Attachment 7

**Geotechnical Report** 





### REPORT

### **Geotechnical Investigation**

Proposed Development The Davidson by GURNER<sup>™</sup> 97-113 Davidson Street Port Douglas QLD 4877



23003AA-D-R01-v2 Davidson Street Port Douglas Developments Pty Ltd 5 May 2023

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### **1.0** Introduction

GEO Design has carried out a geotechnical investigation for a proposed development located at 97-113 Davidson Street, Port Douglas. The geotechnical investigation was carried out at the request of Davidson Street Port Douglas Developments Pty Ltd.

It is understood that the proposed development comprises the construction of new short term accommodation and residential buildings with associated swimming pools and lagoon, car parking and landscaped areas. It is further understood that it is proposed to construct a new basement 120 car park over at least part of the site.

The aims of the geotechnical investigation were as follows:

- Evaluate the subsurface conditions in the area of the proposed development.
- Comment on footing options and provide geotechnical design parameters for structural design of buildings.
- Comment on ground improvement options if suitable.
- Comment on potential total and differential settlements under the expected loads.
- Comment on basement construction and provide geotechnical design parameters.
- Comment on dewatering and likely inflows into excavations.
- Comment on retaining wall (temporary and permanent) that may be required and provide geotechnical design parameters for design.
- Provide subgrade CBR values to allow pavement design.
- Comment on earthworks procedures and site preparation.
- Comment on the likely presence of Acid Sulphate Soils (ASS) and potential disturbance from the proposed development.
- Comment on likely ASS management procedures if present.

The results of the investigation together with the engineering comments outlined above are presented in the following sections.

### 2.0 Fieldwork

The fieldwork for the current investigation comprised the following:

- A walkover assessment, carried out by an experienced Engineering Geologist.
- Performance of nine (9) electronic Cone Penetration Tests (CPT's) to a maximum of 12 m or prior refusal.
- Drilling of six (6) geotechnical boreholes to a depth of about 15 m with in-situ SPT/U50 sampling at 1.5 m intervals together with ASS sampling to 4.5 m below the existing ground surface level.
- Excavation of eight (8) test pits to a maximum depth of 3 m.
- Completion of field pH testing (pH<sub>F</sub> and pH<sub>FOX</sub>) on samples recovered for the preliminary assessment of ASS.
- Combination of samples for Chromium Suite testing.
- Collection of samples for geotechnical and chemical testing.

Fieldwork was carried out by an experienced field technician under the direction of a geotechnical engineer. The location of all testing is presented in Appendix A and shown below in Figure 1. Inferred cross sections are also presented in Appendix A. The inferred cross sections are based upon the provided Earthworks Cut Fill Sections (Drawing 200372-DA-C03.11 (Revision 2)).

Co-ordinates for the test locations are summarised in Table 1. A site plan showing the location of the proposed development and the test locations is presented in Figure 1 and in Appendix A. The results of the fieldwork are presented in Appendix B.

Test Location	Easting (m)	Northing (m)	Completed Depth (m)	Approximate Surface RL (m-AHD)
BH01	335980.0	8175732.0	14.95	4.32
BH02	335881.0	8175754.0	14.95	2.85
BH03	335961.0	8175637.0	14.95	4.21
BH04	335867.0	8175652.0	14.95	2.98
BH05	335641.0	8175562.0	14.95	4.17
BH06	335864.0	8175566.0	14.95	3.75
TP01	335959.0	8175704.0	1.40	4.04
TP02	335988.0	8175644.0	1.70	4.62
ТРОЗ	335929.0	8175637.0	1.40	3.98

Table	1:	Summary	v of	Test	Locations*
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Test Location	Easting (m)	Northing (m)	Completed Depth (m)	Approximate Surface RL (m-AHD)
TP04	335898.0	8175644.0	1.00	3.40
TP05	335938.0	8175678.0	1.10	3.91
TP06	335894.0	8175725.0	0.90	3.13
TP07	335977.0	8175603.0	1.80	4.51
TP08	335907.0	8175557.0	1.40	4.01
CPT01	336005.0	8175713.0	11.9	4.89
СРТ02	335928.0	8175746.0	10.1	3.65
СРТ03	335989.0	8175656.0	11.5	4.52
СРТ04	335932.0	8175932.0	10.5	3.93
CPT05	335881.0	8175682.0	9.6	3.29
СРТО6	335928.0	8175627.0	11.6	4.01
СРТ07	335972.0	8175604.0	11.3	4.66
СРТ08	335860.0	8175643.0	11.6	2.90
CPT09	335910.0	8175561.0	9.7	4.07

\*Co-ordinates in MGA2020: Zone 55. RL's estimated from provided site plan



Figure 1: Test Location Plan

### 3.0 Results of Fieldwork

#### 3.1 Surface Conditions

The subject development site is located at 97-113 Davidson Street Port Douglas. The proposed development parcel of land covers the following allotments:

- Lot 1 on RP723702
- Lot 2 on RP723702
- Lot 3 on RP909815
- Lot 4 on RP909815

The allotments are currently occupied by accommodation and commercial businesses including a backpacker accommodation and caravan park. The existing infrastructure includes various buildings, swimming pools, sealed and unsealed roads, and landscaped areas.

The overall parcel of land is bound to the west by the Railway Service Line, to the south by Crimmins Street, to the north by an existing commercial development, and to the east by Davidson Street.

Photographs of the site taken during fieldwork are presented in Figures 2 to 6.



Figure 2: Site Photographs



Figure 3: Site Photographs



Figure 4: Site Photographs



Figure 5: Site Photographs



Figure 6: Site Photographs

### 3.2 Subsurface Conditions

The subsurface conditions encountered within the boreholes, test pits and inferred from the results of the CPT's were generally consistent and comprised Quaternary aged unconsolidated alluvial sediments. The conditions encountered were consistent with those encountered on previous geotechnical investigations in this area of Port Douglas.

From a geotechnical point of view, the subsurface materials can be largely classified into three main material zones. For reporting purposes, these are referred to as Zones 1 to 3.

Inferred subsurface profiles are presented in Appendix A.

### **3.2.1** Subsurface Zone 1

Zone 1 extends from the current ground surface to a depth of between about 1.6 m to 7.0 m (RL 1.4 m to -2.7 m). This zone is dominated by lightly to darkly hued Loose to Medium Dense/Dense sands with some minor lightly to darkly hued Soft to Firm clay layers.

Some surface fill was noted across the site and is likely related to the existing development at the site. The fill generally comprised sandy and clayey materials. No deleterious materials were observed within the fill.

### 3.2.2 Subsurface Zone 2

Zone 2 comprises the Soft to Firm compressible clay layer with organics (Marine Clay) that is dominant in this area of Port Douglas. The results of the investigation indicate that the Marine Clay layer extends below the Zone 1 units to depths of about 7.0 m to 9.5 m below the current ground surface (RL -2.8 m to -6.4 m).

Zone 2 also includes some interbedded sand layers within the marine clay.

The soft to firm compressible clay layers provide issues with settlement for buildings and placement of new filling. These materials are also generally Potentially Acid Sulfate Soils (PASS) and require treatment if excavated.

#### 3.2.3 Subsurface Zone 3

Zone 3 generally comprises Firm to Hard clays and Loose to Medium Dense sands that extend to depth below the soft to firm compressible clay layers. These layers were encountered to the maximum depths investigated.

#### 3.2.4 Groundwater

At the time of fieldwork groundwater was encountered at a depth of between about 0.1 m to 2.2 m below the current ground level. These levels correspond to around RL 1.6 m to 2.1 m. A summary of the approximate groundwater levels observed at the time of fieldwork is summarised in Table 2 below.

Test Location	Groundwater Level (m-bgl)	Groundwater Level RL-m AHD	
BH01	1.80	2.52	
BH02	0.80	2.05	
BH03	1.30	2.91	
BH04	0.90	2.08	
BH05	1.0	3.17	
BH06	0.80	2.95	
TP01	1.00	3.04	
TP02	1.60	3.02	
TP03	1.20	2.78	
TP04	0.80	2.60	
TP05	1.10	3.81	
TP06	0.70	2.43	
TP07	1.80	2.71	
TP08	1.40	2.61	

In addition to the above, Odyssey water level monitors were installed within boreholes BH03 and BH06 The monitors were installed upon completion of fieldworks and remained collecting groundwater data from 23 February to 18 April 2023.

The groundwater monitoring results are presented in Appendix B and are summarised below in Figure 7. The groundwater levels shown are in accordance with RL – m AHD.

It can be seen that the groundwater levels fluctuate based on rainfall and tidal effects and generally vary between about RL 0.8 m to 1.1 m in BH06 and RL 0 m to 1.0 m in BH03 throughout the period.

It is not uncommon for ground water to reach higher levels and approach the natural ground surface level following periods of prolonged rainfall, particularly when coinciding with high tides.

It is considered that an upper groundwater level of around RL 1.8 – 2.0 m should be adopted for all design and construction planning.



Figure 7: Summary of Groundwater Monitoring Results



Figure 8: Summary of BH01 and BH02 Results



Figure 9: Summary of BH03 and BH04 Results



#### Figure 10: Summary of BH05 and BH06 Results



#### Figure 11: Summary of TP01 to TP04 Results



#### Figure 12: Summary of TP05 to TP08 Results



Figure 13: Summary of CPT Results

### 4.0 Laboratory Testing

### 4.1 Geotechnical Testing

The results of the geotechnical laboratory testing are presented in Appendix C. The laboratory testing was carried out by Soil Engineering Services and Earth Test in their NATA accredited laboratories.

A summary of the results is presented in Tables 3 and 4 below.

Test Location	TP01	TP02	TP05	ТР07
Depth (m)	0.2-0.6	0.6-1.0	0.1-0.5	0.7-0.9
Liquid Limit (%)	31	30	31	33
Plastic Limit (%)	NO	NO	NO	NO
Plasticity Index	NP	NP	NP	NP
Linear Shrinkage (%)	0	0	0	0
% <0.075 mm	6	3	5	2
Moisture Content (%)	14.5	13.1	13.2	10.2
CBR (%)	25.0	13.0	25.0	5.0

NP- Non Plastic; NO= Not Obtainable

#### Table 4: Summary of Borehole Geotechnical Laboratory Testing

Test Location	BH01	BH04	BH04	BH06
Depth (m)	7.0-7.45	5.5-5.95	10.0-10.45	14.5-14.95
Liquid Limit (%)	40	38	50	38
Plastic Limit (%)	19	19	17	14
Plasticity Index	21	19	33	24
Linear Shrinkage (%)	11	9	16	9.5
% <0.075 mm	70	59	80	24
Moisture Content (%)	47.6	51.0	22.0	17.0
CBR (%)	NT	NT	NT	NT

### 5.0 Proposed Development

As outlined previously, it is understood that the proposed development comprises a main building of up to about four levels in height plus basement, together with smaller buildings with finished floor levels around RL 5.70 m to 6.30 m.

Based on the plans provided, the currently planned finished floor levels for the proposed main building are summarised in Table 5.

Level	Finished Floor Level (RL-m)
Service Area Basement	1.00
Basement/Carpark	1.80
Ground Level (Level 00)	5.90
First Floor (Level 01)	11.40
Second Floor (Level 02)	15.15
Third Floor (Level 03)	18.90
Fourth Floor (Level 04)	22.40

#### Table 5: Approximate Proposed FFL

In addition to the above, it is understood that the proposed development comprises a large swimming pool along with smaller pools associated with the smaller accommodation buildings, paved access roads and driveways, and landscaped areas.

#### 5.1 Proposed Earthworks

Based on the plans provided, it is understood that significant cut and fill earthworks are proposed at the site including excavation for the basements and pools, and filling to raise the building platform level.

The current ground surface levels outside the areas of previous development generally range between about RL 2.9 m to RL 4.9 m.

It is considered that excavation for basement construction will extend to about 1 m below the basement FFL, to about RL 0 m. However, excavations depths may be locally increased to allow construction of the foundations, services and ancillary structures.

Based on preliminary evaluation, an estimate of the total cut and fill works are summarised in Table 6 below.

Earthworks	Volume (m³)
Total Cut	9,500
Total Fill	24,500

Table	6:	Estimated	Total	Cut an	d Fill at	the Site
Table	υ.	Louinateu	iotai	cutan	uimat	the site

Figures 14 and 15 below show preliminary earthworks plans and indicative earthworks cross sections provided to us. It is understood that further modifications to these plans will be undertaken following design finalisation and based on construction requirements.



Figure 14: Cut and Fill Plan



Figure 15: Cut and Fill Section

### 6.0 Engineering Comments

Engineering comments relating to site preparation and earthworks procedures, foundation options, expected settlements under fill and building loads, and comments regarding retaining wall design are presented in the following sections.

#### 6.1 Cut and Fill Earthworks

As outlined above, significant civil earthworks will be carried out as part of the development.

For areas of filling, site preparation and earthworks procedures should involve the following:

- Strip and remove existing debris/materials, topsoil and soil containing significant amounts of organic materials.
- Strip and remove all cobble and boulders >150 mm in diameter from the surface.
- Compact the subgrade with a heavy roller to reveal soft or loose materials. Soft or loose
  material that cannot be improved by compaction should be removed and replaced with
  engineered fill.
- Place fill where required in uniform horizontal layers not exceeding 200 mm loose thickness and compact to achieve a relative dry density ratio of at least 95% using Standard Compaction. Each layer of filling should be keyed into natural ground. Filling should be placed at least 1 m beyond the design profile and then trimmed to the design profile.

It is considered that the upper sand and clay materials could be re-used as engineered fill. Additional imported fill materials should have a Plasticity Index less than 20 and a soaked CBR value of >15%.

It is recommended that all earthworks procedures be carried out in accordance with AS 3798-2007 "Guidelines on Earthworks for Commercial and Residential Developments" and local authority requirements. It is recommended that the earthworks contractor be familiar with site conditions.

#### 6.2 Excavation Conditions

Excavations for the proposed basement and other structures are likely to encounter predominantly sand and clay materials. As such, excavation should be readily achievable with standard excavation equipment such as a >20T excavator.

Excavations below around RL 1.8-2.0 m are likely to encounter groundwater within the upper Zone 1 materials which will result in collapsing conditions. For all excavations below about RL 1.8-2.0 m, temporary or permanent shoring is likely to be required. This could be in the form of sheet piles or soldier piles for deep excavations, or excavation boxes/bracing for shallow excavations.

Localised dewatering of the upper sand layers may also be required to allow construction works to be carried out.

All dewatering and excavation works should consider the potential disturbance of ASS. This is further discussed in Section 7.

Consideration on the effects of dewatering activities on adjacent properties should also be considered. Lowering of the groundwater level in the upper sands of Zone 1 may induce additional settlements. These settlements could impact adjacent structures or buildings, particularly where founded on high level footings.

### 6.3 Settlements Under New Filling

It is understood that up to about 2.0 m of new filling is to be placed across the site. The placement of new filling will result in consolidation settlement within the soft to firm compressible marine clays at depth.

As a guide, the placement of 1 m of new fill across the site, following site preparation, is likely to induce between about 50 mm to 90 mm in settlement. Differential settlements could be in the order of 40 to 50 mm.

On this basis, the placement of up to 2 m of filling could induce around 100 to 180 mm of total settlement and 80 to 100 mm of differential settlements.

These settlements will be additional to settlements induced by new building loads. The majority of settlements are expected to occur within two years of placement of fill. Additional minor settlements associated with long term creep are expected to occur over a long period (3-20 years).

The impact of these long-term settlements will also need to be considered for the placement of services, including evaluation of potential negative skin friction on some structures.

Potential settlement mitigation options are presented in the following sections.

#### 6.4 Footings

### 6.4.1 High Level Footings – Main Building

Based on the results of the investigation and the proposed building finished floor levels, the basement areas of the main building will be founded about on or near the soft compressible marine clay layer (Zone 2 materials). Other portions of the proposed main building are envisaged to be founded at about RL 5.0 to 5.5 m.

Preliminary advice on potential new building loads indicate that the main building is likely to have a distributed load of around 65 kPa, with column loads of around 3,600 kN and wall loads of around 250 kN/m.

Estimated settlements for the proposed main building adopting the above loads are in the order of >180 mm with differential settlements in the order of 90 to 140 mm.

On this basis, high level footings are not considered appropriate for the main structure without ground improvement and/or settlement mitigation options being implemented. Without ground improvement, the main structure will need to be founded on pile footings.

If ground improvement or settlement mitigation options are considered, the main structure could be founded on a high-level footing system such as a raft, strip or pad type footings dependent on overall loads. Ground improvement and settlement mitigation options are discussed further below.

### 6.4.2 High Level Footings – Villas and Smaller Structures

Based on the plans provided, it is understood that the proposed two-level villas and other smaller structures located around the main building will be founded on the constructed filled building platform. On this basis, the buildings will be founded at around RL 5.5 m to 6.0 m.

As outlined previously, settlements under new filling could be in the order of around 50 mm to 90 mm for every 1 m of new fill. It is expected that most (around 70%) of settlement will occur within the initial 6 months of fill placement leaving up to 15 mm to 30 mm of settlement to occur over an extended period for each 1 m of new fill. The majority of settlement will be complete after around 2 years.

Preliminary estimates of loadings of the two-level villas indicate distributed loads of around 23 kPa. On this basis, total and differential settlements for the two-level villas and other low-level structures founded on a raft type footing could be in the order of around 40 to 80 mm. These settlements would be in addition to the settlements associated with the placement of new filling.

Settlements under high level strip or pad footings (<1.4 m square) founded on the proposed building platform are likely to induce about <20 mm of total and differential settlement, in addition to settlements associated with the placement of fill.

If adopted, high level footings founded on the placed engineered fill could be designed using an allowable bearing pressure of 100 kPa. For the purposes of AS2870-2011, high level pad or strip footings constructed in accordance with the above could be designed in accordance with a Class S site.

Alternatively, the structures could be founded on deep footings.

Ground improvement and settlement mitigation options are presented in the following sections.

### 6.5 Deep Footings

### 6.5.1 General

The proposed main structure should be founded on pile footings such as driven enlarged base cast-insitu ('Franki') piles (or similar), driven precast concrete, or bored pile footings. The two-level villas and other structures could also be founded on pile type footings depending on the construction options selected.

Comments are provided in the following sections on appropriate unfactored ultimate loadings ( $R_{d,ug}$ ) for bored pier and driven piles, and driven enlarged base 'Franki' piles, which are the predominant pile type used in the area.

The design geotechnical strength ( $R_{d,g}$ ) may then be obtained after multiplying  $R_{d,ug}$  by a geotechnical strength reduction factor ( $\varphi_g$ ). Based on the overall design average risk rating (ARR) as outlined in AS 2159-2009, a  $\varphi_g$  value of 0.48 to 0.52 is suggested for the design of piles at this site.

A higher geotechnical strength reduction factor may be applied if the installed piles are subjected to load testing to confirm pile capacities. This higher value will depend upon the percentage of piles to be tested, and the test type utilised.

For working stress design of piles, the unfactored ultimate end bearing and skin friction values may be divided by a factor of safety of 2.5 in order to obtain the allowable working pressures.

It is suggested that specialist contractors be approached to comment on predicted loads for their pile types, ability to penetrate soil layers, and the possibility of vibrations affecting nearby structures, since some of these are proprietary pile types and load capacities may vary dependent upon how the pile shaft and enlarged base are formed.

It is recommended that pile load testing be carried out on all piles installed to confirm their structural capacity. All pile load testing should be carried out in accordance with the relevant standards/guidelines.

### 6.5.2 Franki Piles

Minimum 400 mm diameter Franki piles founded at least three times their diameter into the very stiff to hard clay or medium dense sands below about RL-10.0 m can be designed using an unfactored ultimate compressive loading of 1500 kN and shaft adhesion of 100 kN/m. Franki piles should have a minimum enlarged base of 1.5 times the tube diameter.

### 6.5.3 Driven Piles

Driven piles founded at least three times their diameter into the very stiff to hard clay or medium dense sands below about RL-10.0 m may be designed using an unfactored ultimate end bearing pressure of 1800 kPa and shaft friction of 70 kPa, neglecting the contribution of the upper 1 m of material.

Vibration induced damage on adjacent structures associated with piling will need to be considered.

### 6.5.4 Bored Piles

Bored pier footings founded at least three times their diameter into the very stiff to hard clay or medium dense sands below about RL-10.0 m may be designed using an unfactored ultimate bearing pressure of 1000 kPa and shaft adhesion of 40 kPa neglecting the contribution of the upper 1 m of the pile shaft.

Given the materials encountered, it is considered that bored pile installation will require the use of liners. Alternatively, Continuous Flight Auger (CFA) piles could be adopted.

#### 6.5.5 Summary

Further to the above, the design parameters which could be adopted for the design of piles for the proposed buildings are summarised below in Table 7.

Pile Type	Ultimate End Bearing Capacity	Ultimate Shaft Friction		
Franki Pile (400 mm with Enlarged Base)	1500 kN	100 kN/m		
Driven Piles	1800 kPa	70 kPa		
Bored Piles	1000 kPa	40 kPa		

#### Table 7: Summary of Geotechnical Pile Design Parameters

It should be noted that pile load tests should be carried out to evaluate actual pile capacities. Pile construction should be carried out under the supervision and direction of a suitably experienced engineer.

### 6.5.6 Negative Skin Friction

Settlement within the soft to firm compressible clay will result in the development of negative skin friction along the shaft of installed piles. The negative skin friction applies an additional load to the piles, thus reducing the piles capacity to carry the proposed building loads.

Negative skin friction will likely occur throughout the period of settlement of the marine clays as the consolidation rate of the surrounding soil mass is greater than that of the piles.

It is estimated that negative skin friction could be in the order of up to 60 kN for installed piles.

#### 6.6 Settlement Mitigation Measures

Options to mitigate potential settlements associated with the placement of new fill and the proposed new structures and increase ground bearing pressures could be considered. These include preloading, surcharging and ground improvement.

### 6.6.1 Preloading/Surcharging

To limit the effects of settlement on the proposed buildings, surcharging or preloading in these areas could be carried out.

Surcharging involves the placement of fill or surface loads higher than those expected under the proposed new filling and building loads. The placed higher load increases the consolidation of the soft marine clays allowing higher settlements to occur within a shorter timeframe. Surcharging generally continues until the estimated remaining settlements are within tolerable levels.

At this site, a surcharge load of >80 kPa is expected to be required to achieve the settlements required within a 6 month period. This would equate to the placement of around 4 m of filling across the site.

Preloading involves loading the site with an equivalent design load to allow expected settlements to occur before constructing the buildings or other structures.

As outlined previously, up to about 70% of total and differential settlements are expected to occur within 6 months of fill placement. This would result in <30% of the total settlement should occur within the first 2 years of fill placement.

Given the time and construction restraints involved with surcharging or preloading, it is considered that surcharging or preloading are not expected to be viable options in this instance.

### 6.6.2 Ground Improvement

Based on the results of the investigation, it is considered that ground improvement works could be adopted at the site. Ground improvement works could comprise the installation of Deep Soil Mixing (DSM) columns or similar to increase the bearing capacity and reduce potential settlements induced by building and fill loads through the increase of overall stiffness of the underlying compressible marine clay.

The process of DSM comprises the in-situ mixing of the existing soils with a cement based slurry. The slurry injection and mixing process is achieved through the use of a specialised mixing paddle and grouting system. The DSM system is widely used in the construction industry worldwide with many examples of successful use.

The design and installation of DSM systems are through accepted and approved design and construction standards adopted throughout the industry by government departments and specialised contractors. Quality control and assurance is provided through continuous logging of the installed columns using an on-board computer-controlled system and through the post construction evaluation of the mixed columns. The post construction evaluation usually comprises the coring of some installed columns and laboratory testing of the recovered core samples to confirm the strengths and mixing ratios are within design limits.

The aims of the ground improvement works through the installation of DSM columns would be to form a stiff block of soil below founding level which would allow the adoption of a high level raft type footing in lieu of piled footings. This would be achieved through the installation of DSM columns (of a minimum 600 mm diameter) on a nominal grid over the site. The columns should extend to into or below the soft compressible clay layer and be placed in areas of filling and building areas including the basement. A nominal design of DSM columns installed on a 2.0 m grid to a depth of about 6-8 m could be adopted for initial estimation purposes.

In areas of filling, it is considered that following site preparation DSM columns could be installed at the prepared subgrade level. Filling would then be placed over to reach the design heights.

If DSM ground improvement is considered, a detailed design analyses should be undertaken to confirm viability and design specifics. The detailed design should also include finite element modelling of the ground improvement system considering the loads of the proposed structure and the effects of the DSM soils on potential surface movements and overall capacity.

#### 6.6.3 High Level Footings Following DSM Ground Improvement

Following DSM ground improvement works as outlined above, a high-level footing system could be adopted. The high-level footing system should include a stiffened raft type footing founded on the prepared building platform. A high-level stiffened raft, founded in this manner and following ground improvement works could be designed using an allowable bearing pressure of 150 kPa.

Total and differential settlements for the site following filling and the placement of a stiffened raft footing founded in the above manner, and following the installation of a suitable ground improvement system are expected to be less than 40 mm.

#### 6.7 Pavement Design

It is envisaged that new pavements will be primarily founded within the upper sand horizons or engineered fill. As such, in accordance with the Austroads guidelines, it is recommended that a subgrade CBR of 10% could be adopted for the natural sandy subgrades or engineered fill for design of pavements at the site.

#### 6.8 Basement Construction

As outlined above, it is understood that the proposed development includes the construction of a basement car parking area and back of house facilities with a maximum finished floor level of around RL 1.0 m. On this basis, the basement will be formed near the natural groundwater level which is likely to result in the requirement for dewatering. The basement is also likely to be founded near the upper surface or within the soft marine clay.

The temporary batters of the proposed basement excavation will need to be supported. It is envisaged that the support is likely to be in the form of temporary or permanent sheet piles or similar placed around the perimeter of the proposed basement area. Design parameters for the design of sheet piles or similar braced walls are outlined the following sections.

The basement should be designed to be fully tanked and able to withstand expected hydrostatic pressures based on an assumed groundwater level near the proposed finished surface level. The basement walls should also consider external loadings behind the crest of the walls.

Given that the basement will be founded within or near the soft compressible marine clay, or within loose wet sand, a working platform will be required to allow access for construction equipment and to maintain an acceptable level of workability.

A working platform comprising the placement of Tensar geogrid reinforced geofabric layers and crushed rock materials such as a -70 mm quarry product could be considered. A typical design would include the placement of a layer of Tensar geogrid reinforced geofabric on the exposed subgrade and then the placement of 150 mm thick layer of compacted gravel. This process should be completed for a minimum thickness of 450 mm overall (3 layers of Tensar geogrid reinforced geofabric – base, 150 mm and 300 mm heights).

Further advice for the design of the working platform can be provided if required. The design will need to take into consideration the proposed equipment and access requirements (such as for pile rigs, trucks etc) to the base of the excavation.

### 6.9 Retaining Structures

The excavation for the proposed basement will require the installation of temporary or permanent batter support to allow construction. It is envisaged likely that the support will likely be in the form of sheet piles installed around the perimeter of the basement excavation.

Other retaining walls where they are part of landscaping or other structures could be founded on high level or deep footings. High level footings (strip/pad or slab on ground) should be founded in the loose to medium dense upper sands or engineered fill following site preparation. High level footings for the retaining walls founded in this manner could be designed with an allowable bearing pressure of 100 kPa.

Bored pier footings for retaining walls should be founded at least three times their diameter into the loose to medium dense sands or very stiff sandy clays below the marine clay layer. Bored pier footings founded in this manner can be designed using an allowable end bearing pressure of 250 kPa and an allowable shaft adhesion of up to 40 kPa, neglecting the contribution of the upper 1 m of the shaft.

It is recommended that all new temporary and permanent retaining structures be designed using the design parameters provided in Table 8 including at rest ( $K_0$ ), active ( $K_a$ ) and passive ( $K_p$ ) earth pressure coefficients.

Material Description	Density لا	Ko	Ka	Kp	
Loose to Medium Dense Sand	20 kN/m <sup>3</sup>	0.35	0.55	2.75	
Soft to Firm Clay	18 kN/m <sup>3</sup>	0.60	0.75	NA	
Stiff to Very Stiff Clays	20 kN/m <sup>3</sup>	0.4	0.6	2.0	

Table 8: Retaining V	/all Design	Parameters
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All retaining walls should include any surcharge loads imposed on the walls.

All retaining walls should be designed by a Structural Engineer.

### 7.0 Acid Sulfate Soils (ASS)

### 7.1 General

The proposed development comprises significant cut earthworks as part of the construction of the building and pool areas. Based on our experience in this area of Port Douglas and the subsurface conditions encountered as part of this investigation, it is considered that the presence of Potential Acid Sulfate Soils (PASS) is likely to be encountered as part of the excavation works.

In general, darkly hued marine clays and sands typical for this area of Port Douglas and within the upper 10 m of the soil profile are likely to be PASS. Disturbances to these materials through excavation works are likely to result in the requirement for treatment and the adoption of an Acid Sulfate Soils Management Plan in accordance with the Queensland Acid Sulfate Soil Technical Manual.

#### 7.2 ASS Sampling

Sampling for ASS was carried out in accordance with the state guidelines within boreholes BH01 to BH06 to depths of about 4.5 m below the current ground surface (approximately RL-1.6 m to 0.3 m).

