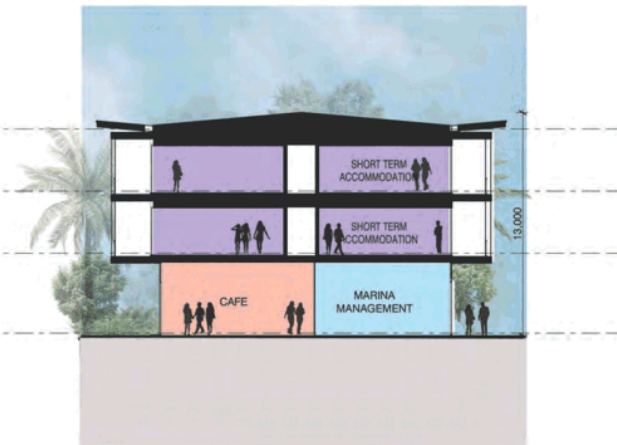
7.6 MIXED USE BUILDINGS A & B  
ELEVATIONS (2)



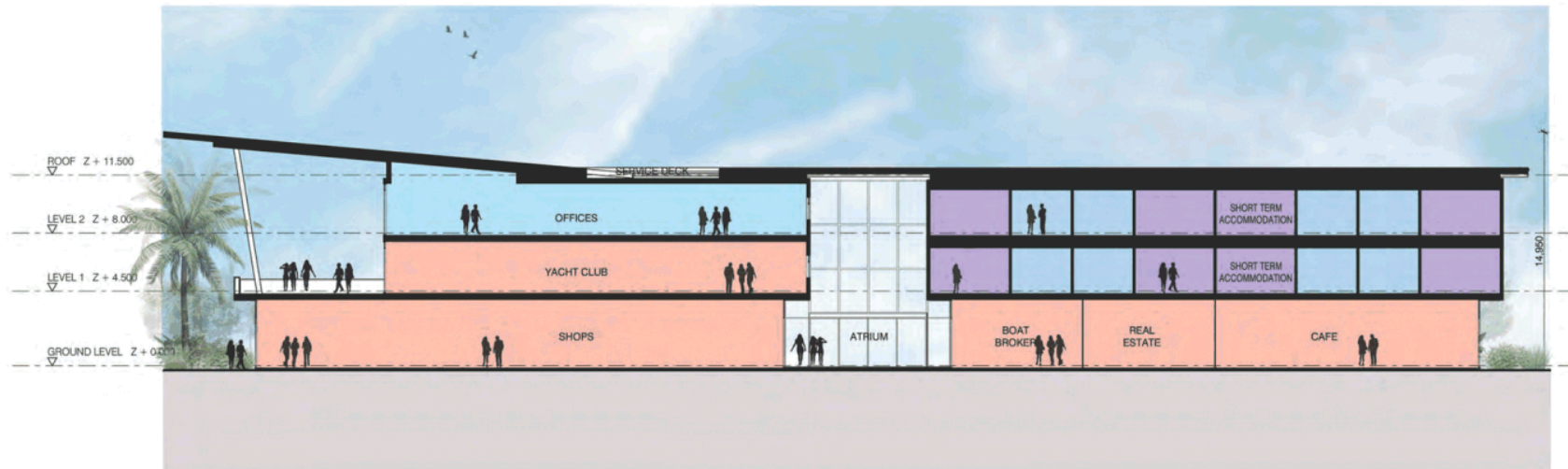
7.7 MIXED USE BUILDINGS A & B  
SECTIONS



SECTION A-A - ATRIUM



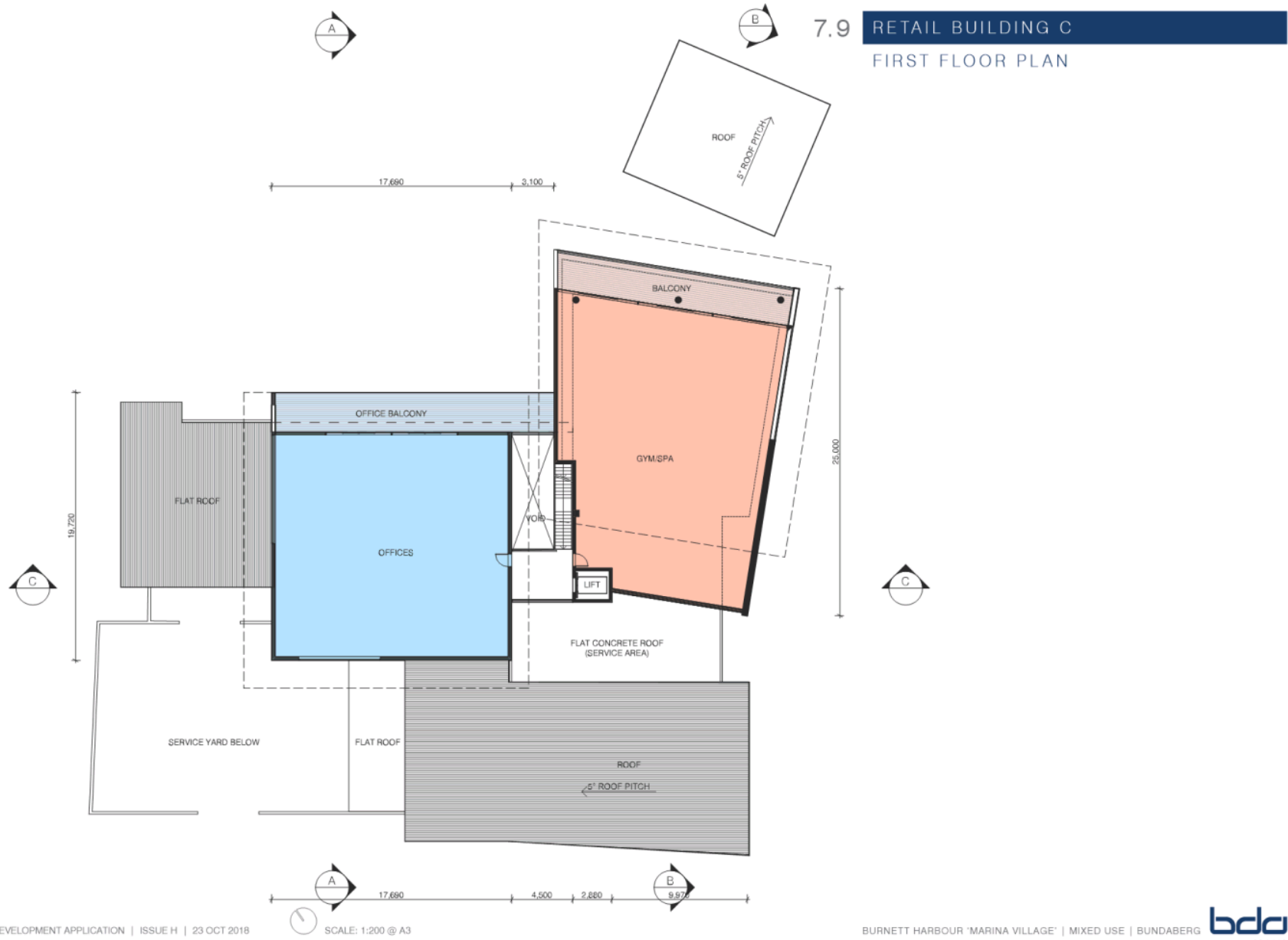
SECTION B-B



SECTION C-C



NOTE:  
ALL HABITABLE ROOMS SHALL BE 300mm  
ABOVE THE DESIGNATED FLOOD LEVEL





7.10 RETAIL BUILDING C  
ROOF PLAN



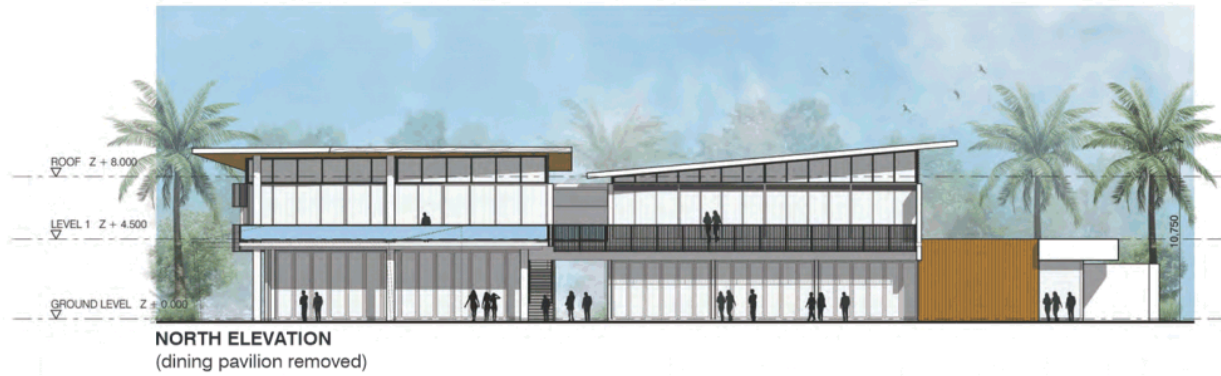
7.11 RETAIL BUILDING C  
ELEVATIONS (1)



7.12 RETAIL BUILDING C  
ELEVATIONS (2)



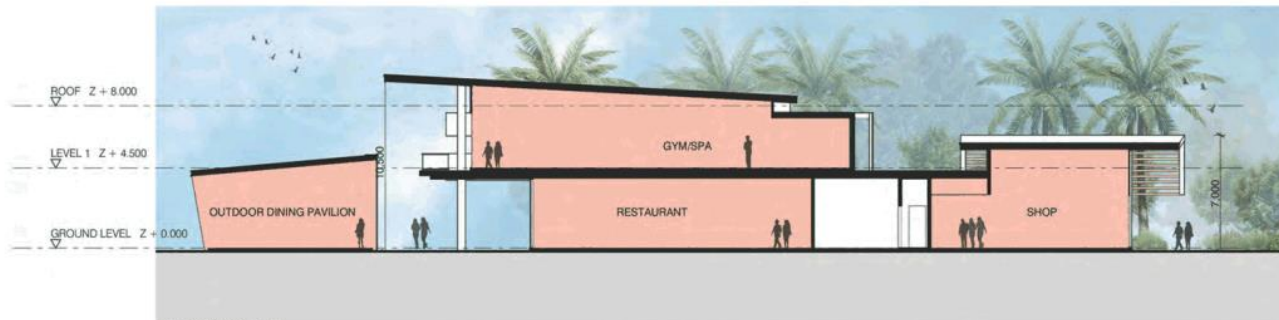
7.13 RETAIL BUILDING C  
ELEVATIONS (3)



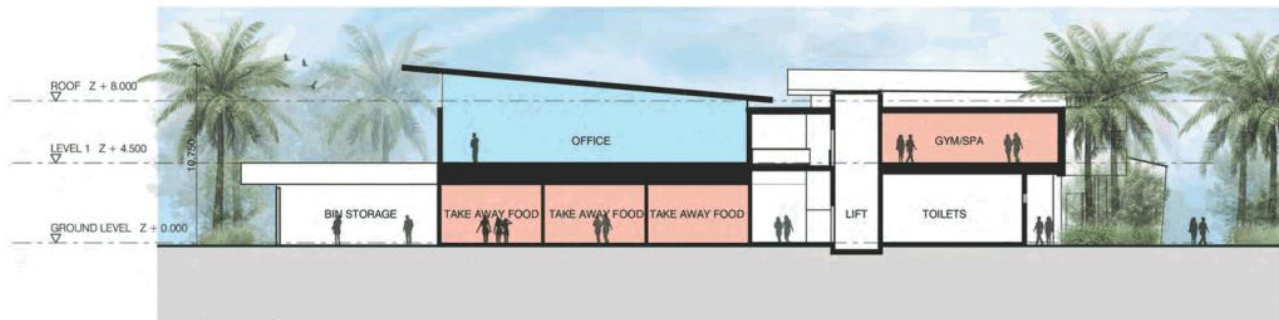
7.14 RETAIL BUILDING C  
SECTIONS



SECTION A-A



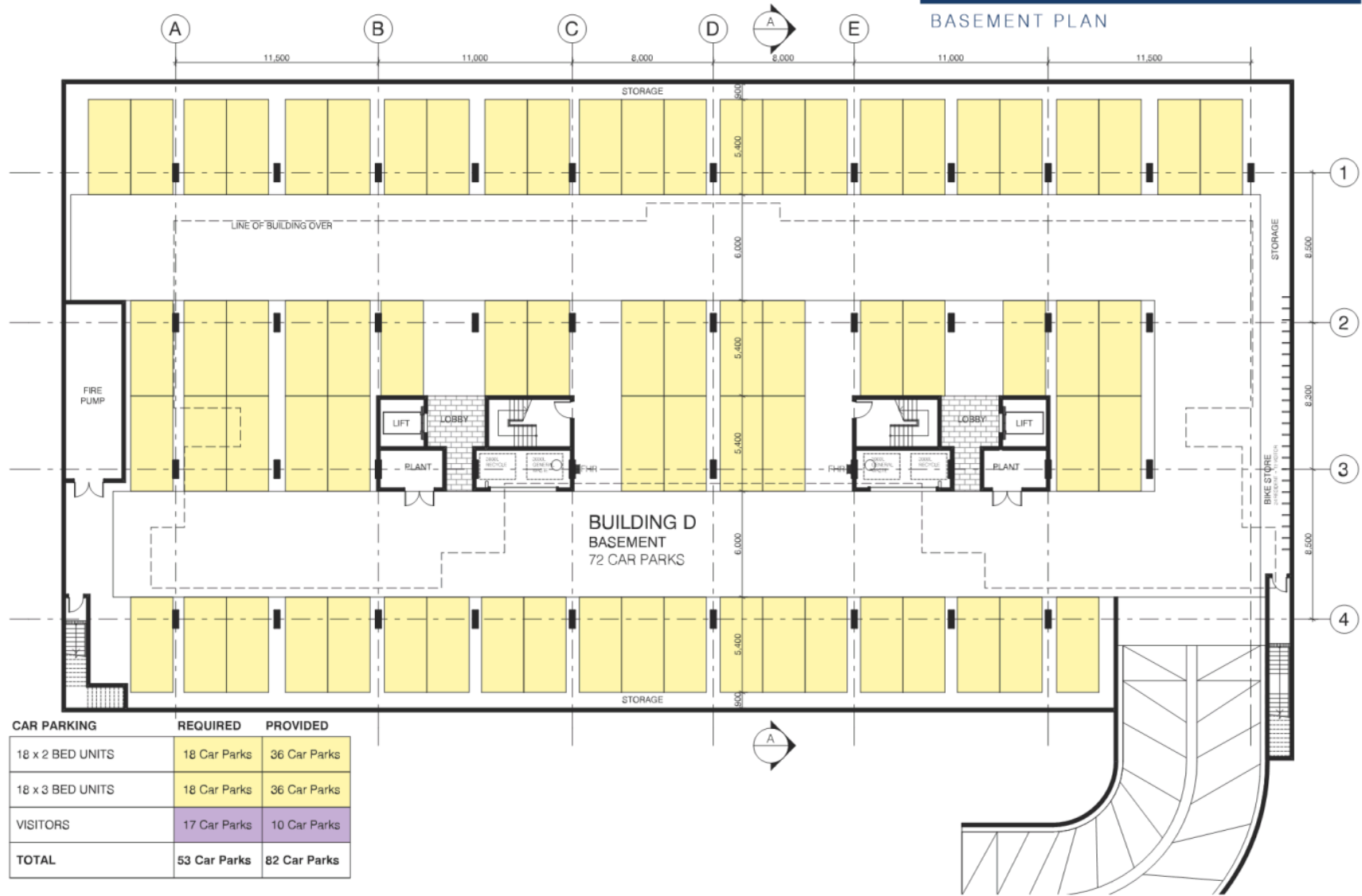
SECTION B-B



SECTION C-C

7.15 APARTMENT BUILDING D

BASEMENT PLAN



CAR PARKING	REQUIRED	PROVIDED
18 x 2 BED UNITS	18 Car Parks	36 Car Parks
18 x 3 BED UNITS	18 Car Parks	36 Car Parks
VISITORS	17 Car Parks	10 Car Parks
<b>TOTAL</b>	<b>53 Car Parks</b>	<b>82 Car Parks</b>

7.16 APARTMENT BUILDING D  
GROUND FLOOR PLAN



NOTE:  
All habitable rooms shall be 300mm above the designated flood level.

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7.17 APARTMENT BUILDING D

LEVEL 1 FLOOR PLAN



DEVELOPMENT SUMMARY			
TYPE A	8 Apt (22.22%)	3 Bed, 2 Bath ? Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 146 m <sup>2</sup> Total
TYPE B	6 Apt (16.66%)	3 Bed, 2 Bath ? Car Space	130 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 161 m <sup>2</sup> Total
TYPE C	6 Apt (16.66%)	3 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE D	6 Apt (16.66%)	3 Bed, 2 Bath ? Car Space	123 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 168 m <sup>2</sup> Total
TYPE D1	2 Apt (5.56%)	3 Bed, 2 Bath ? Car Space	105 m <sup>2</sup> Enclosed 20 m <sup>2</sup> Terrace 125 m <sup>2</sup> Total
TYPE E	2 Apt (5.56%)	3 Bed, 3 Bath ? Car Space	195 m <sup>2</sup> Enclosed 106 m <sup>2</sup> Balcony 300 m <sup>2</sup> Total
TYPE F	2 Apt (5.56%)	3 Bed, 3 Bath ? Car Space	114 m <sup>2</sup> Enclosed 136 m <sup>2</sup> Balcony 249 m <sup>2</sup> Total
TYPE G1	2 Apt (5.56%)	3 Bed, 3 Bath ? Car Space	124 m <sup>2</sup> Enclosed 149 m <sup>2</sup> Balcony 272 m <sup>2</sup> Total
TYPE I	2 Apt (5.56%)	3 Bed, 3 Bath ? Car Space	89 m <sup>2</sup> Enclosed 54 m <sup>2</sup> Terrace 143 m <sup>2</sup> Total
<b>TOTAL</b>	<b>36 APARTMENTS</b>		

7.18 APARTMENT BUILDING D

LEVEL 2 FLOOR PLAN



**DEVELOPMENT SUMMARY**

TYPE A	8 Apt (22.22%)	3 Bnd, 2 Bth ? Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 146 m <sup>2</sup> Total
TYPE B	6 Apt (16.66%)	3 Bnd, 2 Bth ? Car Space	130 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 161 m <sup>2</sup> Total
TYPE C	6 Apt (16.66%)	3 Bnd, 2 Bth 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE D	6 Apt (16.66%)	3 Bnd, 2 Bth ? Car Space	123 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 168 m <sup>2</sup> Total
TYPE D1	2 Apt (5.56%)	3 Bnd, 2 Bth ? Car Space	105 m <sup>2</sup> Enclosed 20 m <sup>2</sup> Terrace 125 m <sup>2</sup> Total
TYPE E	2 Apt (5.56%)	3 Bnd, 3 Bth ? Car Space	195 m <sup>2</sup> Enclosed 106 m <sup>2</sup> Balcony 300 m <sup>2</sup> Total
TYPE F	2 Apt (5.56%)	3 Bnd, 3 Bth ? Car Space	114 m <sup>2</sup> Enclosed 136 m <sup>2</sup> Balcony 249 m <sup>2</sup> Total
TYPE G1	2 Apt (5.56%)	3 Bnd, 2 Bth ? Car Space	124 m <sup>2</sup> Enclosed 149 m <sup>2</sup> Balcony 272 m <sup>2</sup> Total
TYPE I	2 Apt (5.56%)	3 Bnd, 2 Bth ? Car Space	89 m <sup>2</sup> Enclosed 54 m <sup>2</sup> Terrace 143 m <sup>2</sup> Total
<b>TOTAL</b>	<b>36 APARTMENTS</b>		



7.19 APARTMENT BUILDING D

LEVEL 3 FLOOR PLAN



**DEVELOPMENT SUMMARY**

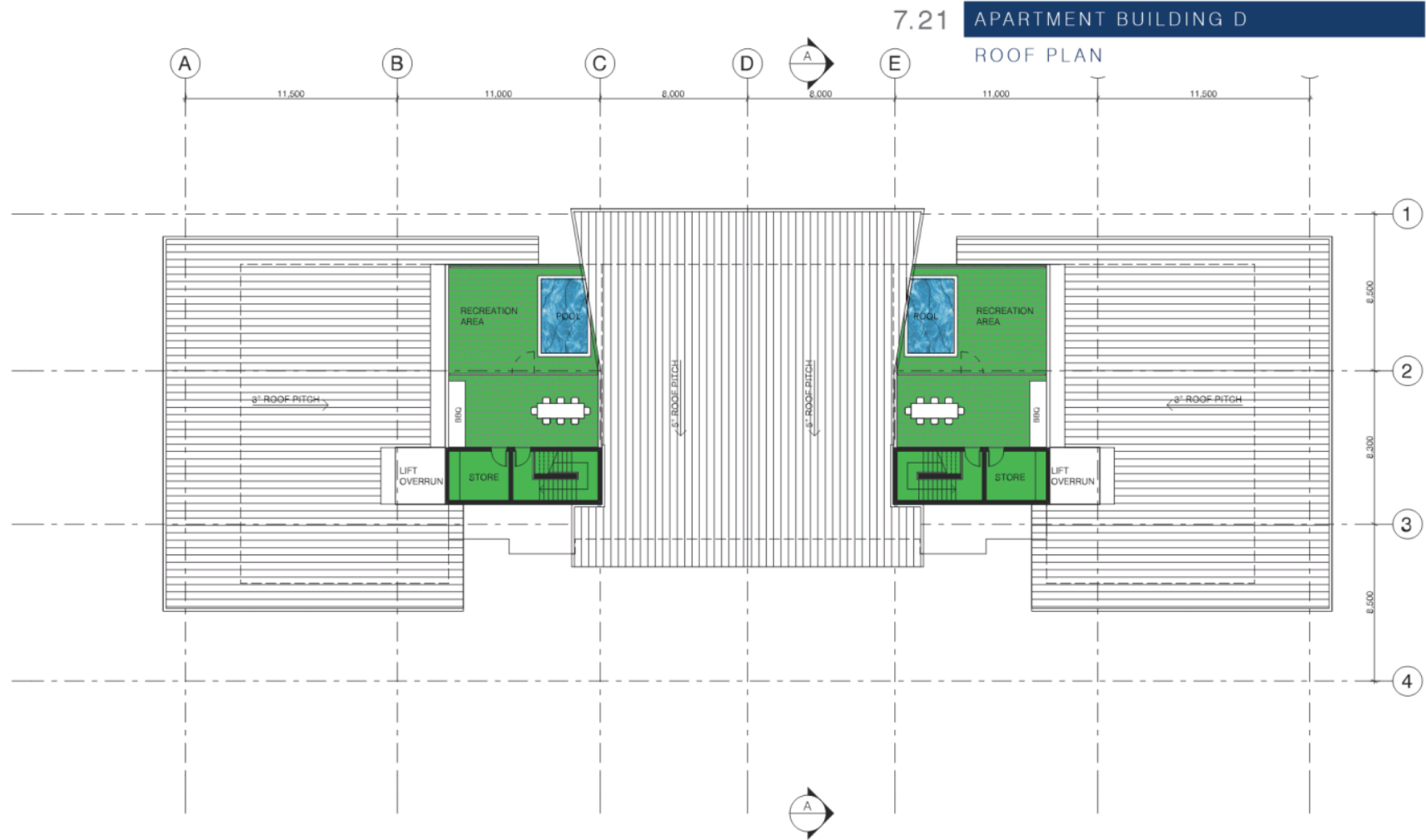
TYPE A	8 Apt (22.22%)	3 Bed, 2 Bath ? Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 146 m <sup>2</sup> Total
TYPE B	6 Apt (16.66%)	3 Bed, 2 Bath ? Car Space	130 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 161 m <sup>2</sup> Total
TYPE C	6 Apt (16.66%)	3 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE D	6 Apt (16.66%)	3 Bed, 2 Bath ? Car Space	123 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 168 m <sup>2</sup> Total
TYPE D1	2 Apt (5.56%)	3 Bed, 2 Bath ? Car Space	105 m <sup>2</sup> Enclosed 20 m <sup>2</sup> Terrace 125 m <sup>2</sup> Total
TYPE E	2 Apt (5.56%)	3 Bed, 3 Bath ? Car Space	195 m <sup>2</sup> Enclosed 106 m <sup>2</sup> Balcony 300 m <sup>2</sup> Total
TYPE F	2 Apt (5.56%)	3 Bed, 3 Bath ? Car Space	114 m <sup>2</sup> Enclosed 136 m <sup>2</sup> Balcony 249 m <sup>2</sup> Total
TYPE G1	2 Apt (5.56%)	3 Bed, 2 Bath ? Car Space	124 m <sup>2</sup> Enclosed 149 m <sup>2</sup> Balcony 272 m <sup>2</sup> Total
TYPE I	2 Apt (5.56%)	3 Bed, 2 Bath ? Car Space	89 m <sup>2</sup> Enclosed 54 m <sup>2</sup> Terrace 143 m <sup>2</sup> Total
<b>TOTAL</b>	<b>36 APARTMENTS</b>		

7.20 APARTMENT BUILDING D

LEVEL 4 FLOOR PLAN



DEVELOPMENT SUMMARY			
TYPE A	8 Apt (22.22%)	3 Bnd, 2 Bth ? Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 146 m <sup>2</sup> Total
TYPE B	6 Apt (16.66%)	3 Bnd, 2 Bth ? Car Space	130 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 162 m <sup>2</sup> Total
TYPE C	6 Apt (16.66%)	3 Bnd, 2 Bth 1 Car Space	69 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE D	6 Apt (16.66%)	3 Bnd, 2 Bth ? Car Space	123 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 167 m <sup>2</sup> Total
TYPE D1	2 Apt (5.56%)	3 Bnd, 2 Bth ? Car Space	105 m <sup>2</sup> Enclosed 20 m <sup>2</sup> Terrace 125 m <sup>2</sup> Total
TYPE E	2 Apt (5.56%)	3 Bnd, 2 Bth ? Car Space	195 m <sup>2</sup> Enclosed 106 m <sup>2</sup> Balcony 300 m <sup>2</sup> Total
TYPE F	2 Apt (5.56%)	3 Bnd, 2 Bth ? Car Space	114 m <sup>2</sup> Enclosed 136 m <sup>2</sup> Balcony 249 m <sup>2</sup> Total
TYPE G1	2 Apt (5.56%)	3 Bnd, 2 Bth ? Car Space	124 m <sup>2</sup> Enclosed 149 m <sup>2</sup> Balcony 272 m <sup>2</sup> Total
TYPE I	2 Apt (5.56%)	3 Bnd, 2 Bth ? Car Space	69 m <sup>2</sup> Enclosed 54 m <sup>2</sup> Terrace 143 m <sup>2</sup> Total
<b>TOTAL</b>	<b>36 APARTMENTS</b>		