In general, samples were collected at 0.25 m intervals through collection of materials from the auger in the upper soil profile and through the performance of continuous Standard Penetration Test (SPT) sampling or undisturbed tube (U50) sampling thereafter. Samples were placed in sealed plastic sample bags and placed on ice for storage. Upon return to the office, the samples were stored in a freezer until transported for laboratory testing.

#### 7.3 Field Testing

Field pH testing ( $pH_F$  and  $pH_{FOX}$ ) were carried out on the collected 0.25 m samples. The results of the field testing are presented in Tables 11 to 16 and are summarised in Table 17 below.

The results are presented in general accordance with Section H (Field Tests) of the Acid Sulfate Soil Laboratory Method Guidelines Version 2.1 -June, 2004). The descriptive of the Reaction Strength and evaluations of the conditions indicating PASS or AASS (Conditions a to c) are in accordance with the above guide and are summarised in Tables 9 and 10 below.

Reaction Strength							
Reaction Strength Number1234							
Description	Slight	Moderate	High	Very Vigorous			

#### **Table 9: Summary of Reaction Strengths**

#### Table 10: Evaluations of the Conditions Indicating PASS or AASS

Interpretation of Field Tests					
Condition a	The strength of the reaction with peroxide is a useful indicator but cannot be used alone. Organic matter and other soil constituents such as manganese oxides can also cause a reaction.				
Condition b	A pH <sub>FOX</sub> value at least one unit below pH <sub>F</sub> may indicate a potential acid sulfate soil (PASS). The greater the difference between the two measurements, the more indicative the value is of a PASS. The lower the final pH <sub>FOX</sub> value is, the better the				
Condition c	If the $pH_{FOX}$ <3, and the other two conditions apply, then it strongly indicates a PASS. The more the $pH_{FOX}$ drops below 3, the more positive the presence of sulfides.				

				BH01				
Top (mbgl)	Bottom (mbgl)	Material Type	Reaction Strength	pH⊧	pH <sub>Fox</sub>	Condition a	Condition b	Condition c
0.00	0.25	Moderately Hued SAND	4	5.49	4.48	Y	Y	
0.25	0.50	Lightly Hued SAND	4	5.52	4.51	Y	Y	
0.50	0.75	Lightly Hued SAND	1	5.19	5.19			
0.75	1.00	Lightly Hued SAND	1	5.17	5.18			
1.00	1.25	Lightly Hued SAND	1	5.90	5.87			
1.25	1.50	Lightly Hued SAND	1	5.90	5.88			
1.50	1.75	Lightly Hued SAND	1	5.63	6.00			
1.75	2.00	Lightly Hued SAND	1	5.64	6.01			
2.00	2.25	Lightly Hued SAND	1	6.25	5.46			
2.25	2.50	Lightly Hued SAND	1	6.25	5.47			
2.50	2.75	Lightly Hued SAND	1	6.55	5.95			
2.75	3.00	Lightly Hued SAND	1	6.54	5.95			
3.00	3.25	Lightly Hued SAND	1	6.92	6.27			
3.25	3.50	Lightly Hued SAND	1	6.93	6.28			
3.50	3.75	Darkly Hued SAND	4	4.99	1.49	Y	Y	Y
3.75	4.00	Darkly Hued SAND	4	5.01	1.50	Y	Y	Y
4.00	4.25	Darkly Hued SAND	4	4.89	1.30	Y	Y	Y
4.25	4.50	Darkly Hued SAND	4	4.89	1.30	Y	Y	Y

#### Table 11: Borehole BH01 Field pH Test Results

BH02								
Top (mbgl)	Bottom (mbgl)	Material Type	Reaction Strength	pH⊧	рН <sub>гох</sub>	Condition a	Condition b	Condition c
0.00	0.25	Moderately Hued SAND Fill	1	5.64	4.27		Y	
0.25	0.50	Dark Hued SAND	1	5.98	4.33		Y	
0.50	0.75	Dark Hued SAND	1	5.54	5.24			
0.75	1.00	Dark Hued CLAY	1	5.51	5.26			
1.00	1.25	Dark Hued CLAY	1	5.55	5.56			
1.25	1.50	Dark Hued CLAY	1	5.67	5.54			
1.50	1.75	Dark Hued CLAY	1	5.36	5.51			
1.75	2.00	Dark Hued CLAY	1	5.37	5.51			
2.00	2.25	Dark Hued CLAY	1	5.44	5.53			
2.25	2.50	Dark Hued CLAY	1	5.62	5.56			
2.50	2.75	Dark Hued CLAY	1	6.47	5.72			
2.75	3.00	Dark Hued CLAY	1	6.44	5.70			
3.00	3.25	Lightly Hued SAND	4	4.57	1.33	Y	Y	Y
3.25	3.50	Lightly Hued SAND	4	4.55	1.31	Y	Y	Y
3.50	3.75	Lightly Hued SAND	4	3.88	1.33	Y	Y	Y
3.75	4.00	Lightly Hued SAND	4	3.92	1.32	Y	Y	Y
4.00	4.25	Lightly Hued SAND	4	5.67	1.18	Y	Y	Y
4.25	4.50	Lightly Hued SAND	4	5.71	1.16	Y	Y	Y

#### Table 12: Borehole BH02 Field pH Test Results
ВН03									
Top (mbgl)	Bottom (mbgl)	Material Type	Reaction Strength	рН⊧	рН <sub>Fox</sub>	Condition a	Condition b	Condition c	
0.00	0.25	Dark Hued SAND	2	4.86	4.39				
0.25	0.50	Lightly Hued SAND	2	4.86	4.37				
0.50	0.75	Lightly Hued SAND	2	4.95	3.71		Y		
0.75	1.00	Lightly Hued SAND	2	4.93	3.69		Y		
1.00	1.25	Lightly Hued SAND	2	4.81	2.79		Y	Y	
1.25	1.50	Lightly Hued SAND	2	4.83	2.81		Y	Y	
1.50	1.75	Lightly Hued SAND	2	4.97	3.89		Y		
1.75	2.00	Lightly Hued SAND	2	4.96	3.89		Y		
2.00	2.25	Lightly Hued SAND	2	4.99	2.97		Y	Y	
2.25	2.50	Lightly Hued SAND	2	4.99	2.99		Y	Y	
2.50	2.75	Lightly Hued SAND	4	5.24	1.29	Y	Y	Y	
2.75	3.00	Lightly Hued SAND	4	5.21	1.27	Y	Y	Y	
3.00	3.25	Lightly Hued SAND	4	5.87	1.10	Y	Y	Y	
3.25	3.50	Lightly Hued SAND	4	5.88	1.11	Y	Y	Y	
3.50	3.75	Dark Hued CLAY	4	5.38	1.13	Y	Y	Y	
3.75	4.00	Dark Hued CLAY	4	5.40	1.13	Y	Y	Y	
4.00	4.25	Dark Hued CLAY	4	4.31	1.13	Y	Y	Y	
4.25	4.50	Dark Hued CLAY	4	4.33	1.13	Y	Y	Y	

#### Table 13: Borehole BH03 Field pH Test Results

BH04									
Top (mbgl)	Bottom (mbgl)	Material Type	Reaction Strength	pH⊧	pH <sub>Fox</sub>	Condition a	Condition b	Condition c	
0.00	0.25	Moderately Hued CLAY Fill	2	4.67	4.19				
0.25	0.50	Lightly Hued SAND	2	4.48	4.22				
0.50	0.75	Lightly Hued SAND	1	5.11	4.60				
0.75	1.00	Lightly Hued SAND	1	5.13	4.61				
1.00	1.25	Lightly Hued SAND	2	5.52	3.33		Y		
1.25	1.50	Lightly Hued SAND	2	5.52	3.34		Y		
1.50	1.75	Dark Hued CLAY	4	4.97	1.21	Y	Y	Y	
1.75	2.00	Dark Hued CLAY	4	4.95	1.19	Y	Y	Y	
2.00	2.25	Dark Hued CLAY	4	5.02	1.12	Y	Y	Y	
2.25	2.50	Dark Hued CLAY	4	4.99	1.10	Y	Y	Y	
2.50	2.75	Dark Hued CLAY	4	5.61	1.12	Y	Y	Y	
2.75	3.00	Dark Hued CLAY	4	5.61	1.11	Y	Y	Y	
3.00	3.25	Dark Hued CLAY	4	5.74	1.53	Y	Y	Y	
3.25	3.50	Dark Hued CLAY	4	5.73	1.52	Y	Y	Y	
3.50	3.75	Dark Hued CLAY	4	6.39	1.53	Y	Y	Y	
3.75	4.00	Dark Hued CLAY	4	6.39	1.52	Y	Y	Y	
4.00	4.25	Dark Hued CLAY	4	6.44	1.64	Y	Y	Y	
4.25	4.50	Dark Hued CLAY	4	6.42	1.63	Y	Y	Y	

#### Table 14: Borehole BH04 Field pH Test Results

				BH05				
Top (mbgl)	Bottom (mbgl)	Material Type	Reaction Strength	pH⊧	рН <sub>Fox</sub>	Condition a	Condition b	Condition c
0.00	0.25	Moderately Hued SAND/GRAVEL	2	7.08	5.51		Y	
0.25	0.50	Lightly Hued SAND	2	7.05	5.49		Y	
0.50	0.75	Lightly Hued SAND	1	6.83	6.16			
0.75	1.00	Lightly Hued SAND	1	6.84	6.15			
1.00	1.25	Lightly Hued SAND	1	7.15	6.42			
1.25	1.50	Lightly Hued SAND	1	7.13	6.40			
1.50	1.75	Lightly Hued SAND	1	6.46	5.98			
1.75	2.00	Lightly Hued SAND	1	6.47	5.99			
2.00	2.25	Lightly Hued SAND	1	6.62	5.94			
2.25	2.50	Lightly Hued SAND	1	6.59	5.94			
2.50	2.75	Lightly Hued SAND	1	6.94	6.08			
2.75	3.00	Lightly Hued SAND	1	6.93	6.06			
3.00	3.25	Lightly Hued SAND	4	5.25	2.08	Y	Y	Y
3.25	3.50	Lightly Hued SAND	4	5.25	2.05	Y	Y	Y
3.50	3.75	Lightly Hued SAND	4	5.81	1.23	Y	Y	Y
3.75	4.00	Lightly Hued SAND	4	5.79	1.21	Y	Y	Y
4.00	4.25	Dark Hued CLAY	4	7.11	1.55	Y	Y	Y
4.25	4.50	Dark Hued CLAY	4	7.10	1.54	Y	Y	Y

#### Table 15: Borehole BH05 Field pH Test Results

BH06									
Top (mbgl)	Bottom (mbgl)	Material Type	Reaction Strength	рН⊧	pH <sub>Fox</sub>	Condition a	Condition b	Condition c	
0.00	0.25	Moderately Hued SAND Fill	1	6.78	5.52		Y		
0.25	0.50	Moderately Hued SAND Fill	1	6.68	5.34		Y		
0.50	0.75	Moderately Hued SAND Fill	1	5.88	4.71		Y		
0.75	1.00	Lightly Hued SAND	1	5.75	4.42		Y		
1.00	1.25	Lightly Hued SAND	1	5.83	5.21				
1.25	1.50	Lightly Hued SAND	1	5.77	4.29		Y		
1.50	1.75	Lightly Hued SAND	1	5.81	4.90				
1.75	2.00	Lightly Hued SAND	1	5.80	4.89				
2.00	2.25	Lightly Hued SAND	1	5.97	5.05				
2.25	2.50	Lightly Hued SAND	1	5.96	5.42				
2.50	2.75	Lightly Hued SAND	1	6.31	5.34				
2.75	3.00	Lightly Hued SAND	1	6.16	5.34				
3.00	3.25	Lightly Hued SAND	1	5.65	3.66		Y		
3.25	3.50	Dark Hued CLAY	1	5.61	3.10		Y		
3.50	3.75	Dark Hued CLAY	4	6.47	0.47	Y	Y	Y	
3.75	4.00	Dark Hued CLAY	4	6.19	0.48	Y	Y	Y	
4.00	4.25	Dark Hued CLAY	4	6.40	0.57	Y	Y	Y	
4.25	4.50	Dark Hued CLAY	4	6.50	0.54	Y	Y	Y	

#### Table 16: Borehole BH06 Field pH Test Results

#### 7.4 Chromium Suite Testing

Following a review of the field pH testing, samples were selected for Chromium Suite testing. Based on the results, together with experience with similar materials in the Port Douglas area, Chromium Suite testing was carried out on selected composite samples within the proposed excavation disturbance area. The aim was to characterise the general nature of the predominant materials in this zone in terms of the actual and potential acidity.

The laboratory testing was carried out by Eurofins in their NATA accredited laboratory. The results of the laboratory testing are presented in Appendix C and summarised in Tables 17 to 20 below.

Test Location	BH01	BH01	BH02	BH02
Sample Depth (m)	3.0-3.5	3.5-4.0	1.0-1.5	1.5-2.0
Material Type	Lightly Hued SAND	Darkly Hued SAND	Dark Hued CLAY	Dark Hued CLAY
Net Acidity (% S) Excluding ANC	<0.02	0.53	0.07	0.05
Net Acidity (moles H+/T) Excluding ANC	<10	330	41	29
Liming Rate (kg CaCO3/T) Excluding ANC	<1	25	3.1	2.1
рН КСІ	5.8	4.0	4.6	4.6
TAA (% pyrite S)	<0.003	0.10	0.036	0.027
Chromium Reducible Sulfur (Scr) (%)	0.007	0.43	0.029	0.018
Chromium Reducible Sulfur (Scr) (moles H+/T)	4.1	270	18	11
Acid Neutralisation Capacity (ANCBT) (% CaCO <sub>3</sub> )	N/A	N/A	N/A	N/A
Liming Rate (kg CaCO3/T)	<1	25	3.1	2.1

Table 17: Summary of Chromium Suite Results

Test Location	BH02	BH02	BH02	BH03
Sample Depth (m)	2.0-2.5	2.5-3.0	3.0-3.5	3.5-4.0
Material Type	Dark Hued CLAY	Dark Hued CLAY	Lightly Hued SAND	Dark Hued CLAY
Net Acidity (% S) Excluding ANC	0.74	0.98	0.14	1.8
Net Acidity (moles H+/T) Excluding ANC	460	610	90	1100
Liming Rate (kg CaCO3/T) Excluding ANC	35	46	6.8	85
рН КСІ	4.0	3.9	5.0	3.7
TAA (% pyrite S)	0.16	0.15	0.017	0.30
Chromium Reducible Sulfur (Scr) (%)	0.58	0.82	0.13	1.5
Chromium Reducible Sulfur (Scr) (moles H+/T)	360	510	80	950
Acid Neutralisation Capacity (ANCBT) (% CaCO₃)	N/A	N/A	N/A	N/A
Liming Rate (kg CaCO3/T)	35	46	6.8	85

#### Table 18: Summary of Chromium Suite Results

#### Table 19: Summary of Chromium Suite Results

Test Location	BH04	BH04	BH04	BH04
Sample Depth (m)	1.0-1.5	1.5-2.0	2.0-2.5	2.5-3.0
Material Type	Lightly Hued SAND	Dark Hued CLAY	Dark Hued CLAY	Dark Hued CLAY
Net Acidity (% S) Excluding ANC	0.03	1.4	0.09	1.6
Net Acidity (moles H+/T) Excluding ANC	18	890	55	980
Liming Rate (kg CaCO3/T) Excluding ANC	1.3	67	4.2	74
рН КСІ	5.1	4.0	4.5	4.3
TAA (% pyrite S)	0.016	0.28	0.033	0.18
Chromium Reducible Sulfur (Scr) (%)	0.012	1.1	0.055	1.4
Chromium Reducible Sulfur (Scr) (moles H+/T)	7.6	710	35	870
Acid Neutralisation Capacity (ANCBT) (% CaCO₃)	N/A	N/A	N/A	N/A
Liming Rate (kg CaCO3/T)	1.3	67	4.2	74

Test Location	BH04	BH04	BH05	BH06
Sample Depth (m)	3.0-3.5	3.5-4.0	3.0-3.5	3.5-4.0
Material Type	Dark Hued CLAY	Dark Hued CLAY	Lightly Hued SAND	Dark Hued CLAY
Net Acidity (% S) Excluding ANC	0.06	1.5	1.3	2.4
Net Acidity (moles H+/T) Excluding ANC	37	930	790	1500
Liming Rate (kg CaCO3/T) Excluding ANC	2.8	70	59	110
рН КСІ	5.4	5.0	4.5	4.4
TAA (% pyrite S)	0.006	0.091	0.12	0.18
Chromium Reducible Sulfur (Scr) (%)	0.053	1.4	1.2	2.3
Chromium Reducible Sulfur (Scr) (moles H+/T)	33	870	720	1400
Acid Neutralisation Capacity (ANCBT) (% CaCO <sub>3</sub> )	N/A	N/A	N/A	N/A
Liming Rate (kg CaCO3/T)	2.8	70	59	110

#### Table 20: Summary of Chromium Suite Results

#### 7.5 Summary of Results

#### 7.5.1 Proposed Excavation Works

As outlined above, the proposed development includes significant cut and fill earthworks to be carried out to allow construction of the proposed basement and building platform, associated landscaping and access construction.

Within the proposed basement areas, the bulk excavation levels appear to be a maximum of around RL 0 m.

This the depth of cut within the building area generally varies between about 3.5 m to 4.0 m. Excavations for the installation of services and for lift wells may extend to greater depths locally. There appears to be minimal bulk excavation works outside the basement and pool areas.

It is estimated that up to about 20,000 t of soil is to be excavated.

It is considered that there will be no alteration to the permanent water table as a result of the proposed works.

#### 7.5.2 Presence of ASS

The results of the field and laboratory testing indicate that the darkly hued marine clays of Zone 2 are Potential Acid Sulfate Soils (PASS) with net acidity above the >0.03 % S action criteria for excavations >1000 t as outlined in Table 4-1 of the Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines.

The results also indicate that some of the upper lightly to darkly hued sands are PASS, however, most of the Zone 1 materials are not PASS, nor Actual Acid Sulfate Soils (AASS). Some of the Chromium Suite test results indicate that the upper sands and fills are slightly PASS, however they are below the action criteria guidelines. These soils contain some natural acid neutralising capacity likely in the form of shell fragments and carbonaceous materials.

Some of the darkly hued marine clays also show evidence of containing acid neutralising capacity materials. This ANC is likely related to the presence of shell grit and fragments within the marine clay. The shell grit and fragments were noted as relatively thin lenses within the boreholes and were noted to occur sporadically throughout the encountered marine clay profile. On this basis, the ANC within these materials should not be considered in terms of the adoption of a suitable management plan such as for lime treatment.

Comments on potentially suitable management options for the treatment of the inferred PASS materials are outlined in the following sections.

#### 7.5.3 PASS/AASS Materials Disturbed by Excavation Works

As outlined in Section 3.2, the subsurface conditions at the site generally comprises three distinct subsurface zones. Zone 1 comprises some filling and lightly hued sands with subordinate moderately to darkly hued materials, overlying Zone 2 materials comprising darkly hued marine clays that extend to depths below the proposed bulk excavation levels. A summary of the approximate top and base levels (RL-m) of the upper sands/fill and marine clay layers are presented in Table 21.

Material	Top (RL -m)	Base (RL -m)
Zone 1	Surface (2.9 to 4.8)	1.4 to -2.7
Zone 2	1.4 to -2.7	-2.8 to -6.4

Table 21: Summary	v of Subsurface Materials Likel	v to be Disturbed in Bull	K Excavation Works
	y of Subsulface Matchais Elice	y to be bistanoea in ban	CENCUTURION TOOLS

Based on the above, the basement excavation will extend between about 1.4 m to 2.7 m into the darkly hued marine clay.

Given the above, it is estimated that >1000 t of potential PASS material will be excavated as part of the works. On this basis, an action criteria of 0.03% S has been adopted.

The proposed placement of filling is not expected to result in further disturbance to the local groundwater regime or expunge additional acid generating material or result in exposure of PASS materials that would lead to the generation of associated acidic soils or groundwaters.

Inferred cross sections showing the extents of PASS and excavation levels is presented in Appendix A. The alignment of the inferred cross section is shown in Figure 1 of Appendix A.

#### 7.5.4 Risk Categorisation

Based on the subsurface sections and the extent of proposed excavation works, it is estimated that up to around 2000 t of PASS materials may be disturbed. As such, and in accordance with Table 4-2 of the Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines, the proposed disturbance can be classified as requiring a High (H) to Extra High (XH) level of treatment.

For illustration purposes, a summary of the assessed treatment category for each sample tested as outlined above in Section 7.4 and based on an excavation amount of 10,000 t of each tested material is presented in Tables 22 to 24 below.

As outlined above, the ANC of the material has not been included as it is considered to be sporadic and non-uniform through the marine clay profile.

Test Location	BH01	BH02	BH02	BH02	BH03
Sample Depth (m)	3.5-4.0	2.0-2.5	2.5-3.0	3.0-3.5	3.5-4.0
Net Acidity (% S) Excluding ANC	0.53	0.74	0.98	0.14	1.8
Liming Rate (kg CaCO3/T) Excluding ANC	25	35	46	6.8	85
Treatment Category	XH EXTRA HIGH				

#### Table 22: Risk category for Treatment of Darkly Hued Clays Based on 10,000 T of Excavation.

#### Table 23: Risk category for Treatment of Darkly Hued Clays Based on 10,000 T of Excavation.

Test Location	BH04	BH04	BH04	BH04
Sample Depth (m)	1.0-1.5	1.5-2.0	2.0-2.5	2.5-3.0
Net Acidity (% S) Excluding ANC	0.03	1.4	0.09	1.6
Liming Rate (kg CaCO3/T) Excluding ANC	1.3	67	4.2	74
Treatment Category	H HIGH	XH EXTRA HIGH	VH VERY HIGH	XH EXTRA HIGH

Test Location	BH04	BH04	BH05	BH06
Sample Depth (m)	3.0-3.5	3.5-4.0	3.0-3.5	3.5-4.0
Net Acidity (% S) Excluding ANC	0.06	1.5	1.3	2.4
Liming Rate (kg CaCO3/T) Excluding ANC	2.8	70	59	110
Treatment Category	VH VERY HIGH	XH EXTRA HIGH	XH EXTRA HIGH	XH EXTRA HIGH

#### Table 24: Risk category for Treatment of Darkly Hued Clays Based on 10,000 T of Excavation.

Actual treatment of the PASS will be in accordance with the developed management plan and based on site testing as excavation works are carried out.

#### 7.6 ASS Treatment

#### 7.6.1 PASS/AASS

In accordance with the Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines, for the disturbance of ASS materials that require up to Extra High level of treatment, a comprehensive environmental management plan must be created. The detailed management plan must include the following as a minimum:

- Plans for ongoing management and monitoring of the disturbance of ASS throughout the construction works.
- All management procedures for various construction stages.
- Details of treatment options and how containment and treatment would be carried out.
- Details of testing and compliance of excavated and treated materials during works.
- Details of surface and groundwater controls and management strategies.

In addition to the above, a detailed closure report would be required following completion of works and include the following:

- Total volumes and dimensions of disturbed ASS materials.
- Extent and duration of dewatering and how extracted water was treated and disposed of.
- Details of soil management strategies adopted at the site during the works including location maps and details.
- Location and details of an offsite management site and the works carried out.
- All compliance soil test results of untreated and treated of disturbed ASS materials.

- Details of surface and groundwater monitoring including groundwater wells, chemical testing and groundwater levels.
- Proposed future monitoring and reporting of the site and any offsite treatment areas.

GEO are able to assist in the development and onsite management of the required environmental management plan.

Treatment options that may be considered as part of the environmental management plan include neutralisation onsite or at an offsite facility and/or burial under permanent water (surface or groundwater). An option that may be considered, if sufficient volume is available would be to over excavate the upper non-ASS lightly hued sands and replace with a portion of the excavated PASS marine clay below the groundwater level.

The proposed placement of filling is not expected to result in further disturbance to the local groundwater regime or expunge additional acid generating material.

It is considered that the proposed works will not impact the permanent water table which may lead to further exposure of the PASS materials.

#### 7.6.2 Groundwater

A groundwater sample was collected from BH02. Laboratory analyses was carried out on the samples. The results are summarised below in Table 25 and are presented in Appendix C.

Test Location	BH02
Material	Water
рН	7.7
Conductivity @ 25 C	700
Sulphate (as S) (mg/L)	7.3

#### Table 25: Summary of Groundwater Testing Results

It is envisaged that dewatering will be required to allow construction of the proposed basement and to allow other excavations below the groundwater level. At the time of fieldwork, the groundwater levels within the boreholes generally varied between about RL 2 m to RL 3 m. However, the long term data loggers indicated groundwater levels of between about RL 0 m to RL 1.1.

It is considered that an upper groundwater level of around RL 1.8 – 2.0 m should be adopted for all design and construction planning.

The fluctuation in groundwater levels is based on tidal and rainfall events, local subsurface conditions and influence or surrounding disturbances. Groundwater levels observed during the fieldwork were likely influenced by drilling operations at the time.

For the purposes of ASS treatment, it is considered that the proposed basement will be supported through the installation of temporary sheet piling or similar. The sheet piling will likely extend from the existing surface or a prepared building surface to below the base of the marine clay layer.

Based on the above, it is considered that dewatering of the upper sands could be carried out without affecting the groundwater levels (saturation) of the marine clay at depth, thus preventing further oxidation of the marine clay outside the proposed excavation limits and limiting the potential generation of acid.

As such, dewatering of the upper sands outside of the sheet pile wall or similar structure could be carried out through the installation of shallow dewatering spears. Groundwater infiltration through the exposed marine clay at the base of the excavation could be carried out by in-pit sump pumping to maintain water levels within the basement excavation below the working platform level. This should maintain the saturation of the marine clay at the base of the base of the base of the base of the basement excavation and limit acid generation.

All removed groundwater should be collected and tested for acidity prior to release to an approved receptor. This would form part of the approved environmental management plan.

### 8.0 Limitations

GEO Design has prepared this report for the use of Davidson Street Port Douglas Developments Pty Ltd for design purposes in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made as to the professional advice included in this report. This report has not been prepared for use by parties other than Davidson Street Port Douglas Developments Pty Ltd and their other consultants. It may not contain sufficient information for purposes of other parties or for other uses.

Your attention is drawn to the document - "Important Information About Your Geotechnical Engineering Report". This document has been prepared by the ASFE (Professional Firms Practicing in the Geosciences). The statements presented in this document are intended to advise you of what your realistic expectations of this report should be, and to present you with recommendations on how to minimise the risks associated with the ground works for this project. The document is not intended to reduce the level of responsibility accepted by GEO Design Pty Ltd, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

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We would be pleased to answer any questions that you may have regarding this matter.