7.22 APARTMENT BUILDING D  
ELEVATION (1)



7.23 APARTMENT BUILDING D  
ELEVATION (2)



NORTH ELEVATION

7.24 APARTMENT BUILDING D  
ELEVATION (3)



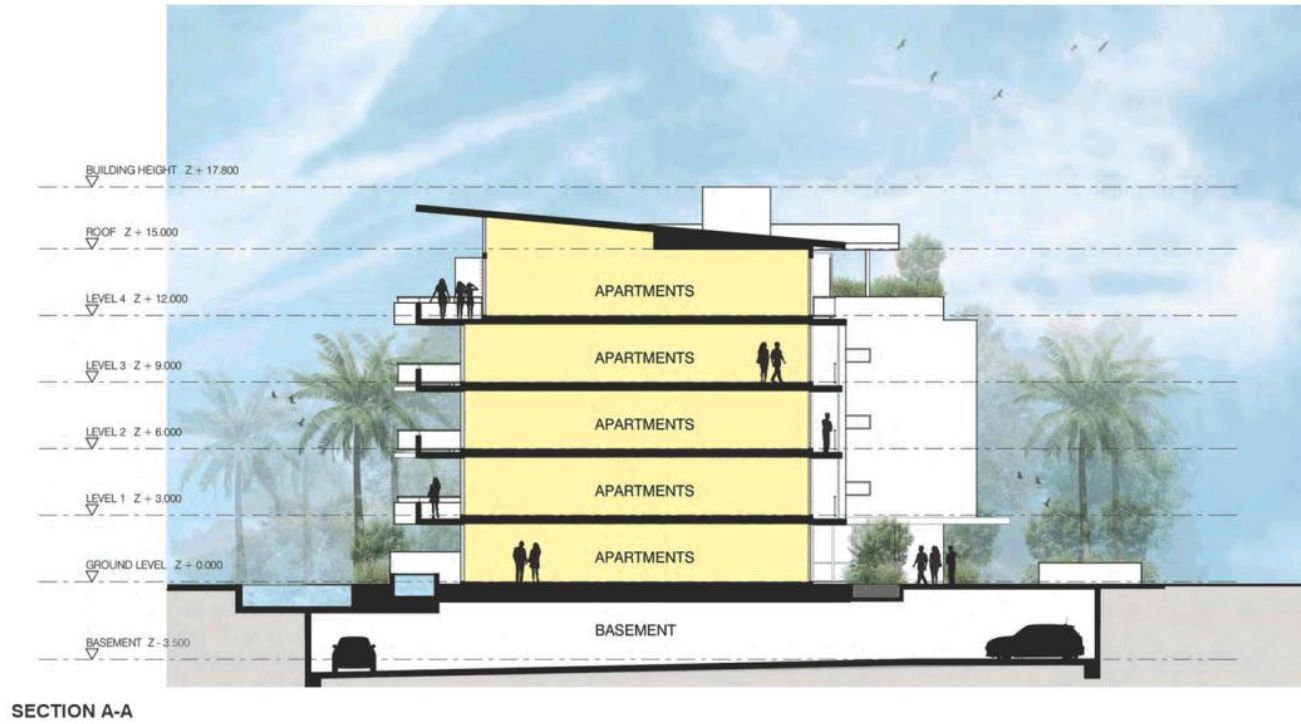
WEST ELEVATION

7.25 APARTMENT BUILDING D  
ELEVATION (4)

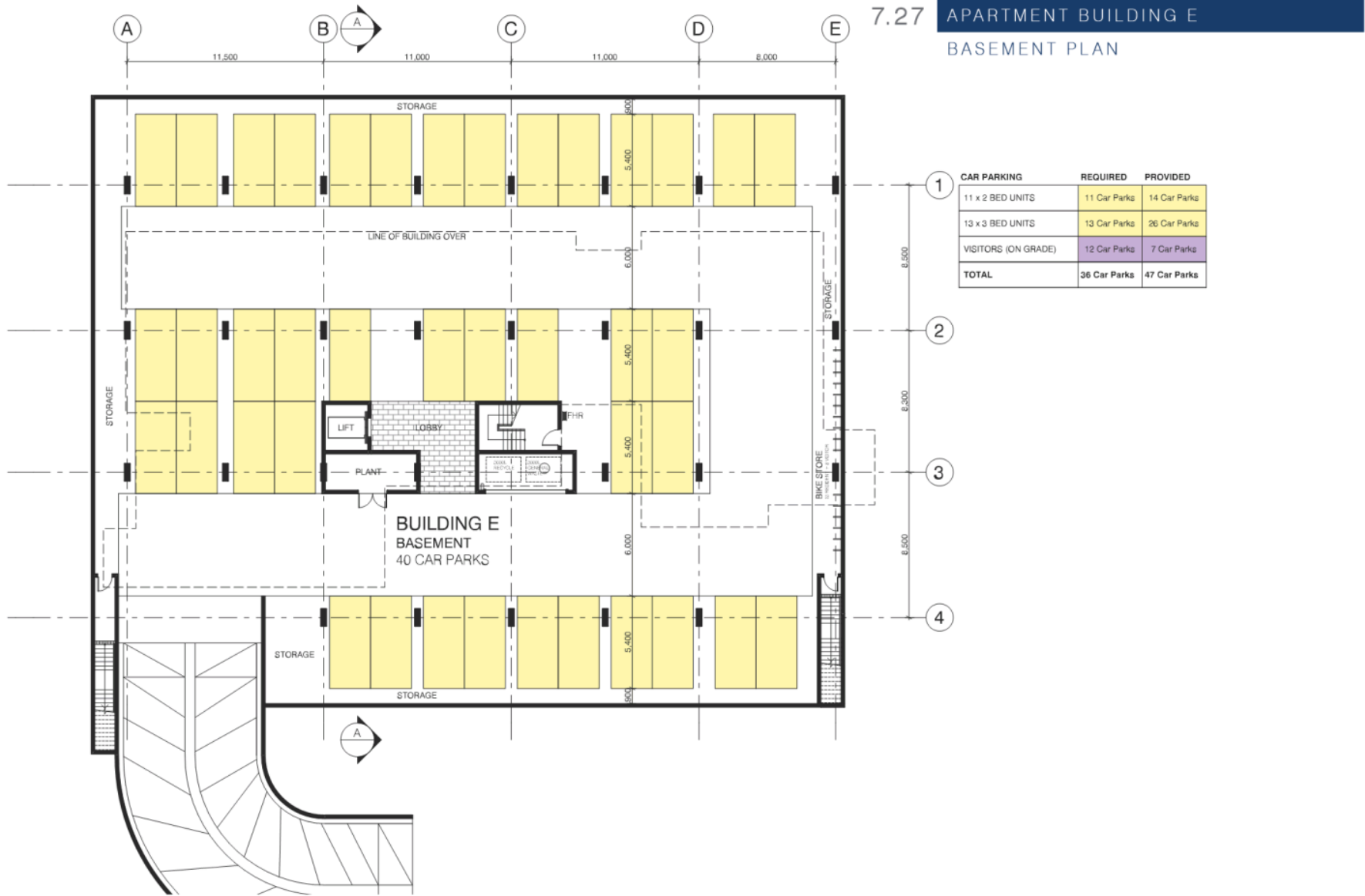


SOUTH ELEVATION

7.26 APARTMENT BUILDING D  
SECTION







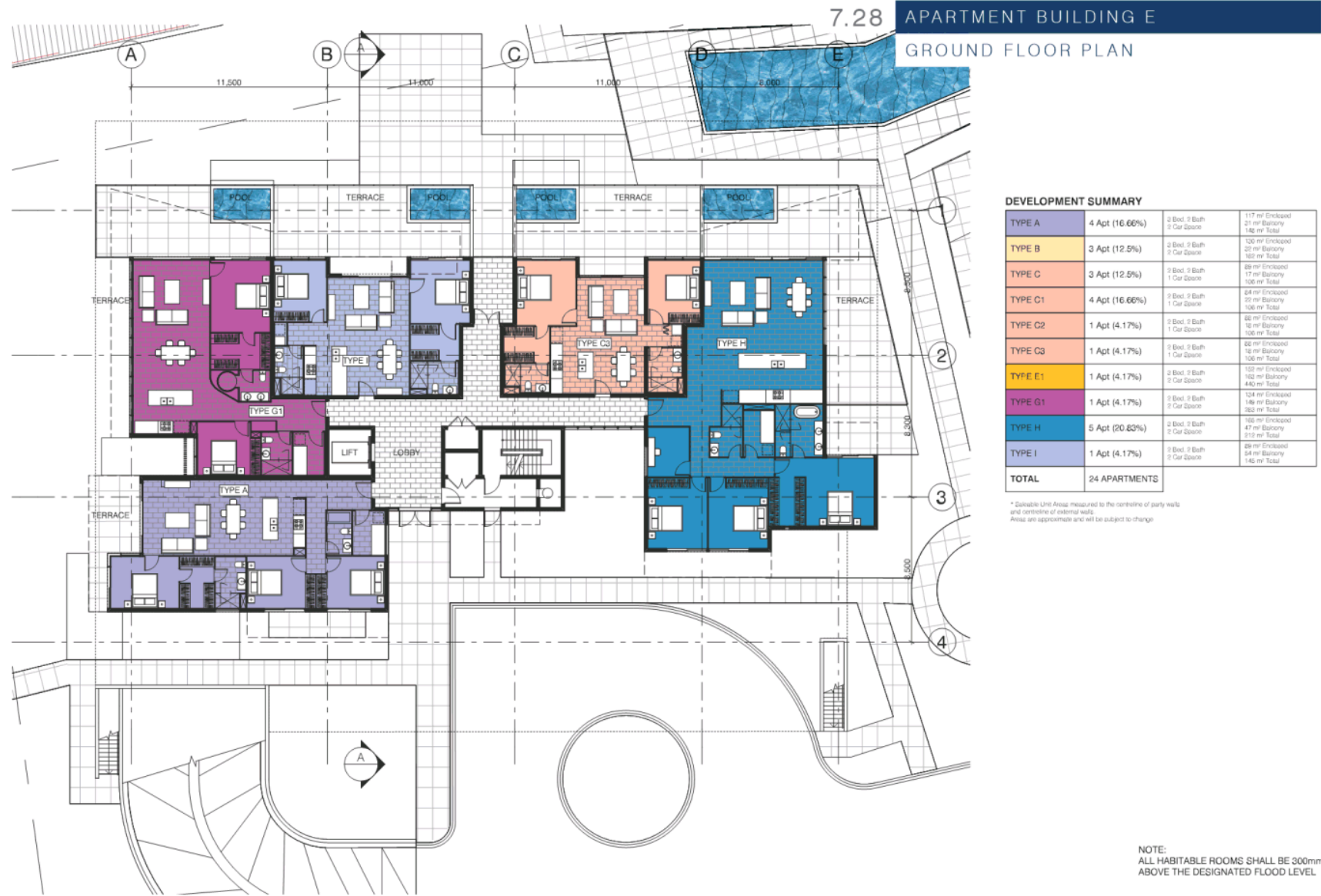
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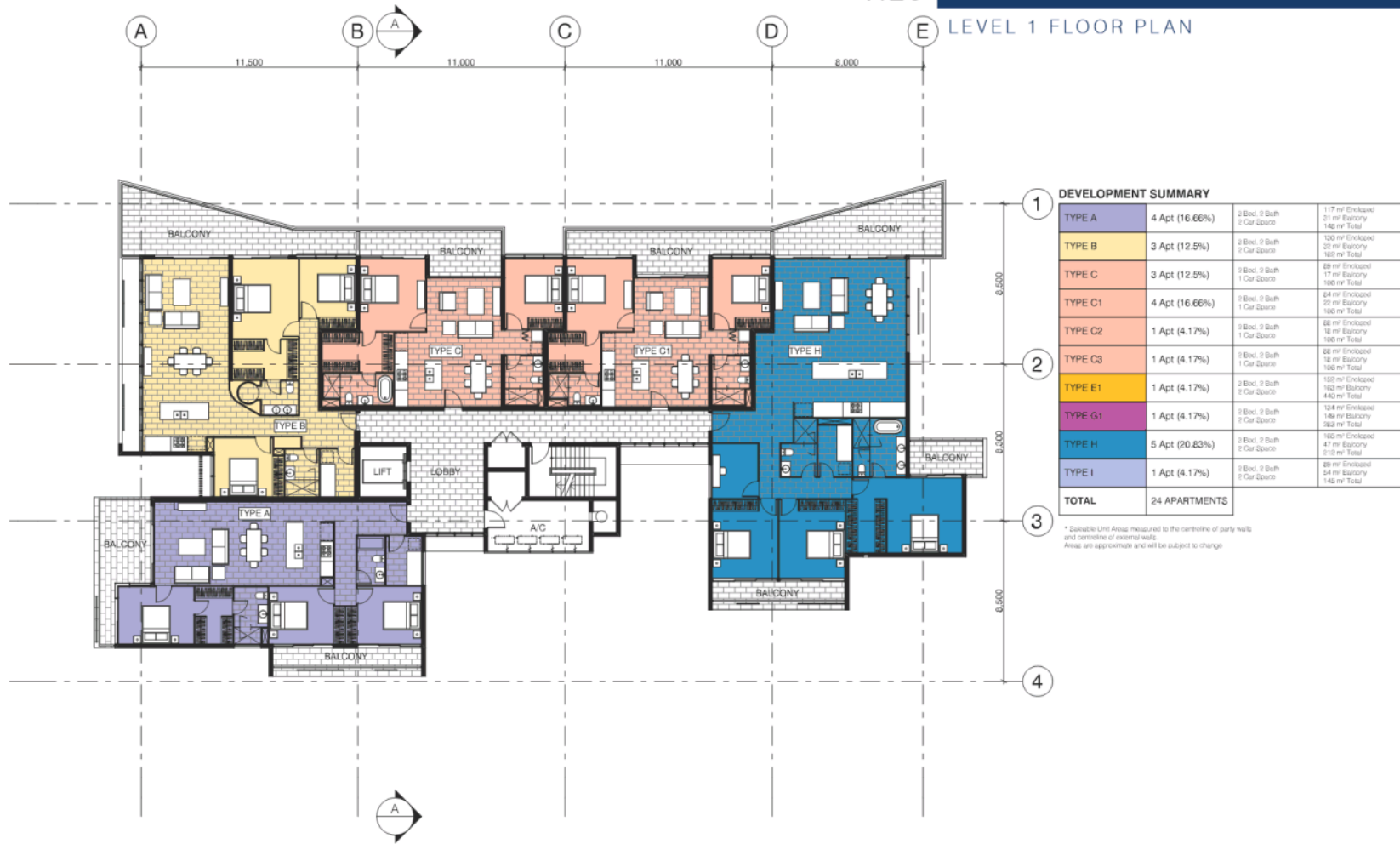


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7.29 APARTMENT BUILDING E

LEVEL 1 FLOOR PLAN



DEVELOPMENT SUMMARY			
TYPE A	4 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
TYPE B	3 Apt (12.5%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 162 m <sup>2</sup> Total
TYPE C	3 Apt (12.5%)	2 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C1	4 Apt (16.66%)	2 Bed, 2 Bath 1 Car Space	64 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C2	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE C3	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE E1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	102 m <sup>2</sup> Enclosed 162 m <sup>2</sup> Balcony 442 m <sup>2</sup> Total
TYPE G1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	124 m <sup>2</sup> Enclosed 146 m <sup>2</sup> Balcony 362 m <sup>2</sup> Total
TYPE H	5 Apt (20.83%)	2 Bed, 2 Bath 2 Car Space	162 m <sup>2</sup> Enclosed 47 m <sup>2</sup> Balcony 312 m <sup>2</sup> Total
TYPE I	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	89 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
<b>TOTAL</b>	<b>24 APARTMENTS</b>		

\* Balcony Unit Area measured to the combine of party walls and combine of external walls.  
Areas are approximate and will be subject to change

7.30 APARTMENT BUILDING E

LEVEL 2 FLOOR PLAN



DEVELOPMENT SUMMARY			
TYPE A	4 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
TYPE B	3 Apt (12.5%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 162 m <sup>2</sup> Total
TYPE C	3 Apt (12.5%)	2 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C1	4 Apt (16.66%)	2 Bed, 2 Bath 1 Car Space	64 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C2	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE C3	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE E1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	102 m <sup>2</sup> Enclosed 162 m <sup>2</sup> Balcony 442 m <sup>2</sup> Total
TYPE G1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	124 m <sup>2</sup> Enclosed 146 m <sup>2</sup> Balcony 362 m <sup>2</sup> Total
TYPE H	5 Apt (20.83%)	2 Bed, 2 Bath 2 Car Space	162 m <sup>2</sup> Enclosed 47 m <sup>2</sup> Balcony 312 m <sup>2</sup> Total
TYPE I	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	89 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
<b>TOTAL</b>	<b>24 APARTMENTS</b>		

\* Balcony Unit Area measured to the combine of party walls and combine of external walls.  
Areas are approximate and will be subject to change

7.31 APARTMENT BUILDING E

LEVEL 3 FLOOR PLAN



DEVELOPMENT SUMMARY			
TYPE A	4 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
TYPE B	3 Apt (12.5%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 162 m <sup>2</sup> Total
TYPE C	3 Apt (12.5%)	2 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C1	4 Apt (16.66%)	2 Bed, 2 Bath 1 Car Space	84 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C2	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE C3	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE E1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	102 m <sup>2</sup> Enclosed 162 m <sup>2</sup> Balcony 442 m <sup>2</sup> Total
TYPE G1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	124 m <sup>2</sup> Enclosed 146 m <sup>2</sup> Balcony 362 m <sup>2</sup> Total
TYPE H	5 Apt (20.83%)	2 Bed, 2 Bath 2 Car Space	162 m <sup>2</sup> Enclosed 47 m <sup>2</sup> Balcony 312 m <sup>2</sup> Total
TYPE I	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	89 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
<b>TOTAL</b>	<b>24 APARTMENTS</b>		

\* Balcony Unit Area measured to the combine of party walls and combine of external walls.  
Areas are approximate and will be subject to change

7.32 APARTMENT BUILDING E

LEVEL 4 FLOOR PLAN

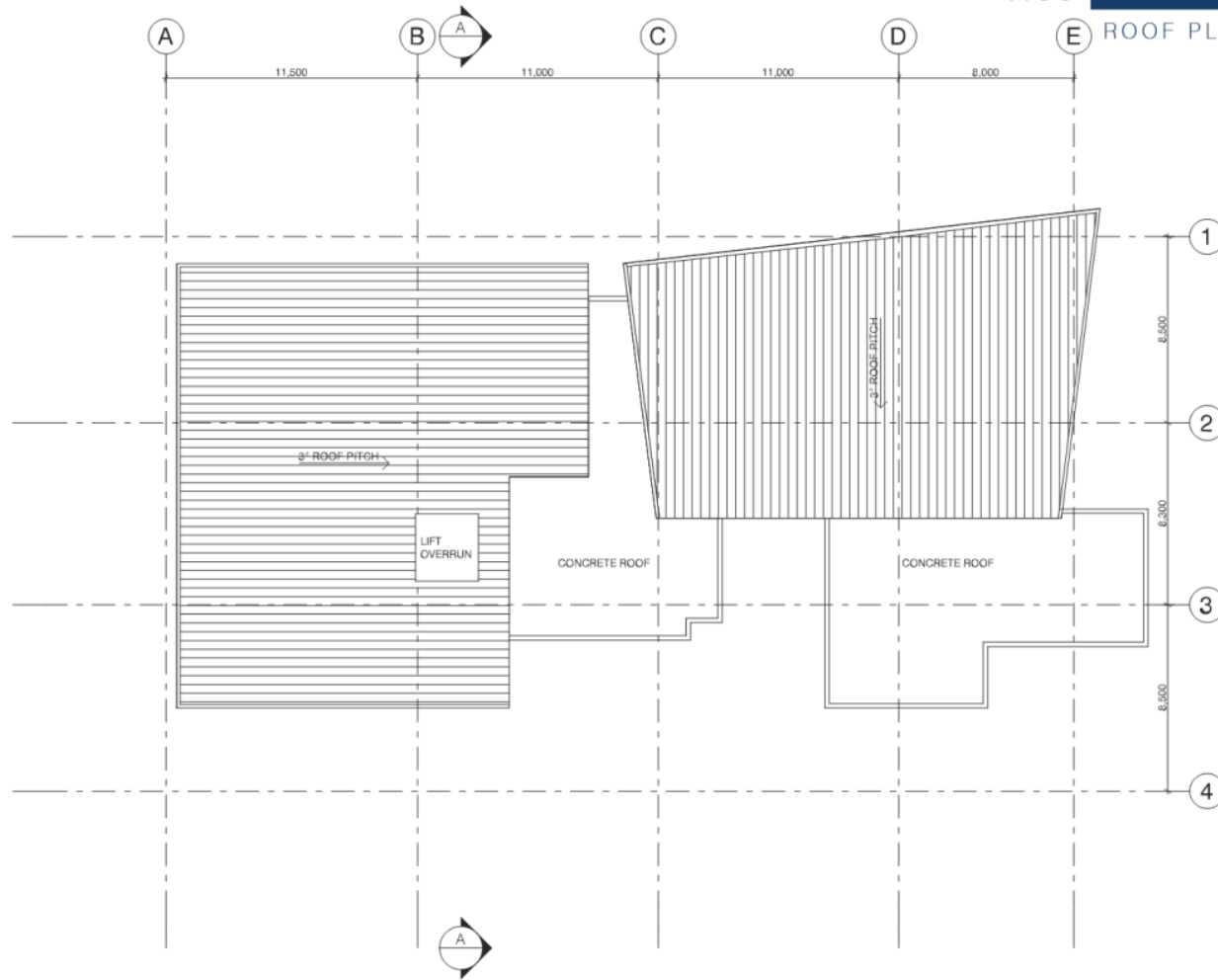


DEVELOPMENT SUMMARY			
TYPE A	4 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
TYPE B	3 Apt (12.5%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 162 m <sup>2</sup> Total
TYPE C	3 Apt (12.5%)	2 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C1	4 Apt (16.66%)	2 Bed, 2 Bath 1 Car Space	84 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C2	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE C3	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE E1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	102 m <sup>2</sup> Enclosed 162 m <sup>2</sup> Balcony 442 m <sup>2</sup> Total
TYPE G1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	124 m <sup>2</sup> Enclosed 146 m <sup>2</sup> Balcony 362 m <sup>2</sup> Total
TYPE H	5 Apt (20.83%)	2 Bed, 2 Bath 2 Car Space	162 m <sup>2</sup> Enclosed 47 m <sup>2</sup> Balcony 312 m <sup>2</sup> Total
TYPE I	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	89 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
<b>TOTAL</b>	<b>24 APARTMENTS</b>		

\* Saleable Unit Area measured to the combine of party walls and combine of external walls.  
Areas are approximate and will be subject to change

7.33 APARTMENT BUILDING E

ROOF PLAN



7.34 APARTMENT BUILDING E  
ELEVATION (1)



EAST ELEVATION



7.35 APARTMENT BUILDING E  
ELEVATION (2)



NORTH ELEVATION

7.36 APARTMENT BUILDING E  
ELEVATION (3)



WEST ELEVATION

7.37 APARTMENT BUILDING E  
ELEVATION (4)

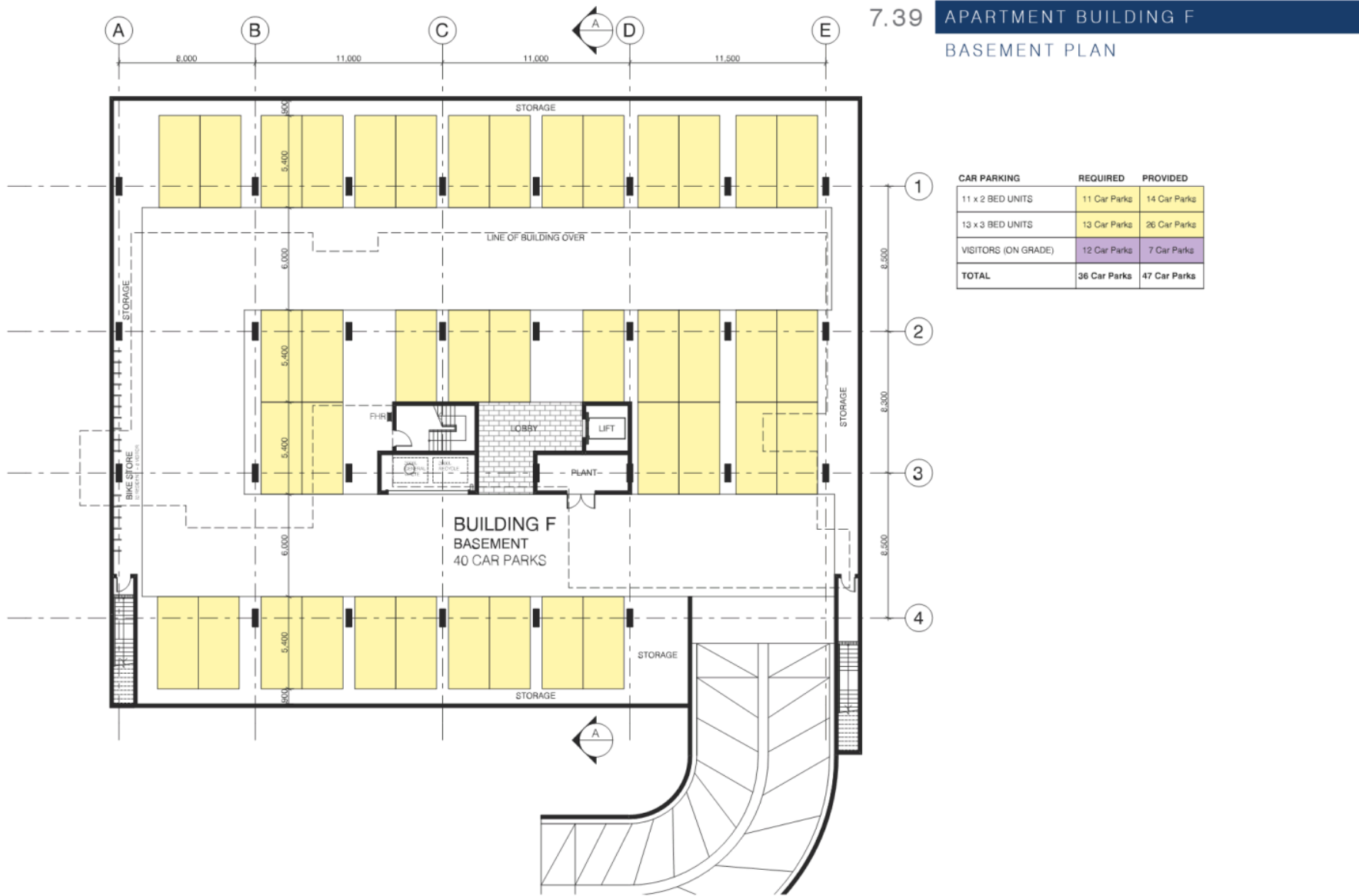


SOUTH ELEVATION

7.38 APARTMENT BUILDING E  
SECTION



SECTION A-A



**7.39 APARTMENT BUILDING F**  
BASEMENT PLAN

CAR PARKING	REQUIRED	PROVIDED
11 x 2 BED UNITS	11 Car Parks	14 Car Parks
13 x 3 BED UNITS	13 Car Parks	26 Car Parks
VISITORS (ON GRADE)	12 Car Parks	7 Car Parks
<b>TOTAL</b>	<b>36 Car Parks</b>	<b>47 Car Parks</b>



7.41 APARTMENT BUILDING F  
LEVEL 1 FLOOR PLAN



DEVELOPMENT SUMMARY			
TYPE A	4 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
TYPE B	3 Apt (12.5%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 162 m <sup>2</sup> Total
TYPE C	3 Apt (12.5%)	2 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C1	4 Apt (16.66%)	2 Bed, 2 Bath 1 Car Space	64 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C2	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE C3	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE E1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	102 m <sup>2</sup> Enclosed 162 m <sup>2</sup> Balcony 442 m <sup>2</sup> Total
TYPE G1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	124 m <sup>2</sup> Enclosed 146 m <sup>2</sup> Balcony 362 m <sup>2</sup> Total
TYPE H	5 Apt (20.83%)	2 Bed, 2 Bath 2 Car Space	162 m <sup>2</sup> Enclosed 47 m <sup>2</sup> Balcony 312 m <sup>2</sup> Total
TYPE I	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	89 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
<b>TOTAL</b>	<b>24 APARTMENTS</b>		

\* Balcony Unit Areas measured to the combine of party walls and combine of external walls.  
Areas are approximate and will be subject to change

7.42 APARTMENT BUILDING F  
LEVEL 2 FLOOR PLAN



DEVELOPMENT SUMMARY			
TYPE A	4 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
TYPE B	3 Apt (12.5%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 162 m <sup>2</sup> Total
TYPE C	3 Apt (12.5%)	2 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C1	4 Apt (16.66%)	2 Bed, 2 Bath 1 Car Space	64 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C2	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE C3	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE E1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	102 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 148 m <sup>2</sup> Total
TYPE G1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	124 m <sup>2</sup> Enclosed 14 m <sup>2</sup> Balcony 162 m <sup>2</sup> Total
TYPE H	5 Apt (20.83%)	2 Bed, 2 Bath 2 Car Space	102 m <sup>2</sup> Enclosed 47 m <sup>2</sup> Balcony 151 m <sup>2</sup> Total
TYPE I	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	89 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
<b>TOTAL</b>	<b>24 APARTMENTS</b>		

\* Balcony Unit Area measured to the combine of party walls and combine of external walls.  
Areas are approximate and will be subject to change



7.43 APARTMENT BUILDING F  
LEVEL 3 FLOOR PLAN



DEVELOPMENT SUMMARY			
TYPE A	4 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
TYPE B	3 Apt (12.5%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 162 m <sup>2</sup> Total
TYPE C	3 Apt (12.5%)	2 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C1	4 Apt (16.66%)	2 Bed, 2 Bath 1 Car Space	64 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C2	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE C3	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 100 m <sup>2</sup> Total
TYPE E1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	102 m <sup>2</sup> Enclosed 162 m <sup>2</sup> Balcony 442 m <sup>2</sup> Total
TYPE G1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	124 m <sup>2</sup> Enclosed 146 m <sup>2</sup> Balcony 362 m <sup>2</sup> Total
TYPE H	5 Apt (20.83%)	2 Bed, 2 Bath 2 Car Space	162 m <sup>2</sup> Enclosed 47 m <sup>2</sup> Balcony 312 m <sup>2</sup> Total
TYPE I	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	89 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
<b>TOTAL</b>	<b>24 APARTMENTS</b>		

\* Balcony Unit Area measured to the combine of party walls and combine of external walls.  
Areas are approximate and will be subject to change

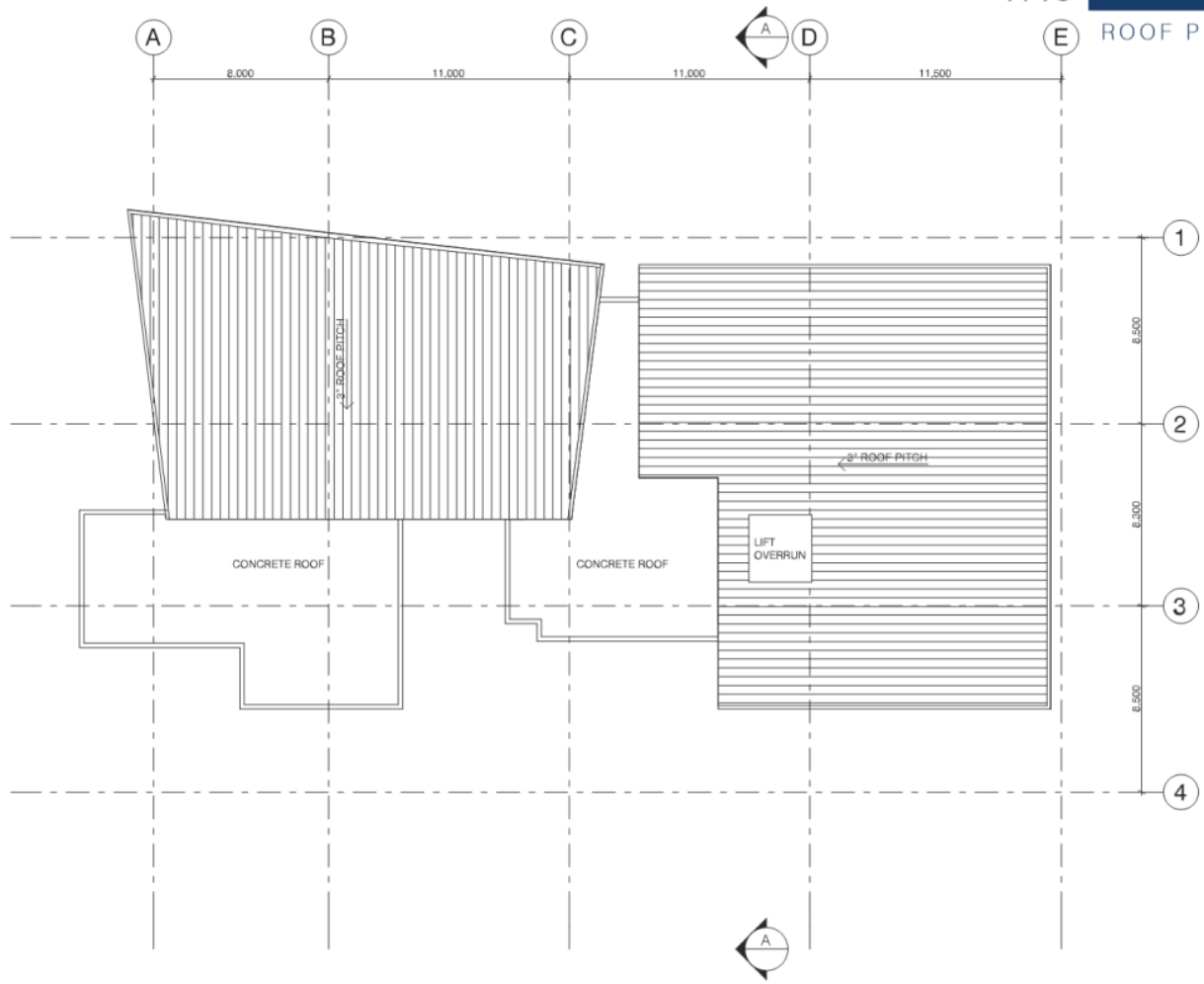
7.44 APARTMENT BUILDING F  
LEVEL 4 FLOOR PLAN



DEVELOPMENT SUMMARY			
TYPE A	4 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	117 m <sup>2</sup> Enclosed 21 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
TYPE B	3 Apt (12.5%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 162 m <sup>2</sup> Total
TYPE C	3 Apt (12.5%)	2 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C1	4 Apt (16.66%)	2 Bed, 2 Bath 1 Car Space	64 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C2	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	66 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE C3	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	62 m <sup>2</sup> Enclosed 16 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
TYPE E1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	102 m <sup>2</sup> Enclosed 162 m <sup>2</sup> Balcony 442 m <sup>2</sup> Total
TYPE G1	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	124 m <sup>2</sup> Enclosed 146 m <sup>2</sup> Balcony 362 m <sup>2</sup> Total
TYPE H	5 Apt (20.83%)	2 Bed, 2 Bath 2 Car Space	162 m <sup>2</sup> Enclosed 47 m <sup>2</sup> Balcony 312 m <sup>2</sup> Total
TYPE I	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	89 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
<b>TOTAL</b>	<b>24 APARTMENTS</b>		

\* Balcony Unit Areas measured to the combine of party walls and combine of external walls.  
Areas are approximate and will be subject to change

7.45 APARTMENT BUILDING F  
ROOF PLAN



7.46 APARTMENT BUILDING F  
ELEVATION (1)



7.47 APARTMENT BUILDING F  
ELEVATION (2)



NORTH ELEVATION

7.48 APARTMENT BUILDING F  
ELEVATION (3)

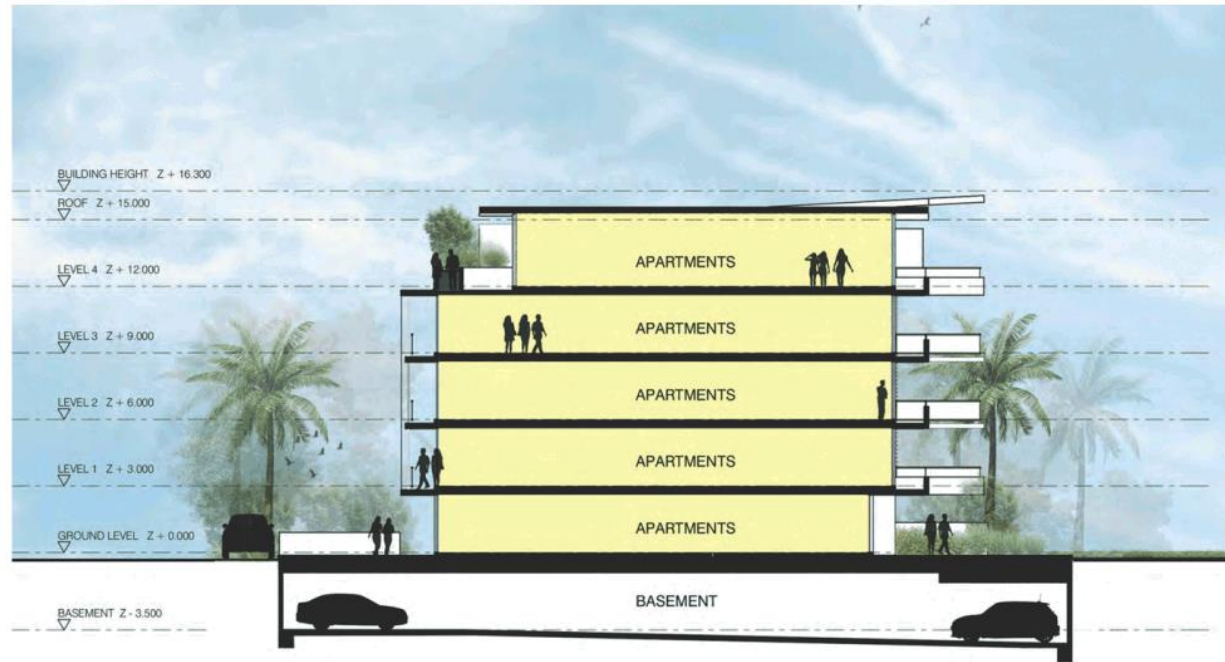


7.49 APARTMENT BUILDING F  
ELEVATION (4)



SOUTH ELEVATION

7.50 APARTMENT BUILDING F  
SECTION



SECTION A-A



7.51 TYPICAL APARTMENT PLANS

TYPE A & B



UNIT TYPE A - 1:100 (A3)

BUILDING D

TYPE A	8 Apt (22.22%)	2 Bed, 2 Bath 2 Car Space	117 m <sup>2</sup> Enclosed 31 m <sup>2</sup> Balcony 148 m <sup>2</sup> Total
--------	----------------	------------------------------	--

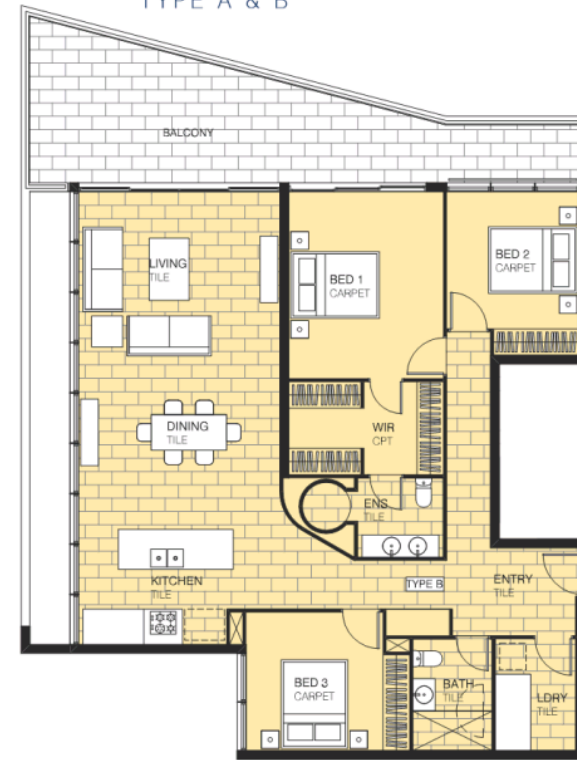
BUILDING E

TYPE A	4 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	117 m <sup>2</sup> Enclosed 31 m <sup>2</sup> Balcony 148 m <sup>2</sup> Total
--------	----------------	------------------------------	--

BUILDING F

TYPE A	4 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	117 m <sup>2</sup> Enclosed 31 m <sup>2</sup> Balcony 148 m <sup>2</sup> Total
--------	----------------	------------------------------	--

\* Saleable Unit Areas measured to the centreline of party walls and centreline of external walls. Areas are approximate and will be subject to change.



UNIT TYPE B - 1:100 (A3)

BUILDING D

TYPE B	6 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 25 m <sup>2</sup> Balcony 145 m <sup>2</sup> Total
--------	----------------	------------------------------	--

BUILDING E

TYPE B	3 Apt (12.5%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 25 m <sup>2</sup> Balcony 145 m <sup>2</sup> Total
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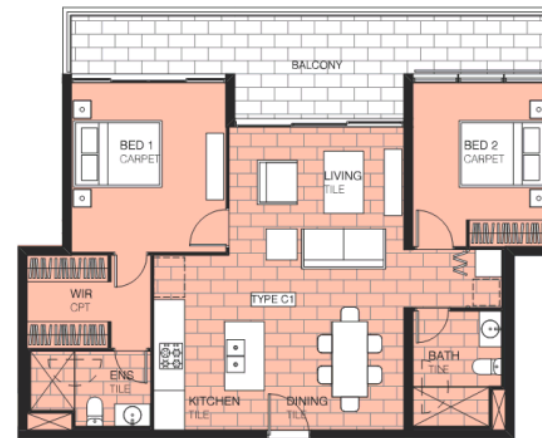
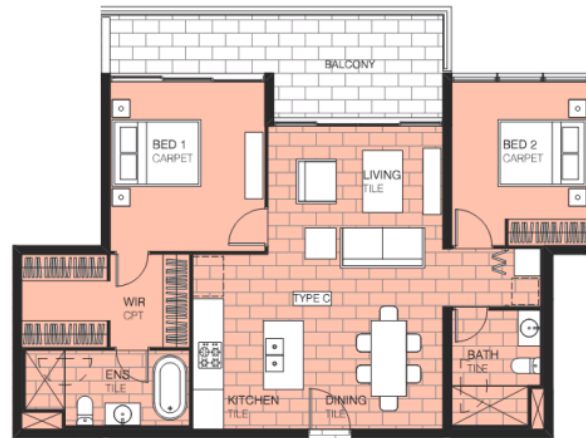
BUILDING F

TYPE B	3 Apt (12.5%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 25 m <sup>2</sup> Balcony 145 m <sup>2</sup> Total
--------	---------------	------------------------------	--

\* Saleable Unit Areas measured to the centreline of party walls and centreline of external walls. Areas are approximate and will be subject to change.

7.52 TYPICAL APARTMENT PLANS

TYPE C & C1



UNIT TYPE C - 1:100 (A3)

**BUILDING D**

TYPE C	6 Apt (16.66%)	2 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
--------	----------------	------------------------------	---

**BUILDING E**

TYPE C	3 Apt (12.5%)	2 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
--------	---------------	------------------------------	---

**BUILDING F**

TYPE C	3 Apt (12.5%)	2 Bed, 2 Bath 1 Car Space	89 m <sup>2</sup> Enclosed 17 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
--------	---------------	------------------------------	---

\* Spacious Unit Areas measured to the centreline of party walls and centreline of external walls. Areas are approximate and will be subject to change.

UNIT TYPE C1 - 1:100 (A3)

**BUILDING E**

TYPE C1	4 Apt (16.66%)	2 Bed, 2 Bath 1 Car Space	84 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
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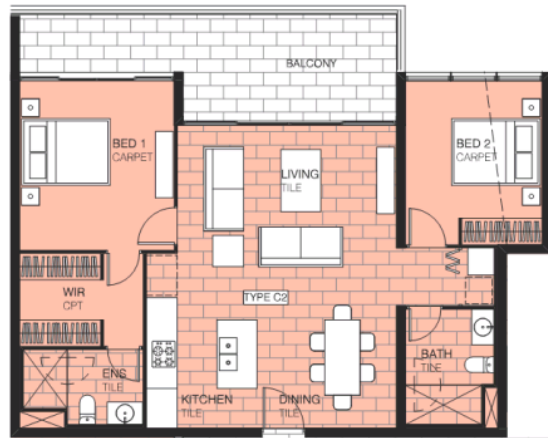
**BUILDING F**

TYPE C1	4 Apt (16.66%)	2 Bed, 2 Bath 1 Car Space	84 m <sup>2</sup> Enclosed 22 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
---------	----------------	------------------------------	---

\* Spacious Unit Areas measured to the centreline of party walls and centreline of external walls. Areas are approximate and will be subject to change.

7.53 TYPICAL APARTMENT PLANS

TYPE C2, C3 & D



UNIT TYPE C2 - 1:100 (A3)

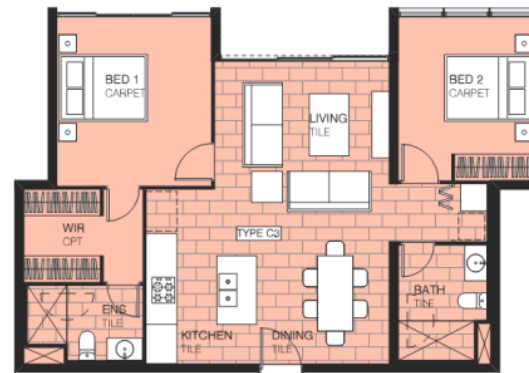
BUILDING E

TYPE C2	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	66 m <sup>2</sup> Enclosed 18 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
---------	---------------	------------------------------	---

BUILDING F

TYPE C2	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	66 m <sup>2</sup> Enclosed 18 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
---------	---------------	------------------------------	---

\* Suitable Unit Areas measured to the centreline of party walls and centreline of external walls. Areas are approximate and will be subject to change.



UNIT TYPE C3 - 1:100 (A3)

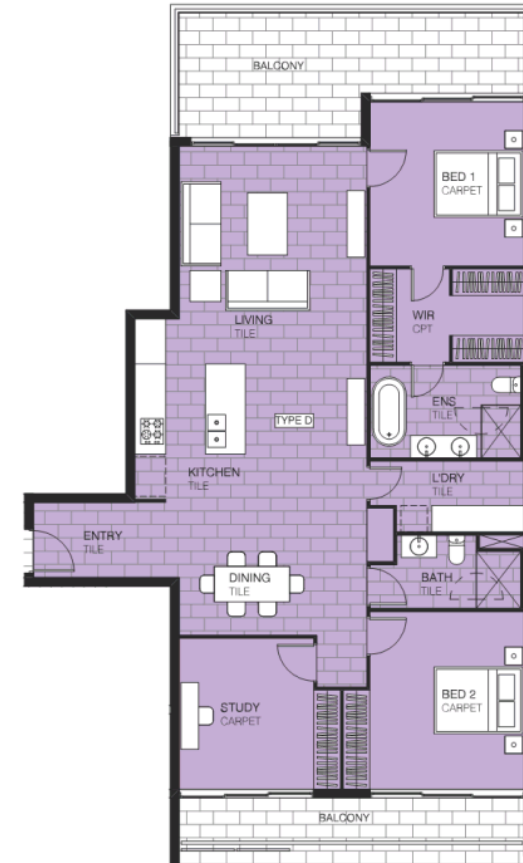
BUILDING E

TYPE C3	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	66 m <sup>2</sup> Enclosed 18 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
---------	---------------	------------------------------	---

BUILDING F

TYPE C3	1 Apt (4.17%)	2 Bed, 2 Bath 1 Car Space	66 m <sup>2</sup> Enclosed 18 m <sup>2</sup> Balcony 106 m <sup>2</sup> Total
---------	---------------	------------------------------	---

\* Suitable Unit Areas measured to the centreline of party walls and centreline of external walls. Areas are approximate and will be subject to change.



UNIT TYPE D - 1:100 (A3)

BUILDING D

TYPE D	6 Apt (16.66%)	2 Bed, 2 Bath 2 Car Space	120 m <sup>2</sup> Enclosed 24 m <sup>2</sup> Balcony 166 m <sup>2</sup> Total
--------	----------------	------------------------------	--

\* Suitable Unit Areas measured to the centreline of party walls and centreline of external walls. Areas are approximate and will be subject to change.



7.54 TYPICAL APARTMENT PLANS  
 TYPE E



7.55 TYPICAL APARTMENT PLANS  
TYPE E1

7.56 TYPICAL APARTMENT PLANS  
TYPE F

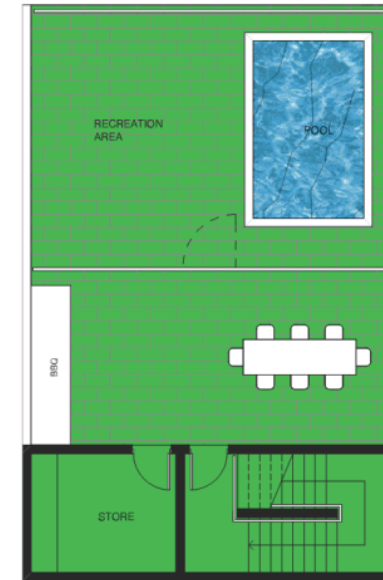


UNIT TYPE F - 1:100 (A3)

BUILDING D

TYPE F	2 Apt (5.56%)	3 Bed, 2 Bath 9 Car Spaces	214 m <sup>2</sup> Enclosed 136 m <sup>2</sup> Balcony 340 m <sup>2</sup> Total
--------	---------------	-------------------------------	---

\* Suitable Unit Areas measured to the centreline of party walls and centreline of external walls.  
Areas are approximate and will be subject to change



UNIT TYPE F ROOF - 1:100 (A3)

7.57 TYPICAL APARTMENT PLANS

TYPE G & H



UNIT TYPE H - 1:100 (A3)

BUILDING E

TYPE H	5 Apt (20.83%)	2 Bed, 2 Bath 2 Car Space	165 m <sup>2</sup> Enclosed 47 m <sup>2</sup> Balcony 212 m <sup>2</sup> Total
--------	----------------	------------------------------	--

BUILDING F

TYPE H	5 Apt (20.83%)	2 Bed, 2 Bath 2 Car Space	165 m <sup>2</sup> Enclosed 47 m <sup>2</sup> Balcony 212 m <sup>2</sup> Total
--------	----------------	------------------------------	--

\* Suitable Unit Area measured to the centreline of party walls and centreline of external walls.  
Areas are approximate and will be subject to change.



UNIT TYPE G - 1:100 (A3)

BUILDING D

TYPE G1	2 Apt (5.56%)	1 Bed, 2 Bath 2 Car Space	124 m <sup>2</sup> Enclosed 146 m <sup>2</sup> Balcony 269 m <sup>2</sup> Total
---------	---------------	------------------------------	---

BUILDING E

TYPE G1	1 Apt (4.17%)	1 Bed, 2 Bath 2 Car Space	124 m <sup>2</sup> Enclosed 146 m <sup>2</sup> Balcony 269 m <sup>2</sup> Total
---------	---------------	------------------------------	---

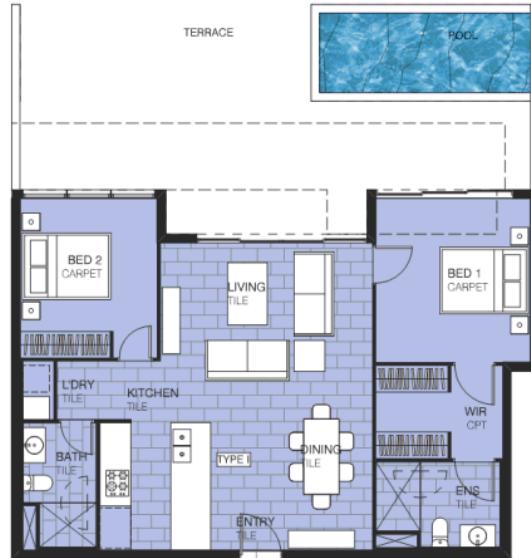
BUILDING F

TYPE G1	1 Apt (4.17%)	1 Bed, 2 Bath 2 Car Space	124 m <sup>2</sup> Enclosed 146 m <sup>2</sup> Balcony 269 m <sup>2</sup> Total
---------	---------------	------------------------------	---

\* Suitable Unit Area measured to the centreline of party walls and centreline of external walls.  
Areas are approximate and will be subject to change.