Regards,

Steve Ford Principal Geotechnical Engineer BSc (Geo) BSc Hons (Geo) MEngSc (Geotechnical) MMinEng (Geomechanics) RPEQ 25762 Appendix A

### Site Plan and Inferred Cross Sections



	Client:	GURNER	GEOTECHNICAL INVESTIGATION
GEO design	Drawn:	SRF	97-113 DAVIDSON STREET, PORT DOUGLAS
	Scale:	NTS	FIGURE 1
	Project No:	23003AA-D-FIGURE 1-V2	SITE PLAN



<u>PLAN:</u> scale 1:750 (A3)

on this	REV	DESCRIPTION	APP'D	DATE	-	R.P.E.Q. NAME:	CLIENT GU	JRNER TM	NOMINE	ES Pty Ltd
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#### <u>LEGEND</u>

APPROXIMATE LOCATION BOREHOLE APPROXIMATE LOCATION CPT APPROXIMATE LOCATION TEST PIT

#### DEVELOPMENT AT 97-113 DAVIDSON STREET PORT DOUGLAS PROJECT TITLE

SITE PLAN

PROJECT No

23003AA-D

FIGURE No

FIG 1

REV A A3



PROJECT No

23003AA-D

FIGURE No

FIG 2

REV A A3

#### DEVELOPMENT LAYOUT PLAN

#### DEVELOPMENT AT 97-113 DAVIDSON STREET PORT DOUGLAS



DESCRIPTION	APP'D	DATE
INITIAL ISSUE		05/05/23
	DESCRIPTION INITIAL ISSUE	DESCRIPTION APP'D INITIAL ISSUE

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R.P.E.Q. No.:	DRAWN	KCDD	DATE	05/05/23
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#### LEGEND



ZONE 1 UPPER FILLS, SAND AND MINOR CLAYS

ZONE 2 MARINE CLAYS

ZONE 3 SANDS AND CLAYS



PROJECT	DEVELOPMENT AT								
	97-113 DAVIDSON STREET PORT DOUGLAS								
TITLE	INTERPRETATIVE	E CROSS S	SECTION	۹					
PROJECT No	23003AA-D	FIGURE No	FIG 3A	REVA	A3				



#### <u>LEGEND</u>

\_ \_ \_

ZONE 1 UPPER FILLS, SAND AND MINOR CLAYS

ZONE 2 MARINE CLAYS

ZONE 3 SANDS AND CLAYS

### PROJECT DEVELOPMENT AT 97-113 DAVIDSON STREET PORT DOUGLAS TITLE INTERPRETATIVE CROSS SECTION B

PROJECT No 23003AA-D FIGURE No FIG 3B REV A A3





R.P.E.Q. NAME:	CLIENT GL	JRNER TM	NOMINEE	S Pty Ltd	PROJECT
R.P.E.Q. No.:	DRAWN	KCDD	DATE	05/05/23	TITLE
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DATE:	SCALE	1:750 (A3)			PROJECT N

OJECT	DEVELOPMENT AT							
	97-113 DAVIDSON STREET PORT DOUGLAS							
LE	INTERPRETATIVE CROSS SECTION C							
OJECT No	23003AA-D	FIGURE No	FIG 3C	REVA	A3			



<u>LEGEND</u>



ZONE 2 MARINE CLAYS

ZONE 1 UPPER FILLS, SAND AND MINOR CLAYS



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PROJECT	DEVELOPMENT AT								
	97-113 DAVIDSON STREET PORT DOUGLAS								
TITLE	INTERPRETATIV	E CROSS	SECTION	1					
PROJECT No	23003AA-D	FIGURE No	FIG 4A	REVA	A3				





ZONE 2 MARINE CLAYS

ZONE 1 UPPER FILLS, SAND AND MINOR CLAYS

LEGEND



#### LEGEND

ZONE 1 UPPER FILLS, SAND AND MINOR CLAYS

ZONE 2 MARINE CLAYS

ZONE 3 SANDS AND CLAYS

PROJECT	DEVELOPMENT AT 97-113 DAVIDSON STREET PORT DOUGLAS	
TITLE		

#### INTERPRETATIVE CROSS SECTION 2

PROJECT No	23003AA-D	FIGURE No	FIG 4B	REVA	A3	
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SECTION SCALE 1:500H 1:100V (A3) -

REV	DESCRIPTION	APP'D	DATE	R.P.E.Q. NAME:		MENT AT
A	INITIAL ISSUE		05/05/23	R.P.E.Q. No.:	97-113 DAVIDSON STF	RETPORTDOUGLAS
						CROSS SECTION 3
				SIGNATURE:	CHECKED SRF DATE 05/05/23	
				DATE:		
					1:750 (A3) 23003AA-D	FIG 4C A A3

#### LEGEND



ZONE 1 UPPER FILLS, SAND AND MINOR CLAYS

ZONE 2 MARINE CLAYS

ZONE 3 SANDS AND CLAYS



OJECT	DEVELOPMENT AT	
	97-113 DAVIDSON STREET PORT DOUGLAS	
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Appendix B

**Results of Fieldwork** 

				(	7						BO	<b>REHOLE:</b>	BH01
ir	vesti	<b>D</b> gate	desig	n   cons	Project Site Struct Location Position Job No. Client	Geot 97 - <sup>-</sup> Port Refe 2300 GUR	echnic 111 Da Dougla r to Site 3AA-D NER	al Inv vidso is e Pla	estigation East 335980.0 m In Street North 8175732.0 m MGA2020 56 Surface RL 4.32 m AHD n Contractor GEO Investigate Drill Rig DT1200 Inclination -90°			Sheet Date Started Date Completed Logged	1 OF 1 30/1/23 30/1/23 DLH
		Dril	ling		Sampling				Field Material Descr	iptio	n		
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	<i>DEPTH</i> RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	<b>USCS SYMBOL</b>	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE ADDITION OBSERVAT	AND IAL IONS
ADT		7		4.22 0.70 3.62 1.80	DS 0.00-0.25 m DS 0.25-0.50 m DS 0.50-0.75 m DS 0.75-1.00 m SPT 1.00-1.45 m 3, 3, 3 N*=6 DS 1.50-1.75 m			SP SP	FILL GRAVELLY CLAYEY SAND: grey, fine to coarse grained sand, low plasticity clay, fine to coarse gravel SAND: grey-brown, fine to medium grained sand, non plasticity SAND: yellow-brown, fine to medium grained sand, non plasticity	м	MD to L		
	-		2	2.52 3.50	DS 1.75-2.00 m DS 2.00-2.25 m DS 2.25-2.50 m SPT 2.50-2.95 m 2, 4, 9 N*=13 SPT 3.00-3.45 m 2, 3, 5 N*=8			SP	SAND: pale grey, fine to medium grained sand, non plasticity		MD		
			- 4 - -	0.82	SPT 3.50-3.95 m HW/450mm SPT 4.00-4.45 m 0, 0, 2 N*=2			SC	CLAYEY SAND: dark grey, fine to medium grained sand, non plasticity, low plasticity clay, trace fine to coarse gravel, trace shell grit		L		
.30.003 Developed by Datge			- 6	-1.18 -2.68	SPT 5.50-5.95 m 7, 14, 21 N*=35			SP	SAND: grey, fine to medium grained sand, non plasticity		D to MD		
<pre><drawingfile>&gt; 01/03/2023 12:35 8 WB</drawingfile></pre>	L-M		- 8 - -	-2.00	SPT 8.50-8.95 m HW/450mm			5	SIL IY CLAY: Gark grey, medium plasticity, with fine to coarse grained sand, trace organics, "MARINE CLAY"	w	S to F		
STREET, PORT DOUGLAS.GPJ <-			 10  -	<u>9.50</u> -5.18 11.50	U50 10.00-10.30 m PP 10.45 m =550 - 570 kPa			CI	SILTY CLAY: pale grey mottled orange-brown, medium plasticity, trace fine grained sand		VSt to H		
23003AA-D 97 - 111 DAVIDSON			- 12 — - -	-7.18	SPT 11.50-11.95 m 22, 23, 27 N*=50 SPT 13.00-13.45 m 8, 12, 14 N*=26			CL	SILTY CLAY: pale grey, low plasticity, trace fine to coarse grained sand, trace fine to medium gravel				
Log MFG SUIL BUREPULE			- 14 — - -	14.95	SPT 14.50-14.95 m 7, 10, 16 №=26				BOREHOLE TERMINATED AT 14.95 m		VSt		
MFC_LIB_03.GLB	 comm	ents								<u> </u>		Checked S Date 1/	RF 3/23

1				(	7						BO	REHOLE: B	8H02
in	vestig	<b>J</b> gate	desig	n   cons	Project Site Struct Location Position Job No. Client	Geot 97 - <sup>-</sup> Port Refe 2300 GUR	echnic 111 Da Dougla r to Site 3AA-D NER	al Inv ividso as e Pla	estigation East 335881.0 m on Street North 8175754.0 m MGA2020 56 Surface RL 2.85 m AHD n Contractor GEO Investigate Drill Rig DT1200 Inclination -90°			Sheet1Date Started30Date Completed30LoggedD	OF 1 0/1/23 1/1/23 0LH
		Dril	ling	1	Sampling				Field Material Desc	riptic	on		
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	<i>DEPTH</i> RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	<b>USCS SYMBOL</b>	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AN ADDITIONAL OBSERVATION	ND IS
			0	0.20 2.65 0.80	DS 0.00-0.25 m DS 0.25-0.50 m SPT 0.50-0.95 m			CL SM	FILL SANDY CLAY: red-brown, low plasticity, fine to coarse \grained sand, trace fine coarse gravel SILTY SAND: dark grey, fine to medium grained sand, low plasticity sit	м	F		
ADT			-	2.05	N*=7 SPT 1.00-1.45 m 1, 1, 1 N*=2			SP	SAND: grey-brown, fine to medium grained sand, non plastic		L		
			2—	1.80 1.05	SPT 1.50-1.95 m HW/450mm SPT 2.00-2.45 m HW/450mm			CI	SANDY SILTY CLAY: dark grey, medium plasticity, fine to coarse grained sand, trace shell grit, trace organics, "MARINE CLAY"	-	Sto		
			-	<i>3.00</i> -0.15	SPT 2.50-2.95 m HW/450mm SPT 3.00-3.45 m HW/450mm			SP	SAND: pale grey, fine grained sand, non plastic				
					SPT 3.50-3.95 m 1, 1, 1 N*=2 SPT 4.00-4.45 m						VL to L		
			-	<b>4.60</b> -1.75	0, 2, 2 N*=4			CI	SILTY CLAY: dark grey, medium plasticity, with fine grained sand, trace shell grit, trace organics, "MARINE CLAY"	_			
			- - 6		SPT 5.50-5.95 m HW/450mm								
	L-M		-	7.00 -4.15	U 7.00-7.45 m PP 7.45 m =50 -			CI	SILTY CLAY: pale grey, medium plasticity, with fine grained sand		S to F		
WB			8		SPT 8.50-8.95 m 1, 3, 3					w			
			-	<b>9.20</b> -6.35	N <sup>*</sup> =6			CI	SILTY CLAY: pale grey mottled orange-brown, medium plasticity, with fine grained sand				
			10		SPT 10.00-10.45 m 5, 7, 10 N*=17						VSt		
			- - 12	<u>11.50</u> -8.65	SPT 11.50-11.95 m 4, 5, 8 N*=13			CI	SILTY CLAY: pale grey, medium plasticity, trace fine grained sand	_	St		
			-	<u>13.00</u> -10.15	SPT 13.00-13.45 m 7, 10, 14 N*=24			СН	SILTY CLAY: pale grey mottled orange-brown, high plasticity, trace fine grained sand				
			14		SPT 14.50-14.95 m 7. 10. 11						VSt		
			-	14.95	N*=21	_/			BOREHOLE TERMINATED AT 14.95 m Target depth				
C	omm	ents		L			<u> </u>			<u> </u>	<u>   </u>	Checked SRF Date 1/3/23	3

				1	7						BO	REHOLE: BH03	
ir	nvest	<b>D</b> igate	desig	n   cons	Project Site Struct Location Position Job No. Client	Geot 97 - <sup>-</sup> Port Refe 2300 GUR	echnic I 11 Da Dougla r to Site 3AA-D NER	al Inv avidso as e Pla	restigation East 335961.0 m on Street North 8175637.0 m MGA2020 56 Surface RL 4.21 m AHD n Contractor GEO Investigate Drill Rig DT1200 Inclination -90°			Sheet1 OF 1Date Started31/1/23Date Completed31/1/23LoggedDLH	
		Dril	ling		Sampling	1			Field Material Desc	riptio	n		
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	<i>DEPTH</i> RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	<b>USCS SYMBOL</b>	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
			0	4.11	DS 0.00-0.25 m DS 0.25-0.50 m			SM SP	TOPSOIL SILTY SAND: black, fine to medium grained sand, low plasticity silt SAND: yellow-brown, fine to medium grained sand, non plastic	м			
ADT	_	$\bigtriangleup$	_ 	<u>1.30</u> 2.91	SPT 1.00-1.45 m 2,3,5 N*=8 DS 1.50-1.75 m DS 1.75-2.00 m DS 2.00-2.25 m DS 2.25-2.50 m SPT 2.50-2.95 m			SP	SAND: grey-brown, fine to medium grained sand, non plastic		L		-
			- - 4	<u>3.60</u> 0.61	1, 2, 3 N*=5 SPT 3.00-3.45 m HW/450mm SPT 3.50-3.95 m HW/450mm SPT 4.00-4.45 m HW/450mm			CI	SILTY CLAY: dark grey, medium plasticity, with fine to medium grained sand, trace shell grit, trace organics, "MARINE CLAY"				-
			- - 6		SPT 5.50-5.95 m 0, 0, 2 N*=2						S to F		-
	L-M			<u>7.00</u> -2.79	SPT 7.00-7.45 m 3, 5, 4 N*=9			SP	SAND: pale grey, fine to medium grained sand, non plastic, trace fine to medium gravel	w	MD		-
WB			- - 10	10.20	SPT 10.00-10.45 m		~~~~~						
			-	-5.99	14, 9, 12 N*=21			CI	SILTY CLAY: pale grey, medium plasticity, with fine grained sand		VSt		
			 12	<u>11.50</u> -7.29	SPT 11.50-11.95 m 2, 4, 8 N*=12			CL	SANDY CLAY: pale grey, low plasticity, fine to medium grained sand				-
			- - 14	<u>13.00</u> -8.79	SPT 13.00-13.45 m 4, 4, 9 N*=13			CI	SILTY CLAY: pale grey mottled orange-brown, medium plasticity, with fine grained sand		St		
			-	-10.29 14.95	SPT 14.50-14.95 m 5, 8, 14			CL	SANDY CLAY: pale grey, low plasticity, fine to medium grained sand, trace fine to medium gravel	1	VSt		
0		1	-		<u>111°=22</u>				BOREHOLE TERMINATED AT 14.95 m Target depth				-
	Comm	nents			<u> </u>		1	I			1	Checked SRF Date 1/3/23	

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in	vesti	<b>D</b> gate	design	n   cons	Project Site Struct Location Position Job No. Client	Geot 97 - Port Refe 2300 GUR	echnica 111 Da Dougla r to Site 3AA-D NER	al Inv vidso Is e Pla	estigation East on Street North Surfa n Contr Drill F Inclina	ce RL actor Rig ation	335867.0 m 8175652.0 m MGA2020 56 2.98 m AHD GEO Investigate DT1200 -90°			Sheet Date Started Date Completed Logged	1 OF 1 3/2/23 3/2/23 DLH
		Dri	ling		Sampling						Field Material Desc	riptio	n		
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	<i>DEPTH</i> RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	<b>USCS SYMBOL</b>	SOIL/ROC	K MATER	RIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURI ADDITION OBSERVAT	E AND NAL IONS
			0	<i>0.20</i> 2.78	DS 0.00-0.25 m DS 0.25-0.50 m		XXXX	CL SP	FILL SANDY CLAY: re	d-brown,	ow plasticity, fine to coarse		F		
			-	0.90	DS 0.50-0.75 m DS 0.75-1.00 m				SAND: pale grey, fine	to mediun	grained sand, non plastic	IVI			
ADT			-	2.08	SPT 1.00-1.45 m 2, 1, 2			SP	SAND: grey-brown, fin	e to medii	Im grained sand, non plastic				
			2	<u>1.60</u> 1.38	N <sup>-=3</sup> DS 1.50-1.75 m DS 1.50-1.75 m DS 2.00-2.25 m DS 2.25-2.50 m SPT 2.50-2.95 m HW/450mm SPT 3.00-3.45 m HW/450mm			CI	SILTY CLAY: dark gre grained sand, with org medium grained, "MAF	y, medium anics, Inte RINE CLA	plasticity, with fine to coarse rmittent SP SAND fine to "	_			-
			4		SPT 3.50-3.95 m HW/450mm SPT 4.00-4.45 m HW/450mm								Sto		-
			-	<u>5.00</u> -2.02	U50 5.50-5.95 m			CI	SANDY SILTY CLAY: grained sand	pale grey,	medium plasticity, fine to coarse	_	F		
	L-M		6		PP 5.95 m =50 - 70 kPa SPT 7.00-7.45 m HW/450mm										-
WB			8	7.90 -4.92 9 10	SPT 8.50-8.95 m 1, 2, 2 N*=4			SP	SAND: pale grey, fine	to mediun	grained sand, non plastic	w	L		-
			-	-6.12				CI	CLAY: pale grey mottle with fine grained sand	ed orange	brown, fine, medium plasticity,				
			-		SPT 10.00-10.45 m 2, 4, 6 N*=10								St		
			- 12 -		SPT 11.50-11.95 m 1, 2, 5 N*=7								F		-
			- - 14	14.50	SPT 13.00-13.45 m 3, 5, 7 №=12								St to VSt		-
			_	14.80	SPT 14.50-14.95 m 5, 8, 12 N*=20			CI SP	CLAY: pale grey, medi SAND: pale grey mottle	ium plastic ed orance	ity, with fine grained sand -brown, fine grained sand, non				
, 			-		·				plastic BOREHOLE TERMINA	ATED AT	14.95 m	1			
С	omm	ients							ı arget depth					Checked S Date 1	;RF /3/23

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				(	7								BC	OREHOLE:	BH05
in	vesti	<b>D</b> gate	desig	n   cons	Project Site Struct Location Position Job No.	Geot 97 - <sup>-</sup> Port Refe 2300	echnic 111 Da Dougla r to Sit 3AA-D	al Inv avidso as e Pla )	restigation East on Street North Surfa n Cont Drill	n ace RL ractor Rig	335641.0 m 8175562.0 m MGA2020 56 4.17 m AHD GEO Investigate DT1200			Sheet Date Started Date Complete	1 OF 1 3/2/23 ad 3/2/23
		Dril	lina		Sampling	GUR			Inclir	ation	-90° Field Material Desc	rintic	n	Logged	DLH
	Z		iiiig		Sampling	0		gL			Tield Material Dest		∑ ]		
METHOD	PENETRATIC	WATER	DEPTH (metres)	<i>DEPTH</i> RL	SAMPLE OR FIELD TEST	RECOVERE	GRAPHIC LOG	USCS SYME	SOIL/ROC	K MATE	RIAL DESCRIPTION	MOISTURE	CONSISTEN DENSITY	STRUCTUF ADDITIO OBSERVA	RE AND NAL TIONS
			0	3.97	DS 0.00-0.25 m DS 0.25-0.50 m			GP SM	FILL SANDY GRAVE grained sand	L: grey, fin	e to coarse gravel, fine to coarse	I			
			-		DS 0.50-0.75 m DS 0.75-1.00 m			SP	SILTY SAND: black, f silt, trace organics	ine to med	lium grained sand, low plasticity	м			
DT		$\triangleright$	-		SPT 1.00-1.45 m 3, 5, 5				SAND: yellow-brown,	fine to me	dium grained sand, non plastic				
			-	1.50 2.67	N*=10 DS 1.50-1.75 m			SP	SAND: pale grey, fine	to mediur	n grained sand, non plastic		L to MD		
			2—	-	DS 1.75-2.00 m DS 2.00-2.25 m										
-	-		-	-	DS 2.25-2.50 m SPT 2.50-2.95 m										
			-		3, 7, 11 N*=18 SPT 3.00-3.45 m										
			_		HW/450mm SPT 3 50-3 95 m								VL to L		
			4	<b>3.90</b> 0.27	HW/450mm			СН	SILTY CLAY: dark are	ev. hiah pl	asticity, with organics, trace shell	-			
			-	-	HW/450mm				grit, "MARINE CLAY"	,	,,,				
			-												
0			-												
oy Datg			-		U50 5.50-5.85 m										
pedole			6—	-	PP 5.95 m =50 - 70 kPa								Sto		
33 Deve			-										F		
8.30.0			_		SPT 7.00-7.45 m										
3 12:33	L-M		-	-	HW/450mm PP 7.45 m =25 -										
03/2025			8—	-	50 kPa							w			
>> 01/1			-	0.70											
WB			-	<u>8.70</u> -4.53	U50 8.50-8.95 m			CL	SANDY CLAY: pale g	rey, low p	asticity, fine to medium grained	1			
< <dray< td=""><td></td><td></td><td>-</td><td>-</td><td></td><td></td><td></td><td></td><td>Sanu</td><td></td><td></td><td></td><td></td><td></td><td></td></dray<>			-	-					Sanu						
S.GPJ			-										St		
OUGL/			10 —	10.30	SPT 10.00-10.45 m 6, 7, 6										
PORT L			-	-0.13	N*=13			57	SAND: pale grey, fine	grained s	ano, non plastic				
REET,			-										MD		
SONST			-	<u>11.50</u> -7.33	SPT 11.50-11.95 m		//	CI	CLAY: pale grey mott	led orange	-brown, medium plasticity, with	-			
DAVIDS			12—		0, 2, 4 N*=6				fine grained sand, inte	ermittent S	P SAND fine grained				
7 - 111			-	-									F		
3AA-D 9			-		SPT 13 00-13 45 ~										
23000			-		6, 10, 14 N*=24										
TEHOLE				]									VSt		
OIL BOF			-												
MFCSC			-	14.95	SPT 14.50-14.95 m 6, 6, 9										
LB Log					(14 = 15				BOREHOLE TERMIN Target depth	ATED AT	14.95 m				
	omm	ents						•					· · · ·	Checked Date	SRF 1/3/23
≥															

Openet         Opene         Opene         Opene <th></th> <th></th> <th></th> <th></th> <th>1</th> <th>7</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>BO</th> <th>REHOLE:</th> <th>BH06</th>					1	7							BO	REHOLE:	BH06
Detiling         Sampling         Pield Material Description           0	in	vestig	<b>D</b> gate	desig	n   cons	Project Site Struct Location Position Job No. Client	Geot 97 - Port Refe 2300 GUR	technic 111 Da Dougla r to Site 3AA-D NER	al Inv avidso as e Pla	vestigation East on Street North Surface RL n Contractor Drill Rig Inclination	335864.0 m 8175566.0 m MGA2020 5 3.75 m AHD GEO Investigate DT1200 -90°	6		Sheet Date Started Date Completed Logged	1 OF 1 6/2/23 d 6/2/23 DLH
United by the set of			Dril	ling		Sampling					Field Material D	escriptio	on		
0         3.73         050 500 -0.25 m. 0 00 0.02 m. 1 0 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	<i>DEPTH</i> RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	<b>USCS SYMBOL</b>	SOIL/ROCK MA	TERIAL DESCRIPTION	MOISTURE	CONSISTENCY	STRUCTUR ADDITIOI OBSERVAT	E AND NAL TIONS
Image: Second				0	3.75 <i>0.80</i>	DS 0.00-0.25 m DS 0.25-0.50 m DS 0.50-0.75 m			SM	FILL GRAVELLY SILTY SAN sand, low plasticity silt, fine to	ID: brown, fine to coarse grained o coarse gravel	м	MD		
2       23       0.13-3-17.5 m D1.73-2.0	Ц				2.95 1.30	DS 0.75-1.00 m SPT 1.00-1.45 m			SP	SAND: brown, fine to mediur	n grained sand, non plastic				
1         1         2.20 0.55         PT 3 03-36 m HW 450mm         0         0         111 Y CLAY. data gray, medium plasticity, with the grained sand, it are organics, %M410H CLAY.         1           1         1         0         9         0         0         111 Y CLAY. data gray, medium plasticity, with the grained sand, it are organics, %M410H CLAY.         1           1         1         0         0         0         0         0         1           1         1         0         0         0         0         0         0         0           1         1         0         0         0         0         0         0         0         0         0           1         1         0 <td>AC</td> <td>-</td> <td></td> <td>- 2</td> <td>2.45</td> <td>1, 2, 1 N=3 DS 1.50-1.75 m DS 1.75-2.00 m DS 2.00-2.25 m DS 2.25-2.50 m SPT 2.50-2.95 m HW/450mm</td> <td></td> <td></td> <td>SP</td> <td>SAND: pale grey, fine to mee</td> <td>lium grained sand, non plastic</td> <td></td> <td>VL to L</td> <td></td> <td></td>	AC	-		- 2	2.45	1, 2, 1 N=3 DS 1.50-1.75 m DS 1.75-2.00 m DS 2.00-2.25 m DS 2.25-2.50 m SPT 2.50-2.95 m HW/450mm			SP	SAND: pale grey, fine to mee	lium grained sand, non plastic		VL to L		
Image: SPT 359-358 m         SPT 4 00-4.5 m           SPT 4 00-4.5 m         SPT 4 00-4.5 m           Image: SPT 3 59-358 m         SPT 4 00-4.5 m           Image: SPT 3 59-358 m         SPT 4 00-4.5 m           Image: SPT 3 59-358 m         SPT 4 00-4.5 m           Image: SPT 3 59-358 m         SPT 5 59-35 m           Image: SPT 3 50-358 m         SPT 5 59-35 m           Image: SPT 3 50-358 m         SPT 5 59-35 m           Image: SPT 3 50-358 m         SPT 5 59-35 m           Image: SPT 3 50-358 m         SPT 5 59-35 m           Image: SPT 3 50-358 m         SPT 5 59-35 m           Image: SPT 3 50-358 m         SPT 5 59-35 m           Image: SPT 1 100-10-45 m         SPT 1 100-10-45 m           Image: SPT 1 100-11-45 m         SPT 1 100-11-45 m           Image: SPT 1 100-11-45 m         SPT 1 100-11-45 m           Image: SPT 1 100-11-45 m         SPT 1 100-11-45 m           Image: SPT 1 100-11-45 m         SPT 1 100-11-45 m           Image: SPT 1 100-11-45 m         SPT 1 100-11-45 m           Image: SPT 1 100-11-45 m         SPT 1 100-11-45 m           Image: SPT 1 100-11-45 m         SPT 1 100-11-45 m           Image: SPT 1 100-11-45 m         SPT 1 100-11-45 m           Image: SPT 1 100-11-45 m         SPT 1 100-11-45 m <t< td=""><td></td><td></td><td></td><td>-</td><td><i>3.20</i> 0.55</td><td>SPT 3.00-3.45 m HW/450mm</td><td></td><td>[]X[]</td><td>CI</td><td>SILTY CLAY: dark grey, med</td><td>lium plasticity, with fine grained sa</td><td>and,</td><td></td><td></td><td></td></t<>				-	<i>3.20</i> 0.55	SPT 3.00-3.45 m HW/450mm		[]X[]	CI	SILTY CLAY: dark grey, med	lium plasticity, with fine grained sa	and,			
B				-		SPT 3.50-3.95 m HW/450mm				trace organics, "MARINE CL	AY"				
and				-		SPT 4.00-4.45 m HW/450mm									
1         0         -	n duga			-		U50 5.50-5.95 m							S to		
and bit of the second stand, low plasticity, fine to medium grained stand, low plasticity, fine to coarse grained stand, low plasticity, with fine grained stand, low plasticity, line to coarse grained stand, low low low plasticity, line to coarse grained stand, low low low plasticity, line to coarse grained stand, low	(n nadrus			6 —		PP 5.95 m =50 - 50 kPa							F		-
L-M B P 7.35 m = 50 · F3 m = 5				-	7.00	U50 7.00-7.35 m			CL		u plasticity, find to modium grained	4			
Bit of the second sec	0 00.21 02021	L-M		-		PP 7.35 m =50 - 50 kPa				sand	plasticity, file to medium grane	w			
Image: Second state     N=12     Image: Second state     Similar     Similar       Image: Second state       Image: Second state     Image: Second state     Image: Second state     Image: Second state     Image: Second state       Image: Second state     Image: Second state     Image: Second state     Image: Second state     Image: Second state       Image: Second state     Image: Second state     Image: Second state     Image: Second state     Image: Second state       Image: Second state     Image: Second state     Image: Second state     Image: Second state     Image: Second state       Image: Second state     Image: Second state     Image: Second state     Image: Second state     Image: Second state       Image: Second state     Image: Second state     Image: Second state     Image: Second state     Image: Second state       Image: Second state     Image: Second state     Image: Second state     Image: Second state     Image: Second state       Image: Second state     Image: Second state     Image: Second state     Image: Second state     Image: Second state       Image: Second state     Image: Second state     Image: Second state     Image: Second state     Image: Second state       Image: Second state     Image: Second state     Image: Second state <td>WB</td> <td></td> <td></td> <td>-</td> <td><i>8.50</i> -4.75</td> <td>SPT 8.50-8.95 m 6, 8, 4</td> <td></td> <td>                                       </td> <td>SC</td> <td>CLAYEY SAND: pale brown, plasticity clay, trace fine grav</td> <td>fine to coarse grained sand, low</td> <td></td> <td></td> <td></td> <td></td>	WB			-	<i>8.50</i> -4.75	SPT 8.50-8.95 m 6, 8, 4			SC	CLAYEY SAND: pale brown, plasticity clay, trace fine grav	fine to coarse grained sand, low				
0       10       -5.65       SPT 10.00-10.45 m       SPT 10.00-10.45 m       F         11.50       SPT 10.00-10.45 m       3,4,4       N=8       F       F         11.50       SPT 11.50-11.95 m       CH       SILTY CLAY: grey motiled orange-brown, high plasticity, trace       F         12       -       -7.75       S,6,9       N=15       VSI       VSI         14       -10.25       SPT 13.00-13.45 m       VSI       VSI       VSI         14       -10.25       SPT 14.50-14.95 m       SPT 14.50-14.95 m       VSI       VSI         0       -       -       -       -       -       VSI       VSI         0       -       -       -       -       -       -       VSI       VSI         14       -       -       -       -       -       -       -       -       -         14       -       -       -       -       -       -       -       -       -       -         14       -       -       -       -       -       -       -       -       -         14       -       -       -       -       -       -       -	<pre>&lt;</pre>			-	9.40	N*=12							St		
Image: Second and the second and t	C10.04			-	-5.65				CI	SILTY CLAY: pale grey, med	lium plasticity, with fine grained sa	Ind			
Image: Second and the second and t				10		SPT 10.00-10.45 m 3, 4, 4 N*=8							F		-
And the second of the secon				- - 12	<u>11.50</u> -7.75	SPT 11.50-11.95 m 5, 6, 9 N*=15			СН	SILTY CLAY: grey mottled or fine grained sand	range-brown, high plasticity, trace				-
Comments Checked SRF Date 1/3/23 CL SANDY CLAY: pale grey, low plasticity, fine to coarse grained VSt				- - 14	14.00	SPT 13.00-13.45 m 4, 10, 12 N*=22							VSt		
Image: Section of the section of t				-	-10.25	SPT 14 50-14 95 m			CL	SANDY CLAY: pale grey, lov sand, trace fine to medium g	v plasticity, fine to coarse grained ravel		VSt		
Comments Checked SRF Date 1/3/23				-	14.95	9, 8, 7 N*=15				BOREHOLE TERMINATED	AT 14.95 m				
	C	omm	ents	I			1	•						Checked S Date 1	SRF //3/23







	1				(	7							TEST PIT	: TP(	04
			フ			Project	Geot 97	echnic	al Inv	estigation East 335898.0 m			Sheet	1 OF	1
	inve	estic	gate	desig	n con	struct Location	Port	Dougla	as	Surface RL 3.40 m AHD			Choot	1 01	
						Position Job No.	Refe 2300	r to Sit 3AA-D	e Pla 1	n Contractor GEO Design Machine 4-6t Excavator			Date Logged	1/2/23 DLH	
						Client	GUR	NER		Bucket Size					
		E	xca	ation/		Sampling			Ļ	Field Material Desc	riptio	on ⊳			
		ANCE		~		SAMPLE OR	ERED	2	SYMBC	SOIL/BOCK MATERIAL DESCRIPTION	JRE	STENC Y	DCP TES (AS 1289.6.3.2	3T 2-1997)	
		RESIST	NATER	DEPTH	DEPTH	FIELD TEST	RECOV	GRAPH OG	ISCS S			SONSIS DENSIT	Biows per 10	0 mm 15 20	25
F	2  0			0.0 —	3.40				SP	TOPSOIL SILTY SAND: black, fine to medium grained sand, low					
				-		BDS 0.10-0.60 m			SP SM	plasticity slit, trace organics SAND: grey, fine to medium grained sand, non plastic	1				
				-											-
				0.5 —								L to MD			-
				-	2.80	DS 0.60-1.00 m			SP	SAND: yellow-brown, fine to medium grained sand, non plastic	1				-
			$\triangleright$	-											-
				- 	1.00						w				
				-						Collapse					-
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30.003				2.0											-
16:30 8.				-											-
03/2023				_											
e>> 02/				-2.5-						Sketch & Other Observations					
äLB Log MFC TEST PIT WITH SKETCH 23003AA-D 97 - 111 DAVIDSON STREET, PORT UOUGLAS.GPJ <<∪rawngr T															
LIB_03.G	Со	mme	ents										Checked	SRF	
U M M M													Date	1/3/23	












Appendix C

**Results of Laboratory Testing** 



	Moi	isture Conten	t Report	
Client : Address : Project Name : Project Number :	GEO Design 14 Danbulan Street, Smith Geotechnical Investigation	nfield, QLD, 4878 n 23003AA-D	Report Number: Report Date : Order Number : Tost Mathad :	SI 096-23 - 1/1 24/02/2023
Location:	97 111 Davidson St , Port	Douglas	Pa	AS1289.2.1.1 age 1 of 1
	-			
Sample Number :	T-16690	T-16691	T-16692	T-16693
Test Number :	1	2	3	4
Sampling Method :	As Received	As Received	As Received	As Received
Date Sampled :	30/01/2023	30/01/2023	30/01/2023	30/01/2023
Date Tested :	23/02/2023	23/02/2023	23/02/2023	23/02/2023
Material Type :				
Material Source :	Unknown	Unknown	Unknown	Unknown
Lot Number :				
Sample Location :	BH01	BH04	BH04	BH06
	7.0 - 7.45	5.5 - 5.95	10.0 - 10.45	14.5 - 14.95
Oven Temperature (°C) :	105-110	105-110	105-110	105-110
Soil Description :				
Moisture Content (%) :	47.6	51.0	22.0	17.0
Remarks :	Test results only apply to	the sample tested.		