7.58 TYPICAL APARTMENT PLANS

TYPE I & D1



UNIT TYPE I - 1:100 (A3)

BUILDING D

TYPE I	2 Apt (5.56%)	2 Bed, 2 Bath 2 Car Space	89 m <sup>2</sup> Enclosed 54 m <sup>2</sup> Terrace 142 m <sup>2</sup> Total
--------	---------------	------------------------------	---

\* Suitable Unit Areas measured to the centreline of party walls and centreline of external walls.  
Areas are approximate and will be subject to change.

BUILDING E

TYPE I	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	89 m <sup>2</sup> Enclosed 54 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
--------	---------------	------------------------------	---

\* Suitable Unit Areas measured to the centreline of party walls and centreline of external walls.  
Areas are approximate and will be subject to change.

BUILDING F

TYPE I	1 Apt (4.17%)	2 Bed, 2 Bath 2 Car Space	89 m <sup>2</sup> Enclosed 54 m <sup>2</sup> Balcony 142 m <sup>2</sup> Total
--------	---------------	------------------------------	---

\* Suitable Unit Areas measured to the centreline of party walls and centreline of external walls.  
Areas are approximate and will be subject to change.



UNIT TYPE D1 - 1:100 (A3)

BUILDING D

TYPE D1	2 Apt (5.56%)	2 Bed, 2 Bath 2 Car Space	158 m <sup>2</sup> Enclosed 58 m <sup>2</sup> Terrace 188 m <sup>2</sup> Total
---------	---------------	------------------------------	--

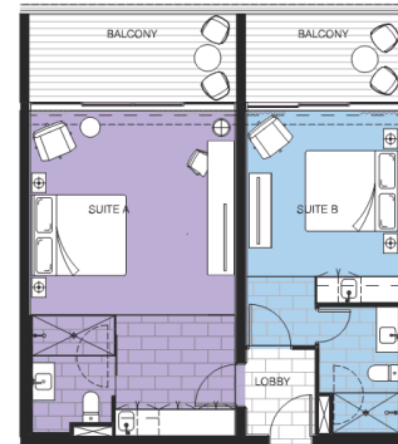
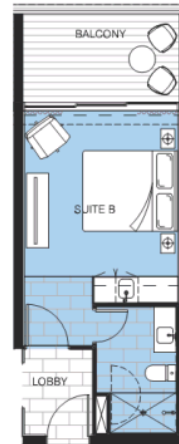
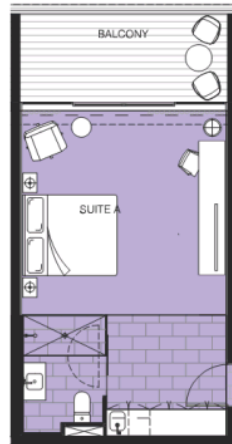
\* Suitable Unit Areas measured to the centreline of party walls and centreline of external walls.  
Areas are approximate and will be subject to change.



7.59 TYPICAL SHORT TERM ACCOMMODATION

TYPE A & B

Note: These suites are configured in pairs to create a twin key apartment with shared entry.



SUITE TYPE A - 1:100 (A3)

SUITE A	14 Suites (50%)	27.75 m <sup>2</sup> Enclosed 10.75 m <sup>2</sup> Balcony 40.5 m <sup>2</sup> Total*
---------	-----------------	---

\* Selective Unit Areas measured to the centreline of party walls and centreline of external walls.  
Areas are approximate and will be subject to change.

SUITE TYPE B - 1:100 (A3)

SUITE B	14 Suites (50%)	25 m <sup>2</sup> Enclosed 9.05 m <sup>2</sup> Balcony 32.05 m <sup>2</sup> Total*
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\* Selective Unit Areas measured to the centreline of party walls and centreline of external walls.  
Areas are approximate and will be subject to change.

COMBINED SUITE - 1:100 (A3)

FORM

# Burnett Heads Gateway Marina

67 Harbour Esplanade, Burnett Heads QLD 4670

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LANDSCAPE DESIGN INTENT  
OCTOBER 2019

190819

FORM

bda

BH DEVELOPMENTS

Issue	Date	Description	Checked
01	12/11/2019	Preliminary Issue	AB
02	29/11/2019	RFI Revisions	AB

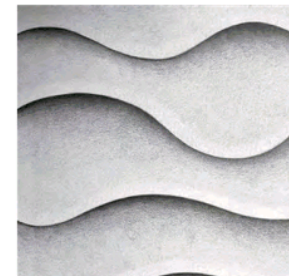
**Form Landscape Architects**

900 Ann Street  
Trinity Lane via Church Street  
Fortitude Valley QLD 4000

PO Box 393  
Fortitude Valley QLD 4000

T +617 3210 0000  
info@formla.com.au

[formla.com.au](http://formla.com.au)



# Contents

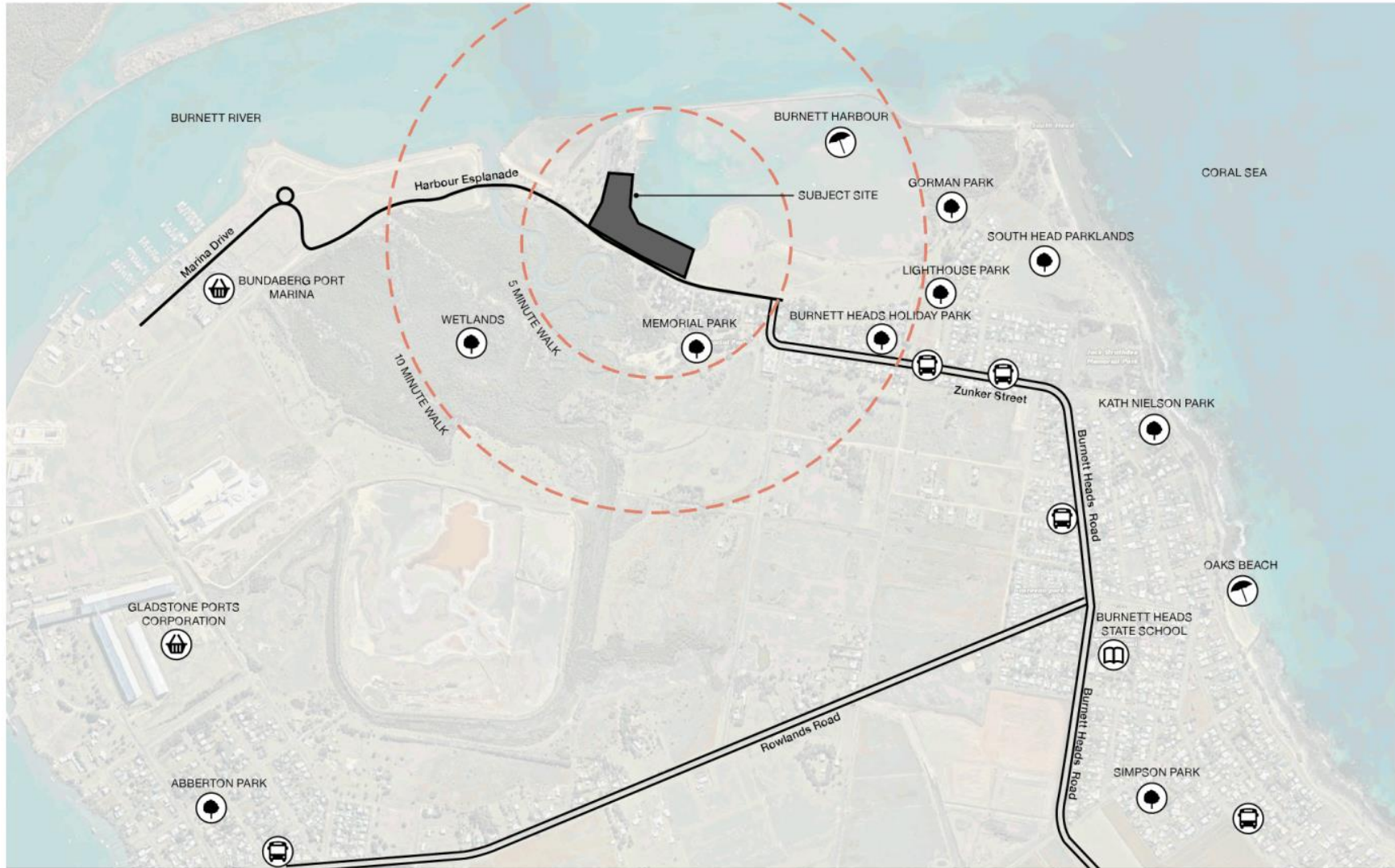
<b>1.0</b>	<b>Site Understanding</b>	<b>4</b>		
1.1	Location & Context	5		
<b>2.0</b>	<b>Design Approach</b>	<b>6</b>		
2.1	Landscape Vision	7		
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3.2	Landscape Character Product	11		
3.3	Street Interface	12		
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			4.2	Planting Palette
			4.3	Planting Palette
			4.4	Planting Palette
			<b>5.0</b>	<b>Code Response</b>
			5.1	Landscape Work Code

# Part One

Site Understanding



Site Understanding  
1.1 Location & Context



# Part Two

Design Approach



Design Approach  
**2.1 Landscape Vision**



Contours + Landform



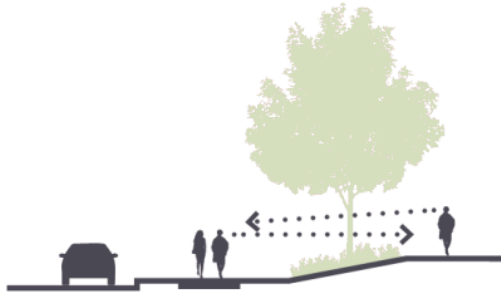
Ribbon + Connection



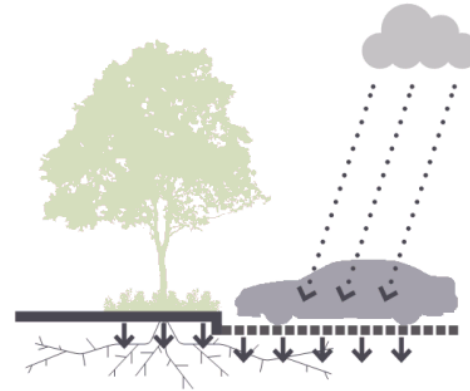
Waves + Layers



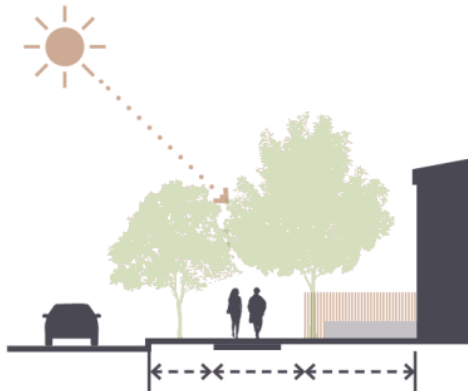
Design Approach  
**2.2 Design Drivers**



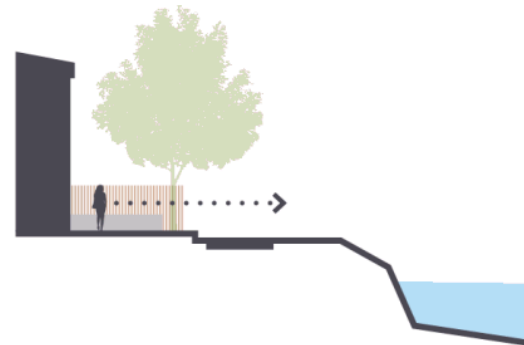
Surveillance to street



Integrated WSUD



Genuine street tree environment



Surveillance to river

# Part Three

Landscape Design



Landscape Design  
**3.1 Landscape Master Plan**



- Legend**
- 1** Offices, yacht club, shops, restaurants & Bar
  - 2** Short term accommodation, shops & offices
  - 3** Shops, restaurants, offices & Bars
  - 4** Residential apartments & short term accommodation
  - 5** Residential apartments
  - 6** Waterfront promenade
  - 7** Access to Marina
  - 8** Commercial parking area
  - 9** Residential parking area
  - 10** Pool area
  - 11** Pedestrian spine
  - 12** Harbour esplanade verge
  - 13** Main commercial entry
  - 14** Residential entry
  - 15** Bio retention

29 Nov 2019 DA02 190819 North Scale 1:1000 @ A3



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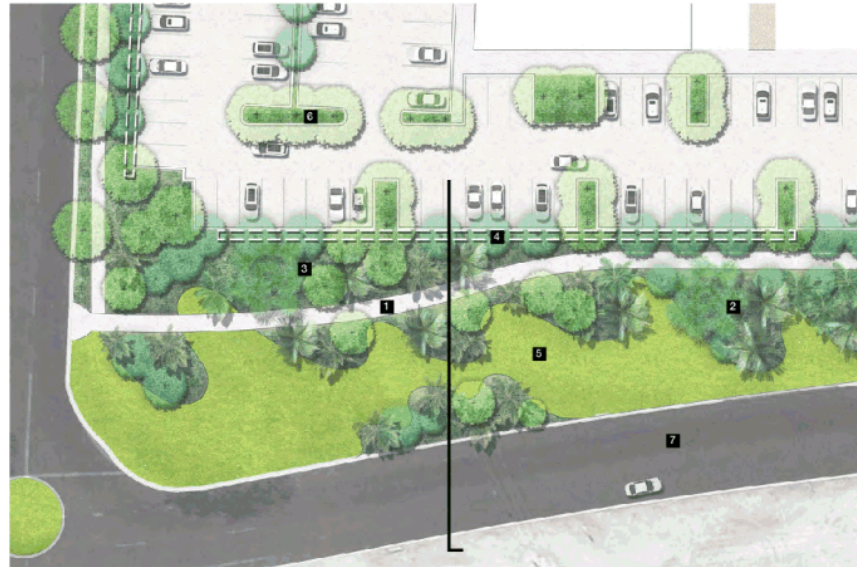
Landscape Design  
**3.2 Landscape Character Precinct**



29 Nov 2019 DA02 190819 North Scale 1:1000 @ A3

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Landscape Design  
**3.3 Street Interface**



Detail Plan

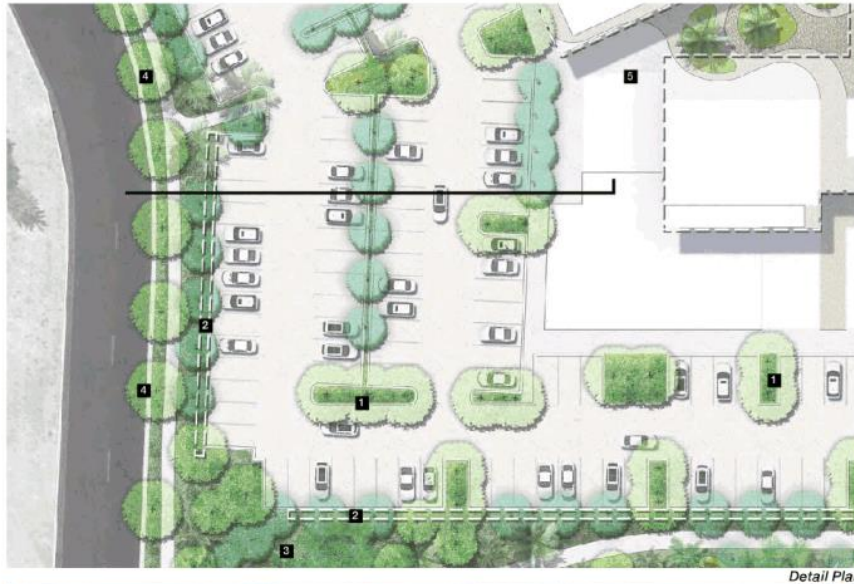


Section

Legend

- 1 Existing pedestrian pathway
- 2 Landscape mounding
- 3 Layered planting
- 4 Bioretention basin
- 5 Open lawn area
- 6 Shade trees to car park area
- 7 Harbour Esplanade

Landscape Design  
**3.4 Vehicular Zone**



Detail Plan



**Legend**

- 1** Shade trees to car park
- 2** Bioretention basin
- 3** Layered planting to street frontage
- 4** Street trees
- 5** Retail plaza



Section

Landscape Design  
**3.5 Pedestrian Zone**



Detail Plan



Section

Landscape Design  
**3.6 Waterfront Zone**



Detail Plan



Section

Legend

- 1 Private pool area
- 2 Pathway to marina edge
- 3 Layered screen planting
- 4 Private access to pool area



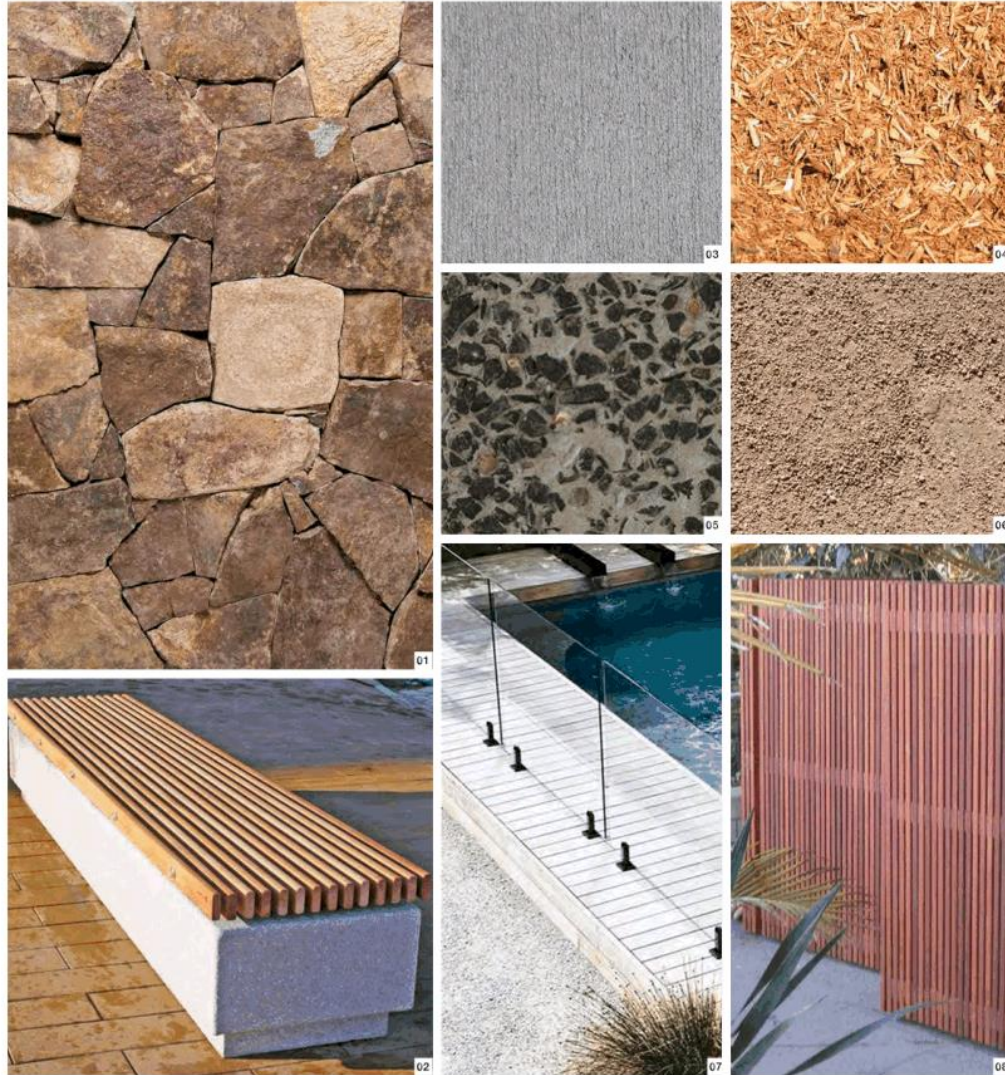
# Part Four

Design Details



Design Details

4.1 Materials and Finishes



SURFACE FINISHES		
03	Paving Type 1	Plain concrete Broom finished
05	Paving Type 2	Exposed aggregate Light exposure
06	Pavement Type 2	Decomposed granite Compacted
MULCHES		
04	Mulch Type 1	Organic mulch Cypress
WALLS		
01	Wall Type 1	Stone clad wall Random patter, tight lay
FENCES		
07	Fence Type 1	Glass pool fence Frameless
08	Fence Type 2	Timber batten fence Treated hardwood
FURNITURE		
02	Seating	Concrete + timber seat

Design Details

4.2 Planting Palette



TREES		Street Interface	Vehicular Zone	Pedestrian Spine	Waterfront Interface	Biorotation Systems	Private Landscape	Landscape Buffer
01	<i>Agathis robusta</i> Kauri Pine	✓			✓			
02	<i>Araucaria cunninghamii</i> Hoop Pine	✓			✓			
03	<i>Araucaria heterophylla</i> Norfolk Island Pine		✓		✓			
04	<i>Banksia integrifolia</i> Coast Banksia	✓		✓		✓	✓	
05	<i>Buckinghamia celsissima</i> Ivory Curl Tree	✓					✓	
06	<i>Casuarina equisetifolia</i> Australian Pine	✓					✓	
07	<i>Cupaniopsis anacardioides</i> Tuckeroo		✓	✓	✓			
08	<i>Eleocharpus eumundi</i> Smooth-leaved Quandong			✓			✓	
09	<i>Eleocharpus reticulatus</i> Blueberry ash	✓	✓	✓				
10	<i>Flindersia schottiana</i> Bumpy Ash		✓	✓			✓	
11	<i>Grevillea baileyana</i> White Oak	✓		✓			✓	✓
12	<i>Harpullia pendula</i> Tulipwood	✓	✓	✓			✓	
13	<i>Hibiscus tiliaceus</i> Cottonwood		✓	✓		✓	✓	
14	<i>Livistona australis</i> Fan Palm	✓	✓	✓	✓		✓	
15	<i>Livistona decipiens</i> Ribbon Fan Palm	✓	✓	✓	✓		✓	
16	<i>Lophostemon suaveolens</i> Swamp Mahogany		✓	✓			✓	
17	<i>Magnolia grandiflora</i> Magnolia	✓		✓			✓	
18	<i>Magnolia grandiflora</i> 'Little Gem'			✓			✓	
19	<i>Melaleuca quinquenervia</i> Broad Leaved Paperbark	✓				✓	✓	
20	<i>Pandanus pedunculatus</i> Pandanus Palm			✓	✓		✓	
21	<i>Pandanus tectorius</i> Screwpine			✓	✓		✓	
22	<i>Phoenix canariensis</i> Canary Island Palm			✓	✓		✓	
23	<i>Plumeria obtusa</i> Evergreen Frangipannii			✓			✓	
24	<i>Randia fitzalanii</i> Native Gardenia		✓	✓			✓	
25	<i>Strelitzia nicolai</i> Bird of Paradise Tree			✓			✓	✓
26	<i>Syzygium tierneyanum</i> Lilly Pilly	✓		✓	✓		✓	
27	<i>Tristaniopsis</i> 'Luscious'	✓	✓				✓	
28	<i>Waterhousia floribunda</i> Weeping Lily Pilly	✓					✓	✓
29	<i>Wodyetia bifurcata</i> Foxtail Palm		✓	✓	✓		✓	

Design Details  
4.3 Planting Palette



SHURBS

		Street Interface	Vehicular Zone	Pedestrian Spine	Waterfront Interface	Biorotation Systems	Private Landscape	Landscape Buffer
01	<i>Alocasia brisbanensis</i>	Cunjevoi			✓		✓	
02	<i>Alpinia caerulea</i>	Native Ginger	✓	✓			✓	✓
03	<i>Alpinia mutica</i>	Dwarf Ginger			✓		✓	
04	<i>Asplenium nidus</i>	Birds Nest Fern			✓		✓	
05	<i>Banksia spinulosa</i> 'Coastal Cushion'	Coastal cushion	✓	✓	✓	✓	✓	✓
06	<i>Banksia ericifolia</i>	Heath Banksia	✓		✓	✓		✓
07	<i>Blechnum nudum</i>	Fisbone Water Fern			✓		✓	
08	<i>Bougainvillea glabra</i>	Paper Flower			✓	✓	✓	
09	<i>Callistemon</i> 'Little John'	Little John	✓	✓	✓	✓	✓	✓
10	<i>Calathea lutea</i>	Cigar Calathea			✓		✓	
11	<i>Carissa desert star</i>	Desert Star	✓	✓	✓	✓	✓	✓
12	<i>Cordyline australis</i>	Native Cordyline			✓		✓	✓
13	<i>Cordyline rubra</i>	Red Fruited Palm Lily			✓		✓	✓
14	<i>Crassula ovata</i>	Jade Plant		✓			✓	
15	<i>Crassula undulata</i>	Jitters		✓			✓	
16	<i>Crinum pedunculatum</i>	Spider Lily	✓	✓				✓
17	<i>Doryanthes palmeri</i>	Giant Spear Lily	✓		✓	✓		✓
18	<i>Grevillea</i> 'Bronze Rambler'	Bronze Rambler	✓		✓			✓
19	<i>Heliconia psittacorum</i>	False Bird-of-Paradise	✓		✓		✓	
20	<i>Hibiscus rosa sinensis</i>	Hibiscus			✓			✓
21	<i>Hymenocallis speciosa</i>	Broad-leaved Spider Lily			✓		✓	
22	<i>Lomandra longifolia</i> 'Lime Tuff'	Lime Tuff Mat Rush	✓	✓		✓		
23	<i>Monstera deliciosa</i>	Fruit Salad Plant			✓		✓	
24	<i>Philodendron</i> 'Little Phil'	Philodendron			✓		✓	
25	<i>Philodendron</i> 'Rojo Congo'	Rojo Congo			✓		✓	
26	<i>Philodendron xanadu</i>	Xanadu	✓	✓	✓	✓	✓	✓
27	<i>Radermachera summerscent</i>	Summerscent	✓					✓
28	<i>Rhapis excelsa</i>	Slender Lady Palm			✓		✓	
29	<i>Strelitzia reginae</i>	Bird of Paradise	✓	✓	✓			✓
30	<i>Syzygium australe</i> 'Resilience'	Resilience			✓		✓	✓
31	<i>Viburnum odoratissimum</i>	Viburnum			✓		✓	✓
32	<i>Westringia fruticosa</i> 'Wynyabbie'	Coastal Rosemary	✓	✓	✓	✓		✓
33	<i>Zamia furfuracea</i>	Cardboard Plant			✓		✓	

Design Details

4.4 Planting Palette



GROUND COVERS

		Street Interface	Vehicular Zone	Pedestrian Spine	Pedestrian Spine	Biorotation Systems	Private Landscape	Landscape Buffer
01	<i>Carex appressa</i>	Tall Sedge	✓	✓		✓		
02	<i>Carpobrotus glaucescens</i>	Pigface	✓	✓	✓	✓	✓	✓
03	<i>Casuarina glauca</i> 'Cousin It'	Cousin It			✓		✓	✓
04	<i>Cissus antarctica</i>	Kangaroo Vine			✓			
05	<i>Cissus rhombifolia</i>	Grape Ivy			✓		✓	
06	<i>Dianella caerulea</i> 'Little Jess'	Flax Lily	✓	✓	✓	✓	✓	✓
07	<i>Dichondra argentea</i> 'Silver Fall'	Silver Fall			✓		✓	
08	<i>Gazania rigens</i>	Coastal Gazania	✓	✓	✓	✓	✓	✓
09	<i>Goodenia ovata</i>	Hop goodenia	✓	✓	✓	✓	✓	✓
10	<i>Hardenbergia violacea</i>	Bushy Blue	✓			✓	✓	✓
11	<i>Isolepis nodosa</i>	Knobby Club Rush				✓		✓
12	<i>Juncus kraussiana</i>	Unicorn Soft Rush				✓		✓
13	<i>Juncus usitatus</i>	Common Rush				✓		✓
14	<i>Liriope muscari</i>	Lilyturf	✓	✓	✓	✓	✓	✓
15	<i>Lomandra hystrix</i>	Slender Mat Rush	✓	✓		✓		✓
16	<i>Lomandra longifolia</i> 'Tanika'	Mat Rush	✓	✓		✓		✓
17	<i>Myoporum ellipticum</i>	Coastal Myoporum	✓		✓			✓
18	<i>Myoporum parvifolium</i>	Creeping Boobialla		✓	✓			✓
19	<i>Pandorea jasminoides</i>	Bower Vine			✓			✓
20	<i>Peperomia obtusifolia</i>	Baby Rubber Plant			✓			✓
21	<i>Rhoeo discolor</i>	Moses In the Cradle	✓	✓	✓			✓
22	<i>Scaevola aemula</i>	Fairy Fan Flower	✓	✓				✓
23	<i>Trachelospermum jasminoides</i>	Chinese Star Jasmine	✓	✓	✓			✓
24	<i>Trachelospermum jasminoides</i> 'Tricolour'	Tricolor Jasmine	✓	✓				✓
25	<i>Viola hederacea</i>	Native Violet			✓			✓
26	<i>Westringia fruticosa</i> 'Mundi'	Mundi Native Rosemary	✓	✓	✓			✓

**INSITE SJC**

**BURNETT HARBOUR MARINA VILLAGE: MARINE TURTLE  
MANAGEMENT PLAN**



Prepared by

Pendoley Environmental Pty Ltd

For

InSite

**21 February 2020**





## DOCUMENT CONTROL INFORMATION

**TITLE: BURNETT HARBOUR MARINA VILLAGE**

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Appendix B: Burnett Harbour Marina Village Development Application
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## ACRONYMS

Acronym	Definition
AFMA	Australian Fisheries Management Authority
BHD	BH Developments Qld Pty Ltd
CITES	Convention on the International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals
DoEE	Department of Energy and the Environment
EPBC	Environment Protection and Biodiversity Conservation
ESD	Ecologically Sustainable Development
eQld	Eastern Queensland (genetic stock)
GHG	Green House Gas
IUCN	International Union for the Conservation of Nature
MTMP	Marine Turtle Management Plan
NCA	Nature Conservation Act
sGBR	Southern Great Barrier Reef (genetic stock)
SSAP	Single Species Action Plan
swPac	south-west Pacific (genetic stock)



## 1 INTRODUCTION

### 1.1 Project Background

BH Developments Qld Pty Ltd. (BHD) have submitted two development applications (Phase 1 and Phase 2) to Bundaberg Regional Council for the “Burnett Harbour Marina Village” located within Lot 1 on SP157913 at Burnett Heads. The proposal includes a total of 14 buildings, which are a mix of retail/commercial and residential, in addition to a public walkway and connecting pathways. Building details are provided in Table 1.

The proposal is located adjacent to the Bundaberg State Development Area (SDA) which was established by the Queensland Government with the key objective to “encourage the establishment of industrial and port related development of regional, State or national significance and other associated industries, facilities and local utilities to facilitate economic development and job creation” (Queensland Government, 2017). The Bundaberg SDA also has a vision to “manage and plan for the establishment of industry, infrastructure and port related development to support the continued growth of the Port of Bundaberg as a multicommodity port”. The Port of Bundaberg, managed by Gladstone Ports Corporation (GPS), is located ~5 km downstream from the mouth of the Burnett River. Between 2009 and 2019 the port has more than doubled its throughput of sugar and molasses and is expected to continue to grow (Gladstone Ports Corporation, 2020). Bundaberg Port Marina also provides 180 floating berths (Bundaberg Port Marina, 2020). Bundaberg Regional Council also maintains a four-lane Burnett Heads Harbour Boat Ramp, adjacent to the development (Bundaberg Regional Council, 2020).

**Table 1: Details of proposed buildings in Phase 1 and Phase 2**

Building	Use	Area (sq.m)	Storeys
<i>Phase 1</i>			
A	Offices, yacht club, retail	345	3
B	Short term accommodation, retail	648	3
C	Retail	860	1
D	Residential apartments and short-term accommodation	951	5
E	Residential apartments and short-term accommodation	597	5
F	Residential apartments	597	5
<i>Phase 2</i>			
G	Residential apartments and short-term accommodation	1404	6
H	Residential apartments and short-term accommodation	1404	6
I	Resort complex	1500	10
J	Residential apartments and short-term accommodation	1478	6
K	Residential apartments and short-term accommodation	1478	6
L	Conference centre	735	3
M	Residential apartments	1320	2
N	Short term accommodation	800	2



## 1.2 Site Description

The development site for Phase 1 includes some existing buildings and previously undeveloped land. Phase 2 comprises entirely undeveloped land. Combined, the sites face north toward Burnett Heads Boat Harbour and the Burnett River beyond. Aerial photography of the site is provided in Appendix B.

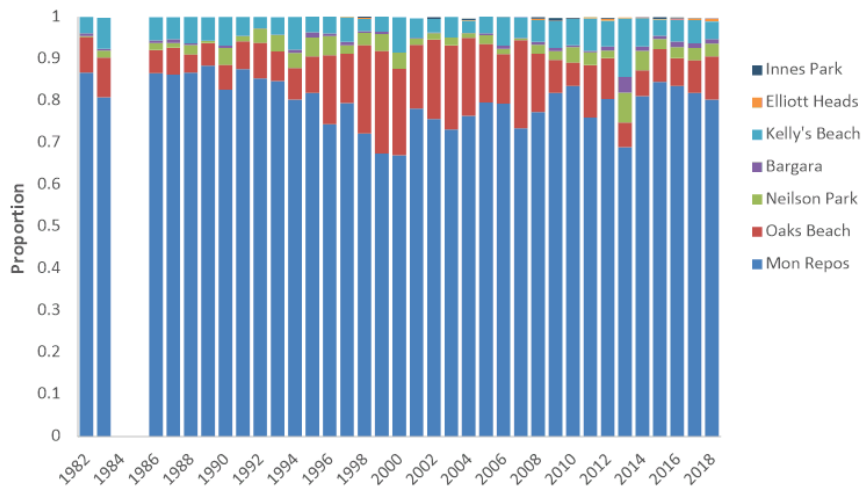
The Queensland Coast provides a number of nesting beaches for marine turtle species listed under the Environment Protection and Biodiversity Conservation (EPBC) Act 1999. The Woongarra Coast comprises individual turtle nesting beaches which, combined, represent a major loggerhead turtle rookery (see Section 3.1). Lower density nesting of green and flatback turtles has also been recorded at beaches within this area (see Sections 3.2 and 3.3, respectively). The Woongarra Coast includes the individual beaches of Mon Repos, Oaks Beach, Neilson Park, Bargara, Kellys-Moneys beaches, Elliott Heads and Innes Park (Figure 1). Although not routinely monitored, Barubbra Island is considered the northernmost extent of the Woongarra Coast (DES, pers. comm.).

In the vicinity of the development, turtle nesting beaches include Oaks Beach, Barubbra Island and Mon Repos Beach (Figure 1). The beach at South Head Parklands is fringed by a rocky intertidal zone rendering it unsuitable for turtle nesting. As such, this beach is not considered further. Accordingly, in this Marine Turtle Management Plan (MTMP), Oaks Beach, Barubbra Island and Mon Repos Beach are collectively referred to as 'relevant nesting beaches' hereon in. Though undocumented, it is also possible that adult and juvenile green turtles will use the Burnett River, and the mangrove lined creek behind the development location, as a refuge or for foraging.

Of the relevant nesting beaches, Mon Repos supports the greatest number of nests each year when considered as a proportion of the total number recorded across the Woongarra Coast (Figure 2). Although not routinely monitored or published, DES field studies of Barubbra Island (10-15 years ago) found that the number of loggerhead and flatback turtle were similar to the number of nests on Bargara Beach (DES, pers. comm.). At the closest point, the development is located approximately 1.7 km from Oaks Beach, 4.5 km from Mon Repos Beach and approximately 0.65 km from Barubbra Island. Unlike Oaks Beach and Mon Repos Beach, the level of development (e.g. existing housing) between beaches of Barubbra Island and the development is very low. Further, Barubbra Island is located across the Burnett River, in direct line of sight of the development. This, combined with the shorter distance, makes the beaches of Barubbra Island more exposed to the potential of directly visible light.



Figure 1: Turtle nesting beaches and critical habitat of the Woongarra Coast. Proposal location indicated by ★



**Figure 2: Proportion of loggerhead turtle nesting crawls occurring on the individual beaches of the Woongarra Coast relative to the total number of crawls between 1982 and 2018** (Source: Limpus pers. comm.).

**1.2.1 Existing ambient light levels**

Information regarding ambient light levels were collected from Barubbra Island, Oaks Beach and Mon Repos Beach to better understand the artificial light environment of the region. Data was gathered using automated Sky42™ light monitoring cameras that feature a Canon EOS 700D camera and fish-eye lens with custom built hardware to acquire low light night sky images of the entire sky. The cameras are built into a rigid housing with a protective lid that automatically opens during image capture and closes between capture intervals. The cameras were deployed at Barubbra Island, Oaks Beach and Mon Repos Beach between the 24<sup>th</sup> and 26<sup>th</sup> January 2020. Images were downloaded from the cameras each day and were processed as described in Appendix A.

Atmospheric conditions, such as cloud cover, can influence the scattering of light and therefore ambient light levels. Cloud cover was present for the duration of the survey; however, this is typical for the Burnett Heads area at this time of year and, therefore, results are considered representative and suitable for future comparisons. Conditions on the 24<sup>th</sup> January 2020 provided the best image quality and these are presented in Figure 3 (Barubbra Island), Figure 4 (Mon Repos Beach) and Figure 5 (Oaks Beach).

The images were processed to determine “whole-of-sky”, “zenith”, and “horizon” sky brightness levels. Zenith is the mean value of sky glow in magnitudes within 0° – 30° field of view directly overhead, whole-of-sky (WOS) is the mean value of sky glow in the entire image, and horizon is the



mean value of sky glow within the 60° – 90° outer band (see Appendix A). Results for each beach are provided in Table 2.

**Table 2: Sky brightness as measured at each beach (visual magnitudes/arcsec<sup>2</sup>)**

Site	Median Sky brightness (V mag / arcsec <sup>2</sup> )		
	WOS*	Zenith	Horizon
Barubbra Island	18.92	19.49	18.77
Oaks Beach	19.12	19.44	18.92
Mon Repos Beach	19.65	19.65	19.77

\*Whole-of-sky

The median sky brightness varied between 18.77 and 19.77 across the three beaches which is typical of a suburban/urban night sky (Appendix A). Overall Barubbra Island had the brightest night sky, whereas Mon Repos Beach had the least bright night sky.

Images show that at Barubbra Island (Figure 3), sky brightness was greatest in the direction of Bundaberg and Bundaberg Port. At Oaks Beach (Figure 5), the greatest levels of sky brightness were evident in the direction of Bundaberg Port and Marina, rather than Bundaberg, suggesting that the high levels of sky brightness visible from Barubbra Island also originate from Bundaberg Port and Marina.

High levels of sky brightness are also evident in a south eastern direction from Barubbra Island (Figure 3), towards the proposed development, in the direction of Bargara and some less dense residential buildings. Images from Oaks Beach (Figure 5) and Mon Repos Beach (Figure 4), which are south of the residential area but north of Bargara, indicate relatively low sky brightness in the direction of the proposed development suggesting that the sky brightness detected at Barubbra Island is most likely skyglow from Bargara, rather than the residential area. Images from Oaks Beach (Figure 5) also indicate high levels of sky brightness in the direction of Bargara. At Mon Repos, sky brightness was lowest overall, with Bargara being the most notable source.

Overall, it is possible to conclude that Bundaberg Port and Marina is a significant source of artificial light in the region, in addition to Bundaberg and Bargara.



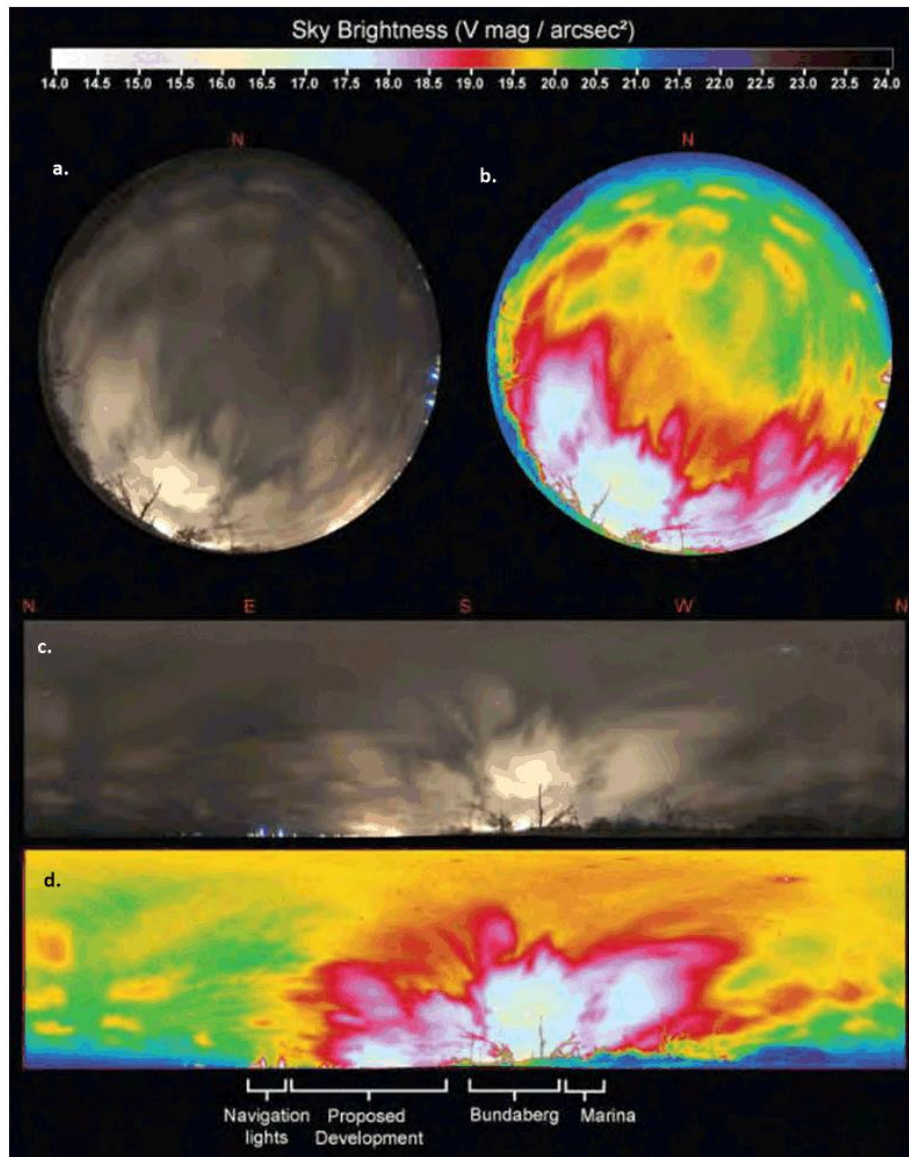


Figure 3: Artificial light monitoring results at Barubbra Island on the 24<sup>th</sup> January; a. Median raw image; b. Processed isophote image; c. Median raw panorama; d. Processed equirectangular panorama showing location of visible light sources.

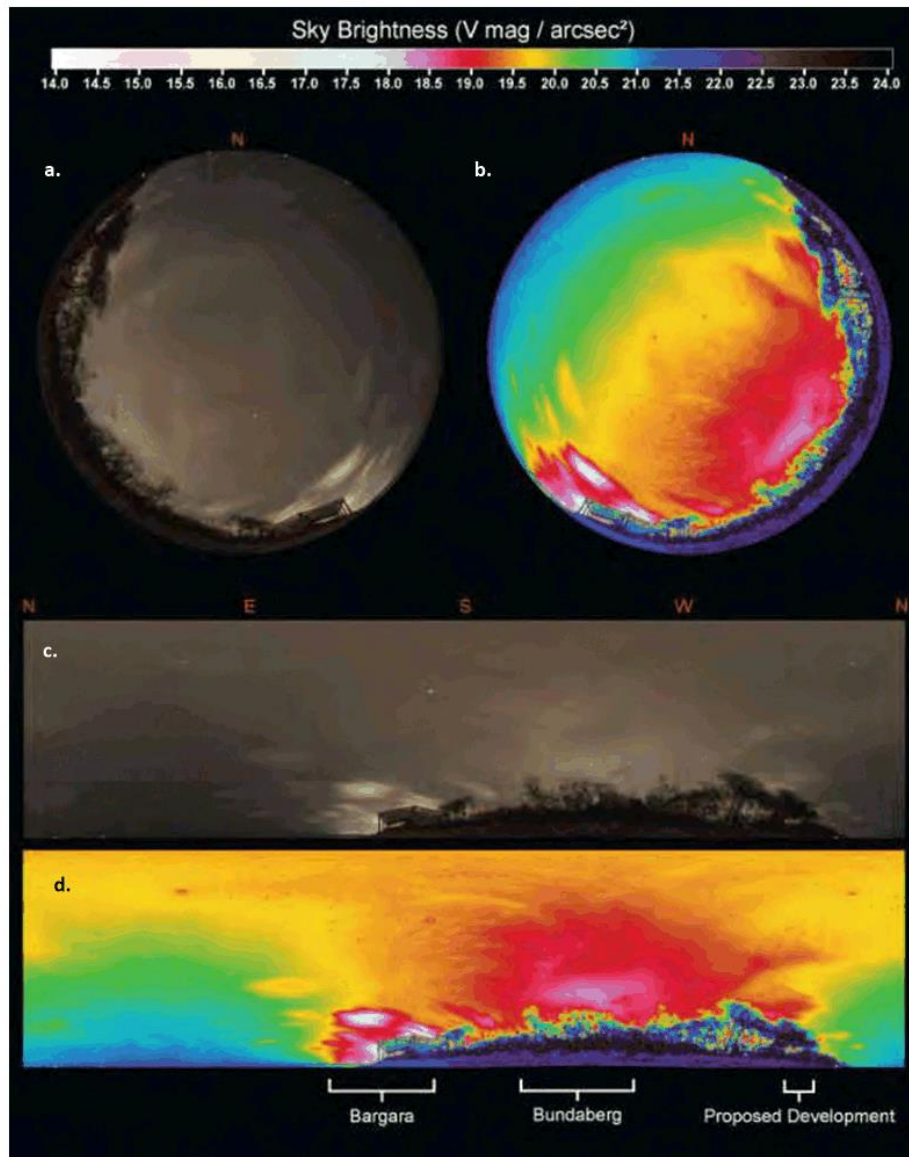


Figure 4: Artificial light monitoring results at Mon Repos Beach on 2<sup>nd</sup> October 2019; a. Median raw image; b. Processed isophote image; c. Median raw panorama; d. Processed equirectangular panorama showing location of visible light sources.

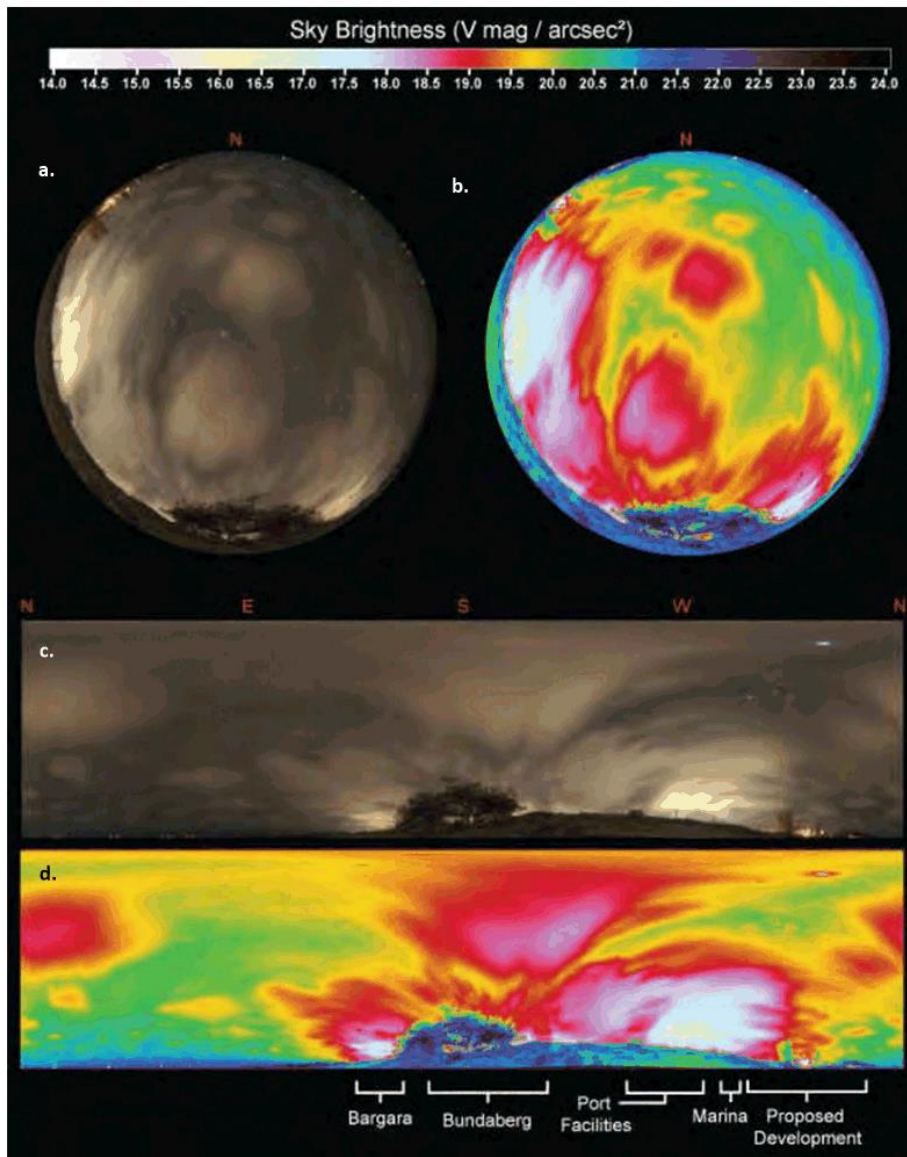


Figure 5: Artificial light monitoring results at Oaks Beach on 2<sup>nd</sup> October 2019; a. Median raw image; b. Processed isophote image; c. Median raw panorama; d. Processed equirectangular panorama showing location of visible light sources.



### 1.3 Aims

This MTMP has been prepared to accompany the Phase 1 and Phase 2 Burnett Harbour Marina Village applications, with aims to:

- Provide species profiles for the EPBC listed threatened marine turtle species nesting on beaches in the vicinity of the development;
- Describe and risk assess the potential threats of the development at the stock, population and site-specific level;
- Develop mitigation measures to reduce the risk of site-specific threats; and
- Assess the potential impacts of site-specific threats, following implementation of mitigation measures, against the 'Significant Impact Criteria' (refer to Section 2; Commonwealth of Australian, 2013).

### 1.4 Exclusions

This MTMP does not include assessment or mitigation of potential impacts arising from the construction and operation of the marina berths.



## 2 RELEVANT LEGISLATION

Six species of marine turtle are documented as occurring in Queensland, all are listed as threatened under State and Commonwealth legislation. Of these, four species have been recorded breeding at beaches in the vicinity of the development; loggerhead (*Caretta caretta*), green (*Chelonia mydas*), flatback (*Natator depressus*) and leatherback (*Dermochelys coriacea*) turtles (see Section 3 for species profiles).