Accredited for compliance with ISO/IEC 17025 - Testing

APPROVED SIGNATORY

n

GN - Laboratory Manager NATA Accreditation Number 18563

Document Code RF120-9



			Q	u	ality	/ of	Ma	ate	rials	s Rep	ort									
Client : Address : Project Name Project Numbe Location:	: er:	GEO Design 14 Danbulan Geotechnical SI 096-23 97 111 Davids	Stree Inve	et, esti St ,	Smithfie igation 2 , Port Do	ld, QLD, 3003AA uglas	, 4878 -D	3		Report Report Order N Test Me	Number Date : Iumber : ethod :	: P	age	10	of 4	SI 09 1/0 AS1	)6-23 03/2( .289.3	- 2/ 023 3.6.1	/1	
Sample Numb	or ·	T-16690										SAM			ΔΤΙ					
Sample Numb	nod :	As Received										JAH	B	H01						
Sampled By :		Client											7.0	- 7.	.45					
Date Sampled	:	30/01/2023																		
Date Tested :		28/02/2023																		
Material Type	:									Test Nu	mber :			Т			1			
Material Source	e:	Unknown								Lot Nun	nber :			1						
Remarks :		Test results o	nly a	арр	oly to the	e sample	e teste	ed.		Specific	ation Nu	umber :								
AS Sieve Size(mm)	Percent Passing	Specification Limits								-1				4						
100			1	00																
75.0	100											Ĭ	Ĭ	ľ	ľ	Ī	ľ	ľ		Ĭ
63.0				90				$\uparrow$					+	_						+
53.0	100																			
37.5	100			80		ř.	-						+	-				_		†
26.5	100			70 0																
19.0	100																			
16.0			(%)	60									+	_						+
13.2	100		assing																	
9.5	100		rcent F	50			-						+	-						+
6.7			ď	40																
4.75	100																			
2.36	99			30									+	_						+
1.18	97																			
0.600	95			20			-						+	-				_		+
0.425	92			10																
0.300	89																			
0.150	80			0.07	75 0	1.15	0.3	0.425	0.6 1.	18 2	36	4.75	9.5	13.2	1	9 26.	5 37.5		3	75
0.075	70									AS Sieve	Size(mm)									
					Test M	1ethod			Results											
Liquid Limit (%	%):								40	Shrinka	ge Com	ments :		Cr	umt	oling	Occ	urre	ed	
Plastic Limit (	%):			AS	1289.3.	1.2, 3.	2.1,		19	Mould L	.ength (r	mm) :		12	25					
Plasticity Inde	x (%) :				3.3.1,	3.4.1			21	Sample	History			Οv	/en	Drie	d			
Linear Shrinka	ıge (%) :								11	Q252 W	/eighted	PI (%):					1932	2		
Soil Description	n :		· ·																	
WORLD RECOGNISED ACCREDITATION	Accredited for compliance with ISO/IEC 17025 - Testin							Testing	APPROVED SIGNATORY GN - Laboratory Manager NATA Accreditation Number											



			Qı	ality	y of	Ma	ter	rials	Rep	ort								
Client : Address : Project Name Project Numbe Location:	: er:	GEO Design 14 Danbulan S Geotechnical S SI 096-23 97 111 Davids	Stree Inves	t, Smithfi stigation : t , Port D	eld, QLD, 23003AA- ouglas	4878 ·D			Report I Report I Order N Test Me	Number: Date : umber : thod :	Ρ	age	2 of	5 f 4	7 090 1/0 AS12	5-23 - 13/20: 289.3.	2/1 23 6.1	
Sample Numb	or :	T-16601									SAMI							
Sample Numb	hod ·	As Received									JAIN	BI	H04					
Sampling Net		Client									ļ	5.5	- 5.9	)5				
Date Sampled	:	30/01/2023											0.0					
Date Tested :		28/02/2023																
Material Type	:	,,							Test Nu	mber :			T			2		
Material Source	e:	Unknown							Lot Num	nber :			+					
Remarks :		Test results o	nlv a	pplv to th	e sample	tester	d.		Specific	ation Nu	mber :		+					
AS Sieve Size(mm)	Percent Passing	Specification Limits					-		ļ ·				<b>I</b>					
100			100															
75.0	100									)	Ĭ	Ĭ	Ĭ	Ĭ	ľ	Ĭ	Ĭ	Ĭ
63.0			90	, <b> </b>			<u> </u>					_					_	
53.0	100																	
37.5	100		80		+ /							-					-	
26.5	100		70															
19.0	100																	
16.0			8 60	,								_	_				_	
13.2	100		assing															
9.5	100		Cent P	)]														
6.7			- Der															
4.75	100		40															
2.36	99		30	,								_	_				_	
1.18	97																	
0.600	91		20	) <b> </b>														
0.425	89																	
0.300	84																	
0.150	71		C	0.075	0.15	03 04	125 0.6	1	19 27	86	4.75	9.5	13.2	10	26.5	37.5	53	75
0.075	59			0.010	0.15	0.0 0.4	25 0.0		AS Sieve	Size(mm)	4.15	0.0	13.2	15	20.5	51.5	55	15
				Test	Method		R	esults										
Liquid Limit (%	%):							38	Shrinka	ge Comr	ments :		Cra	ickii	ng O	ccurr	ed	
Plastic Limit (	%):		A	S1289.3	3.1.2, 3.2	2.1,		19	Mould L	ength (n	nm) :		250	D				
Plasticity Inde	x (%) :			3.3.1	, 3.4.1	,		19	Sample	History			Ô٧¢	en C	Dried	1		
Linear Shrinka	ige (%) :							9	Q252 W	eighted	PI (%):				1	1691		
Soil Descriptio	n:																	
WORLD RECOONISED ACCREDITATION	Accredited for compliance with ISO/IEC 17025 - Testing							esting	APPROVED SIGNATORY GN - Laboratory Manager NATA Accreditation Number									



			Q	u	ality	γ of	Ма	te	rials	Rej	oort									
Client : Address : Project Name Project Numb Location:	: er :	GEO Design 14 Danbulan S Geotechnical S SI 096-23 97 111 Davids	Stre Invo	eet, est St	Smithfie igation 2 , Port De	eld, QLI 23003A ouglas	), 4878 A-D			Report Report Order I Test Mo	Number Date : Number : ethod :	P	age	- 3 c	of 4	SI 09 1/ AS1	)6-23 03/2 1289.	3 - 2 <u>,</u> 2023 .3.6.	/1	
Sample Numb	or :	T-16602										SAM			ΔΤΙ					
Sample Numb	bod ·	As Received										JAN	B	HOZ	1					
Sampling Net		Client										1	0.0	- 10	0.45					
Date Sampled	:	30/01/2023										-								
Date Tested :	•	28/02/2023																		
Material Type	:	20, 02, 2020								Test Nu	umber :			Τ			3			
Material Source	ce:	Unknown								Lot Nu	mber :									
Remarks :		Test results o	nlv	арі	ply to th	e samp	le teste	d.		Specific	cation Nu	mber :								
AS Sieve Size(mm)	Percent Passing	Specification Limits	,							<u> </u>				<u> </u>						
100				100																
75.0	100			]						}	,	Ĭ	Ĭ	Ť	Ĭ	Ĩ		, <u> </u>	Ĭ	Ĩ
63.0				90				$\vdash$						+		$\vdash$			<u> </u>	+
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37.5	100			80	·								-	+					-	+
26.5	100			-																
19.0	100			10-																T
16.0			(%)	60				<u> </u>						_		$\vdash$			<u> </u>	+
13.2	100		assing																	
9.5	100		cent P	50										-					-	+
6.7			Per																	
4.75	100			40																T
2.36	100			30				<u> </u>						+		$\vdash$			<u> </u>	+
1.18	98			1																
0.600	93			20									_	-					-	+
0.425	92																			
0.300	90			10																Ť
0.150	86			۱												$\square$		-		1
0.075	80			0.0	1/5	0.15	0.3 0.4	425 0	U.6 1.	AS Siev	e Size(mm)	4.75	9.5	13.2	19	9 26.	5 37.	5 5	)3	/5
					Test I	Method		1	Results											
Liquid Limit (9	%):								50	Shrinka	age Comi	ments :		So	ome	Curl	ling	Occ	ure	d
Plastic Limit (	%):			AS	1289.3	.1.2.3	.2.1.		17	Mould I	Length (r	nm) :		12	25					
Plasticity Inde	x (%) :				3.3.1	, 3.4.1	,	-	33	Sample	History			٥v	/en	Drie	d			
Linear Shrinka	age (%) :							-	16	Q252 V	Veighted	PI (%):					303	6		
Soil Descriptio	n:							<u> </u>												
WORLD RECOGNISED ACCORDINATION		Accredited	for	con	npliance v	with ISO	/IEC 17(	)25 - <sup>-</sup>	Testing		ſ	APPRC GN - La	IVED	atory	SNATO y Ma	ORY anage Numt	er Der			



			Qı	uality	/ of I	Ма	te	rials	s Rep	ort						
Client : Address : Project Name Project Numbe Location:	: er:	GEO Design 14 Danbulan S Geotechnical I SI 096-23 97 111 Davids	itree Inve	et, Smithfie stigation 2 St , Port Do	ild, QLD, 4 3003AA-1 buglas	4878 D			Report Report Order N Test Me	Number: Date : Iumber : ethod :	Pag	e 4 of	SI 09 1/ AS1 4	€-23 - 03/202 289.3.	2/1 23 6.1	
Sample Numb	er :	T-16693									SAMPLE	LOCA	ΓΙΟΝ			
Sampling Met	nod :	As Received										3H06				
Sampled By :		Client									14.5	5 - 14.9	95			
Date Sampled	:	30/01/2023														
Date Tested :		28/02/2023														
Material Type	:								Test Nu	imber :				4		
Material Source	ce :	Unknown							Lot Nur	nber :						
Remarks :		Test results or	ıly a	apply to the	sample •	teste	d.		Specific	ation Nu	mber :					
AS Sieve Size(mm)	Percent Passing	Specification Limits							-			<u> </u>				
100																
75.0	100		10	[ 00												Ĩ
63.0			ç	90			<u> </u>						_			_
53.0	100									Ĭ						
37.5	100		8	80												+
26.5	100		-					5								
19.0	100		7	70		+									-	+
16.0	100		. (9 (	60												_
13.2	100		ssing(°													
9.5	90		ent Pa:	50			$\vdash$						_			+
6.7			Pero				ď									
4 75	95		4	40											-	+
2.36	89			30												
1 18	73				0											
0.600	55		:	20			<u> </u>								—	+
0.000	45															
0.425			1	10		+									+	+
0.500	20															
0.130	20			0.075 0	1.15	0.3 0.4	425 0	).6 1.	18 2 AS Sieve	36 Size(mm)	4.75 9.5	13.2	19 26.	5 37.5	53	75
0.073	24			Tost N	Aethod			Poculto								
Liquid Limit (0	(a) :			Test	letilou			39	Shrinka	ao Comr	nonts :	No	<u>`racki</u> ı	na or (	Crum	bling
Plastic Limit (								14	Mould I	ongth (n		125	ACKI	ig of t		biilig
	/0). 			AS1289.3. 3.3.1	1.2, 3.2. , 3.4.1	.1,			Sampla	History		0.00	n Drie			
Linear Shrinks	x ( /0) .			,				<u> </u>			DT (%).	000		1080		
Soil Descriptio	n ·							9.5	Q252 V	reighteu	FI (70).			1000		
													ΔΤΟΡΥ			
WORLD RECOONISED ACCREDITATION		Accredited	for c	ompliance w	rith ISO/IE	EC 170	)25 - '	Testing		Ņ	GN - Labor IATA Accre	ratory l ditatior 8563	Manage Numb	er Der		



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ABN 34 149 057 182

			Qu	ality	/ (	of Ma	terials	Repo	rt				
Client : Address : Project Name : Project Number : Location:	:	Geo Group 14 Danbulan S Geotechnical I TS23223 Port Douglas	treet, nvesti	Smithfie igation/9	ld, ( )7-1	QLD, 4878 11 Davidso	n Street, Port [	Report Num Report Date Order Numb Test Methoo	ber: : ber: !: Page	TS: 9/ AS1 2 1 of 4	23223 - 1 03/2023 001 289.3.6.1	L	
Comple Number		22 500											
		23-390						Poad Nam	SAMPLL	idson Stree	•		
		Client Sampler	4					Test Pit Number: TP01					
atte Sampled :		1/02/2023						Depth: 0.2	2m -0.6m				
ate Tested :		10/02/2023						Desc: Refe	r to logs				
laterial Type ·		Refer to logs						Tect Number · 001					
laterial Source :		Insitu						Lot Number	:				
emarks :		Reissue of Rep	ort No	o. due to	data	a change.		Specification	Number :				
AS Sieve Size(mm)	Percent Passing	Specification Limits											
100				FINE SAND		SAND MEDILM SAND	COARSE SAND	FINE GRAVEL	GRAVEL MEDIUM GRAVEL	COARSE GRAVEL	COBBLES		
75.0			100				Ĭ	Ĭ					
63.0			90			_/							
53.0													
37.5			80										
26.5			70			/						-	
19.0													
16.0			(%)6L		1							+	
13.2			Passi 10										
9.5			rcent	1									
6.7	100		<b>e</b> 40									-	
4.75	100		30										
2 36	100												
1 18	100		20									-	
0.600	00		40										
0.000	99		10										
0.300	99		0			e é	é é	<u> </u>	<u> </u>	e e	É	<u> </u>	
0.500	47			2200	0.200	0.300 r 0.425 r	0.000 1	2.36r 2.36r 4.76r	0 19 19 0 1	37.51	761	150 r 200 r	
0.130	6							AS Sieve Size(n	im)				
0.075	•			Test N	/oth	nod	Posults						
iquid Limit (%)							31	Shrinkag	e Comments ·	Crumb	ing Occur	red	
lastic Limit (%)					• •	2.2.4	Not	Mould L	e comments .		250.6		
lasticity Index (	%)·		AS 3	.3.1, 3.3	.9.2 8.2 8	, 3.2.1, k 3.4.1	Obtainable NP (Non	Sam	nle History	0.4	en Dried		
near Shrinkage	(%) ·			, -			Plastic)	Sample	Preneration	07	en Dried		
oil Description	(70).						U	Jample		50			
Accredited for compliance with ISO/IEC 17025 - Testing					25 - Testing	Brand A							

NATA Accreditation Number 2856



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ABN 34 149 057 182

			Quali	ty of Ma	terials	Report			
Client : Address : Project Name : Project Number Location:	r :	Geo Group 14 Danbulan S Geotechnical I TS23223 Port Douglas	treet, Smith nvestigation	field, QLD, 4878 n/97-111 Davidso	on Street, Port I	Report Number Report Date : Order Number Test Method :	: Page 2	TS23223 - 1 9/03/2023 001 AS1289.3.6.1 2 of 4	
Canaala Numaha		22 501							
Sample Numbe	r:	23-591				Dead Name: (	SAMPLE L		
Sampling Metho	50:	As Received				Road Name: S		son Street	
Sampled By :			1			Denth: 0.6m	1.0m		
Date Sampled :		1/02/2023				Deptn: 0.6m	· 1.UM		
		10/02/2023				Desc: Refer to	biogs		
Material Type :						Test Number :		001	
Material Source	2:	Insitu				Lot Number :			
Remarks :		Reissue of Rep	ort No. due	to data change.		Specification N	umber :		
AS Sieve Size(mm)	Percent Passing	Specification Limits							
100				SAND MEDILM SAND	COARSE SAND	FINE ORAVEL	GRAVEL MEDIUM GRAVEL	COARSE OR A VEL COBBLES	
75.0			-						
63.0			90	/					
53.0									
37.5			00						
26.5			70	/					
19.0									
16.0			(%)6L						
13.2			Jassi						
9.5			rcent						
6.7			a 40						
4.75	100		30						
2.26	100		30						
2.30	100		20						
1.18	100								
0.600	100		10						
0.425	100		۰ <u>۲</u>						
0.300	100		0.076 mm	0.150 mn 0.200 mn 0.300 mn	0.500 mm	2 mn 2.36 mn 4.76 mn 0 mn	0.5 mm	37.5 mn 80 mn 75 mn	200 mr
0.150	43					AS Sieve Size(mm)			
0.075	3		Tes	t Method	Results				
Liquid Limit (%	):				30	Shrinkage C	omments :	Crumbling Occurr	ed
Plastic Limit (%	):		AC1 700	307 371	Not	Mould Leng	th (mm) :	250.3	
Plasticity Index	(%):		3.3.1, 3	3.3.2 & 3.4.1	Obtainable NP (Non	Sample	History	Oven Dried	
Linear Shrinkac	ie (%) :	+			Plastic) 0	Sample Pre	eperation:	Oven Dried	
Soil Description					, v				
							APPROVED S	GNATORY	
Accredited for compliance with ISO/IEC 17025 - Testing					)25 - Testing	g Lui Moti - Senior Technician			



ABN 34 149 057 182

			Quality of Ma	terials	Report		
Client : Address : Project Name : Project Number : Location:		Geo Group 14 Danbulan S Geotechnical I TS23223 Port Douglas	treet, Smithfield, QLD, 4878 nvestigation/97-111 Davidso	on Street, Port [	Report Number: Report Date : Order Number : Test Method : <b>Page</b>	TS23223 - 1 9/03/2023 001 AS1289.3.6.1 3 of 4	
Camarla Number		22 502			CAMPLE		
Sample Number	:	23-592			SAMPLE	IOCATION	
Sampling Method	1:	As Supplied			Road Name: 97 - 111 Dav	lason Street	
					Donth: 0.1m 0.5m		
Date Sampled :		1/02/2023			Deptn: 0.1m - 0.5m		
Date Tested :		10/02/2023			Desc: Refer to logs	001	
Material Type :		Refer to logs				001	
Material Source :		Insitu					
Remarks :		Reissue of Rep	ort No. due to data change.		Specification Number :		
AS Sieve Size(mm)	Percent Passing	Specification Limits					
100			SAND FINE SAND MEDILM SAND	COARSE SAND	GRAVEL MEDIUM GRAVEL	COARSE ORAVEL	
75.0							
63.0			90				
53.0							
37.5							
26.5			70				
19.0							
16.0			(%) 60 				
13.2							
9.5			cent				
6.7			₫ 40				
4.75			30				
2.26	100						
2.36	100		20				
1.18	100						
0.600	100		10				
0.425	100						
0.300	100		0.076 mm 0.150 mm 0.200 mm 0.300 mm	0.600 mm	2.36 mm 2.36 mm 6 mm 0.6 mm 19.0 mm	37.5 mm 60 mm 75 mm 76 mm 160 mm	
0.150	33				AS Sieve Size(mm)		
0.075	5		Test Method	Results			
Liquid Limit (%)	:			31	Shrinkage Comments :	Crumbling Occurred	
Plastic Limit (%)	:		A61200 2 0 2 2 2 4	Not	Mould Length (mm)	250.6	
Plasticity Index (	· %) ·		A31209.3.9.2, 3.2.1, 3.3.1, 3.3.2 & 3.4.1	Obtainable NP (Non	Sample History	Oven Dried	
l inear Shrinkage	(%) ·		-	Plastic)	Samle Preneration	Oven Dried	
Soil Description	(70) •			v		oven bried	
		<u> </u>			APPROVED	SIGNATORY	
Accredited for compliance with ISO/IEC 17025 - Testing				g Lui Moti - Senior Technician			



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ABN 34 149 057 182

			Qua	lity	/ of	Ma	terials	Rep	ort				
Client : Address : Project Name : Project Number : Location:		Geo Group 14 Danbulan S Geotechnical I TS23223 Port Douglas	treet, Sr nvestiga	mithfie ation/9	ld, QLD 97-111	, 4878 Davidse	on Street, Port	Report Report Order N Test Me	Number Date : Number : ethod :	: Page 4	T: 9 AS 4 of 4	523223 - : /03/2023 001 51289.3.6	1 3 .1
Cample Number 1		22 602						[					
Sample Number :		23-593						Poad N	Jame: 0	SAMPLE L	lson Stre	et	
	•	As Received	4					Tost Di	it Numb	or: TD07	ison stre	el	
Data Sampled by .			1					Denth	0 7m -	0.0m			
Date Sampled .		10/02/2023						Desc' I	Refer to				
Material Type :		10/02/2023						Tost Nu		logs		001	
Material Type .		Incitu						Lot Nur	mber :			001	
		Reissue of Por	ort No	duo to	data ch	2220		LOL NUI	nuer .	mbor :			
				uue to	uala ci	lange.		Specific		iniber .			
AS Sieve Size(mm)	Percent Passing	Specification Limits											
100			100	FINE SAND		SAND MEDILM SAND	COARSE SAND	FINE OR/	AVEL .	GRAVEL MEDIUM GRAVEL	COARSE GRAVEL	COBBLES	
75.0													
63.0			90										-
53.0			80										
37.5													
26.5			70		_/								
19.0													
16.0			(%)6u		7								-
13.2			Lassi										
9.5			rcent	ا ۲	{								
6.7			<b>e</b> 40	/									
4 75			30										
2 36	100												
1 18	100		20										
0.600	100		10										
0.000	100		10										
0.300	100		0 -	6		6 6	e ș	6.6		<u> </u>	é	e e	
0.300	45		0.076 1	0,150	0.200	0.300 n	0.500 п	2,361	4.76 0	- 5.0 E 0.61	9.76 n	75.7	150 n 200 n
0.130								AS Sieve	e Size(mm)				
0.075	2			Test M	1ethod		Results						
Liquid Limit (%) :							33	Shri	nkage C	omments :	Crum	bling Occu	ırred
Plastic Limit (%) :			Δ <u>S</u> 1	289.3	.9.2.3	2.1	Not	Μοι	uld Leng	th (mm) :		250.6	
Plasticity Index (%	6):		3.3.	.1, 3.3	.2 & 3.	4.1	NP (Non		Sample I	History	0	ven Drie	d
Linear Shrinkage (	(%):						Plastic) 0	Sai	mple Pre	peration:	0	ven Drie	d
Soil Description :	. ,		I				-			•			
										APPROVED S	SIGNATORY	,	
Accredited for compliance with ISO/IEC 17025 - Testing				g Lui Moti - Senior Technician									



ABN 34 149 057 182

	Moist	ure Content l	Report	
Client : Address :	Geo Group 14 Danbulan Street, Smithfie	eld, QLD, 4878	Report Number: Report Date:	TS23223 - 2/1 23/02/2023
Project Name :	Geotechnical Investigation/9	97-111 Davidson Street, Port	Order Number:	001
Job Number :	TS23223		Test Method:	-
Location:	Port Douglas		Page	1 of 1
Sample Number :	23-590	23-591	23-592	23-593
Test Number:	001	001	001	001
Sampling Method :	As Received	As Received	As Supplied	As Received
Date Sampled :	1/02/2023	1/02/2023	1/02/2023	1/02/2023
Date Tested:	10/02/2023	10/02/2023	10/02/2023	10/02/2023
Material Type:	Refer to logs	Refer to logs	Refer to logs	Refer to logs
Material Source :	Insitu	Insitu	Insitu	Insitu
Lot Number :				
Sample Location :	Road Name: 97 - 111 Davidson Street	Road Name: 97 - 111 Davidson Street	Road Name: 97 - 111 Davidson Street	Road Name: 97 - 111 Davidson Street
	Test Pit Number: TP01	Test Pit Number: TP02	Test Pit Number: TP05	Test Pit Number: TP07
	Depth: 0.2m -0.6m	Depth: 0.6m - 1.0m	Depth: 0.1m - 0.5m	Depth: 0.7m - 0.9m
	Desc: Refer to logs	Desc: Refer to logs	Desc: Refer to logs	Desc: Refer to logs
Oven Temperature (C)	105-110	105-110	105-110	105-110
Soil Description:	Refer to logs	Refer to logs	Refer to logs	Refer to logs
Moisture Content:	14.5	13.1	13.2	10.2
Remarks:	Nata accrediation does not co	over the performance of same	olina.	