The Nature Conservation Act 1992 (NCA), administered by the Queensland Department of Environment and Science, protects flora and fauna species in Queensland. The Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is the central legislation for protection of nationally significant environmental values across Australia and is administered by the Department of the Environment and Energy (DoEE). In accordance with the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* ('Significant Impact Guidelines') (Commonwealth of Australian, 2013), an action is deemed to have a significant impact if there is a real chance or possibility that it will adversely affect 'habitat critical to the survival of a species'. The EPBC Act provides for recovery plans to be made for the purpose of protection, conservation and management of listed threatened species. The Recovery Plan for Marine Turtles in Australia, 2017 – 2027 (the 'Recovery Plan'), identifies nesting and interesting areas that are considered habitat critical to the survival of marine turtles ('critical habitat') (Commonwealth of Australia, 2017). In the vicinity of the development, critical habitat for marine turtles includes (Figure 1):

- Flatback turtle: Mon Repos beach including a 60 km interesting buffer (between October and March);
- Green turtle: Wreck Rock to Burnett Head including a 20 km interesting buffer (between October and April); and
- Loggerhead turtle: beaches from the Elliot River to Bustard Head including a 20 km interesting buffer (between October and March).

These species are also included on the Red List of Threatened Species of the International Union for the Conservation of Nature (IUCN), of which Australia is a member, which internationally recognises them as species of conservation concern. Additionally, Australia is a signatory to a range of international agreements and conventions including the Convention on Biological Diversity, the Convention Concerning the Protection of the World Cultural and Natural Heritage, the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on the Conservation of Migratory Species of Wild Animals (CMS). The CMS adopts the Single Species Action Plan (SSAP) for the loggerhead turtle in the South Pacific Ocean. While the SSAP is not legally binding, it provides a framework and actions for the recovery of the loggerhead turtle nesting at Mon Repos.

Refer to Table 2 for relevant marine turtle conservation status.



Table 3: Conservation status and presence of marine turtle species at relevant nesting beaches

Common name	Scientific name	Legislation			Presence at relevant nesting beaches
		State (NCA)	Commonwealth (EPBC Act)	International (IUCN)	
Loggerhead	<i>Caretta caretta</i>	Endangered	Endangered Migratory	Vulnerable	✓
Flatback	<i>Natator depressus</i>	Vulnerable	Vulnerable Migratory	Data deficient	✓
Green	<i>Chelonia mydas</i>	Vulnerable	Vulnerable Migratory	Endangered	✓
Leatherback	<i>Dermochelys coriacea</i>	Endangered	Endangered Migratory	Vulnerable	✓
Hawksbill	<i>Eretmochelys imbricata</i>	Endangered	Vulnerable Migratory	Critically endangered	✗
Olive Ridley	<i>Lepidochelys olivacea</i>	Endangered	Endangered Migratory	Vulnerable	✗



### 3 SPECIES PROFILES

As outlined in Table 3, four species of marine turtle have been recorded breeding at relevant nesting beaches; loggerhead, green, flatback and leatherback turtles. The last recorded nesting event for the leatherback turtle on the east coast of Queensland was in 1996 and it is understood that the nesting population of leatherbacks in eastern Australia is likely to be functionally extinct. As such, leatherback nesting is considered unlikely to recommence at the relevant nesting beaches and is not considered further.

The status, habitat and distribution of loggerhead, green and flatback turtles are discussed below. Threats, as identified for each species in the Recovery Plan, will be addressed through a site-specific risk assessment in Section 4.

#### 3.1 Loggerhead Turtles

There are two genetically distinct stocks of loggerhead turtles nesting in Australia, one in Queensland (known as the south-west Pacific (swPac) stock) and one in Western Australia. Loggerhead turtles nesting at Mon Repos are part of the swPac stock. The nesting population of the swPac stock declined by 86% between the mid 1970's and 1999, and recruitment, measured as the proportion of turtles breeding for the first time, has declined by 50% over the last two decades (Limpus *et al.* 2019), and is classified as 'in early stages of decline' (Commonwealth of Australia, 2017; Limpus & Limpus, 2003).

The Woongarra Coast is a major rookery for the swPac genetic stock and includes the individual beaches of Mon Repos, Oaks Beach, Neilson Park, Bargara, Kellys-Moneys beaches, Elliott Heads and Innes Park (Figure 1). Of these beaches, Mon Repos supports the greatest proportion of nesting loggerhead turtles, as measured as the proportion of nesting crawls on each individual beach relative to the total number of crawls recorded that season (Figure 2; Limpus, pers comm.) Additionally, beaches between Elliot River to Bustard Head are identified as critical habitat for the species within the Recovery Plan (Commonwealth of Australia, 2017). Loggerhead turtle nesting has been monitored at Mon Repos Beach since 1968, with a long history of observations prior to this date. Accordingly, Mon Repos Beach, along with Wreck Rock further north on the Queensland coast, is an index beach used to monitor the population (Limpus *et al.* 2013a). Between 400 - 480 turtles have been reported to nest annually at Mon Repos between October and March (Limpus *et al.* 2013a).

Mating by turtles of the swPac stock occurs from October to December (peak: November), nesting occurs on sandy beaches almost exclusively in Australia and New Caledonia (Limpus, 2009) between October and March (peak: December to January), with hatching from December to May (peak: February to March). More than 80% of nesting by this genetic stock occurs in protected areas under management of the Queensland Government (Limpus, 2009).

#### 3.2 Green Turtle

Green turtles nesting in Australia are distributed across nine genetically distinct stocks. Green turtles nesting at relevant nesting beaches are identified as part of the southern Great Barrier Reef (sGBR) genetic stock which has been assessed as recovering (Chaloupka & Limpus, 2001). The relevant nesting beaches sit within the minor nesting area of mainland coast from Bustard Head to Bundaberg



(Commonwealth of Australia, 2017). The population of green turtles at Mon Repos has been estimated at less than ten individuals nesting annually (Limpus *et al.* 2013b). Major nesting areas include islands of the south Great Barrier Reef, including Heron, Wreck, North West and Lady Musgrave Islands which are index beaches (Limpus *et al.* 2013b).

Within this stock, mating occurs from September to November, nesting from October to April (peak: late December to early January) and hatching from December to May (peak: February to March) (Commonwealth of Australia, 2017).

### 3.3 Flatback Turtle

There are five genetic stocks of flatback turtles currently described around Australia. Flatback turtles relevant to this MTMP are part of the eastern Queensland (eQld) genetic stock. Breeding for the Eastern Queensland flatback turtle occurs between Bundaberg and Townsville and is centred on continental islands in inshore areas; Peak, Wild Duck, Avoid, Facing and Curtis Islands, with the remainder comprising low-density nesting on mainland beaches, including Mon Repos (Limpus *et al.* 2013c)

The relevant nesting beaches are components of the Woongarra Coast nesting area which, like the eQld stock overall, is identified as stable. Flatback turtle nesting has been monitored at Mon Repos beach since 1968 and is an index beach for the eQld stock. Since monitoring began, the total nesting population at Mon Repos has fluctuated annually between two and 14 individuals (Limpus *et al.* 2013c). Seasonality for mating of this genetic stock is unknown, however, nesting is reported to occur between October and January (peak: late November to early December), with hatching occurring between December and March with a peak in February (Commonwealth of Australia, 2017).





**4 SITE SPECIFIC RISK ASSESSMENT**

**4.1 Threats**

The Recovery Plan identifies and assess current threats to marine turtles of each identified genetic stock. Threats identified for the genetic stock of the relevant nesting beaches for loggerhead (swPac), green (sGBR) and flatback (eQld) turtles are summarised in Table 4.

In addition, the CMS SSAP (see Section 2) for loggerhead turtles in the South Pacific Ocean outlines threats assessed as very high risk to the population, which also align with those identified in the Recovery Plan:

- Terrestrial predators
- Fisheries bycatch
- Marine debris
- Lower water table
- Changed light horizons (light pollution)
- Climate change/ variability

The site-specific risks of these threats to the nesting population at relevant beaches, both before (inherent) and after (residual) implementation of proposed mitigation measures, are discussed in the following subsections, with a summary provided in Table 15. Risk assessment methodology is described in Section 4.2

**Table 4: Threats to marine turtle species as identified in the Recovery Plan for Marine Turtles in Australia (2017 – 2027)**

<b>Threat</b>	<b>Loggerhead (swPac)</b>	<b>Green (sGBR)</b>	<b>Flatback (eQld)</b>
Climate change and variability	High	High	Very high
Marine debris – entanglement and ingestion	High	High	Moderate
Chemical and terrestrial discharge	Moderate	High	Moderate
International take	Moderate	Moderate	Low
Terrestrial predation	Moderate	Low	Moderate
Fisheries bycatch	Very high	Moderate	Low
Light pollution	High	Moderate	High
Habitat modification – coastal development	Moderate	Moderate	Moderate
Indigenous take	Low	Moderate	Low
Vessel disturbance	Moderate	Moderate	Low
Noise interference – chronic	Moderate	Moderate	Moderate
Recreational activities	Low	Low	Low
Disease and pathogens	Moderate	Low	Low



## 4.2 Risk Assessment Methodology

The risks of the development are assessed by considering the consequence and likelihood of the development contributing to the threats identified in Section 4.1 in both construction and operational phases. The risk assessment process undertaken follows that used in the Turtle Sands Holiday Park Turtle Management Plan (2018), which was modified from the Great Barrier Reef Marine Park Authority Environmental Assessment and Management Risk Management Framework (GBRMPA, 2009). The risk assessment process is described in Table 5 with descriptions of the consequence definitions provided in Table 6. In this section we assess the risk before (inherent risk) and after (residual risk) mitigation measures are applied to the project.

Table 5: Risk Assessment Matrix

Likelihood	Consequence (see Table 6 for definition)				
	<i>Insignificant</i>	<i>Minor</i>	<i>Moderate</i>	<i>Major</i>	<i>Catastrophic</i>
	1	2	3	4	5
<i>Almost certain</i> (96 – 100%)	5 <b>Medium</b>	10 <b>High</b>	15 <b>High</b>	20 <b>Extreme</b>	25 <b>Extreme</b>
<i>Likely</i> (71 – 95%)	4 <b>Medium</b>	8 <b>Medium</b>	12 <b>High</b>	16 <b>High</b>	20 <b>Extreme</b>
<i>Possible</i> (31 – 70%)	3 <b>Low</b>	6 <b>Medium</b>	9 <b>Medium</b>	12 <b>High</b>	15 <b>High</b>
<i>Unlikely</i> (5 – 30%)	2 <b>Low</b>	4 <b>Low</b>	6 <b>Medium</b>	8 <b>Medium</b>	10 <b>High</b>
<i>Rare</i> (0 – 5%)	1 <b>Low</b>	2 <b>Low</b>	3 <b>Low</b>	4 <b>Medium</b>	5 <b>Medium</b>



Table 6: Definition of consequence descriptions

Description	Definition
Insignificant	Little to no impact on the overall ecosystem. Very small levels of impact on turtles and their habitats. Only occasional injury to or mortality of turtles.
Minor	Impacts are present, but not to the extent that the overall condition of turtle populations or their habitats are impaired in the long term. Low levels of mortality of turtles and their habitats. Recovery would generally be measured in years for habitats.
Moderate	Turtle populations and their habitats are significantly affected, either through elevated mortality of turtles or a minor disruption to a population over a widespread geographic area. Recovery at habitat level would take at least a decade, with recovery of turtle populations taking several decades.
Major	Significant impact on sea turtle populations and their habitats, with high level of turtle mortality. Recovery of habitats would take a few decades with turtle populations taking several decades.
Catastrophic	Turtle habitats irretrievably compromised. Mass mortality of sea turtles and local extinction of species. Recovery over several decades for habitat values and centuries for turtle populations.

### 4.3 Climate change and variability

#### 4.3.1 Potential impacts

Climate change has the potential to effect marine turtles across the entire lifecycle, both at the nesting beach and at sea (see Hawkes *et al.* 2009 for review).

Changes in sea temperature can affect prey or foraging habitat distribution leading to a change in species range. Further, conditions in foraging areas may influence both the decision to breed in a given season, as well as the timing of migration to the breeding grounds (Hawkes *et al.* 2009, and references therein). Once nesting has occurred, shifts in sand temperature have the potential to affect both hatch rate and sex ratio of the clutch; incubation temperature during the middle trimester of development (the thermosensitive period) determines whether hatchlings are male or female (Bjorndal & Bolten 1992; Standora & Spotila 1985; Spotila *et al.* 1987; Yntema & Mrosovsky 1980, 1982; Hewavisenthi & Parmenter 2002). Sea level rise and increases in frequency of extreme weather events, such as high category cyclones, resulting in greater incidence of beach erosion can result in loss of turtle nesting habitat (Hawkes *et al.* 2009, and references therein).

Green House Gas (GHG) emissions which will occur throughout the construction phase, through use of vehicles and machinery. During operation, energy consumption will be required to power residential units and shops and other amenities, further contributing to global emissions.

#### 4.3.2 Mitigation measures

Appendix B outlines a number of Ecologically Sustainable Development (ESD) initiatives to reduce energy consumption during the operational phase, including:



- Natural cross ventilation
- Natural lighting of all rooms where possible
- Fixed sun shading of selected glazing and adjustable screening
- Passive thermal design for ventilation, heating and cooling
- Use of solar panels

It is recommended that BHD contribute to and support ongoing turtle research at Mon Repos Beach conducted by Department of Environment and Science (DES). This work conducted by DES will support understanding of long term trends, potential evidence of effects of climate change and implement mitigative actions such as beach replenishment or nest relocation.

#### 4.3.3 Risk assessment

Potential consequences could include shifts in species range or loss of nesting habitat resulting in long term declines in nesting females at these beaches. Clutches may be exposed to inundation from extreme weather or experience lower success or skewed sex ratios reducing reproductive success of the Mon Repos nesting population. Although difficult to predict, should these effects of climate change be realised, it is considered possible that the relevant nesting populations could be impacted.

Implementation of the mitigation measures to reduce energy consumption will contribute towards global efforts in reducing emissions and reducing the effects of climate change. More directly, by supporting and contributing to research and monitoring programmes at Mon Repos Beach, the ability to detect impacts of climate change, and implement mitigating actions, will reduce the consequence and likelihood of impacts occurring to nesting and hatchling turtles on relevant nesting beaches.

Outcomes of the risk assessment is provided in Table 7 below.

**Table 7: Summary of the risk assessment for climate change**

Risk	Consequence	Likelihood	Ranking
Inherent	Moderate (3)	Possible (3)	Medium (9)
Residual	Minor (2)	Rare (1)	Low (2)

## 4.4 Marine debris

### 4.4.1 Potential impacts

Marine debris primarily consists of plastic debris and can negatively impact adult and hatchling turtles via entanglement and from ingestion. Entanglement can inhibit swimming resulting in drowning or inhibiting the ability to escape predation or feed normally, while the implications of debris ingestion include death through perforation or impaction of the digestive system (Wallace *et al.* 1985), or through pollution if the solid waste is toxic or hazardous. Debris washed up on turtle nesting beaches can also present obstacles for hatchlings as they traverse the beach towards the ocean.



The development will increase the numbers of visitors to the area, initially as part of construction then during operation, increasing the total volume of waste produced. Litter and other waste products have the potential to enter the marine environment through poor housekeeping, such as overfilling bins, or inadequate storage areas allowing access of wildlife.

#### 4.4.2 Mitigation measures

During construction and operation, a waste management plan will outline the number and location of waste bins in outdoor areas and enclosed waste storage spaces within buildings. Waste collection will be based on estimates of volume produced based on building tenancy. Waste generation will be monitored throughout operation and the number of bins increased if required (Section 5).

Both outdoor bins and internal waste storage spaces will be signposted and designed to prevent loss of items through extreme weather or scavenging by urban wildlife.

#### 4.4.3 Risk assessment

Marine debris is a growing problem for wildlife, including turtles. Of 115 necropsied turtles recovered from southeast Queensland, over half were found to have debris-load from ingestion (Schuyler *et al.* 2012), indicating high prevalence of ingestion occurring in the region. Unmitigated, the development could increase the likelihood of individuals nesting at relevant beaches encountering marine debris. However, implementation of the mitigation measures should not result in an increase in the amount of marine debris in the local area. Mitigation proposed would reduce the consequence at the population level, since prevention of marine debris entering the marine environment would reduce the number of individuals potentially encountering marine debris.

Outcomes of the risk assessment is provided in Table 8 below.

**Table 8: Summary of the risk assessment for marine debris**

Risk	Consequence	Likelihood	Ranking
Inherent	Minor (2)	Possible (3)	Medium (6)
Residual	Insignificant (1)	Rare (1)	Low (2)

## 4.5 Chemical and terrestrial discharge

### 4.5.1 Potential impacts

Chemical and terrestrial discharges can occur through leakages, stormwater discharges or loss of solid wastes. Solid waste is considered in Section 4.4 above.

Discharge of stormwater contaminated with fertilisers, pollutants or sediments may impact marine environments through:

- Algae blooms from increased nutrients;
- Reduced oxygen availability for aquatic organisms;



- Toxic effects to marine organisms and communities;
- Physical smothering of habitats; and
- Reduced water clarity limiting sunlight penetration and photosynthesis.
- Increased risk of fibropappilloma disease in adult turtles

During construction, the sediment load of stormwater may be increased, depending on the excavation works being undertaken. Leaks and spillages of chemicals during construction and operation have the potential to contaminate stormwater. Stormwater quality modelling undertaken by RMA Engineers and forming part of the Phase 1 and Phase 2 development applications demonstrates the development meets pollutant load reductions required by State Planning Policy 2017. (Stormwater Management Plan, RMA Engineers, November 2019)

#### 4.5.2 Mitigation measures

Chemical pollutants will be appropriately stored and disposed of in accordance with their Material Safety Data Sheet.

A stormwater management plan will be developed for the proposal which will outline the practicability of storm water harvesting and water recycling initiatives. Such initiatives will not only reduce potential impacts to the marine environment (and therefore the nesting turtle population at relevant beaches) but will also contribute to water conservation and storage of emergencies supplies.

#### 4.5.3 Risk assessment

Chemical discharges have the potential to cause toxic impacts to marine turtles across all life stages. Although adult and juvenile green turtles have been shown to use rivers as refuge, and may be more susceptible to runoff while utilising this habitat, the distance between the development footprint and turtle nesting beaches reduces the likelihood of impact to breeding marine turtles. Further, stormwater quality modelling demonstrates the development meets regulatory pollutant load reductions. Following implementation of mitigation measures the consequence of such an impact would be reduced.

Outcomes of the risk assessment is provided in Table 9 below.

**Table 9: Summary of the risk assessment for chemical and terrestrial discharge**

Risk	Consequence	Likelihood	Ranking
Inherent	Minor (2)	Unlikely (2)	Low (4)
Residual	Insignificant (1)	Rare (1)	Low (1)

#### 4.6 International take

The development does not represent any site-specific risks regarding this threat.



**4.7 Terrestrial predation**

**4.7.1 Potential impacts**

Predation of eggs and hatchlings, particularly by non-native species, can have significant, negative effects on the breeding success of nesting populations.

Prior to management, red fox (*Vulpes vulpes*) predation of loggerhead turtle clutches at Mon Repos was reported for ~10% of all clutches (Limpus, 2009). Following baiting and control at Mon Repos, predation levels declined during the early 1970s and have been relatively trivial since about 1975 (Limpus, 2009).

The increase in human population in the area of the development, initially during construction and then more so during operation, has the potential to attract scavenging wildlife, such as the red fox. Poor housekeeping, such as discarded food waste, overfilling bins and active feeding of wildlife can increase predator population densities, subsequently increasing predation risk and pressure on turtle clutches at nesting beaches.

**4.7.2 Mitigation measures**

Outdoor bins and internal waste storage spaces will be designed to prevent scavenging by urban wildlife (Section 4.4).

The Marine Village Resident and Visitor Code of Conduct (Section 4.14), implemented as part of the approved Community Management Scheme by the Bodies Corporate, will promote reporting of non-native predator sightings, and prohibit feeding of wildlife, by residents and visitors.

**4.7.3 Risk assessment**

Although predation levels at Mon Repos are currently considered trivial, the influx of visitors and the potential for increased scavenging opportunities could result in increases in predator population density with subsequent increases in predation rate. Unmitigated, there is potential for notable effects on the relevant nesting populations. However, implementation of mitigation measures outlined above minimise the likelihood of predator populations increasing, thereby reducing the consequence of predation at the nesting population level.

Outcomes of the risk assessment is provided in Table 10 below.

**Table 10: Summary of the risk assessment for terrestrial predators**

Risk	Consequence	Likelihood	Ranking
Inherent	Moderate (3)	Unlikely (2)	Medium (6)
Residual	Insignificant (1)	Rare (1)	Low (1)



**4.8 Fisheries bycatch**

**4.8.1 Potential impacts**

Fisheries bycatch is the incidental catch and interactions with marine turtles in fishing gear and this threat can occur at any time during the oceanic life cycle phases of marine turtles.

Recreational fishing is likely to be undertaken by residents and visitors during the operational phase either on or in the vicinity of nesting beaches. Recreational fishing is unlikely to use the equipment most commonly associated with marine turtle bycatch (e.g. bottom trawling or long line gear (AFMA, 2019)). However, inappropriate disposal of recreational fishing gear can result in equipment, such as fishing line, entering the marine environment and resulting in entanglement of marine turtles.

**4.8.2 Mitigation measures**

Outdoor bins and internal waste storage spaces will be positioned and designed to prevent loss of litter, including fishing gear, to the marine environment (Section 4.4).

The Marine Village Resident and Visitor Code of Conduct (Section 4.14), implemented as part of the approved Community Management Scheme by the Bodies Corporate, will educate and promote responsible control, management and disposal of fishing line and hooks by residents and visitors.

**4.8.3 Risk assessment**

Entanglement of marine turtles with marine debris, such as discarded fishing gear, can inhibit swimming resulting in drowning or inhibiting the ability to escape predation or feed normally (Wallace et al. 1985; Section 4.4). Unmitigated, the development could increase the likelihood of individuals of the nesting population becoming entangled in fishing gear. However, implementation of the mitigation measures should not result in an increase in the amount of fishing gear (and other marine debris) in the local area. Mitigation proposed would reduce the consequence at the population level, since prevention of discarded fishing gear entering the marine environment would reduce the number of individuals potentially becoming entangled or injured.

Outcomes of the risk assessment is provided in Table 11 below.

**Table 11: Summary of the risk assessment for fisheries bycatch**

Risk	Consequence	Likelihood	Ranking
Inherent	Minor (2)	Unlikely (2)	Low (4)
Residual	Insignificant (1)	Rare (1)	Low (1)

**4.9 Light pollution**

**4.9.1 Potential impacts**

Adverse effects of artificial light on marine turtle behaviour is well recognised by a substantial body of research (see Withington and Martin, 2003; Lohmann et al., 1997; Salmon, 2003 for reviews). Artificial





lighting can impact individuals at different stages of the life cycle, including nesting adult females and hatchlings.

Adult female marine turtles return to land, predominantly at night, to nest on sandy beaches, relying on visual cues to select, and orient on, nesting beaches. Artificial lighting on or near beaches has been shown to disrupt nesting behaviour (see Witherington and Martin, 2003 for review). Beaches with artificial light, such as urban developments, roadways and piers, often have lower densities of nesting females compared to beaches with less development (Salmon, 2003; Hu et al., 2018).

Hatchling turtles emerge from the nest, typically at night (Mrosovsky & Shettleworth, 1968), and must rapidly reach the ocean to avoid predation (Salmon 2003). Hatchlings locate the ocean using a combination of topographic and brightness cues, orienting towards the lower, brighter oceanic horizon, and away from elevated darkened silhouettes of dunes and/or vegetation behind the beach (Pendoley & Kamrowski, 2015; Lohmann et al 1997; Limpus & Kamrowski 2013).

Artificial lights interfere with natural light levels and silhouettes disrupting hatchling sea finding behaviour (Withington and Martin, 2003; Pendoley & Kamrowski, 2015; Kamrowski, et al., 2014). Hatchlings may become disorientated - where hatchlings crawl in circuitous paths; or misorientated - where they move in the wrong direction, possibly attracted to artificial lights (Withington and Martin, 2003; Lohmann et al., 1997; Salmon 2003). On land, movement of hatchlings in a direction other than the sea often leads to death from predation, exhaustion or dehydration.

Once in nearshore waters, artificial lights on land can also interfere with the dispersal of hatchlings. Lights can slow down their in-water dispersal (Witherington & Bjorndal, 1991; Wilson et al., 2018), increase their dispersion path or even attract hatchlings back to shore (Truscott et al., 2017). In addition to interfering with swimming, artificial light can influence predation rates, with increased predation of hatchlings in areas with significant sky glow (Gyuris 1994; Pilcher et al 2000). Since the nearshore area tends to be predator-rich, hatchling survival may depend on them exiting this area rapidly (Gyuris, 1994). Should this be the case, aggregation of predatory fish occurring in artificially lit areas (Becker et al., 2013, Wilson et al 2019) may further increase predation of hatchlings.

The proposal is located adjacent to the Bundaberg State Development Area where development is encouraged by the Queensland Government. Given the nature of the proposal (residential/light commerce), light emissions from the proposal are expected to be lower in comparison to existing industrial activities in the Burnett Heads area (e.g. Bundaberg Port and Marina) and urban areas such as Bundaberg and Bargara (refer to Section 1.2.1). Nevertheless, the current proposal involves development of previously undeveloped land increasing the size of the artificial light footprint with potential to increase skyglow on the horizon when considered cumulatively across the Burnett Heads area.

The proposal includes multistorey buildings (up to 10 storeys). The height of elevation of a light source can influence the distance at which the light source is directly visible. However, to what extent this leads to impacts to nesting or hatchling turtle behaviour is dependent on a suite of factors including, but not limited to, the distance to turtle nesting beach, the intensity of the light source, topography and presence of any shielding or screening. Since these factors are both site and project specific, the degree to which building height may impact turtle nesting beaches should be assessed on a case by



case basis. To understand how the proposed light sources of the Burnett Harbour Marine Village may impact turtle nesting beaches, modelling of the light sources, including the location, orientation and height of lights, in relation to topography and screening/shielding in situ, is recommended (Section 7).

During construction, the use of temporary lighting, such as floodlights has the potential to increase light pollution over a shorter duration. During operation, the increase in light associated with the ongoing use of the development will permanently affect ambient light levels. Artificial light generated could result in direct light spill on adjacent water, directly visible light or light glow at relevant nesting beaches.

#### 4.9.2 Mitigation measures

The presence of habitat for EPBC listed threatened turtle species potential exposed to artificial light, mitigation measures should align with those outlined in the Draft National Light Pollution Guidelines for Wildlife Including marine turtles, seabirds and migratory shorebirds (Commonwealth of Australia, 2019), which also recognises that the health and safety of humans take precedence over environmental considerations.

When considering these measures, 'turtle season' is defined as the timing of peak nesting and hatchling of all species (December to March; Section 3).

At time of writing no detailed lighting design for the proposal has been undertaken. During detailed design, the following simple light design principles can be used to reduce light pollution (adapted from the *Draft National Light Pollution Guidelines for Wildlife Including marine turtles, seabirds and migratory shorebirds* (Commonwealth of Australia (2019)):

1. Start with a base case of no lights and only add light for specific purposes.
2. Apply adaptive light controls to manage light timing, intensity and colour (but see exemptions).
3. Light only the object or area intended.
4. Use the lowest intensity lighting appropriate for the purpose.
5. Use non-reflective, dark-coloured surfaces.
6. Use amber LED lights ('true amber' or 'phosphor converted amber') and avoid lights containing short wavelength (blue and ultraviolet) light (but see exemptions).
7. Where conflicts in design occur, the option which results in the lowest levels of light spill or emissions will be selected.

It should be noted that exemptions are in place for:

- Lighting installations required by the Commonwealth, State or Local law;
- Lighting installations required temporarily for emergency tasks (such as evacuation); and
- Where contrary to the requirements of applicable Australian Standard designs.



Considering the above key principles, the following control measures could be implemented to reduce light emissions and potential impacts to marine turtles. However, the efficacy of suggested control measures may be compromised due to the above exemptions. Further, additional, practicable controls may be available following detailed design. Therefore, it is recommended that qualified marine turtle biologists are consulted during the lighting design phase of the project.

External lighting (buildings):

- All exterior building lights utilise amber LED emitters (~585nm 'true amber' emitters, 'phosphor converted amber') or, where white light is required, LEDs with a correlated colour temperature (CCT) equal to or lower than 2700K;
- External lighting achieves an upward waste light output ratio (ULR) of 0%, achieved by:
  - Shielding, by recessing the light fitting into roof structures, eaves or building ceilings
  - Shielding, by the light housing which prevents horizontal light above a 45-degree angle.
  - Mounting external lights (i.e. on walls, stairs and walkways) as low as physically possible and using targeted asymmetrical distribution to illuminate only the specific areas of need, while minimising the angle of incidence and reflectance.
- Security lighting will be motion activated and supplemented with computer monitored infrared detection systems;
- Motion activated external walkway lighting for residential premises from 8pm until dawn during turtle season;
- Motion activated lights will have an associated deactivation period of a maximum of five minutes;
- Exterior finishes on all buildings will be matte and have a maximum reflective value of 30%; and
- All balcony lighting will automatically turn off at 8:00pm during the turtle season (under the control of the Bodies Corporate).

Indoor lighting (buildings):

- Indoor lighting will have a CCT equal to or lower than 2700K;
- Apartment downlights will be built-in to the fixture – not a replaceable fixture;
- Modification of the apartments' lighting design, including changes to the type / colour temperature / spectral power distribution of the LED sources, will be prohibited by the Bodies Corporate (see 'Bodies Corporate responsibilities' below);
- All glass (windows/doors) will have opaque (block-out) blinds/curtains/shutters fitted;



- interior finishes will be matte and have a maximum reflective value of 30%;
- All glass (windows/doors/balustrades) on all buildings will have a tint applied with a visible light transmittance value of 50%; and
- Skylights will not be permitted.

Pool/water feature lighting:

- The boundary of artificial water bodies will only be illuminated at night if night activities are intended;
- Swimming pools will either be in-ground design or enclosed with solid walls (i.e. no glass windows);
- In-pool lighting will be the minimum and lowest intensity needed for safe swimming and use of steps to access the water, lights will be aimed at or below the horizontal or lower;
- Pool surfaces will be dark coloured to reduce light reflection from the water;
- Pool decking will be a dark colour to minimise reflection; and
- Pool deck lighting will be low level, shielded, mini-bollard amber LED.

Car parks, road and walkways:

- Flashing/intermittent lights or reflective material instead of fixed beam to identify an entrance or delineate a pathway;
- Use of amber LED emitters (~585nm 'true amber' emitters, or 'phosphor converted amber') for carparks lighting; and
- Carpark lighting will be low level, bollard style with an upward waste light output ratio (ULR) of 0% (Principle 3)

Bodies Corporate responsibilities:

- Following construction to conduct inspection and to ensure:
  - No directly visible light is observed from Oaks Beach; and
  - Compliance with the Lighting Management Plan.
- At the start of each turtle season to ensure:
  - No directly visible light is observed from Oaks Beach;
  - Compliance with the Lighting Management Plan;
  - Internal light fixtures are within specification;



- No additional light fittings (temporary or otherwise) have been installed on balconies; and
- Internal blinds have been closed after 8 pm.
- Should any non-conformances be noted, educational outreach to residents and visitors will be performed, based on reiteration of the Code of Conduct, implemented as part of the approved Community Management Scheme.

#### Lighting Management Plan

A project specific Lighting Management Plan will outline:

- Proposed lighting plans for each building/section of walkway, including number, type and specification of each light fitting;
- Design specifications for external building surfaces;
- Post construction audit to verify compliance with the approved lighting design and regulatory conditions;
- Auditing schedule to ensure compliance with lighting designs in communal areas;
- Monitoring schedule for the measurement of biologically meaningful light from Oaks Beach post construction and annually throughout operation.

#### **During construction:**

- Avoid activities that require elevated floodlights at night during the nesting season.

Implementation of these mitigation measures would satisfy the relevant performance outcomes outlined in Schedule 3 of the Temporary Local Planning Instrument (TLPI) 01/2019 (Bargara Building Height and Sea Turtle Sensitive Area).

#### **4.9.3 Risk assessment**

Artificial light, in the form of light spill, directly visible light or skyglow, has the potential to contribute to the cumulative regional skyglow and impact nesting females and hatchlings. Unmitigated, there is potential for direct light to be visible from Oaks Beach and Barubbra Island, and open ocean adjacent to the development. Nesting females at Oaks Beach and Barubbra Island could potentially be disturbed by the artificial light resulting in reduced nesting activity. Emerging hatchlings may be dis- or mis-orientated on the beach, reducing survival rates. Once at sea, hatchlings may be attracted by the artificial light preventing or disrupting dispersal with potential effects on survival rates. However, direct light spill onto open ocean would be limited to water adjacent to the development and within Burnett Harbour. Given the lack of nesting activity within the harbour boundaries, few hatchlings are expected to occur and, therefore, increased predation is unlikely to notably effect survival rates.

Implementation of the above lighting management mitigation measures, and assurance of efficacy of these measures as demonstrated through compliance with a Lighting Management Plan and



Monitoring (Section 5), will prevent direct light being visible from Oaks Beach. Given the extent of direct light currently visible from Barubbra Island in the direction of the development, light monitoring from this beach is unlikely to detect additional light as a result of the development. While the prevention of upward light spill (i.e. ULR) may not eliminate skyglow, given the current light levels recorded during baseline monitoring (Section 1.2.1), additional skyglow attributed directly to the development will unlikely be detectable above the baseline. As such, both the consequence and likelihood of disruption of nesting and emerging hatchling behaviour is reduced.

Outcomes of the risk assessment is provided in Table 12 below.

**Table 12: Summary of the risk assessment for light pollution**

Risk	Consequence	Likelihood	Ranking
Inherent	Moderate (3)	Likely (4)	High (12)
Residual	Minor (2)	Unlikely (2)	Low (4)

**4.10 Habitat modification**

Potential impacts of artificial light are discussed in Section 4.9. The construction of the marina and berths is not included within the scope of this MTMP (Section 1.3). Further, since the area to be developed does not occur on, or adjacent to, turtle nesting beaches, no site-specific risks regarding this threat are identified.

**4.11 Indigenous take**

The development does not represent any project-specific risks regarding this threat.

**4.12 Vessel disturbance**

**4.12.1 Potential impacts**

Vessel presence and movements can lead to behavioural changes in response to vessel noise, resulting such as startle responses (abrupt movements, increase in swimming) and prolonged inactivity (Lenhardt et al. 1983, 1996; Lenhardt 1994), potential altering foraging and internesting behaviours. However, habituation to vessel presence has been documented in response to continuous, low frequency noise (O'Hara & Wilcox 1990; Dickerson et al. 2004; Geraci & Aubin 1980; Whittock et al. 2017). Vessels also present the risk of injury or mortality from collision (Dobbs, 2001). This is particularly an issue in shallow coastal foraging habitats and internesting areas where there are high numbers of recreational and commercial craft (Hazel & Gyuris, 2006; Hazel *et al.* 2009). Excluding unknown causes of mortality, boat strike was the most commonly determined cause of marine turtle mortality in Queensland waters between 2000 and 2011 (Meager & Limpus, 2012).

Although construction and operation of the proposed development does not include vessel activities, the development will increase the number of residents and visitors to the area which in turn may increase recreational boat use during the operational phase. The degree to which boat use may



increase due to the development is not quantifiable, however, is unlikely to be significant at the local and regional scale given existing vessel traffic associated with Bundaberg Port, Bundaberg Port Marina and the existing four-land boat ramp at Burnett Heads Harbour, and absence of boat storage within the development. The marina, once developed, may provide residents and visitors access to vessel berths, however, construction and operation of the marina is out of scope of this MTMP.

Interesting females may be present in the marine environment adjacent to the development during the nesting season. The Burnett River and mangrove creeks may be used as foraging and/or refuge habitat by juvenile and resident (non breeding) adult turtles, though numbers are expected to be low. Consequently, increased boat use presents a risk of collision and behavioural responses to vessel presence to a small number of individuals only.

**4.12.2 Mitigation measures**

The Marine Village Resident and Visitor Code of Conduct (Section 4.14), implemented as part of the approved Community Management Scheme by the Bodies Corporate, will raise awareness of boat strike and promote slow speeds by residents and visitors.

**4.12.3 Risk assessment**

Although the outcome can be fatal for individual turtles, boat strike (as a standalone threat) has not been shown to cause stock level declines (Commonwealth of Australia, 2017). Behavioural responses of a insignificant number individuals to vessel presence may occur; it is not anticipated that vessel activity will increase substantially in order to lead to population level effects. Raising awareness of the risks of collision to visitors and residents, and promotion of slower speeds, reduces the likelihood of a collision occurring, resulting in a lower proportion of the local population being impacted, reducing the consequence and overall risk ranking.

Outcomes of the risk assessment is provided in Table 13 below.

**Table 13: Summary of the risk assessment for vessel disturbance**

Risk	Consequence	Likelihood	Ranking
Inherent	Insignificant (1)	Unlikely (2)	Low (2)
Residual	Insignificant (1)	Rare (1)	Low (1)

**4.13 Noise interference**

Only vessel noise was identified as a potential source of threat, which is discussed in Section 4.12.

**4.14 Recreational activities**

**4.14.1 Potential impacts**

The development will increase the number of residents and visitors to the area during the operational phase with a subsequent increase in recreational activities, such as:



- Recreational fishing (Section 4.8);
- Recreational boat use (Section 4.12); and
- Beach use, including turtle watching.

Oaks Beach is a 25-minute walk from the development location and Mon Repos Beach a 10-minute drive. Mon Repos is globally recognised for its tourism around nesting and hatchling turtles which is encouraged by the Queensland Government (Queensland Government, 2018). To what extent the development will increase visitor numbers to the beaches is unknown; however, increased beach use may result in increased marine debris (Section 4.4) and unintentional disturbance of nesting turtles, clutches and hatchlings.

#### 4.14.2 Mitigation measures

We propose the development of a Marine Village Resident and Visitor Code of Conduct to be implemented through the approved Community Management Schemes as a tool for the Bodies Corporate to communicate standards and expectations of behaviour for residents and visitors residing at the Marina Village.

##### 1. Turtle watching and beach use (source: Queensland Government (2018))

- Stay well clear (at least two meters) of turtles;
- Turn off all lights until laying begins;
- Keep still and quiet;
- Remain behind turtles as they dig and lay their eggs – do not stand in front of or where they can see you;
- Restrict flash photography to a minimum and only take flash photos once the eggs have been laid;
- Remove/turn off lights and back away from the turtles if they appear to show signs of disturbance;
- Watch where you step to avoid crushing eggs or hatchlings;
- Do not disturb or dig up nests; and
- Be aware that turtles have good eyesight and an excellent sense of smell.

##### 2. Recreational fishing and boat use (source: Queensland Government (2019))

- All discarded fishing gear to be disposed of in bins provided;
- Check crab pots regularly, set your pots to avoid loose rope floating about in the water and ensure pot entrances are not large enough to trap a turtle;





- Report all sightings of any sick, injured or dead turtles by calling the RSPCA Queensland (1300 264 625);
- Avoid shallow seagrass areas. If you cannot avoid seagrass areas, reduce speed to below 10 knots (off the plane) and take extra care;
- Look out for turtles and dugong; and
- Be careful not to damage seagrass by careless anchoring or operating of a vessel in shallow water where boat wash or propeller damage can occur.

### 3. Housekeeping

- Report sightings of non-native predators;
- Prohibit feeding of wildlife;
- Observe waste disposal and storage plans; and
- Close internal blinds after 8 pm during turtle nesting season.

#### 4.14.3 Risk assessment

Unmitigated, disturbance to nesting and hatchling turtles on nesting beaches could result in decreased breeding success, depending on the extent to which beach use is increased due to the development. Through education of visitors and promotion of mitigation measures the likelihood and consequence of disturbance occurring is reduced.

Outcomes of the risk assessment is provided in Table 14 below.

Table 14: Summary of the risk assessment for recreational use

Risk	Consequence	Likelihood	Ranking
Inherent	Minor (2)	Unlikely (2)	Low (4)
Residual	Insignificant (1)	Rare (1)	Low (1)

### 4.15 Disease and pathogens

Physical contact between humans and turtles could result in zoonosis or exposure of turtles to contaminants. However, the Code of Conduct (Section 4.14) outlines that persons should remain two meters from turtles on the beach, eliminating risk of this threat. No additional site-specific threats were identified.



#### 4.16 Risk Assessment Summary

Table 15: Summary of the site-specific risk assessment outcomes

Threat	Inherent risk	Mitigation measures	Residual risk
Climate change and variability	Medium (9)	<ul style="list-style-type: none"> <li>ESD initiatives</li> <li>Contribute to and support ongoing marine turtle research at Mon Repos</li> </ul>	Low (2)
Marine debris	Medium (6)	<ul style="list-style-type: none"> <li>Waste Management Plan</li> <li>Bin and waste storage spaces design</li> </ul>	Low (2)
Chemical and terrestrial discharge	Low (2)	<ul style="list-style-type: none"> <li>Storage of chemicals</li> <li>Stormwater Management Plan</li> </ul>	Low (1)
International take	<i>Not considered relevant to the development</i>		
Terrestrial predation	Medium (6)	<ul style="list-style-type: none"> <li>Bin and waste storage spaces design</li> <li>Marine Village Resident and Visitor Code of Conduct</li> </ul>	Low (1)
Fisheries bycatch	Low (4)	<ul style="list-style-type: none"> <li>Bin and waste storage spaces design</li> <li>Marine Village Resident and Visitor Code of Conduct</li> </ul>	Low (1)
Light pollution	High (12)	<p><u>External lighting (buildings):</u></p> <ul style="list-style-type: none"> <li>All exterior building lights utilise amber LED emitters (~585nm ‘true amber’ emitters, ‘phosphor converted amber’) or where white LED is required for human safety, a correlated colour temperature (CCT) equal to or lower than 2700K;</li> <li>External lighting achieves an upward waste light output ratio (ULR) of 0%, achieved by: <ul style="list-style-type: none"> <li>Shielding, by recessing the light fitting into roof structures, eaves or building ceilings</li> <li>Shielding, by the light housing which prevents horizontal light above a 45-degree angle.</li> </ul> </li> </ul>	Low (4)



Threat	Inherent risk	Mitigation measures	Residual risk
		<ul style="list-style-type: none"> <li>○ Mounting external lights (i.e. on walls, stairs and walkways) as low as physically possible and using targeted asymmetrical distribution to illuminate only the specific areas of need, while minimising the angle of incidence and reflectance.</li> <li>● Security lighting will be motion activated and supplemented with computer monitored infrared detection systems;</li> <li>● Motion activated external walkway lighting for residential premises from 8pm until dawn during turtle season;</li> <li>● Motion activated lights will have an associated deactivation period of a maximum of five minutes;</li> <li>● Exterior finishes on all buildings will be matte and have a maximum reflective value of 30%; and</li> <li>● All balcony lighting will automatically turn off at 8:00pm during the turtle season (under the control of the Bodies Corporate).</li> </ul> <p><u>Indoor lighting (buildings):</u></p> <ul style="list-style-type: none"> <li>● Indoor lighting will have a CCT equal to or lower than 2700K;</li> <li>● Apartment downlights will be built-in to the fixture – not a replaceable fixture;</li> <li>● Modification of the apartments’ lighting design, including changes to the type / colour temperature / spectral power distribution of the LED sources, will be prohibited by the Bodies Corporate (see ‘Bodies Corporate responsibilities’ below);</li> <li>● All glass (windows/doors) will have opaque (block-out) blinds/curtains fitted;</li> <li>● interior finishes will be matte and have a maximum reflective value of 30%;</li> </ul>	



Threat	Inherent risk	Mitigation measures	Residual risk
		<ul style="list-style-type: none"> <li>• All glass (windows/doors/balustrades) on all buildings will have a tint applied with a visible light transmittance value of 50%; and</li> <li>• Skylights will not be permitted.</li> </ul> <p><u>Pool/water feature lighting:</u></p> <ul style="list-style-type: none"> <li>• The boundary of artificial water bodies will only be illuminated at night if night activities are intended;</li> <li>• Swimming pools will either be in-ground design or enclosed with solid walls (i.e. no glass windows);</li> <li>• In pool lighting will be the minimum and lowest intensity needed for safe swimming and use of steps to access the water, lights will be aimed at or below the horizontal or lower;</li> <li>• Pool surfaces will be dark coloured to reduce light reflection from the water;</li> <li>• Pool decking will be a dark colour to minimise reflection; and</li> <li>• Pool deck lighting will be low level, shielded, mini-bollard amber LED.</li> </ul> <p><u>Car parks, road and walkways:</u></p> <ul style="list-style-type: none"> <li>• Flashing/intermittent lights instead of fixed beam to identify an entrance or delineate a pathway;</li> <li>• Use of amber LED emitters (~585nm ‘true amber’ emitters, or ‘phosphor converted amber’) for carparks lighting; and</li> <li>• Carpark lighting will be low level, bollard style with an upward waste light output ratio (ULR) of 0% (Principle 3)</li> </ul> <p><u>Bodies Corporate responsibilities:</u></p> <ul style="list-style-type: none"> <li>• Following construction to conduct inspection and to ensure:                         <ul style="list-style-type: none"> <li>○ No directly visible light is observed from Oaks Beach; and</li> <li>○ Compliance with the Lighting Management Plan.</li> </ul> </li> </ul>	



Threat	Inherent risk	Mitigation measures	Residual risk
		<ul style="list-style-type: none"> <li>• At the start of each turtle season to ensure:                             <ul style="list-style-type: none"> <li>○ No directly visible light is observed from Oaks Beach;</li> <li>○ Compliance with the Lighting Management Plan;</li> <li>○ Internal light fixtures are within specification;</li> <li>○ No additional light fittings (temporary or otherwise) have been installed on balconies; and</li> <li>○ Internal blinds have been closed after 8 pm.</li> </ul> </li> <li>• Should any non-conformances be noted, educational outreach to residents and visitors will be performed, based on reiteration of the Code of Conduct, implemented as part of the approved Community Management Scheme.</li> </ul> <p><u>Lighting Management Plan</u> A project specific Lighting Management Plan will outline:</p> <ul style="list-style-type: none"> <li>• Proposed lighting plans for each building/section of walkway, including number, type and specification of each light fitting;</li> <li>• Design specifications for external building surfaces;</li> <li>• Auditing schedule to ensure compliance with lighting designs in communal areas;</li> <li>• Monitoring schedule for the measurement of biologically meaningful light from Oaks Beach post construction and annually throughout operation.</li> </ul> <p><u>During construction</u></p> <ul style="list-style-type: none"> <li>• Avoid activities that require elevated floodlights at night during the nesting season.</li> </ul>	
Habitat modification	<i>Not considered relevant to the development</i>		
Indigenous take	<i>Not considered relevant to the development</i>		



Threat	Inherent risk	Mitigation measures	Residual risk
Vessel disturbance	Low (4)	<ul style="list-style-type: none"> <li>Marine Village Resident and Visitor Code of Conduct</li> </ul>	Low (1)
Noise interference	<i>Not considered relevant to the development</i>		
Recreational activities	Low (4)	<ul style="list-style-type: none"> <li>Marine Village Resident and Visitor Code of Conduct</li> </ul>	Low (1)
Disease and pathogens	<i>Not considered relevant to the development</i>		



## 5 MONITORING AND ADAPTIVE MANAGEMENT

### 5.1 Artificial Light

Baseline artificial light monitoring was conducted in January 2020 (Section 1.2.1) from Barubbra Island, Oaks Beach and Mon Repos Beach which provided evidence of directly visible light and measures of sky brightness. It is recommended that this light monitoring is repeated following completion of construction, and periodically throughout operation, from Oaks Beach with the objective of:

- Identifying any additional directly visible light from the direction of the development; and
- Comparing measures of sky brightness (in V mag / arcsec<sup>2</sup>) to the baseline measurements.

Light monitoring and reporting should be detailed in a Lighting Management Plan (see Section 7).

### 5.2 Marine Turtles

Mon Repos is one of six index nesting beaches for the loggerhead turtle across Queensland. The beach has been monitored for nightly turtle nesting from October – March from 1968 through to 2020. It is recommended that a partnership be established between DES and BHD for the purpose of sharing information. The partnership can be formalised between the two parties through development of a Memorandum of Understanding (MoU) to include, but not limited to:

- BHD sharing with DES their Marina Village Residents and Visitors Code of Conduct.
- BHD sharing with DES their Lighting Management Plan.
- Identifying options for resourcing increased biological monitoring effort at Oaks Beach and Barubbra Island.
- Pre-turtle season meeting to confirm compliance with the Lighting Management Plan.
- Post-turtle season meeting to discuss DES experiences regarding turtle nesting at Barubbra Island and Oaks Beach in particular.
- Anything else the parties see as being relevant to their interests.

### 5.3 Other

Waste generation will be monitored throughout operation and the number of bins increased if required.

### 5.4 Reporting and Adaptive Management

An annual review of monitoring outcomes will be undertaken at the end of each turtle season. This review will allow for adaptive management such as:



- Should any directly visible light from the development be detected during post-construction light surveys, additional measures will be undertaken (e.g. additional screening or shielding) to eliminate directly visible light.





## 6 SIGNIFICANT IMPACT CRITERIA

The Significant Impact Guidelines (Section 2; Commonwealth of Australia, 2013) provide criteria under which an action can be assessed. An action is likely to have a significant impact on an endangered (loggerhead turtle, Table 3) or vulnerable (green and flatback turtles, Table 3) species if there is a real chance or possibility that it will:

- Lead to a long-term decrease in the size of a population (endangered) or important population<sup>1</sup> (vulnerable);
- Reduce the area of occupancy of the species (endangered) or important population (vulnerable);
- Fragment an existing population (endangered) or important population (vulnerable) into two or more populations;
- Adversely affect habitat critical to the survival of a species;
- Disrupt the breeding cycle of a population (endangered) or important population (vulnerable);
- Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline;
- Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat;
- Introduce disease that may cause the species to decline; or
- Interfere (endangered) or substantially interfere (vulnerable) with the recovery of the species.

Table 16 assess the potential for significant impacts to occur based on the identified threats and mitigation measures outlined in Section 4.

<sup>1</sup> The Recovery Plan identifies areas of the coast, including Mon Repos beach, as important nesting areas for all three species. Therefore, the nesting populations in the vicinity of the development are considered to be components of 'important populations' and are assessed accordingly.



Table 16: Summary of significant impact of the project

Significant criteria	Impact	Contributing threats (risk)	Assessment of significance
Lead to a long-term decrease in the size of a population		Light pollution (Low) Recreational activities (Low) Vessel disturbance (Low)	<p>Nest success could be negatively impacted by recreational activities on nesting beaches. However, following implementation of mitigation measures, primarily the Code of Conduct, disturbance to nesting turtles, clutches or hatchlings was considered low. Increased vessel use associated with the development is considered insignificant when compared to existing levels of vessel use and the mitigated likelihood of a population level decline is low.</p> <p>Of greater risk was the potential impact of light pollution disrupting nesting and hatchling turtle behaviour on the beach. Mitigation measures, including monitoring and adaptive management, will eliminate light spill and direct visible light at turtle nesting beaches, and minimise additional skyglow, reducing potential impacts to nesting turtles. Should any changes in turtle nesting and hatchling behaviour be detected pre and post construction, and throughout operation, adaptive management will identify and rectify potential impacts to prevent long term declines.</p> <p>Accordingly, long-term decreases in the size of the population or genetic stock are not expected.</p>
Reduce the area of occupancy of the species		Light pollution (Low) Recreational activities (Low)	<p>The development does not propose any physical changes to nesting, internesting or foraging habitat, however, changes to nesting habitat could result from recreational activities and/or light spill on nesting beaches.</p> <p>Mitigation measures, including monitoring and adaptive management, will eliminate light spill and direct visible light at turtle nesting beaches, and minimise additional skyglow, reducing potential impacts to nesting turtles. Should any changes in turtle nesting behaviour be detected before and after construction, adaptive management will identify and rectify potential impacts</p>



Significant criteria	Impact	Contributing threats	Assessment of significance
			to prevent changes in area occupancy. The Code of Conduct will further reduce the potential for recreational activities to effect nest success.  Accordingly, the proposal is not expected to reduce the area of occupancy of marine turtle species.
Fragment an existing population into two or more populations		Light pollution (Low)	The genetic stocks for each turtle species identified in Section 3 occur over a large geographical area and comprise a number of nesting beaches. Fragmentation of nesting populations within each genetic stock are not considered likely given the nature of the development, and the number of nesting beaches comprising the Woongarra Coast rookery.
Adversely affect habitat critical to the survival of a species		Light pollution (Low) Recreational activities (Low) Vessel disturbance (Low)	Beaches and adjacent waters in the vicinity of the development are identified as habitat critical to the survival of the species for loggerhead, flatback and green turtles (Section 3). Nesting habitat (beaches) could be adversely affected by light pollution and recreational activities. However, mitigation measures, including monitoring and adaptive management, will eliminate light spill and direct visible light at turtle nesting beaches, and minimise additional skyglow, reducing potential impacts to nesting turtles, and the Code of Conduct will reduce the likelihood of recreational activities affecting nest success. Should any changes in turtle nesting and hatchling behaviour be detected before and after construction, adaptive management will rectify any identified adverse effects.  Vessel disturbance has the potential to affect internesting habitat by changing internesting turtle behaviour and distribution. However, any increase in vessel activity due to the development will be insignificant when compared to existing vessel use and is not considered to influence turtle internesting behaviour to the extent that population level effects are observed.