APPROVED SIGNATORY:

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Lui Moti - Senior Technician NATA Accreditation Number: 2856

Document Code: RF120-11



Ca	lifornia Beari	ing Ratio Rep	ort ( 1 Poir	nt)		
Client : Address : Project Number :	Geo Group 14 Danbulan Street, Smith TS23223	field, QLD, 4878	Report Number: Report Date : Order Number :	TS23223 - 3/1 23/02/2023		
Project Name :	Geotechnical Investigation Port Douglas	/97-111 Davidson Street,	Test Method :	AS1289.6.1.1		
Location:	Port Douglas		Pa	age 1 of 4		
Sample Number :	23-590		SAMP	PLE LOCATION		
Date Sampled :	1/02/2023		Road Name: 97 - 111 D	avidson Street		
Date Tested :	18/02/2023		Test Pit Number: TP01			
Sampled By :	Client Sampled		Depth: 0.2m -0.6m			
Sampling Method :	As Received		Desc: Refer to logs			
Material Source :	Insitu		Lot Number :			
Material Type :	Refer to logs		Test Request Number	·: 001		
Remarks :	Na	ata accrediation does not cov	er the performance of sa	mpling.		
Moisture Method :	AS1289.2.1.1					
Maximum Dry Density (t/m <sup>3</sup> ) :	1.58	7				
Optimum Moisture Content (%) :	23.5	4,000	CBR 1 Point Greph Force vs Penetration			
Compactive Effort :	Standard	4,000 4,700 4,000 4				
Nominated Percentage of MDD :	98	4,400 4,200 4,200				
Nominated Percentage of OMC :	100	4,000 4,000 3,800 3,800				
Achieved Percentage of MDD :	98	1,000 1,000 3,000				
Achieved Percentage of OMC :	100.0	3,000 3				
Dry Density Before Soak (t/m <sup>3</sup> ) :	1 55	2,000				
Dry Density After Soak (t/m <sup>3</sup> ) :	1.55	- Q200 92,000 2,000 2,000 0,000				
Moisture Content Before Soak (%) :	23.4	2,000				
Moisture Content After Soak (%) :	15.6	1,000				
Density Ratio After Soak (%) :	98.0	1,000				
Field Maisture Content (%) :	98.0 14 F					
Top Moisture Content - After	14.5					
Penetration (%) : Total Moisture Content - After	22.0					
Penetration (%) :	22.1		4 4.5 5 5.5 8 6.5 7 7.5 Penetration (mm)	10 125		
Soak Condition :	Soaked					
Suak Period (days) :	4	4				
Swell (%) :	0.0					
CBR Surcharge (kg) :	4.5	Bearing Ratio 2.5mm (%) :		18.0		
Oversize (%) :		Bearing Ratio 5.0mm (%) :		25.0		
Oversize Material Replaced (%) :		CBR Value (%) :		25.0		
Site Selection :						
Soil Description :						
NATA	Accredited for compliance with	APPROVED SIGNATORY				



Ca	lifornia Bear	ing Ratio Rep	oort ( 1 Point)				
Client :	Geo Group	field OLD 4979	Report Number: <b>T523223 - 3/1</b>				
Address : Project Number :	14 Danbulan Street, Smith	field, QLD, 4878	Report Date : 23/02/2023				
Project Name :	Geotechnical Investigation	n/97-111 Davidson Street,	Test Method : AS1289.6.1.1				
	Port Douglas		Dage 2 of 4				
Location:	Port Douglas		Page 2 01 4				
Sample Number :	23-591		SAMPLE LOCATION				
Date Sampled :	1/02/2023		Road Name: 97 - 111 Davidson Street				
Date Tested :	18/02/2023		Test Pit Number: TP02				
Sampled By :	Client Sampled		Depth: 0.6m - 1.0m				
Sampling Method :	As Received		Desc: Refer to logs				
Material Source :	Insitu		Lot Number :				
Material Type :	Refer to logs		Test Request Number : 001				
Remarks :	N	ata accrediation does not cov	er the performance of sampling.				
Moisture Method :	AS1289.2.1.1						
Maximum Dry Density (t/m³) :	1.58						
Optimum Moisture Content (%) :	25.5	2700	CBR Florit Greath Force vs Prectation				
Compactive Effort :	Standard	2,000					
Nominated Percentage of MDD :	98	2,400					
Nominated Percentage of OMC :	100	2,00					
Achieved Percentage of MDD :	98	1,000					
Achieved Percentage of OMC :	100.0	1,000					
Dry Density Before Soak (t/m <sup>3</sup> ) :	1.55	2 <sup>1,000</sup>					
Dry Density After Soak (t/m³) :	1.55						
Moisture Content Before Soak (%) :	25.4	1,100					
Moisture Content After Soak (%) :	20.0	900					
Density Ratio After Soak (%) :	98.0						
Field Moisture Content (%) :	13.1						
Top Moisture Content - After Penetration (%) :	25.0	200					
Total Moisture Content - After Penetration (%) :	24.3						
Soak Condition :	Soaked	05 1 15 2 25 3 35	4 45 5 55 6 85 / / 2 10 125 Perdetation (mm)				
Soak Period (days) :	4						
Swell (%) :	0.0	1					
CBR Surcharge (kg) :	4.5	Bearing Ratio 2.5mm (%) :	10.0				
Oversize (%) :		Bearing Ratio 5.0mm (%) :	13.0				
Oversize Material Replaced (%) :		CBR Value (%) :	13.0				
Site Selection :							
Soil Description :							
NATA	Accredited for compliance wit	h ISO/IEC 17025 - Testing	APPROVED SIGNATORY Lui Moti - Senior Technician NATA Accreditation Number : 2856				
			Document Code RE39-24				



Ca	lifornia Bear	ing Ratio Rep	oort ( 1 Poin	t)			
Client :	Geo Group		Report Number:	TS23223 - 3/1			
Address :	14 Danbulan Street, Smith	field, QLD, 4878	Report Date :	23/02/2023			
Project Number :	TS23223		Order Number :				
Project Name :	Geotechnical Investigation Port Douglas	/97-111 Davidson Street,	Test Method : AS1289.6.1.1				
Location:	Port Douglas		Pag	je 3 of 4			
Sample Number :	23-592		SAMPL	E LOCATION			
Date Sampled :	1/02/2023		Road Name: 97 - 111 Day	vidson Street			
Date Tested :	18/02/2023		Test Pit Number: TP05				
Sampled By :	Client Sampled		Depth: 0.1m - 0.5m				
Sampling Method :	As Supplied		Desc: Refer to logs				
Material Source :	Insitu		Lot Number :				
Material Type :	Refer to logs		Test Request Number :	001			
Remarks :	Na	ata accrediation does not cov	er the performance of sam	ipling.			
Moisture Method :	AS1289.2.1.1						
Maximum Dry Density (t/m <sup>3</sup> ) :	1.57	1					
Optimum Moisture Content (%) :	25.0	5,000	CBR 1 Point Graph Fonce vis Penetration				
Compactive Effort :	Standard	5,000					
Nominated Percentage of MDD :	98	5,000					
Nominated Percentage of OMC :	100	4,000					
Achieved Percentage of MDD :	98	4,000					
Achieved Percentage of OMC :	100.0	3,000					
Dry Density Before Soak (t/m <sup>3</sup> ) :	1 54	3,00					
Dry Density After Soak (t/m <sup>3</sup> ) :	1 54						
Moisture Content Before Soak (%) :	24.9	2,400					
Moisture Content After Soak (%) :	16.7	2,000					
Density Patio After Soak (%) :	98.0	1,000					
Eield Meisture Content (%)	12.2	1,000					
Top Moisture Content - After	13.2	800					
Penetration (%) : Total Moisture Content - After	23.5						
Penetration (%) :	23.3		4 4.5 5 5.5 6 6.5 7 7.5 Penetration (mm)	10 125			
Soak Condition :	Soaked						
Soak Period (days) :	4	4					
Swell (%) :	0.0		1				
CBR Surcharge (kg) :	4.5	Bearing Ratio 2.5mm (%) :		25.0			
Oversize (%) :		Bearing Ratio 5.0mm (%) :		25.0			
Oversize Material Replaced (%) :		CBR Value (%) :		25.0			
Site Selection -	1						
Soil Description :							
NATA	Accredited for compliance wit	h ISO/IEC 17025 - Testing	APPROVED SIGNATORY Lui Moti - Senior Technician NATA Accreditation Number : 2856				
			Document Co	ode RE39-24			



Са	lifornia Bear	ing Ratio Rep	oort ( 1 Poir	nt)			
Client : Address : Project Number :	Geo Group 14 Danbulan Street, Smith TS23223	field, QLD, 4878	Report Number: Report Date : Order Number :	TS23223 - 3/1 23/02/2023			
Project Name :	Geotechnical Investigation Port Douglas	n/97-111 Davidson Street,	Test Method :	AS1289.6.1.1			
Location:	Port Douglas		Page 4 of 4				
Sample Number :	23-593		SAME				
Date Sampled :	1/02/2023		Road Name: 97 - 111 D	avidson Street			
Date lested :	18/02/2023		Test Pit Number: TP07				
Sampled By :			Depth: 0.7m - 0.9m				
Sampling Method :	AS Received		Desc: Refer to logs				
Material Source :	Insitu		Lot Number :				
Material Type :	Refer to logs		Test Request Number	r: 001			
Remarks :	N	ata accrediation does not cov	er the performance of sa	mpling.			
Moisture Method :	AS1289.2.1.1						
Maximum Dry Density (t/m <sup>3</sup> ) :	1.41						
Optimum Moisture Content (%) :	29.5	2,050	CBR 1 Point Graph Force vs Penetration				
Compactive Effort :	Standard	1,950					
Nominated Percentage of MDD :	98	1,000					
Nominated Percentage of OMC :	100	1,600					
Achieved Percentage of MDD :	98	1,000					
Achieved Percentage of OMC :	99.0	1,350					
Dry Density Before Soak (t/m <sup>3</sup> ) :	1.38	1,00 1,100 2,110					
Dry Density After Soak (t/m³) :	1.38						
Moisture Content Before Soak (%) :	29.3						
Moisture Content After Soak (%) :	25.4	750					
Density Ratio After Soak (%) :	98.0	- 000 550 500					
Field Moisture Content (%) :	28.7	40 40 40 40 40 40 40 40 40 40 40 40 40 4					
Top Moisture Content - After	24.5						
Penetration (%) : Total Moisture Content - After	25.8						
Penetration (%) : Soak Condition :	Soaked	0.5 1 1.5 2 2.5 3 3.5	4 4.5 5 5.5 8 8.5 7 7.5 Penetration (nm)	10 12.5			
Soak Period (days) :	4						
Swell (%)	0.0	-					
CBR Surcharge (kg) :	4.5	Bearing Patio 2 5mm (%)		4 0			
Oversize (%) :		Bearing Ratio 5.0mm (%)		5.0			
Oversize (70)				5.0			
Oversize Material Replaced (76) .	I			5.0			
Site Selection :							
Soil Description :							
NATA	Accredited for compliance wit	h ISO/IEC 17025 - Testing	APPRO Lui Moti - NATA Accr	VED SIGNATORY			



Geo Design Pty Ltd 14 Danbulan Street Smithfield QLD 4878

Attention:

Christina Stallard-Smith

Report
Project name
Project ID
Received Date

967462-S 97-111 DAVIDSON ST PORT DOUGLAS 23003AA - D Feb 27, 2023

Client Sample ID			BH01 3.0-3.5m	BH01 3.5-4.0m	BH02 1.0-1.5m	BH02 1.5-2.0m
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B23-Fe0064288	B23-Fe0064289	B23-Fe0064290	B23-Fe0064291
Date Sampled			Jan 30, 2023	Jan 30, 2023	Jan 30, 2023	Jan 30, 2023
Test/Reference	LOR	Unit				
Extraneous Material						
<2mm Fraction	0.005	g	87	180	190	250
>2mm Fraction	0.005	g	15	< 0.005	< 0.005	< 0.005
Analysed Material	0.1	%	85	100	100	100
Extraneous Material	0.1	%	15	< 0.1	< 0.1	< 0.1
Net Acidity (Excluding ANC)						
CRS Suite - Net Acidity - NASSG (Excluding ANC)	0.02	% S	< 0.02	0.53	0.07	0.05
CRS Suite - Net Acidity - NASSG (Excluding ANC)	10	mol H+/t	< 10	330	41	29
CRS Suite - Liming Rate - NASSG (Excluding ANC)	1	kg CaCO3/t	< 1	25	3.1	2.1
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	5.8	4.0	4.6	4.6
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	62	23	17
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	0.10	0.036	0.027
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) <sup>S04</sup>	0.005	% S	0.007	0.43	0.029	0.018
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	4.1	270	18	11
Extractable Sulfur						
Sulfur - KCI Extractable	0.005	% S	N/A	0.065	N/A	N/A
HCI Extractable Sulfur	0.005	% S	N/A	0.058	N/A	N/A
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	N/A	< 0.005	N/A	N/A
Net Acid soluble sulfur (s-SNAS) NLM-4.1 <sup>S02</sup>	0.005	% S	N/A	< 0.005	N/A	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	N/A	< 2	N/A	N/A
HCI Extractable Sulfur Correction Factor	1	factor	2.0	2.0	2.0	2.0
Acid Neutralising Capacity (ANCbt)		-				
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) <sup>S03</sup>	0.02	% S	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	N/A	N/A	N/A	N/A
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Including ANC)		-				
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	< 0.02	0.53	0.07	0.05
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	< 10	330	41	29
CRS Suite - Liming Rate - NASSG (Including ANC) <sup>S01</sup>	1	kg CaCO3/t	< 1	25	3.1	2.1
Sample Properties						
% Moisture	1	%	24	29	24	23



NATA Accredited Accreditation Number 1261 Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.



Client Sample ID			BH02 2.0-2.5m	BH02 2.5-3.0m	BH02 3.0-3.5m	BH03 3.5-4.0m
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B23-Fe0064292	B23-Fe0064293	B23-Fe0064294	B23-Fe0064295
Date Sampled			Jan 30, 2023	Jan 30, 2023	Jan 30, 2023	Jan 31, 2023
Test/Reference	LOR	Unit				
Extraneous Material	-					
<2mm Fraction	0.005	g	190	160	98	110
>2mm Fraction	0.005	g	< 0.005	< 0.005	< 0.005	< 0.005
Analysed Material	0.1	%	100	100	100	100
Extraneous Material	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Net Acidity (Excluding ANC)						
CRS Suite - Net Acidity - NASSG (Excluding ANC)	0.02	% S	0.74	0.98	0.14	1.8
CRS Suite - Net Acidity - NASSG (Excluding ANC)	10	mol H+/t	460	610	90	1100
CRS Suite - Liming Rate - NASSG (Excluding ANC)	1	kg CaCO3/t	35	46	6.8	85
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	4.0	3.9	5.0	3.7
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	100	96	10	190
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	0.16	0.15	0.017	0.30
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) <sup>S04</sup>	0.005	% S	0.58	0.82	0.13	1.5
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	360	510	80	950
Extractable Sulfur						
Sulfur - KCI Extractable	0.005	% S	0.077	0.12	N/A	0.19
HCI Extractable Sulfur	0.005	% S	0.073	0.12	N/A	0.17
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	< 0.005	< 0.005	N/A	< 0.005
Net Acid soluble sulfur (s-SNAS) NLM-4.1 <sup>S02</sup>	0.005	% S	< 0.005	< 0.005	N/A	< 0.005
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	< 2	< 2	N/A	< 2
HCI Extractable Sulfur Correction Factor	1	factor	2.0	2.0	2.0	2.0
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) <sup>S03</sup>	0.02	% S	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	N/A	N/A	N/A	N/A
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	0.74	0.98	0.14	1.8
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	460	610	90	1100
CRS Suite - Liming Rate - NASSG (Including ANC) <sup>S01</sup>	1	kg CaCO3/t	35	46	6.8	85
Sample Properties						
% Moisture	1	%	40	34	24	55

Client Sample ID			BH04 1.0-1.5m	BH04 1.5-2.0m	BH04 2.0-2.5m	BH04 2.5-3.0m
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B23-Fe0064296	B23-Fe0064297	B23-Fe0064298	B23-Fe0064299
Date Sampled			Feb 03, 2023	Feb 03, 2023	Feb 03, 2023	Feb 03, 2023
Test/Reference	LOR	Unit				
Extraneous Material						
<2mm Fraction	0.005	g	190	130	200	110
>2mm Fraction	0.005	g	1.7	< 0.005	< 0.005	< 0.005
Analysed Material	0.1	%	99	100	100	100
Extraneous Material	0.1	%	0.9	< 0.1	< 0.1	< 0.1



Client Sample ID			BH04 1.0-1.5m	BH04 1.5-2.0m	BH04 2.0-2.5m	BH04 2.5-3.0m
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B23-Fe0064296	B23-Fe0064297	B23-Fe0064298	B23-Fe0064299
Date Sampled			Feb 03, 2023	Feb 03, 2023	Feb 03, 2023	Feb 03, 2023
Test/Reference	LOR	Unit				
Net Acidity (Excluding ANC)						
CRS Suite - Net Acidity - NASSG (Excluding ANC)	0.02	% S	0.03	1.4	0.09	1.6
CRS Suite - Net Acidity - NASSG (Excluding ANC)	10	mol H+/t	18	890	55	980
CRS Suite - Liming Rate - NASSG (Excluding ANC)	1	kg CaCO3/t	1.3	67	4.2	74
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	5.1	4.0	4.5	4.3
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	9.9	170	21	110
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	0.016	0.28	0.033	0.18
Potential Acidity - Chromium Reducible Sulfur		-				
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) <sup>S04</sup>	0.005	% S	0.012	1.1	0.055	1.4
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	7.6	710	35	870
Extractable Sulfur						
Sulfur - KCI Extractable	0.005	% S	N/A	0.20	0.010	0.19
HCI Extractable Sulfur	0.005	% S	N/A	0.19	0.014	0.19
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	N/A	< 0.005	0.007	< 0.005
Net Acid soluble sulfur (s-SNAS) NLM-4.1 <sup>S02</sup>	0.005	% S	N/A	< 0.005	0.006	< 0.005
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	N/A	< 2	3.4	< 2
HCI Extractable Sulfur Correction Factor	1	factor	2.0	2.0	2.0	2.0
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) <sup>S03</sup>	0.02	% S	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	N/A	N/A	N/A	N/A
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Including ANC)						
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	0.03	1.4	0.09	1.6
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	18	890	55	980
CRS Suite - Liming Rate - NASSG (Including ANC) <sup>S01</sup>	1	kg CaCO3/t	1.3	67	4.2	74
Sample Properties						
% Moisture	1	%	23	42	22	52

Client Sample ID			BH04 3.0-3.5m	BH04 3.5-4.0m	BH05 3.0-3.5m	BH06 3.5-4.0m
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B23-Fe0064300	B23-Fe0064301	B23-Fe0064302	B23-Fe0064303
Date Sampled			Feb 03, 2023	Feb 03, 2023	Feb 03, 2023	Feb 06, 2023
Test/Reference	LOR	Unit				
Extraneous Material		-				
<2mm Fraction	0.005	g	280	67	110	67
>2mm Fraction	0.005	g	< 0.005	< 0.005	< 0.005	20
Analysed Material	0.1	%	100	100	100	77
Extraneous Material	0.1	%	< 0.1	< 0.1	< 0.1	23
Net Acidity (Excluding ANC)						
CRS Suite - Net Acidity - NASSG (Excluding ANC)	0.02	% S	0.06	1.5	1.3	2.4
CRS Suite - Net Acidity - NASSG (Excluding ANC)	10	mol H+/t	37	930	790	1500
CRS Suite - Liming Rate - NASSG (Excluding ANC)	1	kg CaCO3/t	2.8	70	59	110
Actual Acidity (NLM-3.2)						
pH-KCL (NLM-3.1)	0.1	pH Units	5.4	5.0	4.5	4.4
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	3.8	57	73	110
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	0.006	0.091	0.12	0.18



		1		1	1	1
Client Sample ID			BH04 3.0-3.5m	BH04 3.5-4.0m	BH05 3.0-3.5m	BH06 3.5-4.0m
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B23-Fe0064300	B23-Fe0064301	B23-Fe0064302	B23-Fe0064303
Date Sampled			Feb 03, 2023	Feb 03, 2023	Feb 03, 2023	Feb 06, 2023
Test/Reference	LOR	Unit				
Potential Acidity - Chromium Reducible Sulfur						
Chromium Reducible Sulfur (s-SCr) (NLM-2.1) <sup>S04</sup>	0.005	% S	0.053	1.4	1.2	2.3
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	3	mol H+/t	33	870	720	1400
Extractable Sulfur						
Sulfur - KCI Extractable	0.005	% S	N/A	N/A	N/A	0.25
HCI Extractable Sulfur	0.005	% S	N/A	N/A	N/A	0.23
Retained Acidity (S-NAS)						
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	N/A	N/A	N/A	< 0.005
Net Acid soluble sulfur (s-SNAS) NLM-4.1 <sup>S02</sup>	0.005	% S	N/A	N/A	N/A	< 0.005
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	N/A	N/A	N/A	< 2
HCI Extractable Sulfur Correction Factor	1	factor	2.0	2.0	2.0	2.0
Acid Neutralising Capacity (ANCbt)						
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) <sup>S03</sup>	0.02	% S	N/A	N/A	N/A	N/A
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	N/A	N/A	N/A	N/A
ANC Fineness Factor		factor	1.5	1.5	1.5	1.5
Net Acidity (Including ANC)		-				
CRS Suite - Net Acidity - NASSG (Including ANC)	0.02	% S	0.06	1.5	1.3	2.4
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	37	930	790	1500
CRS Suite - Liming Rate - NASSG (Including ANC) <sup>S01</sup>	1	kg CaCO3/t	2.8	70	59	110
Sample Properties						
% Moisture	1	%	21	50	49	40



### Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Extraneous Material	Brisbane	Mar 02, 2023	6 Week
- Method: LTM-GEN-7050/7070			
Chromium Suite - NASSG (Excluding ANC)	Brisbane	Mar 02, 2023	6 Week
- Method: LTM-GEN-7070 Chromium Reducible Sulfur Suite			
% Moisture	Brisbane	Feb 28, 2023	14 Days
- Method: I TM-GEN-7080 Moisture			

	Eurofins Environment Testing Australia Pty L									Eurofins ARL Pty Ltd ABN: 91 05 0159 898	Eurofins Environment Testing NZ Ltd NZBN: 9429046024954		
web: v email:	ww.eurofins.com.au	rins .com	Melbourne 6 Monterey Road Dandenong Sou VIC 3175 Tel: +61 3 8564 NATA# 1261 Sit	Geelong           d         19/8 Lew           th         Groveda           VIC 3210         211           5000         Tel: +61           e# 1254         NATA# 1	Sydne           valan Street         179 M           le         Girraw           3         8564 5000         Tel: +1           261         Site# 25403         NATA	ey agowar Ro veen 2145 61 2 9900 # 1261 Site	oad 8400 e# 1821	Canb Unit 1 Mitche ACT 2 Tel: + 7 NATA	ra Brisbane Dacre Street 1/21 Smallwood Place Murarrie 11 QLD 4172 1 2 6113 8091 Tel: +61 7 3902 4600 1261 Site# 25466 NATA# 1261 Site# 20	Newcastle           1/2 Frost Drive           Mayfield West NSW 2304           Tel: +61 2 4968 8448           NATA# 1261           794 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 Tel: +64 9 526 45 51 IANZ# 1327	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 Tel: 0800 856 450 IANZ# 1290
Co Ao	ompany Name: Idress:	Geo Design 14 Danbular Smithfield QLD 4878	Pty Ltd n Street				O Re Pl Fa	rder N eport hone: ax:	<b>5.:</b> <b>:</b> 967462 07 4038 2702		Received: Due: Priority: Contact Name:	Feb 27, 2023 8:40 Mar 6, 2023 5 Day Christina Stallard-{	AM Smith
Project Name:97-111 DAVIDSON ST PORT DOUGLASProject ID:23003AA - D											Eurofins Analytical	Services Manager	: Zoe Flynn
	Sample Detail						Moisture Set	Chromium Suite - NASSG (Excluding ANC)					
Mel	bourne Laborato	ory - NATA # 12	261 Site # 12	54		Х							
Bris	bane Laboratory	/ - NATA # 126	1 Site # 2079	94		Х	x	х					
Exte	ernal Laboratory		1										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	BH01 3.0-3.5m	Jan 30, 2023		Soil	B23-Fe006428	8	X	X					
2	BH01 3.5-4.0m	Jan 30, 2023		Soil	B23-Fe006428	9	X	X					
3	BH02 1.0-1.5m	Jan 30, 2023		Soil	B23-Fe006429	0	X	X					
4	BH02 1.5-2.0m	Jan 30, 2023		Soil	B23-Fe006429	1	X	X					
5	BH02 2.0-2.5m	Jan 30, 2023		Soil	B23-Fe006429	2		×					
7	BH02 2.5-3.0m	Jan 30, 2023		Soil	B23-F0006429	3	×	×					
8	BH03 3 5-4 0m	Jan 31, 2023	+	Soil	B23-Fe000429	<del>י</del> 5	x	x					
9	BH04 1 0-1 5m	Feb 03 2023		Soil	B23-Fe006429	6	x	x					
10	BH04 1 5-2 0m	Feb 03 2023		Soil	B23-Fe006429	7	x	X					
11	BH04 2.0-2.5m	Feb 03, 2023		Soil	B23-Fe006429	8	X	X					
12	BH04 2.5-3.0m	Feb 03, 2023		Soil	B23-Fe006429	9	Х	Х					

•		~	Eurofins Environm	ent Testing Australia	a Pty Ltd	Eurofins ARL Pty Ltd	Eurofins Environn	nent Testing NZ Ltd							
web: w email:	web: www.eurofins.com.au email: EnviroSales@eurofins.com		Melbourne         Geelong         Sydney           6 Monterey Road         19/8 Lewalan Street         179 Magow           Dandenong South         Grovedale         Girraween           VIC 3175         VIC 3216         NSW 2145           Tel: +61 3 8564 5000         Tel: +61 3 8564 5000         Tel: +61 3 8564 5000           NATA# 1261 Site# 1254         NATA# 1261 Site# 25403 NATA# 1261			owar Roa n 45 2 9900 8 261 Site	ad 400 # 1821	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 Tel: +61 2 6113 8091 217 NATA# 1261 Site# 25466		Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Tel: +61 7 3902 4600 466 NATA# 1261 Site# 20794		Newcastle 1/2 Frost Drive Mayfield West NSW 2304 Tel: +61 2 4968 8448 NATA# 1261 4 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370	NZBN: 942904602495 Auckland 35 O'Rorke Road Penrose, Auckland 1061 Tel: +64 9 526 45 51 IANZ# 1327	4 Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 Tel: 0800 856 450 IANZ# 1290
Co Ad	mpany Name: dress:	Geo Desigr 14 Danbula Smithfield QLD 4878	Pty Ltd n Street				Oi Re Pl Fa	rder N eport hone: ax:	<b>).:</b> : 96 07	7462 4038 2702			Received: Due: Priority: Contact Name:	Feb 27, 2023 8:40 Mar 6, 2023 5 Day Christina Stallard-3	AM Smith
Pro Pro	Project Name:97-111 DAVIDSON ST PORT DOUGLASProject ID:23003AA - D												Eurofins Analytical	Services Manager	: Zoe Flynn
Sample Detail				ASS Groundwater Quality Suite - WA Department of Environment and	Moisture Set	Chromium Suite - NASSG (Excluding ANC)									
Melk	ourne Laborato	ry - NATA # 13	261 Site # 1254			X		v							
13	BH04 3 0-3 5m	Feb 03 2023		B23-Fe	0064300		×	x							
14	BH04 3.5-4.0m	Feb 03, 2023	Soil	B23-Fe	0064301		<u>х</u>	X							
15	BH05 3.0-3.5m	Feb 03, 2023	Soil	B23-Fe	0064302		X	X							
16	BH06 3.5-4.0m	Feb 06, 2023	Soil	B23-Fe	0064303		Х	x							
17	BH02	Jan 30, 2023	Wate	er B23-Fe	0064304	X									
Test	Counts		· · ·			1	16	16							



#### Internal Quality Control Review and Glossary

#### General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- 9. This report replaces any interim results previously issued.

#### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA. If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

#### Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	μg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit		

#### Terms

АРНА	American Public Health Association
сос	Chain of Custody
СР	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
ТВТО	Tributyltin oxide (bis-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

#### **QC** - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

#### **QC Data General Comments**

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 4. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- 5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- 6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



### **Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code		
LCS - % Recovery							I	1	
Actual Acidity (NLM-3.2)									
pH-KCL (NLM-3.1)			%	90			80-120	Pass	
Titratable Actual Acidity (NLM-3.2)			%	84			80-120	Pass	
LCS - % Recovery							F		
Potential Acidity - Chromium Redu	ucible Sulfur								
Chromium Reducible Sulfur (s-SCr)	(NLM-2.1)		%	107			80-120	Pass	
LCS - % Recovery							F		
Extractable Sulfur									
HCI Extractable Sulfur			%	105			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate							1		
Net Acidity (Excluding ANC)				Result 1	Result 2	RPD			
CRS Suite - Net Acidity - NASSG (Excluding ANC)	B23-Fe0064288	СР	% S	< 0.02	N/A	N/A	30%	Pass	
CRS Suite - Net Acidity - NASSG (Excluding ANC)	B23-Fe0064288	СР	mol H+/t	< 10	N/A	N/A	20%	Pass	
CRS Suite - Liming Rate - NASSG (Excluding ANC)	B23-Fe0064288	СР	kg CaCO3/t	< 1	N/A	N/A	30%	Pass	
Duplicate							•		
Actual Acidity (NLM-3.2)				Result 1	Result 2	RPD			
pH-KCL (NLM-3.1)	B23-Fe0064288	CP	pH Units	5.8	5.7	<1	20%	Pass	
Titratable Actual Acidity (NLM-3.2)	B23-Fe0064288	CP	mol H+/t	< 2	< 2	<1	20%	Pass	
Titratable Actual Acidity (NLM-3.2)	B23-Fe0064288	CP	% pyrite S	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Potential Acidity - Chromium Redu	ucible Sulfur			Result 1	Result 2	RPD			
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	B23-Fe0064288	СР	% S	0.007	0.007	<1	20%	Pass	
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	B23-Fe0064288	СР	mol H+/t	4.1	4.1	<1	30%	Pass	
Duplicate									
Extractable Sulfur				Result 1	Result 2	RPD			
Sulfur - KCI Extractable	B23-Fe0064288	CP	% S	N/A	N/A	N/A	30%	Pass	
HCI Extractable Sulfur	B23-Fe0064288	CP	% S	N/A	N/A	N/A	20%	Pass	
Duplicate									
Retained Acidity (S-NAS)				Result 1	Result 2	RPD			
Net Acid soluble sulfur (SNAS) NLM-4.1	B23-Fe0064288	СР	% S	N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur (s-SNAS) NLM-4.1	B23-Fe0064288	СР	% S	N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur (a-SNAS) NI M-4.1	B23-Fe0064288	CP	mol H+/t	N/A	N/A	N/A	30%	Pass	
Duplicate									
Acid Neutralising Capacity (ANCbt	)			Result 1	Result 2	RPD			
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	, B23-Fe0064288	СР	% CaCO3	N/A	N/A	N/A	20%	Pass	
Acid Neutralising Capacity - (s-	B23-Fe0064288	CP	% S	N/A	N/A	N/A	30%	Pass	
ANC Fineness Factor B23-Fe0064288 CP		factor	1.5	1.5	<1	30%	Pass		
Duplicate									
Net Acidity (Including ANC)				Result 1	Result 2	RPD			
CRS Suite - Net Acidity - NASSG	B23-Fe0064288	CP	% S	< 0.02	< 0.02	<1	30%	Pass	
CRS Suite - Net Acidity - NASSG	B23-Fe0064288	CP	mol H+/t	< 10	< 10	~1	30%	Pass	
CRS Suite - Liming Rate - NASSG	B23-Fe0064289	CP		~ 1	~ 1	~1	30%	Pase	
	D2010004200		ny CacO3/I			~ 1	0070	1 435	



Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	B23-Fe0064288	24	22	5.8	30%	Pass			
Duplicate							-		
Net Acidity (Excluding ANC)				Result 1	Result 2	RPD			
CRS Suite - Net Acidity - NASSG (Excluding ANC)	B23-Fe0064298	СР	% S	0.09	N/A	N/A	30%	Pass	
CRS Suite - Net Acidity - NASSG (Excluding ANC)	B23-Fe0064298	СР	mol H+/t	55	N/A	N/A	20%	Pass	
CRS Suite - Liming Rate - NASSG (Excluding ANC)	B23-Fe0064298	СР	kg CaCO3/t	4.2	N/A	N/A	30%	Pass	
Duplicate									
Actual Acidity (NLM-3.2)				Result 1	Result 2	RPD			
pH-KCL (NLM-3.1)	B23-Fe0064298	CP	pH Units	4.5	4.5	<1	20%	Pass	
Titratable Actual Acidity (NLM-3.2)	B23-Fe0064298	CP	mol H+/t	21	21	2.5	20%	Pass	
Titratable Actual Acidity (NLM-3.2)	B23-Fe0064298	CP	% pyrite S	0.033	0.034	2.5	30%	Pass	
Duplicate							r		
Potential Acidity - Chromium Red	ucible Sulfur		1	Result 1	Result 2	RPD			
Chromium Reducible Sulfur (s-SCr) (NLM-2.1)	B23-Fe0064298	СР	% S	0.055	0.053	<1	20%	Pass	
Chromium Reducible Sulfur (a-SCr) (NLM-2.1)	B23-Fe0064298	СР	mol H+/t	35	33	3.9	30%	Pass	
Duplicate				1					
Extractable Sulfur				Result 1	Result 2	RPD			
Sulfur - KCI Extractable	B23-Fe0064298	CP	% S	0.010	0.010	1.6	30%	Pass	
HCI Extractable Sulfur B23-Fe0064298 CP				0.014	0.014	<1	20%	Pass	
Duplicate								1	
Retained Acidity (S-NAS)				Result 1	Result 2	RPD			
Net Acid soluble sulfur (SNAS) NLM-4.1	B23-Fe0064298	СР	% S	0.007	0.007	2.3	30%	Pass	
Net Acid soluble sulfur (s-SNAS) NLM-4.1	B23-Fe0064298	CP	% S	0.006	0.005	2.3	30%	Pass	
Net Acid soluble sulfur (a-SNAS) NLM-4.1	B23-Fe0064298	СР	mol H+/t	3.4	3.4	2.3	30%	Pass	
Duplicate									
Acid Neutralising Capacity (ANCbt	)		1	Result 1	Result 2	RPD			
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	B23-Fe0064298	СР	% CaCO3	N/A	N/A	N/A	20%	Pass	
Acid Neutralising Capacity - (s- ANCbt) (NLM-5.2)	B23-Fe0064298	CP	% S	N/A	N/A	N/A	30%	Pass	
ANC Fineness Factor	B23-Fe0064298	CP	factor	1.5	1.5	<1	30%	Pass	
Duplicate								1	
Net Acidity (Including ANC)	1			Result 1	Result 2	RPD			
CRS Suite - Net Acidity - NASSG (Including ANC)	B23-Fe0064298	CP	% S	0.09	0.09	4.5	30%	Pass	
CRS Suite - Net Acidity - NASSG (Including ANC)	B23-Fe0064298	СР	mol H+/t	55	58	4.5	30%	Pass	
CRS Suite - Liming Rate - NASSG (Including ANC)	B23-Fe0064298	CP	kg CaCO3/t	4.2	4.3	4.5	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	B23-Fe0064298	CP	%	22	23	1.5	30%	Pass	



### Comments

N/A
Yes
Yes
Yes
Yes
N/A
No
, , ,

#### **Qualifier Codes/Comments**

Code Description

S01	Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m3'
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl if greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period

#### Authorised by:

Paige Howarth Jonathon Angell Jonathon Angell Analytical Services Manager Senior Analyst-Sample Properties Senior Analyst-SPOCAS

Glenn Jackson General Manager

Final Report - this report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Geo Design Pty Ltd 14 Danbulan Street Smithfield QLD 4878



NATA Accredited Accreditation Number 1261 Site Number 20794

Accredited for compliance with ISO/IEC 17025 – Testing NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

## Attention:

### Christina Stallard-Smith

Report Project name Project ID Received Date 967462-W 97-111 DAVIDSON ST PORT DOUGLAS 23003AA - D Feb 27, 2023

Client Somple ID			Duise
			BH02
			vvater
Eurofins Sample No.			B23-Fe0064304
Date Sampled			Jan 30, 2023
Test/Reference	LOR	Unit	
Acidity (as CaCO3)	10	mg/L	< 10
Ammonia (as N)	0.01	mg/L	0.63
Chloride	1	mg/L	200
Conductivity (at 25 °C)	10	uS/cm	700
Nitrate & Nitrite (as N)	0.05	mg/L	< 0.05
pH (at 25 °C)	0.1	pH Units	7.7
Phosphate total (as P)	0.01	mg/L	0.14
Phosphorus filterable reactive (as P)	0.01	mg/L	0.15
Sulphate (as S)	5	mg/L	7.3
Total Dissolved Solids Dried at 180 °C ± 2 °C	10	mg/L	500
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	2.6
Total Nitrogen (as N)*	0.2	mg/L	2.6
Alkalinity (speciated)			
Total Alkalinity (as CaCO3)	20	mg/L	6000
Heavy Metals			
Aluminium	0.05	mg/L	15
Aluminium (filtered)	0.05	mg/L	0.07
Arsenic (filtered)	0.001	mg/L	< 0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001
Iron	0.05	mg/L	9.4
Iron (filtered)	0.05	mg/L	0.09
Manganese (filtered)	0.005	mg/L	0.12
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	< 0.001
Zinc (filtered)	0.005	mg/L	0.11
Alkali Metals			
Sodium	0.5	mg/L	110



### Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
ASS Groundwater Quality Suite - WA Department of Environment and Conservation	vation		
Acidity (as CaCO3)	Melbourne	Mar 01, 2023	14 Days
- Method: LTM-INO-4210 Acidity			
Ammonia (as N)	Melbourne	Mar 01, 2023	28 Days
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
Chloride	Brisbane	Mar 01, 2023	28 Day
- Method: LTM-INO-4090 Chloride by Discrete Analyser			
Conductivity (at 25 °C)	Brisbane	Mar 02, 2023	28 Days
- Method: APHA 2510B			
pH (at 25 °C)	Brisbane	Mar 02, 2023	0 Days
- Method: APHA 4500-H+ B. Electrometric Method			
Phosphate total (as P)	Melbourne	Mar 01, 2023	28 Days
- Method: LTM-INO-4040 Phosphate by CFA			
Phosphorus filterable reactive (as P)	Melbourne	Mar 01, 2023	2 Days
- Method: APHA 4500-P Phosphate (filterable reactive)			
Sulphate (as S)	Melbourne	Mar 01, 2023	28 Days
- Method: LTM-INO-4110 Sulfate by Discrete Analyser			
Total Dissolved Solids Dried at 180 °C ± 2 °C	Brisbane	Mar 06, 2023	7 Days
- Method: APHA 2540 C			
Alkalinity (speciated)	Melbourne	Mar 01, 2023	14 Days
- Method: LTM-INO-4250 Alkalinity by Electrometric Titration			
Heavy Metals	Brisbane	Mar 01, 2023	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Acid Sulphate Metals : Metals M9 filtered	Brisbane	Mar 17, 2023	180 Days
- Method: USEPA 6010/6020 Heavy Metals			
Alkali Metals	Brisbane	Mar 01, 2023	180 Days
- Method: USEPA 6010 Alkali Metals			
Total Nitrogen Set (as N)			
Nitrate & Nitrite (as N)	Melbourne	Mar 01, 2023	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
Total Kjeldahl Nitrogen (as N)	Melbourne	Mar 01, 2023	28 Days
- Method: APHA 4500-Norg B,D Total Kjeldahl Nitrogen by FIA			

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web: www.eurofins.com.au email: EnviroSales@eurofins.com		rins .com	Melbourne         Geelong         Sydr           6 Monterey Road         19/8 Lewalan Street         179 l           Dandenong South         Grovedale         Girra           VIC 3175         VIC 3216         NSW           Tel: +61 3 8564 5000         Tel: +61 3 8564 5000         Tel: +61 3 8564 5000           NATA# 1261 Site# 1254         NATA# 1261 Site# 25403         NATA#		Sydney           lan Street         179 Mag           Girrawe         NSW 21           NSW 25         100           8564 5000         Tel: +61           61 Site# 25403         NATA#	Iney Magowar Road 'aween W 2145 : +61 2 9900 8400 TA# 1261 Site# 182		Canberra id Unit 1,2 Dacre S Mitchell ACT 2911 400 Tel: +61 2 6113 # 18217 NATA# 1261 Sit		Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Tel: +61 7 3902 4600 6 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 Tel: +61 2 4968 8448 NATA# 1261 4 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 Tel: +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 Tel: +64 9 526 45 51 IANZ# 1327	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 Tel: 0800 856 450 IANZ# 1290
Company Name:       Geo Design Pty Ltd         Address:       14 Danbulan Street         Smithfield       QLD 4878						O Re Pl Fa	rder N eport none: ax:	<b>lo.:</b> #: 967 07	7462 4038 2702		Received: Due: Priority: Contact Name:	Feb 27, 2023 8:40 Mar 6, 2023 5 Day Christina Stallard-S	AM Smith	
Pre Pre	oject Name: oject ID:	97-111 DAV 23003AA - [	'IDSON ST PC D	ORT DOUGLA	S							Eurofins Analytical	Services Manager	: Zoe Flynn
Sample Detail					ASS Groundwater Quality Suite - WA Department of Environment and	Moisture Set	Chromium Suite - NASSG (Excluding ANC)							
Mell	oourne Laborato	ory - NATA # 12	261 Site # 125	4		Х								
Bris	bane Laboratory	/ - NATA # 126	1 Site # 2079	4		Х	X	Х	-					
Exte	rnal Laboratory								-					
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID				-					
1	BH01 3.0-3.5m	Jan 30, 2023		Soil	B23-Fe0064288		X	Х	-					
2	BH01 3.5-4.0m	Jan 30, 2023		Soil	B23-Fe0064289		X	X						
3	BH02 1.0-1.5m	Jan 30, 2023		Soil	B23-Fe0064290		X	X	-					
4	BH02 1.5-2.0m	Jan 30, 2023		Soil	B23-Fe0064291		X	X	-					
5	BH02 2.0-2.5m	Jan 30, 2023		Soil	B23-Fe0064292		X	X						
6	BH02 2.5-3.0m	Jan 30, 2023		50II Doil	B23-Fe0064293			×						
0	BH02 3.0-3.5m	Jan 31, 2023		Soil	B23-F00064294		Ŷ	×						
9	BH04 1 0-1 5m	Feb 03 2022		Soil	B23-Fe0004295		x	x	1					
10	BH04 1 5-2 0m	Feb 03, 2023		Soil	B23-Fe0064290		x	x	1					
11	BH04 2.0-2.5m	Feb 03, 2023		Soil	B23-Fe0064298	1	x	x	1					
12	BH04 2.5-3.0m	Feb 03, 2023		Soil	B23-Fe0064299	1	х	Х	1					
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15	BH05 3.0-3.5m	Feb 03, 2023	Soil	B23-Fe	0064302		X	X							
16	BH06 3.5-4.0m	Feb 06, 2023	Soil	B23-Fe	0064303		Х	x							
17	BH02	Jan 30, 2023	Wate	er B23-Fe	0064304	X									
Test	Counts		· · ·			1	16	16							



#### Internal Quality Control Review and Glossary

#### General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. Information identified on this report with blue colour, indicates data provided by customer that may have an impact on the results.
- 9. This report replaces any interim results previously issued.

#### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA. If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

#### Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	μg/L: micrograms per litre
ppm: parts per million	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony forming unit		

#### Terms

АРНА	American Public Health Association
сос	Chain of Custody
СР	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
ТВТО	Tributyltin oxide (bis-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

#### **QC** - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

#### **QC Data General Comments**

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 4. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- 5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- 6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



### **Quality Control Results**

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Ammonia (as N)	mg/L	< 0.01		0.01	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05		0.05	Pass	
Phosphate total (as P)	mg/L	< 0.01		0.01	Pass	
Sulphate (as S)	mg/L	< 5		5	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	mg/L	< 10		10	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2		0.2	Pass	
Method Blank						
Alkalinity (speciated)						
Total Alkalinity (as CaCO3)	mg/L	< 20		20	Pass	
Method Blank						
Heavy Metals						
Aluminium	mg/L	< 0.05		0.05	Pass	
Arsenic (filtered)	mg/L	< 0.001		0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002		0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001		0.001	Pass	
Iron	mg/L	< 0.05		0.05	Pass	
Iron (filtered)	mg/L	< 0.05		0.05	Pass	
Manganese (filtered)	mg/L	< 0.005		0.005	Pass	
Nickel (filtered)	mg/L	< 0.001		0.001	Pass	
Selenium (filtered)	mg/L	< 0.001		0.001	Pass	
Zinc (filtered)	mg/L	< 0.005		0.005	Pass	
Method Blank						
Alkali Metals						
Sodium	mg/L	< 0.5		0.5	Pass	
LCS - % Recovery						
Ammonia (as N)	%	86		70-130	Pass	
Chloride	%	113		70-130	Pass	
Nitrate & Nitrite (as N)	%	118		70-130	Pass	
Phosphate total (as P)	%	116		70-130	Pass	
Sulphate (as S)	%	116		70-130	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	%	93		70-130	Pass	
Total Kjeldahl Nitrogen (as N)	%	92		70-130	Pass	
LCS - % Recovery				•		
Alkalinity (speciated)						
Total Alkalinity (as CaCO3)	%	73		70-130	Pass	
LCS - % Recovery				•		
Heavy Metals						
Aluminium	%	97		80-120	Pass	
Aluminium (filtered)	%	91		80-120	Pass	
Arsenic (filtered)	%	106		80-120	Pass	
Cadmium (filtered)	%	101		80-120	Pass	
Chromium (filtered)	%	102		80-120	Pass	
Iron	%	104		80-120	Pass	
Iron (filtered)	%	101		80-120	Pass	
Manganese (filtered)	%	99		80-120	Pass	
Nickel (filtered)	%	99		80-120	Pass	
Selenium (filtered)	%	98		80-120	Pass	
Zinc (filtered)	%	98		80-120	Pass	
LCS - % Recovery		,	· · · · · ·			
Alkali Metals						
Sodium	%	90		80-120	Pass	


# **Environment Testing**

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery	•								
				Result 1					
Chloride	B23-Fe0060360	NCP	%	113			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M23-Ma0001203	NCP	%	111			70-130	Pass	
Spike - % Recovery					1 1				
Heavy Metals	I			Result 1					
Aluminium	B23-Ma0000030	NCP	%	98			75-125	Pass	
Aluminium (filtered)	B23-Ma0001174	NCP	%	102			75-125	Pass	
Arsenic (filtered)	B23-Fe0060276	NCP	%	125			75-125	Pass	
Cadmium (filtered)	B23-Ma0001174	NCP	%	101			75-125	Pass	
Chromium (filtered)	B23-Ma0001174	NCP	%	97			75-125	Pass	
Iron	B23-Ma0000030	NCP	%	83			75-125	Pass	
Iron (filtered)	B23-Ma0001174	NCP	%	90			75-125	Pass	
Manganese (filtered)	B23-Ma0001174	NCP	%	96			75-125	Pass	
Nickel (filtered)	B23-Ma0001174	NCP	%	89			75-125	Pass	
Selenium (filtered)	B23-Ma0001174	NCP	%	96			75-125	Pass	
Zinc (filtered)	B23-Ma0001174	NCP	%	87			75-125	Pass	
Spike - % Recovery				-			1		
Alkali Metals	I			Result 1					
Sodium	B23-Ma0037426	NCP	%	89			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Ammonia (as N)	S23-Fe0064419	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Chloride	B23-Fe0060360	NCP	mg/L	190	190	1.2	30%	Pass	
Conductivity (at 25 °C)	B23-Fe0063931	NCP	uS/cm	18000	18000	1.2	30%	Pass	
Nitrate & Nitrite (as N)	S23-Fe0064419	NCP	mg/L	0.33	0.33	<1	30%	Pass	
pH (at 25 °C)	B23-Fe0064138	NCP	pH Units	8.1	8.1	<1	30%	Pass	
Phosphate total (as P)	W23-Fe0061607	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Sulphate (as S)	M23-Ma0001695	NCP	mg/L	9.4	9.6	2.6	30%	Pass	
Total Dissolved Solids Dried at 180 °C ± 2 °C	B23-Fe0064140	NCP	mg/L	3900	3700	2.9	30%	Pass	
Total Kjeldahl Nitrogen (as N)	B23-Fe0064304	CP	mg/L	2.6	2.4	7.9	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Aluminium	B23-Fe0060276	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Aluminium (filtered)	B23-Ma0001173	NCP	mg/L	0.18	0.17	5.1	30%	Pass	
Arsenic (filtered)	B23-Ma0001173	NCP	mg/L	0.002	0.002	1.4	30%	Pass	
Cadmium (filtered)	B23-Ma0001173	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium (filtered)	B23-Ma0001173	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iron	B23-Fe0060276	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Iron (filtered)	B23-Ma0001173	NCP	mg/L	0.29	0.29	1.7	30%	Pass	
Manganese (filtered)	B23-Ma0001173	NCP	mg/L	0.032	0.032	<1	30%	Pass	
Nickel (filtered)	B23-Ma0001173	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Selenium (filtered)	B23-Ma0001173	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc (filtered)	B23-Ma0001173	NCP	mg/L	0.008	0.008	1.8	30%	Pass	
Duplicate									
Alkali Metals				Result 1	Result 2	RPD			
Sodium	B23-Fe0060276	NCP	mg/L	2600	2700	1.6	30%	Pass	



# **Environment Testing**

#### Comments

Sample Integrity	
Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	N/A
Some samples have been subcontracted	No

#### Authorised by:

Paige Howarth Jonathon Angell Jonathon Angell Scott Beddoes Analytical Services Manager Senior Analyst-Inorganic Senior Analyst-Metal Senior Analyst-Inorganic

Glenn Jackson General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested
- \* Indicates NATA accreditation does not cover the performance of this service
- Measurement uncertainty of test data is available on request or please click here.

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Attachment 8

Flood Study





The Davidson by GURNER<sup>™</sup> Luxury Hotel and Private Homes - Hydraulic Report

JBP

scientists and engineers

Final Report 24 April 2023



D



### JBP Project Manager

Daniel Rodger JBPacific Suite T46, 477 Boundary Street Spring Hill QLD 4000 Australia

### **Revision History**

<b>Revision Ref / Date Issued</b>	Amendments	Issued to
Final 13/04/2023		GH
Final 24/04/2023		GH and GURNER <sup>™</sup>

### Contract

This report describes work commissioned by Gary Hunt, on behalf of Hunt Design, by an email dated 6th, 7th and 9th December 2022. Lauchlan Bye of JBP carried out this work.

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The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by JBP has not been independently verified by JBP, unless otherwise stated in the report.

The methodology adopted and the sources of information used by JBP in providing its services are outlined in this report. The work described in this report was undertaken between January 2023 and April 2023 and is based on the conditions encountered and the information available during this period of time. The scope of this report and the services are accordingly factually limited by these circumstances.

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### **Executive Summary**

JBPacific were commissioned by GURNER<sup>™</sup> and Hunt Design to undertake a flood study of the Packers Creek catchment for the proposed The Davidson by GURNER<sup>™</sup> which is for a Luxury Hotel and Private Homes. This involved investigating the proposed developments vulnerability to flooding and storm tide inundation and to investigate the impact the development might have on surrounding properties. The project involved data collection, hydrological analysis, hydraulic modelling and storm tide assessment.

Data obtained for the study included topographic and bathymetry data, survey levels of the current site and proposed development design and data from the Tide Inundation Methodologies Study (JBP, 2020).

The hydrological modelling was conducted using a hydrological model developed in the Unified River Basin Simulator (URBS) software. The catchment was delineated into sub-catchments to be used in the URBS model. The URBS Initial Loss (IL) and Continuing Loss (CL) were obtained from the 2021 Mowbray Flood Study. Given the absence of a gauging station in the study area, the model was validated using the Quantile Regression Technique (QRT). URBS and QRT peak flows were compared at the sub-catchments for the site of interest. At the site location, the URBS model had a flow of 372.3 m<sup>3</sup>/s and QRT had a flow of 369.1 m<sup>3</sup>/s. Temporal patterns and design rain inputs were taken from were obtained from the ARR DataHub. These were used to create the 1% AEP design rainfalls for the current and 2100 climate which were used in URBS to create the design flows for the hydraulic model.

The hydraulic analysis was undertaken in TUFLOW to define the flood extent and peak flood levels. Hydraulic model roughness was defined using land use data set obtained from the DSC Planning Scheme. The ocean boundary was set 900m offshore from the Packers Creek entrance to simulate ocean inflows. Inflow hydrographs for the design hydraulic model simulations. Durations and temporal patterns were obtained for every design AEP for sub-catchments representing the site location, outlet and upstream conditions. Simulations were run for a critical duration of 36 hours with ensemble 8 and a critical duration of 3 hours and ensemble 1. Rainfall intensity was projected to represent a 2100 horizon under the RCP8.5 pathway.

Maps of flood depth and water level were produced for the undeveloped, developed and 2100 climate case. The flood mapping showed that the proposed extent of the site was not impacted by flood waters for any of the modelled cases. The 2100 climate case had a small area of depth at the proposed entry to the underground parking. This was caused by the global initial water level being applied within the car park, this is not a concern in terms of the flooding for the site. Storm tide maps also indicated that storm tide flooding would not reach the site for the current and 2100 climate. An afflux map was created that compared the existing and developed case. The afflux map indicated no change, meaning that surrounding properties would not be adversely impacted by the development.



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# Abbreviations

AEP	Annual Exceedance Probability
ARI	Average Recurrence Interval
CL	Continuing Loss
DEM	Digital Elevation Model
ELVIS	Elevation Information System
GCMs	Global Climate Models
HPC	Heavily Parallelised Computing
IL	Initial Loss
LiDAR	Light Detection and Ranging
QRT	Quantile Regression Technique
STIMS	Storm Tide Inundation Methodologies Study
URBS	Unified River Basin Simulator



### 1 Introduction

This project was undertaken by JBPacific on behalf of GURNER<sup>™</sup> and Hunt Design to develop a new flood study for the proposed development of The Davidson by GURNER<sup>™</sup>, Luxury Hotel and Private Homes. The site location is in Port Douglas, located in the Packers Creek catchment in Far North Queensland. The project included analysis of extreme rainfall, catchment delineation, hydrology modelling, hydraulic modelling and a flood risk assessment. The project has involved the creation of the base case scenario before revising it to become the developed scenario with the proposed development design topography included. These scenarios were modelled for both current climate and with the 2100 climate horizon under the RCP8.5 pathway. The project modelled the storm surge for the current climate and the 2100 climate. The study investigated whether the developed finished surface will cause impacts to surrounding areas and determined the required the finished floor levels to provide adequate freeboard. This includes a comparison of the developed case TUFLOW model to the peak flood water level surfaces of the existing cases.

#### 1.1 Proposed Development

The Davidson by GURNER<sup>™</sup>, Luxury Hotel and Private Homes includes a large central three-story building surrounded by multiple two-story accommodation units. The site also contains shared amenities, recreational facilities and underground parking. The proposed design layout is provided in Appendix A.

### 2 Available data

#### 2.1 Existing Flood Model Data

#### 2.1.1 Storm Tide Inundation Methodologies Study (2020)

A Storm Tide Inundation Methodologies Study (STIMS) was completed by JBPacific in 2020. This mapped storm tide inundation throughout the LGA, considering the effects of vegetation and coastal systems. The outputs included inundation depth maps and depth grids for each scenario. The study area included Port Douglas where the site is located. The study has been used to support the assessment of flood behaviour in the lower Packers Creek catchment.

#### 2.2 Topographic Data

A combination of several topographic and bathymetric datasets are available for this project (Figure 2-1):

- Topographic Data: A Light Detection and Ranging (LiDAR) 1m resolution data set was downloaded from Geoscience Australia's Elevation Information System (ELVIS). Where the 1m data set was not available, Elevation data above mean sea level is available through the QLD 5m LiDAR Digital Elevation Model (DEM). The 5m LiDAR DEM has been sourced from more than 200 individual LiDAR surveys conducted between 2001 and 2015<sup>1</sup>.
- Bathymetric Data: Offshore bathymetry was obtained between the coastline to the outer Great Barrier Reef by the DeepReef 30m dataset<sup>2</sup>. The GBR30 bathymetric dataset was developed in collaboration between James Cook University, Geoscience Australia, and the Australian Hydrographic Office to compile all available digital bathymetry data to develop regional-scale, 30m resolution grids. This contains deep-water multibeam surveys, airborne lidar bathymetry and chart data, all edited as point clouds to remove noise, and merged into a consistent WGS84 horizontal datum, and an approximate mean sea level vertical datum.

<sup>1</sup> Geoscience Australia 2015. Digital Elevation Model (DEM) of Australia derived from LiDAR 5 Metre Grid. Geoscience Australia, Canberra. http://pid.geoscience.gov.au/dataset/ga/89644

<sup>2</sup> Beaman, R.J. (2018) "100/30 m-resolution bathymetry grids for the Great Barrier Reef", SSSI Hydrography Commission Seminar, March 2018. Surveying and Spatial Sciences Institute (SSSI), Canberra, Australia.





Figure 2-1. Overview of topographic information available within the catchment

#### 2.3 Site Survey Data

Survey data was supplied by the client providing the existing elevations at the site and the proposed design elevations for the proposed development ground level. The survey data were converted into elevation maps to be included in the base and developed model case. The elevation of the proposed development is shown in Figure 2-2.





Figure 2-2. Ground level elevation of the proposed development

#### 2.4 Coastal Processes Information

#### 2.4.1 Tide levels

Tidal levels have been sourced from the Maritime Safety Queensland (MSQ) Queensland tide tables 2021 for Port Douglas and are shown in Table 2-1

Table 2-1:	Tide	levels	at Po	ort Douglas
------------	------	--------	-------	-------------

Tide level	2021 (mLAT)	2021 (mAHD)*
HAT	3.36	1.78
MHWS	2.49	0.91
MHWN	1.83	0.25
MSL	1.6	0.02
MLWN	1.37	-0.21
MLWS	0.7	-0.88
PSM10077	6.058	4.48
AHD	1.58	0.00
LAT	0	-1.58
*: AHD guoted based on Permanent Mark	10077, referenced from Queensland Gl	obe.



### 3 Hydrological Analysis

#### 3.1 Overview

The Packers Creek catchment covers an area of approximately 20.4 km<sup>2</sup>. The catchment topography has a maximum elevation of approximately 380 mAHD towards the south, which falls to sea level at the creek entrance.

#### 3.2 URBS Model Configuration

Catchment-wide hydrologic conditions have been analysed using a hydrological model developed in the Unified River Basin Simulator (URBS) software. URBS is a semi-distributed nonlinear rainfallrunoff model, which combines the rainfall-runoff and runoff routing components of the modelling process and allows users to configure the model to match the characteristics of individual catchments.

URBS has the ability to simulate large river basins, split catchment hydrological processes and undertake ARR2019 ensemble temporal pattern modelling. Adopting URBS for the hydrologic analysis is consistent with industry-standard approaches and provides a robust method to estimating rainfall-runoff across the catchment.

#### 3.3 Digital Elevation Model

The catchment extent included a combination of 1m and 5m resolution LiDAR DEM tiles and 30m bathymetry data, as summarised within Section 2.2. DEM tiles were sourced from recent model setups completed for the catchment and the Geoscience Australia's Elevation Information System (ELVIS).

#### 3.4 Catchment Delineation

The catchment was delineated into sub-catchments to be used in the URBS model. The catchment delineation is shown in Figure 3-1. A summary of the sub-catchment information used in the URBS model schematisation is provided in Table 3-1.

	Table 3-1:	Sub-catchment	parameters
--	------------	---------------	------------

Model	Number of sub-	Maximum sub-	Minimum sub-	Average sub-
	catchments	catchment area	catchment area	catchment area
URBS	40	91.3 Ha	15.7 Ha	51.0 Ha





Figure 3-1. Packers Creek sub-catchment delineation



#### 3.5 URBS Hydrology Model

The URBS model has been applied in a 'split' mode, where the effects of the sub-catchment and channel routing are calculated separately. First, the excess rainfall on a sub-catchment is routed to the creek channel, with the inflow assumed to occur at the centroid of the sub-catchment.