Significant criteria	Impact	Contributing threats (risk)	Assessment of significance
			Therefore, the development is not expected to adversely affect habitat critical to the survival of marine turtles.
Disrupt the breeding cycle of a population		Light pollution (Low) Recreational activities (Low)	<p>Recreational activities could disturb nesting females, incubating clutches or emerging hatchlings disrupting these stages of the breeding cycle. However, following implementation of mitigation measures, primarily the Code of Conduct, disturbance to nesting turtles, clutches or hatchlings was considered low. Increased vessel use associated with the development is unlikely to be significant when compared to existing vessel use in the area. Further, the mitigated risk of collision is low and is unlikely to impact on resident turtles or disrupt the internesting phase of the breeding cycle at the population level.</p> <p>Light pollution will be mitigated so that no direct light or light spill is detected at nesting beaches and skyglow will be minimised. Should any changes in turtle nesting and hatchling behaviour be detected before and after construction, and throughout operation, adaptive management will identify and rectify potential impacts prevent disruption to the breeding cycle.</p> <p>Accordingly, disruption to marine turtle the breeding cycles is not expected.</p>
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the		Light pollution (Low) Recreational activities (Low)	<p>Since no physical changes to nesting beaches are proposed, it is considered unlikely that the proposal will modify, destroy, remove, isolate or decrease the availability of habitat of the marine turtles to the extent that the species is likely to decline. Light pollution will be mitigated so that no direct light or light spill is detected at nesting beaches and skyglow will be minimised. Should any changes in turtle nesting and hatchling behaviour be detected before and after construction,</p>



Significant criteria	Impact	Contributing threats (risk)	Assessment of significance
species is likely to decline			and throughout operation, adaptive management will identify and rectify changes to nesting habitat so that marine turtle populations are expected to decline.
Result in invasive species that are harmful to a species becoming established in the endangered or vulnerable species' habitat		Terrestrial predators (Low)	It is unlikely that invasive species would be introduced to marine turtle habitat during the construction and operation of the development. However, existing non-native species occur in the region and are terrestrial predators of marine turtle eggs and hatchlings. The Code of Conduct outlines measure to be taken to reduce the likelihood of predator population densities to increase and, therefore, no significant impacts are expected at the population or stock level due to invasive species.
Introduce disease that may cause the species to decline		Recreational activities (Low)	The development does not present a risk of introducing disease that could result in the decline of marine turtle species.
Interfere with the recovery of the species		Light pollution (Low)	The status of each genetic stock is outlined in Section 3 (sGBR = recovering; eQLD = stable; swPac = early stages of decline).  The effects of light pollution on nesting and hatchling emergence behaviour could interfere with the recovery of these stocks, should impacts significantly affect breeding success in the long term.



Significant criteria	Impact	Contributing threats	Assessment of significance
			<p>As discussed above, mitigation measures, including implementation of monitoring and adaptive management, will prevent long term impacts on nesting and hatchling emergence behaviour.</p> <p>Accordingly, the development is not expected to interfere with the recovery of the genetic stocks.</p>



## 7 CONCLUSION AND RECOMMENDATIONS

Baseline light monitoring from Barubbra Island, Oaks Beach and Mon Repos Beach indicated that Barubbra Island currently experiences direct visible light and high levels of skyglow emanating from the direction of Bundaberg Port and Marina. Oaks Beach currently experiences some direct visible light from local sources and skyglow from Bundaberg Port and Marina. Mon Repos Beach experiences low direct visible light and low skyglow. The mitigation measures in this report have been prepared with a view to the development not discernibly increasing light levels above this baseline.

The impact assessment process, including the development of mitigation measures conducted during the preparation of this report, together with the requirement to conduct a post construction audit to verify compliance with the approved lighting design and regulatory conditions, were done so in line with the National Light Pollution Guidelines (Commonwealth of Australia, 2019) and are considered best practice.

To ensure efficacy of proposed mitigation measures, we recommend that during the detailed design phase of the development, qualified turtle biologists collaborate with professionally qualified lighting engineers/designers to further develop and assess mitigation measures based on detailed lighting designs, light models and simulations.

Implementation of the proposed mitigation measures as described will prevent the development leading to significant impacts to marine turtle species as assessed against the EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (Commonwealth of Australia, 2013) and will meet relevant priority actions outlined in the Recovery Plan for Marine Turtles in Australia 2017 – 2027 (Commonwealth of Australia, 2017). Accordingly, it is recommended that the regulatory assessors of this proposal apply these mitigation measures within approval conditions. Suggested approval conditions are provided in Appendix C.



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Appendix A: Sky42™ Data Analysis

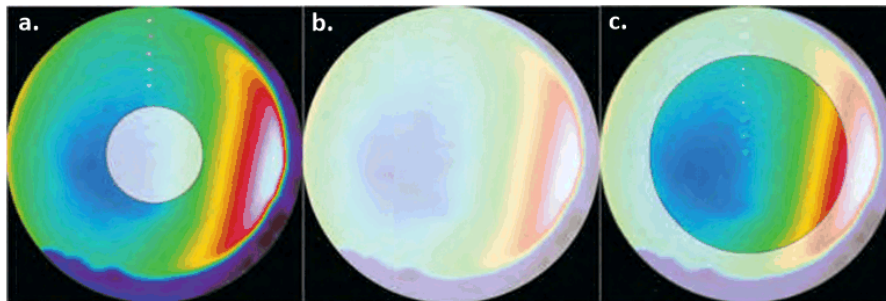
The quality of an image captured by a Sky42 light monitoring camera can be influenced by atmospheric factors such as the presence of the moon, twilight, cloud, rain, dust, humidity, or physical factors such as accumulation of sand or dust on the lens. Any images that were affected by physical factors were removed from the analysis, as well as any images that were affected by the moon or twilight.

All suitable images were processed to determine “whole-of-sky”, “zenith”, and “horizon” sky brightness levels. Zenith is the mean value of sky glow in magnitudes within 0° – 30° field of view directly overhead, whole-of-sky (WOS) is the mean value of sky glow in the entire image, and horizon is the mean value of sky glow within the 60° – 90° outer band (Figure 2).

Sky brightness was quantified in units of visual magnitudes/arcsec<sup>2</sup> (a standard unit used in astronomical measurements and emerging as a standard for sky glow monitoring globally). The visual magnitudes/arcsec<sup>2</sup> unit quantifies light intensity on an inverted logarithmic scale, i.e. higher values represent lower intensity light, while lower values represent higher intensity light (Table 3). The image with the median value of sky brightness for each site on a clear night was selected for complete analysis and presentation in this report.

**Table A1: Qualitative interpretation of magnitude band values (source: Unihedron Sky Quality Meter).** Use as guide only. \*\*Values <17 Vmag/arcsec<sup>2</sup> not provided by source (considered to represent light level greater than ‘very high’ and representative of skies brighter than an urban night sky horizon).

Magnitude (Vmag/arcsec <sup>2</sup> )	Qualitative Interpretation	Qualitative Example of Interpretation
21 – 22	Very low	Ideal natural dark night sky horizon
20 – 21	Low	Typical rural night sky horizon
19 – 20	Moderate	Typical suburban night sky horizon
18 – 19	High	Typical urban night sky horizon
17 – 18	Very High**	Poor urban night sky horizon



**Figure A1: Measurement of mean pixel values; a. Zenith brightness (0° – 30°); b. WOS brightness (full image); c. Horizon brightness (60° – 90°).** White shaded areas denote the region of the sky being measured.

Note that the colour coding used in the isophote map represents the scale of intensity of light and is not representative of the colour of light as perceived by a human/turtle eye or Sky42 camera.

**Appendix B: Burnett Harbour Marina Village Development Application**



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## 1.0 APPLICATION & CONSULTANTS

### 1.1 APPLICATION:

- 1.1.0 **APPLICANT:**  
BH Developments Qld Pty Ltd
- 1.1.1 **APPLICATION:**  
Development Application
- 1.1.2 **STREET ADDRESS:**  
44 Harbour Esplanade, Burnett Heads
- 1.1.3 **PROPERTY DESCRIPTION:**  
Part of Lot 1 on SP157193

### 1.2 CONSULTANTS:

- 1.2.1 **ARCHITECTS & URBAN DESIGN**  
**BDA Architecture**  
Contact: Darren Greenaway Ph - (07) 5555 2600
- 1.2.2 **TOWN PLANNER**  
**InsiteSJC**  
Contact: Randall Barrington Ph - (07) 4151 6677
- 1.2.3 **CIVIL**  
**RMA Engineers**  
Contact: Scott Graham Ph - (07) 3846 5885
- 1.2.4 **TRAFFIC**  
**RMA Engineers**  
Contact: Perci Barnes Ph - (07) 3846 5885



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## 2.0 EXECUTIVE SUMMARY

### INTRODUCTION - URBAN DESIGN & ARCHITECTURE

The Burnett Harbour Marina Village has been designed as a high quality mixed-use marine village located on the southwestern shore of Burnett Harbour. Its architectural form comprises a linear cluster of buildings spread along the shoreline with each end clearly defined by a principal node. The commercial heart marks the western end of the village. This is to be balanced by a future resort residential component, which will identify the eastern end.

This application includes "Stage 1" of the total project: including the retail/commercial buildings (A, B and C), and the first three residential buildings (D, E and F).

Organic in its shape, the built form pattern respects and follows the line of the existing landform edge. In this way the structure of the village can be regarded as a seamless whole, maintaining a natural and meaningful relationship with its surroundings.

The commercial heart is located adjacent to the existing public parking area, boat ramp and jetty. It comprises a compact grouping of 1, 2 and 3 storey buildings sited along the waters edge. These buildings are organized about a principal east-west axis upon which the main public access to the centre and the access to the new marina are aligned. An east-facing boardwalk, which overlooks the marina, provides access to retail, commercial, restaurant and short-term accommodation facilities within, promoting a vibrant and interesting waterfront edge.



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A series of residential buildings are distributed along the waterfront to the east of the village centre. These comprise a diverse mix of product types, including 4 – 5 storey low-rise apartment buildings in this "Stage 1" application. (The separate Preliminary Approval application for the eastern end of the site, Stage "2" includes 2 storey waterfront villas, 2 storey eco-villas and a 6 – 10 storey resort hotel. The resort hotel is located centrally on the small peninsula on a north-south axis running from Harbour Esplanade to the marina. Hotel facilities embrace and overlook a large lagoon pool.)

Residential buildings are angled in plan shape and offset from each other resulting in an interesting and sinuous built edge of varying height, which maximizes views to the marina and the ocean for residents. Lower height buildings are generally positioned closer to the edges of the site with the tallest structure located the furthest distance from the site's boundaries.

Generous gaps between buildings provide view shafts to the marina from Harbour Esplanade and the existing residential neighborhood to the south.

The public boardwalk continues along the southern edge of the harbour in front of the apartment buildings. This is linked by pathways to additional boardwalks, BBQ and picnic areas and a small beach, providing public access to almost the entire waterfront edge of the site. A series of lateral pathways between the buildings, connect the boardwalk to Harbour Esplanade, providing a choice of routes through the village and along the waterfront for both residents and the wider community.

Parking for each of the "Stage 1" residential buildings is provided in basements beneath each building, with visitor parking at grade.

The linear nature of the site allows individual buildings to be accessed directly from Harbour Esplanade. This characteristic also facilitates staging of construction, allowing the development to be staged in sustainable parcels.

### OVERVIEW

This Development Application seeks Development Approval for the western component of the proposed marina village, which comprises commercial/mixed use buildings A, B and C plus residential apartment buildings D, E and F (Stage 1).

The second stage of the overall development, at the eastern end of the Marine Village will be the subject of a separate Preliminary Approval Application, which may be lodged concurrently.

Through thoughtful consideration of the existing waterfront context and its envisaged potential for urban development, the execution of this Stage 1 design will result in the addition of a high quality waterfront mixed use residential community providing both short and long term accommodation, together with service retail and restaurants, which will provide significant amenity for residents and visitors and contribute positively to the existing community of Burnett Heads.


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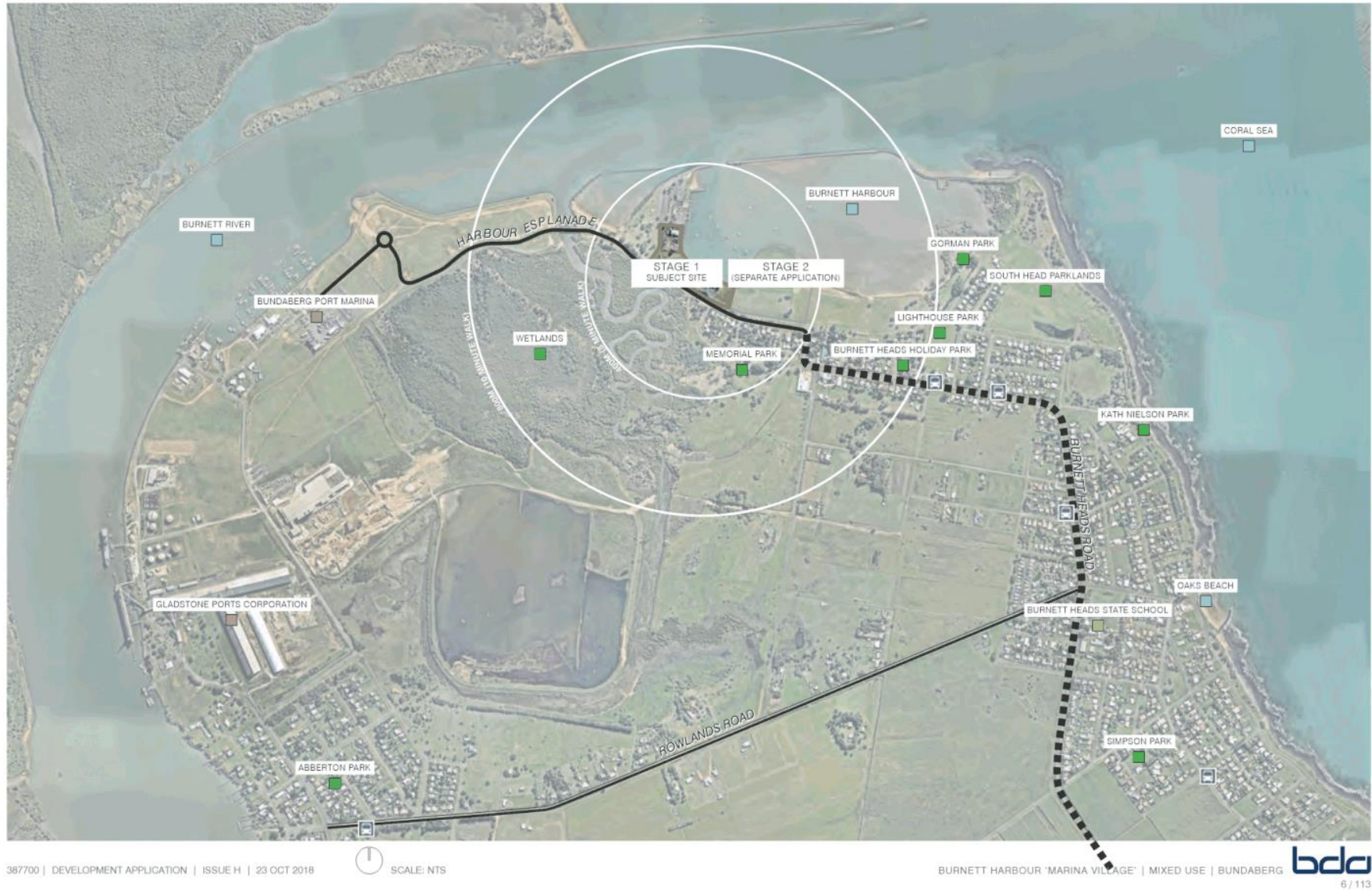
3.0

STATEMENT OF URBAN DESIGN INTENT  
- SITE ANALYSIS

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3.1 CONTEXT PLAN



### 3.2 EXISTING BUILDINGS & ROADS



-  SUBJECT SITE
-  EXISTING SITE ENTRIES
-  HARBOUR ESPLANADE
-  EXISTING 'BLUE WATER CLUB'
-  EXISTING WORKSHOP, CHANDLERY, CARETAKER RESIDENCE
-  EXISTING VOLUNTEER MARINE RESCUE BUILDING

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 SCALE: NTS

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3.3 STREET VIEWS



VIEW LOOKING SOUTH-EAST FROM HARBOUR ESPLANADE



VIEW LOOKING NORTH FROM HARBOUR ESPLANADE



VIEW LOOKING SOUTH-EAST FROM HARBOUR ESPLANADE



VIEW LOOKING NORTH FROM HARBOUR ESPLANADE



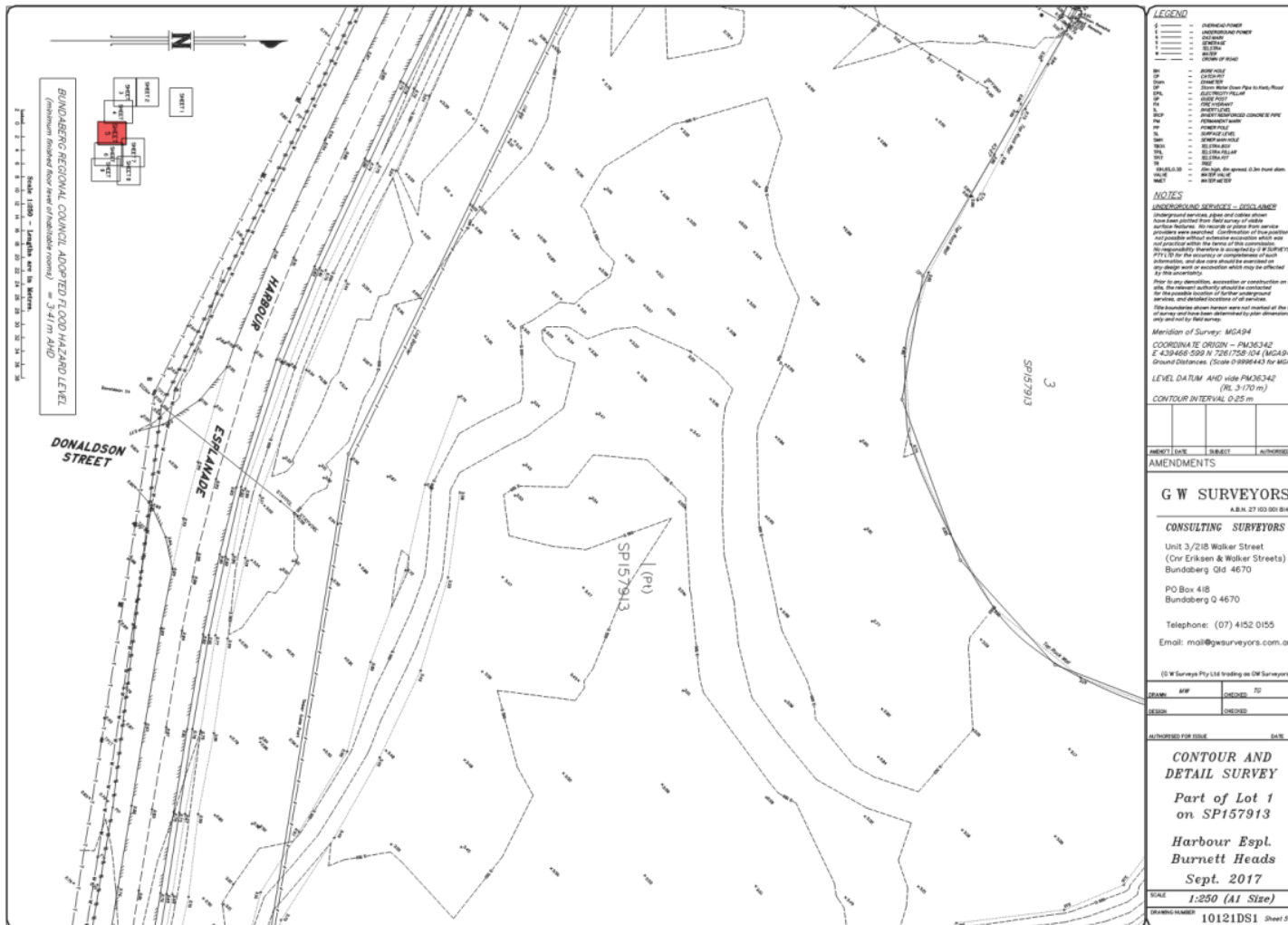








3.8 EXISTING SURVEY PLAN (5)







4.0

STATEMENT OF URBAN DESIGN INTENT  
- MASTER PLAN

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## 4.1 STATEMENT OF URBAN DESIGN INTENT



The urban form of the Burnett Harbour Marina Village has been designed as a linear cluster of buildings spread along the shoreline with each end clearly defined by a principal node.

In overall shape, massing and composition, the built form has been developed from an analysis of the physical landform, the existing built form and the envisaged use, character and density in this part of Burnett Heads.

Organic in its shape, the built form pattern respects and follows the line of the existing waterfront edge. In this way the linear structure of the village wrapping around the harbour, maintains a natural and meaningful relationship with both the landform and the ocean.

The hotel in "Stage 2" (separate Preliminary Approval application) is the tallest building and is designed to provide a distinctive and memorable landmark on the shoreline, clearly identifying the river mouth on approach from the ocean.

Key principles of good urban places considered in the design include:

### ACCESSIBILITY

*Good places are accessible to all members of the community.* Proposed buildings will cater for people arriving by foot, bicycle, car, coach, boat or future public transport. All areas within the site will allow equitable access for people with disabilities.

### COMPREHENSIBILITY

*People can take full advantage of a place if they can readily understand it, easily interpret it and it is imbued with meaning corresponding with its use.* The proposed built environment has clear points of reference in its circulation routes and meeting and gathering places and building entrances. Individual buildings are designed to exhibit clear legibility through architectural language, colour, materiality, transparency and articulation.

### VARIETY AND INTEREST

*Variety is an essential ingredient of good urban places. Variety implies varied forms, uses and meanings.* The visual appearance of building forms will be given increased variety through the layering of façades, variation in height and roof shape, the use of a wide range of exterior materials and the natural landscape. The dynamic composition of building elements within the overall 'horizontal' built form of the development will create visual interest for both residents and visitors.

### ACCOMMODATION CHOICE

The wide range of accommodation choice proposed will cater for a broad range of occupants over the long term.

### CONNECTIVITY

Generous gaps between buildings will provide view shafts to the marina from Harbour Esplanade and the existing residential neighborhood to the south. The waterfront boardwalk provides public access to the entire waterfront edge of the site. A series of lateral pathways between the buildings, connect the boardwalk to Harbour Esplanade, providing a choice of routes through the village and along the waterfront for residents and for the wider community.

### QUALITIES OF EDGES

All edges of the village are readily accessible and have been designed to be legible and interesting in appearance, easy and safe to access, using appropriate materials, finishes and landscaping, which will also provide shade and weather protection.

### HUMAN SCALE

*Good urban places affirm the importance of people, helping us to relate to, interpret and enjoy the built environment.* The proposed village is broken into a series of human scaled building elements, which will relate well to the landform context at the mouth of the Burnett River. Richness will be achieved through the articulation, materiality and detailing of building forms, and extensive outdoor dining and recreation spaces.

### SPACE MAKING

*A good environment possesses well defined public spaces, in which people will feel comfortable.* The public waterfront and other circulation areas within the site comprise a series of interconnected human scaled spaces containing communal meeting places at nodal points. Residents are provided with sheltered outdoor living and recreation areas.

### SENSE OF COMMUNITY

*Good places enhance the sense of community and provide for social interaction.* The design of the circulation and communal areas will provide comfortable places in which people can meet and socialise enjoying a good sense of well being.

### PUBLIC AND PRIVATE ASPECTS

The close proximity of public and private realms has been given consideration in the design. Views towards residential areas will be partially screened through planting to minimise overlooking and maintain privacy for residents.

### ADAPTABILITY AND VERSATILITY

The village has been designed to allow its construction to be staged so that it can be developed at an appropriate pace over time. Many internal walls of the buildings are non load bearing providing adaptive design to readily accommodate changing uses over time.

### ENVIRONMENTAL QUALITIES

The design satisfies environmental qualities for users of the site including the quality of air and water, noise and visual pollution, bio diversity in the landscape and the minimization of energy use and waste.

### SAFETY

In its layout, the masterplan has been configured to provide safe access within the site as well as to and from the new village. This includes the provision of clear sightlines along all pathways.

4.2 OVERALL MASTER PLAN



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SCALE: 1:2000 @ A3

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4.4 CONCEPT SKETCHES (1)



BOARDWALK VIEW 1



MARINE VILLAGE VIEW 2



4.5 CONCEPT SKETCHES (2)



HARBOURFRONT VIEW 3



HARBOURFRONT VIEW 4



### 4.6 STAGING PLAN



The project provides for a logical step-by-step staging commencing with the main entry, and Building B, which includes ground level offices and retail uses with limited short term accommodation over, and concurrently the first residential building (Building 'D'), which has a separate vehicular entry.

- STAGE 1
- STAGE 2
- STAGE 3
- STAGE 4
- FUTURE STAGES (SEPARATE APPLICATION)

- A - OFFICES, YACHT CLUB, SHOPS, RESTAURANTS & BAR
- B - SHORT TERM ACCOMMODATION, SHOPS & OFFICES
- C - SHOPS, RESTAURANTS, OFFICES & BARS
- D - RESIDENTIAL APARTMENTS & SHORT TERM ACCOMMODATION
- E - RESIDENTIAL APARTMENTS & SHORT TERM ACCOMMODATION
- F - RESIDENTIAL APARTMENTS