The lag of the sub-catchment storage is assumed proportional to the square root of the subcatchment area. Next, the inflow is routed along a reach using a linear Muskingum method, where lag time is assumed to be proportional to the length of the reach. The following URBS parameters have been adopted:

- alpha = 0.006#
- beta = 1.0
- IL = 27.5
- CL = 2.3

The Initial Loss (IL) and Continuing Loss (CL) were obtained from the 2021 Mowbray Flood Study.

# alpha is within the standard range as stream slope is being applied as a variable

#### 3.6 URBS Model Validation

Given the absence of a stream flow gauging station within the study catchment, the model was validated using the Quantile Regression Technique (QRT). This was done at the site of interest, the catchment outlet and two locations upstream of the site. Table 3-2 shows a comparison of the flows from URBS and the QRT.

Table 3-2: URBS and QRT flows at sub-catchments of interest

Model	Sub-catchment 38 (site location)	Sub-catchment 1 (outlet)	Sub-catchment 14	Sub-catchment 26
URBS	372.3	406.9	179.9	58.5
QRT	369.1	406.5	223.0	93.2

#### 3.7 Temporal Patterns

The ARR DataHub was used to obtain temporal rainfall pattern ensembles for the hydrologic model. Four sets of temporal patterns were obtained, which represent "frequent", "intermediate", and "rare" events and events within the areal "Wet Tropics" region for the Packers Creek catchment.

The rare temporal pattern sets contained storm durations of 15 mins, 30 mins, 45 mins, 1 hour, 1.5 hours, 2 hours, 3 hours, 4.5 hours, 6 hours, 9 hours, 12 hours, 18 hours, 24 hours, 30 hours, 36 hours, 48 hours, 72 hours, 96 hours, and 120 hours while the areal set contained storm durations of 12hours, 18 hours, 24 hours, 36 hours, 48 hours, 72 hours, 96 hours, and 120 hours, 72 hours, 96 hours, 18 hours, 24 hours, 26 hours, 48 hours, 72 hours, 18 hours, 26 hours, 26 hours, 48 hours, 72 hours, 18 hours, 27 hours, 96 hou

Each of the four temporal pattern sets contained ten ensembles for each duration. Figure 3-2 shows the variability that can be expected between storm frequencies and ensembles for a 72-hour storm duration.





Figure 3-2. Temporal pattern ensemble variability for a 72-hour duration

#### 3.8 ARR19 Design Rainfall Inputs

The following additional inputs are required for URBS to perform the design rainfall results and analysis. Details of these inputs can be found in the URBS manual:

- ARRTPZone = Wet Tropics
- FAF = 1
- TAF = 1
- useARF=True
- Location=Northern Coastal
- longARF = 0.326,0.223,0.442,0.323,0.0013,0.58,-0.374,0.013,-0.0015
- shortARF = 0.287,0.265,0.439,0.360,0.00226,0.226,0.125,0.0141,0.213,-0.021
- Area=20.4
- usePreBurst = TRUE
- ARI = 100
- Durations = 1hour, 2hours, 3hours, 6hours, 12hours, 18hours, 24hours, 48hours, 72hours, 96hours, 120hours

#### 3.9 URBS ARR19 Results

Hydrological analysis was performed using URBS and data accessed from the ARR Data Hub and the BoM website. Duration hydrographs from 1 hour to 120 hours were assessed to determine critical durations at key reporting points, including the Foxton Bridge and the catchment outlet.

Figure 3-3 shows the ensemble results for each duration and return period as a box plot for the site location. The small red box is the peak flow for the selected pattern within each duration with the red line indicating the mean peak flow of all of the pattern within each duration. This indicates that the 3hr duration event is the critical duration as the selected temporal patter results in the peak flow for the site.





Figure 3-3. Box and whisker plot of ensemble temporal patterns modelled using URBS and reported at the site location for the 1% AEP (100 year ARI) design storm event.



# 4 Hydraulic Analysis

#### 4.1 Overview

The hydrodynamic flood, tidal and storm surge processes occurring throughout the Packers Creek catchment have been simulated using hydraulic modelling software. The TUFLOW software package was used to develop a two-dimensional (2D) hydraulic model. TUFLOW version 2020-10-AB was used in its Heavily Parallelised Computing (HPC) configuration. The model grid resolution was set to 2.5m.

#### 4.2 Hydraulic Model Setup

The model development has included the following steps:

• Establishing internal and external model boundaries (inflows and downstream outflow/tidal)

• Terrain modelling; Building a digital terrain using Light Detection and Ranging (LiDAR), DEM, and bathymetric data

- Developing a model roughness using land use maps
- Specifying model outputs

#### 4.2.1 Boundary Conditions

The ocean boundary extends 900m offshore from the Packers Creek entrance. This is positioned away from the river mouth to remove boundary impacts on water levels whilst capturing the nearshore region and any associated sandbars.

#### 4.2.2 Hydraulic Model Roughness

Hydraulic model roughness was defined using land use data set obtained from the DSC Planning Scheme (2018). The waterway data was created using the extent of the bathymetry data. The area beyond the river entrance clipped away from the bathymetry extent to define the ocean. The roughness classifications and Manning's values are summarised in

Table 4-1, and the spatial distribution of roughness characteristics is shown in Figure 4-1.

 Table 4-1:
 Hydraulic roughness classification

Material ID	Classification	Hydraulic Roughness
2	Other minimal use	0.12
3	Cropping	0.035
4	Grazing native vegetation	0.035
5	Intensive animal production	0.04
6	Intensive horticulture	0.02
11	Land in transition	0.04
13	Manufacturing and industrial	0.15
14	Marsh/wetland	0.12
19	Reservoir/dam	0.03
20	Residential and farm infrastructure	0.04
21	River	0.03
22	Services	0.04
23	Transport and communication	0.02
24	Utilities	0.08
25	Waste treatment and disposal	0.08
26	Sandy beach	0.025





Figure 4-1: TUFLOW roughness definition





Figure 4-2: Sub-catchments used for design events



#### 4.2.3 Design Hydraulic Model Simulations

URBS using ARR19 input parameters was used to obtain the inflow hydrographs for the design hydraulic model simulations. This was done to obtain the duration and temporal pattern for every design AEP. Parameters are obtained for each of the sub-catchments that are shown in Figure 4-2. Sub-catchment S\_1 was selected as it is the outlet, S\_38 was chosen as it is before the site location, and the others were selected to give a good representation of upstream peak flood conditions.

Critical durations for each reporting locations are summarised in Table 4-2, while the corresponding ensemble is summarised in Table 4-3.

Design AEP	1%	1% CC
S_38 (Site location)	36H	36H
S_1	36H	36H
S_14	36H	36H
S_17	36H	36H
S_20	ЗН	ЗН

Table 4-2: Summary of design hydraulic model simulations and durations

Table 4-3: Summary of design hydraulic model simulations and temporal ensemble members

Design AEP	1%	1% CC
S_38 (Site location)	8	8
S_1	8	8
S_14	8	8
S_17	8	8
S_20	1	1

#### 4.3 Modelling Future Climates

To understand the impacts of climate variability on future flood risk across the catchment, rainfall intensity was projected to represent a 2100 horizon under the RCP8.5 pathway. Figure 4-3 shows four class intervals (ranges) of projected annual mean surface temperature increases for RCP 4.5 and 8.5 for the wet tropics cluster where Packers Creek catchment is located.

		Temperature C	lass Interval (°C)	
	Slightly warmer	Warmer	Hotter	Much hotter
Year	< 0.5	0.5 to 1.5	1.5 to 3.0	> 3.0, (median)
	RCP4.5 and 40 (	GCMs		
2040	1	38	1	
2050		37	3	
2060		29	11	
2070		25	15	
2080		24	16	
2090		23	17	
	RCP8.5 and 42	GCMs		
2040		39	3	
2050		26	16	
2060		8	34	
2070			37	5 (3.1)
2080			30	12 (3.4)
2090			23	19 (3.8)

#### Figure 4-3: Climate futures for wet tropics cluster

Figure 4-3 shows the predicted temperature rise using Global Climate Models (GCMs) up to 2090. ARR2019 does not present predicted climate future for 2100. It was assumed that much hotter class will be the dominant climate future in 2100 after trend analysis of reported GCM scores between 2070 and 2090.

The median temperature predicted for a much hotter class requires extrapolation of supplied median temperature values as the 2100 temperature estimate is not provided in ARR2019 guidelines. Figure 4-4 shows the medium temperature increase for the much hotter class interval, which estimates a rise of 4.2 degrees Celsius.



Figure 4-4: Relationship between Median temperature increase and year



For a given NRM cluster, service life or planning horizon, RCP and class interval of the projected increase in annual mean surface temperature, a projected rainfall intensity or equivalent depth (Ip) can be obtained from the following equation:

 $I_p = I_{ARR} \times 1.05^{T_m}$ 

Temperature Mid Point = 4.2

Projected Rainfall Intencity =  $I_{ARR} \times 1.05^{4.2} = I_{ARR} \times 1.227$ 

Where,  $I_{ARR}$  is the design rainfall intensity for current climate conditions. Using these formulae, the resulting rainfall increase projections are summarised in

#### Table 4-4.

Table 4-4: 2090 and 2100 planning horizon trajectories for RCP8.5

Horizon	Temperature Increase (°C)	Rainfall Increase (%)
2070 (ARR DataHub)	3.1	16.3
2080 (ARR DataHub)	3.4	18.0
2090 (ARR DataHub)	3.8	20.3
2100	4.2	22.7

Changes to sea levels have been based on those calculated in the Cairns Storm Tide Inundation Methodologies Study (JBP, 2020). The following increase was adopted for the RCP8.5 trajectory:

• 2100: +1.0mAHD Mean High Water Sea

#### 4.4 Model Outputs

The following model outputs have been configured and are shown in Appendix B.

- Peak flood depth maps for the existing and the proposed developed, current and future climate scenarios for the 1% AEP
- Flood level maps of the existing and the proposed developed, current and future climate scenarios for the 1% AEP

The 1% AEP flood depth map is shown for the proposed developed case in Figure 4-5 and the developed case for the 2100 climate in Figure 4-6 along with the location of the development site. This shows that the flood extent does not reach the site area. Figure 4-6 shows that only a small area of flooding exists at the southwest of the site, where the entry to the underground parking is. This is due to the initial water level being applied to the underground carpark. This water has no consequence to the proposed development and the surrounding properties. The buildings nearest to the flood extent are labelled in Appendix D. The peak flood levels near each building are compared to the proposed floor level of the development in Table 4-5 which shows that all buildings are above the flood peak.

Table 4-5: Peak flood levels compared to floor level for nearby buildings

Building group number	1	2	3	4
Building elevation (mAHD)	5.5	5.6	5.15	4.67
1% AEP (mAHD)	1.47	1.47	1.46	1.46
1% AEP future climate (mAHD)	2.37	2.37	2.36	2.36





Figure 4-5: Site extent compared to the 1% AEP Design Event peak flood depth (m) for the developed case



Figure 4-6: Site extent compared to the 1% AEP Design Event peak flood depth (m) for the developed, 2100 climate case



#### 4.5 Development Impact Assessment

An afflux map was created between the developed and existing case to assess the developments impact to surrounding areas. Figure 4-7 shows that there is no increase to water level caused by the development.



Figure 4-7: Afflux for the developed 1% AEP design event

### 5 Storm Tide Assessment

Storm tide flood maps were obtained from the Port Douglas Storm tide Study (JBP, 2020) and are available in Appendix C. The maps simulate the impacts of tides and storm surge for the 1% AEP (Figure 5-1) and the 2100 climate 1% AEP (Figure 5-2). The site is not impacted by storm surge for the 1% AEP. A small area of the site is impacted by the 2100 storm tide at the northwest of the site with a maximum depth of depth of 0.018m. The Port Douglas Storm tide Study did not include the updated elevation of the developed case. As the ground level of the developed case is approximately 1.8m higher that the undeveloped case, the development will not be impacted by the 2100 climate 1% AEP. The buildings nearest to the flood extent are labelled in Appendix D. The peak storm tide levels near each building are compared to the proposed floor level of the develop for the development in Table 5-1 which shows that all buildings are above the flood peak.

Table 5-1: Peak storm tide levels compared to floor level for nearby buildings

Building group number	1	2	3	4
Building elevation (mAHD)	5.5	5.6	5.15	4.67
1% AEP (mAHD)	1.9	1.97	1.91	1.74
1% AEP future climate (mAHD)	2.99	2.98	2.9	2.97





Figure 5-1: Site extent compared to the 1% AEP storm tide depth (m)



Figure 5-2: Site extent compared to the 1% AEP storm tide depth (m) for the undeveloped 2100 climate case



### 6 Summary

JBPacific were commissioned by GURNER<sup>™</sup> and Hunt Design to undertake a flood study of the Packers Creek catchment for the proposed development of The Davidson by GURNER<sup>™</sup>, Luxury Hotel and Private Homes. This involved investigating the proposed developments vulnerability to flooding and storm tide and to investigate the impact the development might have on surrounding properties. The project involved data collection, hydrological analysis, hydraulic modelling and storm tide assessment.

The hydrological modelling was conducted using a model developed in the Unified River Basin Simulator (URBS) software. This involved the delineation of the Packers Creek catchment into subcatchments and the validation of the model using the Quantile Regression Technique (QRT). URBS and QRT flows were compared at Sub-catchments selected at the site of interest, the catchment outlet and two locations upstream of the site and are shown in Table 6-1.

Model	Sub-catchment 38 (site location)	Sub-catchment 1 (outlet)	Sub-catchment 14	Sub-catchment 26
URBS	372.3	406.9	179.9	58.5
QRT	369.1	406.5	223.0	93.2

Table 6-1: URBS and QRT flows at sub-catchments of interest

Rainfalls for the 1% AEP design event were developed for the current and 2100 climate. Temporal patterns and design rain inputs were taken from were obtained from the ARR DataHub. The design rainfalls were used in URBS to obtain design flows for use in the hydraulic model.

The hydraulic analysis was undertaken in TUFLOW. The hydraulic modelling involved establishing internal and external model boundaries, terrain modelling, developing model roughness and specifying model outputs. URBS ARR19 was used to obtain the duration and temporal pattern for the design events. Rainfall intensity was projected to represent a 2100 horizon under the RCP8.5 pathway. Maps of flood depth and water level were produced for the existing, proposed development and 2100 climate case. Maps showing the extent of the site indicated that no cases resulted in flood waters reaching the site. The 2100 climate case had a small area of depth at the proposed entry to the underground parking. This was caused by rain falling on the site and can be handled by the carpark pump system. Storm tide maps also indicated that storm tide flooding would not reach the site for the current and 2100 climate. This was confirmed by comparing the proposed floor levels of nearby buildings to the flood level and storm tide level and is summarised in Table 6-2. An afflux map was created that compared the existing and proposed development cases. The afflux map indicated no change meaning that surrounding properties would not be impacted by the proposed development of The Davidson by GURNER<sup>™</sup>, Luxury Hotel and Private Homes.

Table 6-2: Peak flood and storm tide levels compared to floor level for nearby buildings

Building group number	1	2	3	4
Building elevation (mAHD)	5.52	5.59	5.15	4.67
1% AEP flood level (mAHD)	1.47	1.47	1.46	1.46
1% AEP future climate flood level (mAHD)	2.37	2.37	2.36	2.36
1% AEP storm tide level (mAHD)	1.9	1.97	1.91	1.74
1% AEP future climate storm tide level (mAHD)	2.99	2.98	2.9	2.97

# Appendices

- A Appendix A Proposed construction
- A.1 Layout of the proposed construction





### A.2 Underground level of the centre structure





#### A.3 Ground level of the centre structure





101 A	THE	ROOM TYPE	TOTAL	on
	- The	about the	AREA	191
ACCOMODAT	DÓN			
	LDO	SUITE GARDEN	515	8
	100	SUITE POOLSIDE	425	10
			741 m <sup>3</sup>	
AMENITIES			2.0011	
	100	AMEN	104	1
	100	AMENITES	39	1
			165 m <sup>3</sup>	
NOTALLOR				-
COLOR ON	LDO	RECEPTION & LOUNCE	250	3
	-	T	250 m <sup>1</sup>	T^
	BACKER OF -	4		-
TOOD + BEVE	KAUES (F+B	CARE DECK	211	- 1
	100	PITCHENE .		
	100	MICHENS NC	100	4
	100	REC.	140	1
		RESTRUCTION	9/	<u> </u>
		1	ece mi	-
FUNCTIONS				_
	001	ADMIN - FUNCTION	367	1
		-	367 m <sup>3</sup>	_
LIFESTYLE				_
	100	8	254	18
	100	KIDS CLUB	151	1
	100	SPA.	457	1
		1	854 m <sup>1</sup>	
RESIDENTIAL				-
	LDO	TYPE OT	1,445	14
	LDO	TYPE 02	505	6
	100	TYPE OS	781	11
	100	TYPE 04	1,225	14
	-			-

HOTEL LVL 00

HOTEL DEVELOPMENT GURNER GROUP STATUS: SCHEMATIC DRAWING NO: 05 REVISION NO: 01 DATE: 28/2/2023





#### A.4 First level of the centre structure





	100_ARE/	AS 100_LVLD1 ROOM TALLY	
AREA	LVL	ROOM TYPE	OT
ACCOMODA	ATION		
	L01	KING ROOM	1.
	LOT	SUITE GARDEN	21
	101	SUITE POOLSIDE	26
			48

HOTEL LVL 01

HOTEL DEVELOPMENT GURNER GROUP STATUS: SCHEMATIC DRAWING NO: 06 REVISION NO: 01 DATE: 28/2/2023





#### A.5 Second level of the centre structure





100_AREAS 100_LVL02 ROOM TALLY			
AREA	LVL	ROOM TYPE	an
ACCOMODA	TION		
	L02	SUITE GARDEN	24
	L02	SUITE POOLSIDE	50
			54

HOTEL LVL 02

HOTEL DEVELOPMENT GURNER GROUP STATUS: SCHEMATIC DRAWING NO: 67 REVISION NO: 61 DATE: 28(2)2025



# B Appendix B - Design flood maps

B.1 1% AEP Design Event peak flood depth (m) for the undeveloped case for Port Douglas







B.2 1% AEP Design Event peak flood depth (m) for the undeveloped case at the site





B.3 1% AEP Design Event peak flood depth (m) for the developed case for Port Douglas




B.4 1% AEP Design Event peak flood depth (m) for the developed case at the site





B.5 1% AEP Design Event peak flood depth (m) for the 2100 climate case for Port Douglas





B.6 1% AEP Design Event peak flood depth (m) for the 2100 climate case at the site





B.7 1% AEP Design Event peak flood level (mAHD) for the undeveloped case for Port Douglas



- Legend Site area Flood level (mAHD) <= 1.2 1.2 - 1.4 1.4 - 1.6 1.6 - 1.8 1.8 - 2.0 2.0 - 2.2 2.2 - 2.4 2.4 - 2.6 2.6 - 2.8 > 2.8 100 m 50 0
- 1% AEP Design Event peak flood level (mAHD) for the undeveloped case at the site B.8







B.9 1% AEP Design Event peak flood level (mAHD) for the developed case for Port Douglas





B.10 1% AEP Design Event peak flood level (mAHD) for the developed case at the site





B.11 1% AEP Design Event peak flood level (mAHD) for the 2100 climate case for Post Douglas





B.12 1% AEP Design Event peak flood level (mAHD) for the 2100 climate case for Post Douglas



### C Appendix C - Design storm surge maps

### C.1 1% AEP Design Event storm surge depth (m) for Post Douglas













C.3 1% AEP Design Event storm surge depth (m) for the 2100 climate case for Post Douglas





C.4 1% AEP Design Event storm surge depth (m) for the 2100 climate case at the site





D Appendix D - Labelled buildings nearest flood extent



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Visit our website www.jbpacific.com.au **Attachment 9** 

Hydraulic Design Report





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### THE DAVIDSON by GURNER™

### LUXY HOTEL and PRIVATE HOMES DAVIDSON STREET, PORT DOUGLAS

### HYDRAULIC DESIGN REPORT

REV: B 20<sup>th</sup> APRIL 2023

### Design Report

### PROPOSED HOTEL DEVELOPMENT

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REPORT AUTHORISATION						
Version	В	Date	27 April 2023			
Comments	Design Report					
Prepared by		Date	27 April 2023			
Shane Barnes	Ó		27 , 4911 2020			
Approved by		Date	27 April 2023			
Shane Barnes			27 , 4911 2020			

#### 1.0 INTRODUCTION

H2O Consultants have been requested by Hunt Design to provide a report on the Hydraulic aspects for the new THE DAVIDSON by GURNER<sup>™</sup>, Luxury Hotel and Private Homes, located on Davidson Street, Port Douglas.

The proposed development contains,

107 Luxury Hotel Rooms, Food and Beverage, Function and Lifestyle areas.

44 Private Residential Houses on small Lots under 400m<sup>2</sup>

The Hotel is built over a Basement Carpark and 3 Levels above.

#### 2.0 SERVICES

#### 2.1 Sewerage Reticulation

An existing 150mm AC Sewer main traverses inside the property along the rear boundary. The sewer main connects to a Sewer Pump Station in the South Western corner of the Site with a rising main directed towards the Council Sewer Treatment Plant. The sewer mains and Pump Station were installed in 1975.

As per FNQROC the appropriate demand from the proposed Development is 239 EP. 44 Homes - 110EP,

107 Rooms (104x1bed, 3x2bed) – 109 EP, 402m<sup>2</sup> Food/Bev – 20EP

Our proposal is realigning the existing sewer main outside the Development to keep clear of proposed Buildings. Install a 150mm sewer network internally within the site utilizing 2 sewer connections to the Council Sewer Main.

					adjusted	adjusted
	daily flow		month rate	season	daily flow	month flow
January	86650	31	2,686,150	50%	43,325	1,343,075
February	86650	28	2,426,200	50%	43,325	1,213,100
March	86650	31	2,686,150	50%	43,325	1,343,075
April Low	86650	15	1,299,750	80%	69,320	1,039,800
April Peak	86650	15	1,299,750	100%	86,650	1,299,750
May	86650	31	2,686,150	80%	69,320	2,148,920
June Low	86650	24	2,079,600	80%	69,320	1,663,680
June Peak	86650	6	519,900	100%	86,650	519,900
July Low	86650	16	1,386,400	80%	69,320	1,109,120
July Peak	86650	15	1,299,750	100%	86,650	1,299,750
August	86650	31	2,686,150	80%	69,320	2,148,920
September Low	86650	24	2,079,600	80%	69,320	1,663,680
September Peak	86650	7	606,550	100%	86,650	606,550
October Low	86650	16	1,386,400	80%	69,320	1,109,120
October Peak	86650	14	1,213,100	100%	86,650	1,213,100
November Low	86650	15	1,299,750	50%	43,325	649,875
November Peak	86650	15	1,299,750	80%	69,320	1,039,800
December Low	86650	15	1,299,750	50%	43,325	649,875
December Peak	86650	16	1,386,400	100%	86,650	1,386,400
					YEAR	23,447,490.00

#### Expected Seasonal Flow Rates,

#### 2.2 Water Reticulation

An existing 150mm AC Watermain and a 450mm DICL Trunk Watermain runs parallel to the front boundary.

Flow testing was conducted on the street fire hydrants at the corner of Cummins and Davidson Streets.

Results were 10lit/sec @ 465kpa and 20lit/sec @ 270kpa. Residual pressure in the main at the adjacent hydrant was 350kpa.

The results indicate the proposed Development will require Storage Tanks and pumps for Fire Hydrant and Fire Sprinkler protection.

Potable water supply can be achieved from the council water main with a small pump station to increase the pressure for internal fixtures.

A 150mm connection is required for this project for the supply of Potable Water and Fire Fighting purposes.

Rainwater reuse will be used for Irrigation and Pool Water top up supplies.

					adjusted	adjusted
	daily flow		month rate	season	daily flow	month flow
January	198100	31	6,141,100	50%	99,050	3,070,550
February	198100	28	5,546,800	50%	99,050	2,773,400
March	198100	31	6,141,100	50%	99,050	3,070,550
April Low	198100	15	2,971,500	80%	158,480	2,377,200
April Peak	198100	15	2,971,500	100%	198,100	2,971,500
May	198100	31	6,141,100	80%	158,480	4,912,880
June Low	198100	24	4,754,400	80%	158,480	3,803,520
June Peak	198100	6	1,188,600	100%	198,100	1,188,600
July Low	198100	16	3,169,600	80%	158,480	2,535,680
July Peak	198100	15	2,971,500	100%	198,100	2,971,500
August	198100	31	6,141,100	80%	158,480	4,912,880
September Low	198100	24	4,754,400	80%	158,480	3,803,520
September Peak	198100	7	1,386,700	100%	198,100	1,386,700
October Low	198100	16	3,169,600	80%	158,480	2,535,680
October Peak	198100	14	2,773,400	100%	198,100	2,773,400
November Low	198100	15	2,971,500	50%	99,050	1,485,750
November Peak	198100	15	2,971,500	80%	158,480	2,377,200
December Low	198100	15	2,971,500	50%	99,050	1,485,750
December Peak	198100	16	3,169,600	100%	198,100	3,169,600
					YEAR	53,605,860.00

#### 2.3 Fire Services

A fire service is required for the project in the form of Fire Sprinklers, Fire Hydrants, Fire Hose Reels and Fire Extinguishers.

Expected operational demand for the project as required by the NCC will be 15 lit/sec for the Fire Sprinkler Service

10 lit/sec for the Fire Hydrant Service.

Storage Tanks and Pumps will be required for this installation due to the lack of pressure in the Council Street main.

The storage volume that can be utilized under the ramps is approx. 285,000 litres. This is more than adequate to provide 100% storage volume for Fire Fighting purposes.

#### 2.4 Swimming Pools

Initial filling of the swimming pools would be expected from the Council Water main. Approximately 3.5 million litres of water will be required.

Approximately 5 million litres of water will evaporate throughout the year. The water to top up the swimming pool will be via a combination of rainwater and council water during the drier months.

Water Treatment will be via Chlorine dosing and other Filtration methods complying with the requirements of Queensland Health, Water Quality Guidelines for Public Aquatic Facilities.

Pool Backwash water will be discharged to Sewer via a storage tank at a controlled rate and outside of peak demands.

#### 2.5 Stormwater Reticulation

Stormwater Reticulation and Site drainage will be assessed by a Civil Engineer.

Downpipes from the Hotel roof would be a syphonic stormwater system. Downpipes from the Accommodation Buildings would be 100mm. These would discharge into the Civil Stormwater system to a Legal Point of Discharge. Stormwater Detention Tanks will be utilized for Irrigation Use and Topping up the Pool Supply.

#### **3.0 CONCLUSIONS**

Should you have any further queries, please do not hesitate to contact Shane Barnes at this office.

Yours faithfully H2O Consultants

Shane Barnes

Attachment 10

**Electrical Report** 



DAVIDSON STREET PORT DOUGLAS DEVELOPMENTS PTY LTD

# THE DAVIDSON BY GURNER<sup>™</sup> ELECTRICAL DA REPORT

APRIL 2023

HIGHLY CONFIDENTIAL







# We design. You enjoy

The Davidson by GURNER<sup>™</sup> Electrical DA Report DAVIDSON STREET PORT DOUGLAS DEVELOPMENTS PTY LTD

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REV	DATE	DETAILS
А	12/04/2023	Final
В		
С	24/04/2023	Name Change

	NAME	DATE	SIGNATURE
Prepared by:	M. Hopkinson	24/04/2023	A

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# **EXECUTIVE SUMMARY**

The proposal is for a new short term accommodation development currently occupied by the existing Caravan Park and Backpackers Accommodation on Davidson Street, Port Douglas, QLD.

No major design or construction risks are anticipated from an electrical services perspective for this proposed development.

There will be a significant increase in electrical load required for the project, however this increase in load will be readily accommodated by the local energy authority (Ergon Energy) via their high voltage (22kV) reticulation system which runs along the street frontage on Davidson Street.

It is anticipated that a total of 2No. 1000kVA transformers will be required to power the site. There is already an existing transformer powering the caravan site. This will become redundant due to its location being at the northern end of the site. The proposed location for a new substation for this site will be at the southern end of the site at the end of Crimmins Street.

New National Broadband Network infrastructure will be required for the site and will be the focus of negotiations with NBN to get fibre to the development, which is currently serviced by copper infrastructure (Fibre to the Node Technology). The NBN services design will assume that fibre will be available to the site.

Whilst the quality of the product will be high, it will later be determined as to the appropriateness of payback periods when considering life cycle costing analysis on the various aspects of the building engineering services. Payback periods directly relate to ownership of the assets and the longevity of that ownership.

# **1** INTRODUCTION

### 1.1 PURPOSE OF REPORT

Hopkinson Consulting Engineers (HCE) have been engaged by Davidson Street Port Douglas Developments Pty Ltd to complete an electrical building services review of the proposed development at Lots 1 & 2 on RP723702 and Lots 3 & 4 on RP909815 & Emt A on RP860992in Port Douglas, QLD.

The purpose of this report is to provide information on electrical building services design criteria and considerations involved in the construction of the new development, as well as provide guidance and recommendations of suitable building services systems applicable to the project.

### 1.2 PROJECT BACKGROUND

#### 1.2.1 SITE

The site locality is Lots 1 & 2 on RP723702 and Lots 3 & 4 on RP909815 & Emt A on RP860992 in Port Douglas, QLD. The existing site locality currently holds a caravan park and a Backpackers Accommodation facility.



Figure 1 - Aerial View of the proposed development site

#### 1.2.2 EXISTING SERVICES INFORMATION

#### 1.2.2.1 "BEFORE YOU DIG AUSTRALIA" (BYDA)

A BYDA application (formerly known as Dial Before You Dig) has been lodged and the results of the services applicable to this report are summarised below.

#### ERGON

Ergon Energy owns the high voltage (22kV) infrastructure in Port Douglas. The snip below shows the main elements of that infrastructure within the bounds of this project (project boundary shown in green dashed line). The orange lines represent Ergon's underground assets (cables) below 33kV. The orange lines along the street frontage are most likely 240V street lighting power as the HV cabling is overhead.



Figure 2 - Ergon Energy Network at the proposed development site

#### NATIONAL BROADBAND NETWORK NBN is available in Port Douglas. See notification below.

Q LOT 3 109-111 DAVIDSON ST PORT DOUGLAS X	97-107	Ividson St
Lot 3 109-111 Davidson St Port Douglas QLD 4877 Australia		De
☐ This location is connected to the <b>nbn</b> <sup>®</sup> network		St
Technology used   nbn <sup>®</sup> Fibre to the Node (FTTN)		Davidsor
More address information	113 Crimmine	tS used Bougainv
	tinns St	

However, the NBN technology available (as of April 2023) is "Fibre to the Node" (FTTN). FTTN technology uses copper cabling (not fibre optic) and has inherently lower data transfer speeds and bandwidth than 'Fibre to the Premises' (FTTP). However, with a project of this magnitude, it will be anticipated that fibre optic cabling will be provided for this development. The 'pit and pipe' reticulation design will be on the assumption that fibre will be provided to the site.

The existing NBN site reticulation is shown below.



# 2 PROPOSED DEVELOPMENT

#### 2.1 GENERAL

The objective of this report is to provide high level electrical building services guidance to assist the with the Development Application (DA) of the Architectural concept design of the project.

Key drivers for the design of this precinct from a building services perspective will be:

- Value for Money
- Energy Efficiency (with considerations of Net Zero<sup>1</sup> or Sustainable Precincts ethos)
- Flexibility
- Controllability
- Aesthetics
- Environmental considerations (e.g., Noise)

### 2.2 PROPOSED DEVELOPMENT

The project site plan is as follows:



<sup>&</sup>lt;sup>1</sup> Net Zero is a target of completely negating the amount of greenhouse gases produced by human activity, to be achieved by reducing emissions and implementing methods of absorbing carbon dioxide from the atmosphere.

### 2.3 DESIGN CRITERIA

Design criteria presented herein form the basis of the design of the works including sizing of infrastructure: -

- All new buildings are to be designed in accordance with the requirements of the National Construction Code, relevant Australian Standards and Statutory Regulations.
- All major elements of the building services engineering design will undergo a rigorous 'life cycle cost analysis' to ensure the most appropriate and best value for money solution is implemented for the project.

#### 2.3.1 EXTERNAL ENVIRONMENT CONDITIONS

	° C dry bulb	° C wet bulb
Winter	15	N/A
Summer – General	32.8	26.8

The proposed development site is coastal and subject to significant salt laden air blown in from the ocean from the prevailing south easterly breezes throughout most of the year. A fundamental theme of the design will be the supreme importance to make sure that all installed plant and equipment will be sufficiently protected from this corrosive environment. Preventative measures include enclosing plant, choosing appropriate materials (i.e., 316-grade stainless steel) or allowing a robust maintenance regime.

#### 2.3.2 INTERNAL ENVIRONMENT CONDITIONS

For lighting levels, we will adhere to the recommendations in AS1158 and AS1680 for internal and external lighting levels to maintain comfort, minimise glare and dark sky retention.

# **3 ELECTRICAL SERVICES**

#### 3.1 SITE WIDE ELECTRICAL SERVICES

Site wide electrical services includes the following:

- High voltage reticulation (22kV)
- Low voltage reticulation (415 / 240V)
- NBN Fibre reticulation
- Telstra Copper reticulation
- CCTV Security Coverage and Access Control
- Street Lighting
- Precinct Lighting

#### 3.1.1 HIGH VOLTAGE RETICULATION

The site has high voltage (22kV) overhead transmission lines running along the street frontage on Davidson Street. The site is currently serviced electrically from several low voltage (415V) supplies located at various locations around the stie. These existing connection points will become redundant, and a new single location (point of supply) will be requested at the end of Crimmins Street in the vicinity of the existing sewerage pumping station.

When we consider the new infrastructure to be built as part of this new development and apply engineered electrical loading rates to each type of building, we derive a total power requirement for the site of around 2,000 amps per phase. Refer Appendix A.

Therefore, it our recommendation that the existing 2 x 1000kVA transformers (with the ability to supply 2,600 amps per phase) be allowed for to service this new development. Refer extract below and full drawing in Appendix B.



Figure 3 – Proposed location of Substation.

#### 3.1.2 LOW VOLTAGE RETICULATION

Low voltage reticulation is defined as voltages in the 240 - 415 voltage range. This is the power that comes from the transformers and is distributed around the site to the various Main Switchboards associated with each building.

The longer the runs of low voltage cabling, the larger the cabling becomes and the more expensive it becomes. Therefore, there is a balance when considering the electrical infrastructure layout of the site.

#### 3.1.3 METERING

Metering will be low voltage only. Metering points will be within Main Switchboards and distribution boards throughout the development. It is anticipated that a combination of Ergon (Authority) meters and private meters will be used throughout. It is expected that any private metering will be monitored by Building Management Systems (BMS) for ease of operation and reporting.

#### 3.1.4 NBN FIBRE RETICULATION

As mentioned previously, there is no NBN fibre currently available to the site. However, it is envisaged that an application to NBN will be made to provide fibre to the premises for this project.

#### 3.1.5 TELSTRA COPPER RETICULATION

Existing telecommunications cabling throughout the site is copper. NBN use the copper to provide their broadband services currently.

#### 3.1.6 CCTV SECURITY COVERAGE AND ACCESS CONTROL

An essential part of the new precinct development will be the development of a site wide CCTV system. For this infrastructure, fibre cabling will be reticulated throughout the site for camera connectivity over long distances.

Access control points around driveways, entries and access ramps to the basement will be centrally controlled and monitored.

#### 3.1.7 STREET LIGHTING

Street lighting on the private streets will be designed to the relevant Australian standards, most likely to a pedestrian category as well as vehicles.

#### 3.1.8 PRECINCT LIGHTING

Precinct lighting is defined as aesthetic lighting, such as decorative bollards, landscape lighting on features such as furniture, water features, fairly lights, festoon lights signage lights etc.

#### 3.1.9 UNDERGROUNDING OF EXISTING ERGON ASSETS

The existing overhead cabling on the Davidson Street frontage is unsightly and not in keeping with the quality and first impressions sought by this development. Therefore, it is anticipated that the existing overhead reticulation (which consists of high voltage and low voltage electrical supplies) will be undergrounded by Ergon Energy and its contractors.

An application has been lodged with Ergon Energy for this relocation.

The enquiry reference is CX23DAV0438238Q. Refer Appendix C.

### 3.2 BUILDING ELECTRICAL SERVICES

The scope of building electrical services will include:

- Supply to the buildings and metering arrangements
- Sub-stations and underground cables
- General light and power throughout. Retail tenancies associated with the residential precinct will be <u>cold shell</u>, being provided with a distribution board only and safe movement lighting.
- Electrical submains to mechanical, fire, lifts and hydraulic switchboards
- General electrical distribution system throughout, including distribution boards
- Emergency/exit lights
- Telephone cabling system
- Data cabling
- Standby generators
- Lightning protection
- Master antenna television and radio systems
- Access control and intruder detection systems
- CCTV Surveillance systems
- General landscape lighting
- Main fire indicator panel
- Manual call points systems
- Thermal detector and smoke detector systems
- Emergency warning and intercom systems

## 4 LIMITATIONS

This Report is provided by Hopkinson Consulting Engineers (*HCE*) for Davidson Street Port Douglas Developments Pty Ltd (*Client*) in response to specific instructions from the Client and in accordance with HCE's proposal dated 14 Dec 2022 (*Agreement*).

### 4.1 PERMITTED PURPOSE

This Report is provided by HCE for the purpose described in the Agreement and no responsibility is accepted by HCE for the use of the Report in whole or in part, for any other purpose (*Permitted Purpose*).

### 4.2 QUALIFICATIONS AND ASSUMPTIONS

The services undertaken by HCE in preparing this Report were limited to those specifically detailed in the Report and are subject to the scope, qualifications, assumptions and limitations set out in the Report or otherwise communicated to the Client.

Except as otherwise stated in the Report and to the extent that statements, opinions, facts, conclusion and / or recommendations in the Report (*Conclusions*) are based in whole or in part on information provided by the Client and other parties identified in the report (*Information*), those Conclusions are based on assumptions by HCE of the reliability, adequacy, accuracy, and completeness of the Information and have not been verified. HCE accepts no responsibility for the Information.

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### 4.4 **DISCLAIMER**

No warranty, undertaking or guarantee whether expressed or implied, is made with respect to the data reported or the Conclusions drawn. To the fullest extent permitted at law, HCE, its related bodies corporate and its officers, employees and agents assumes no responsibility and will not be liable to any third party for, or in relation to any losses, damages or expenses (including any indirect, consequential or punitive losses or damages or any amounts for loss of profit, loss of revenue, loss of opportunity to earn profit, loss of production, loss of contract, increased operational costs, loss of business opportunity, site depredation costs, business interruption or economic loss) of any kind whatsoever, suffered on incurred by a third party.
# APPENDIX A MAXIMUM DEMAND CALCULATIONS





#### DEVELOPMENT SUMMARY

ELECTRICAL MAXIMUM DEMAND

RESIDENTIAL

Address	PD 2 - Port Douglas
REV	С
DATE	5/03/2023
-	

HOTEL

FLOORS	APARTMENTS	CARPARK GFA	GFA SERVICES	GFA COMMON / CIRCULATION	GFA F&B	GFA WELLNESS	GFA RESIDENTIAL	AMENITY (INTERNAL)	Total GFA		NLA COMMERCI	AL NLA RETAIL	NSA RESIDENTIAL	Total NSA / NLA	RESIDENTIAL	RESIDENTIAL TERRACE GFA	AMENITY EXTERNAL TERRACE GFA	GBA
1		4,517							-					-				4,517
1	9	-	814	839	672	644	712	171	3,852				-	-		-	319	4,171
1	35	-	138	471	168	614	3,316	121	4,828		-	-	3,217	3,217		-		4,828
1	47		138	507		173	3,688		4,506							-		4,506
1	-	-			-		-	-	-		-		-	-	#DIV/0!	-		-
5	91	4,517	1,090	1,817	840	1,431	7,716	292	13,186		-	-	3,217	3,217		-	319	18,022
NEERING																		
		20	40	50	70	50	40	40									10	
		-	10	40	86	51	43	-			-	-	-			-	-	
		90,340	54,500	163,530	130,800	145,144	643,000	11,680			-	-	-			-	3,190	
		126	76	228	182	202	896	16			-	-	-			-	4	
	FLOORS	FLOORS         APARTMENTS           1         9           1         35           1         47           1         -           5         91	FLOORS         APARTMENTS         CARPARK GFA           1         4,517           1         9         -           1         35         -           1         47         -           1         -         -           5         91         4,517           KEERING           20           -           90,340         126	FLOORS         APARTMENTS         CARPARK GFA         GFA SERVICES           1         4,517         1           1         9         -           1         35         -           1         35         -           1         47         138           1         -         -           5         91         4,517         1,090           VEERING           20         40           -         10           90,340         54,500         126	FLOORS         APARTMENTS         CARPARK GFA         GFA SERVICES         GFA COMMON / CIRCULATION           1         4,517	FLOORS         APARTMENTS         CARPARK GFA         GFA SERVICES         GFA COMMON / CIRCULATION         GFA F&B           1         4,517         1         9         -         1         814         839         672           1         35         -         138         471         168           1         47         -         -         -         -           5         91         4,517         1,090         1,817         840           VEERING         20         40         50         70           -         10         40         86           90,340         54,500         163,530         130,800           126         76         228         182	FLOORS         APARTMENTS         CARPARK GFA         GFA SERVICES         GFA COMMON/ CIRCULATION         GFA F&B         GFA WELLNESS           1         4,517         -         -         -         -         -         -         -         -         -         -         -         -         -         -         138         471         168         614         -         -         -         173         -         173         -	FLOORS         APARTMENTS         CARPARK GFA         GFA SERVICES         GFA COMMON/ CIRCULATION         GFA F&B         GFA         GFA         GFA           1         4,517         1         9         -         814         839         672         644         712           1         35         -         138         471         168         614         3,316           1         47         -         -         -         173         3,688           1         -         -         -         -         -         -         -           5         91         4,517         1,090         1,817         840         1,431         7,716           NEERING           -         10         40         86         51         43           90,340         54,500         163,530         130,800         145,144         643,000           126         76         228         182         202         896	FLOORS         APARTMENTS         CARPARK GFA         GFA SERVICES         GFA COMMON/ CIRCULATION         GFA F&B         GFA         GFA         AMENITY (INTERNAL)           1         4,517         -         <	FLOORS         APARTMENTS         CARPARK GFA         GFA SERVICES         GFA COMMON/ CIRCULATION         GFA F&B         GFA WELLNESS         GFA RESIDENTIAL         AMENITY (INTERNAL)         Total GFA           1         4,517         -	FLOORS         APARTMENTS         CARPARK GFA         GFA SERVICES         GFA COMMON/ CIRCULATION         GFA F&B         GFA         GFA         AMENITY (INTERNAL)         Total GFA           1         4,517         -	FLOORS         APARTMENTS         CARPARK GFA         GFA SERVICES         GFA COMMON/ CIRCULATION         GFA F&B         GFA         GFA         AMENITY (INTERNAL)         Total GFA         NA COMMERCIAL           1         4,517         -	FLOORS         APARTMENTS         CARPARK GFA         GFA SERVICE         GFA COMMON/ CRCULIATION         GFA F&B         GFA WELLNESS         GFA RESIDENTIAL         AMENITY (INTERNAL)         Total GFA         NIA COMMERCIAL         NIA RETAIL           1         4,517         - <td>LOOR         APARTMENTS         CARPARK GFA         GFA SERVICES         GFA COMMON/ CICCULATION         GFA F&amp;B         GFA WELLNESS         GFA RESIDENTIAL         AMENITY (INTERNAL)         Total GFA         NLA COMMERCIAL         NLA RETAIL         NSA RESIDENTIAL           1         4,517         1         9         -</td> <td>APARTMENT       CARPARK GFA       GFA SERVICE       GFA COMMON/ CIRCULATION       GFA FAB       GFA       GFA       AMENITY (INTERNAL)       Total GFA       NLA COMMERCIAL       NLA RETAIL       NSA RESIDENTIAL       NLA NLA         1       4,517       -</td> <td>LOOR         APARTMENT         CARPARK GA         GFA SERVICE         GFA COMMON/ CICULATION         GFA RB         GFA         M MENTY (NTERNAL)         Total GFA         MA COMMERCIAL         NA RETAL         NA RESIDENTIAL         Total MA           1         4,517         -         <t< td=""><td>Image: Proper information of the service of the common / circulation         GFA EB         GFA         GFA         AMENITY (INTERNAL)         Total GFA         MA COMMERCIAL INLA RETAIL INSA RESIDENTIAL         Total MSA         RESIDENTIAL FERRACE GFA         RESIDENTIAL FERRACE GFA         Max         RESIDENTIAL FERRACE GFA         RESIDENTIAL FERRACE GFA         Max         Max         RESIDENTIAL FERRACE GFA         Max         Max</td><td>PLOOR       APARTMENT       CAPARK GFA       GFA SERVICES       GFA COMMON/ CIRCULATION       GFA FA       GFA       GFA       AMENITY (INTERNAL)       Total GFA       MA COMMERCIAL INLA RETAL INSA RESIDENTIAL       Total NSA/ INAC       RESIDENTIAL INFA RESIDENTIAL       AMENITY EXTERNAL EFFICIENCY         1       4,517       5       4,517       5       5       5       5       5       5       5       6       7,71       3,852       7,71       3,852       7       3,17</td></t<></td>	LOOR         APARTMENTS         CARPARK GFA         GFA SERVICES         GFA COMMON/ CICCULATION         GFA F&B         GFA WELLNESS         GFA RESIDENTIAL         AMENITY (INTERNAL)         Total GFA         NLA COMMERCIAL         NLA RETAIL         NSA RESIDENTIAL           1         4,517         1         9         -	APARTMENT       CARPARK GFA       GFA SERVICE       GFA COMMON/ CIRCULATION       GFA FAB       GFA       GFA       AMENITY (INTERNAL)       Total GFA       NLA COMMERCIAL       NLA RETAIL       NSA RESIDENTIAL       NLA NLA         1       4,517       -	LOOR         APARTMENT         CARPARK GA         GFA SERVICE         GFA COMMON/ CICULATION         GFA RB         GFA         M MENTY (NTERNAL)         Total GFA         MA COMMERCIAL         NA RETAL         NA RESIDENTIAL         Total MA           1         4,517         - 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	_	NLA	EFFICIENCY	-	ERRACE GFA	RES GARAGE	GBA	AREAS GBA	CARS MOTORBIKE
	182	182	121%	50	500	440	3,960	3,960	
	176	176		26	156	264	2,058	2,058	
	134			20	220	209	2,519	2,519	
	202			34	204	246	2,304	2,304	
	147			16	112	297	1,998	1,998	
	250			42		41	383	383	
				0			-	-	
	291				160	186	1,946	1,946	
	1,382	358			1,352	1,683	15,168	- 15,168	
								TOTALS	
						10			
-	-				-	-			
-	-				-	16,830			WATTS
-				- -		· · ·	10 	10 	TOTALS

OVERALL SUMMARY

	FLOORS	APARTMENTS	CARPARK GFA	GFA SERVICES	GFA COMMON / CIRCULATION	GFA COMMERCIA	AL GFA RETAIL	GFA RESIDENTIAL	AMENITY (INTERNAL)	Total GFA		NLA COMMERCIAL	NLA RETAIL	NSA RESIDENTIA	Total NSA / L NLA	RESIDENTIAL EFFICIENCY	RESIDENTIAL TERRACE GFA	AMENITY EXTERNAL TERRACE GFA	GBA
		827	4,517	1,090	1,817	840	2,476	8,714	292	25,319	-	-	-	4,599	3,575	-	1,352	2,002	33,190
ELECTRICAL ENGINE	ERING																		
Watts			90,340	54,500	163,530	130,800	232,228	736,147	11,680			-	-	-			-	20,020	
Amps per Ph			126	76	228	182	323	1,025	16			-	-	-			-	28	

GRAND TOTAL POOLS CARS MOTORBIKE BIKE GBA 120 12 4,517 50 2,789 6,960 4,828 4,506 -120 12 50 2,789 20,811 TOTALS WATTS 1,730 AMPS / PHASE



# **APPENDIX B** SITE ELECTRICAL INFRASTRUCTURE





HCE	FE
KED:	PRINT IN
MH	
OVED:	
MH	

# DO NOT SCALE



- POWER POLE (PP1) TO BE DEMOLISHED, ALONG WITH HV SUPPLY

- POWER POLE (PP2) TO BE REMOVED AND POWER RELOCATED TO UNDERGROUND. TYPICAL FOR PP2 TO PP7 INCLUSIVE.

- PASTEL YELLOW ZONE INDICATES AREA WHERE OVERHEAD CABLING IS TO BE UNDERGROUNDED.

# SCOPE OF WORK NOTES

- 1. UNDERGROUND LV AND HV CABLING IN THE VISCINITY OF THE YELLOW ZONE.
- 2. REMOVE POWER POLES NUMBERED 1 TO 7.

- TELSTRA PHONE BOX TO BE REMOVED / RELOCATED.

- NEXT POWER POLE DOWN THE PAGE MAY REQUIRE UNDERGROUNDING ALSO, OR A NEW POLE ON THE CORNER

ELECTRICAL SERVICES **ERGON WORKS - UNDERGROUNDING O'HEAD** 

CALE @ A1: 1 : 500

DRAWING TITLE:

PROJECT No: J000144

# APPENDIX C ERGON APPLICATION REFERENCE



# Mark Hopkinson | Hopkinson Consulting Engineers

From:	ergonportal@ergon.com.au
Sent:	Tuesday, 7 March 2023 12:36 PM
То:	Mark Hopkinson   Hopkinson Consulting Engineers
Subject:	Ergon Energy Network Enquiry CX23DAV0438238Q has been submitted.

An Ergon Energy Network Enquiry has been submitted for PANDANUS CARAVAN PARK SITE Lot: 1 RP723702 DAVIDSON Street PORT DOUGLAS QLD 4877, NMI - Unknown.

The Service Type is: Asset Relocation

The Enquiry reference is: CX23DAV0438238Q

Ergon Energy will evaluate your enquiry and contact you if further information is required.

Visit https://www.ergon.com.au/network/connections/new-connections-and-connection-alterations/apply-forconnection-services for more information on the Ergon Energy Network Connection Contract process.

Regards

**Ergon Energy** 

To view status updates, visit Ergon Self Service (Go to Track Service Orders)

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\*\*\*\* \*\*\* Attachment 11

Assessment against Douglas Shire Council Planning

Scheme 2018 v1





# 6.2.14 Tourist accommodation zone code

#### 6.2.14.1 Application

- (1) This code applies to assessing development in the Tourist accommodation zone.
- (2) When using this code, reference should be made to Part 5.

### 6.2.14.2 Purpose

- (1) The purpose of the Tourist accommodation zone code is to provide for short-term accommodation supported by community uses and small-scale services and facilities in locations where there are tourist attractions.
- (2) The local government purpose of the code is to:
  - (a) implement the policy direction set in the Strategic Framework, in particular:
    - (i) Theme 4 : Strong communities and identity, Element 3.7.4 Sense of place, community and identity.
    - (ii) Theme 5 Economy. Element 3.8.2 Economic growth and diversification, Element 3.8.2 Tourism.
  - (b) provide for tourist accommodation development to establish in areas close to commercial and recreational services and facilities.
- (3) The purpose of the code will be achieved through the following overall outcomes:
  - (a) A range of accommodation activities, with an emphasis on short-term accommodation is established at a scale and density to service tourist needs.
  - (b) Tourist development is of an appropriate scale and achieves an attractive built form which incorporates the character and natural attributes of the site and the surrounding area as integral features of the theme and design of the development.
  - (c) Development facilitates opportunities for establishing tourist facilities and services within, or adjacent to, tourist accommodation to complement the tourist accommodation and enhance the attractiveness of tourist areas.
  - (d) Development is designed to take into account the tropical climate by incorporating appropriate architectural elements and design features.
  - (e) Landscaping of tourist development is of a high quality and contributes to the visual dominance of tropical vegetation and the local streetscape.
  - (f) Community facilities, open space and recreational areas and appropriate infrastructure to support the needs of the local community are provided.

### 6.2.14.3 Criteria for assessment

#### Table 6.2.14.3.a - Tourist accommodation zone code - assessable development

Performance outcomes	Acceptable outcomes	Applicant response			
For self-assessable and assessable development					



<b>PO1</b> The height of all buildings and structures must be in keeping with the residential character of the area.	AO1 Buildings and structures are not more than 13.5 metres and 3 storeys in height. Note – Height is inclusive of roof height.	Complies with AO1. The proposed Short Term Accommodation Hotel development is 13 metres and 3 storeys in height. The Short Term Accommodation/ Multiple Dwelling Villas are 2 storeys and between 6.3 – 6.7metres in height depending on the typology.
Setbacks (other than for a dwelling house)		
<ul> <li>PO1</li> <li>Buildings are setback to: <ul> <li>(a) maintain the character and amenity of the area;</li> <li>(b) achieve separation from neighbouring buildings and from road frontages.</li> </ul> </li> </ul>	<ul> <li>AO1</li> <li>Buildings are setback:</li> <li>(a) a minimum of 6 metres from the main street frontage;</li> <li>(b) a minimum of 4 metres from any secondary street frontage;</li> <li>(c) 4.5 metres from a rear boundary;</li> <li>(d) 2 metres from a side or an average of half of</li> </ul>	Complies with PO1. A detailed setback plan is provided in the Development Plans at Attachment 3. The setbacks are as follows- (a) Main Street Frontage – 6m – 23.6m (b) Secondary Street Frontage – 4m – 4.5m (c) Rear Boundary – 3.3m – 6.8m (d) Side boundary – 1m – 3.8m. The Main Street Frontage and Secondary Street Frontage setbacks comply with the AO. The rear boundary abuts a wide road reserve which contains Railway Service Lane which has minimal use. The reduced setback in this location is considered appropriate as there is an extensive vegetated buffer between the site boundary and the formed road. There are reduced setbacks to the site boundary adjacent Lychee Tree Holiday apartments. The apartments at that location face internally to the



	site (on the existing and proposed development) and are separated from the property boundary by existing landscaping. As such, the reduced setbacks still achieve sufficient separation from the adjoining units.
	The height of the buildings in this location is only 6.3 – 6.7m.



Performance outcomes	Acceptable outcomes	Applicant response
	the height of the building at the side setback, whichever is the greater.	
Site coverage (other than for a dwelling house)		
<b>PO2</b> The site coverage of all buildings does not result in a built form that is bulky or visually obtrusive.	AO2 The site coverage of any building is limited to 50%	Complies with PO2. The overall site coverage is limited to 50%. Technically, once the CTS lots are created that Short Term Accommodation/Multi Unit villas will exceed 50% site coverage of the created lot. This is a technicality and the site coverage overall does not result in a built form that is bulky of visually obtrusive.
Building proportions and scale (other than for a		



#### PO3

The proportions and scale of any development are in character with the area and local streetscape.

#### AO3.1

The overall length of a building does not exceed 30 metres and the overall length of any continuous wall does not exceed 15 metres.

# AO3.2

Balconies, patios and similar spaces are not enclosed or capable of being enclosed and used as a habitable room.

# AO3.3

Balconies, patios and similar spaces are designed to be open and light weight in appearance with a maximum of 20% of the façade being fully enclosed.

# AO3.4

Roof forms, materials and colours of buildings enhance the amenity of the street and locality, including:

- (a) the roofs of buildings are light coloured and non-reflecting;
- (b) white and shining metallic finishes are avoided on external surfaces in prominent view.

Note – The building incorporates building design features and architectural elements detailed in Planning scheme policy SC 6.2 – Building design and architectural elements.

Complies with PO3.

The overall length of the hotel building technically exceeds 30 metres but the large open entrance ensures that it does not appear bulky or obtrusive. The built form provides for a high degree of articulation and landscaping. The length is necessitated by the curved appearance of the structure.

Balconies and patios are spacious and open in keeping with the tropical design of the built form.

The Facades of the buildings and structures are finished with natural tones and materials and are non-reflective. Additionally, the built form is screened by extensive landscaping both on the building façade and at grade.

The finishes are detailed in Attachment 3 and generally consist of the following-



Landscaping (other than for a dwelling house)



<b>PO4</b> Landscape planting is provided for the recreational amenity of residents/guests and incorporates dominant tropical vegetation which enhances the streetscape and the amenity of the area	<b>AO4.1</b> A minimum of 35% of the site is provided as open space and recreation area with a minimum of 30% of this total; area provided for landscape planting.	Complies with PO4 Over 35% of the site consists of garden areas, parkland, or water bodies which form part of the hard landscaping.
	AO4.2 Within the frontage setback area, a minimum width of 2 metres of landscape area includes a minimum 75% dense planting.	A minimum 6m frontage is proposed for the front setback. This area is extensively landscaped providing a sense of arrival at a luxury tropical hotel.
	Within the side and rear setback areas, a minimum width of 1.5 metres of landscape area includes 75% dense planting.	Deep tropical landscaping is proposed throughout the development and at each property boundary. The development also benefits from the existing vegetation on Davidson Street, the Railway Service Lane reserve and Crimmins Street. Detailed site plans and landscaping plans are provided at Attachment 3.



Performance outcomes	Acceptable outcomes	Applicant response
For assessable development		
<b>PO5</b> The establishment of uses is consistent with the outcomes sought for the Tourist accommodation zone and protects the zone from the intrusion of inconsistent uses.	<b>AO5</b> Inconsistent uses as identified in Table 6.2.14.3.b are not established in the Tourist accommodation zone.	Complies with AO5. All proposed uses are code assessable.
PO6 Development is located, designed, operated and managed to respond to the characteristics, features and constraints of the site and surrounds. Note – Planning scheme policy – Site assessments provides guidance on identifying the characteristics, features and constraints of a site and its surrounds.	AO6 No acceptable outcomes are prescribed.	Complies with PO6. The proposed development has been informed by extensive flood and stormwater studies, geotechnical studies, and hydrological design. Additionally, the proposed development is reflective of the low rise tourist accommodation currently developed in the area. The site is not mapped as containing any protected vegetation or natural areas. All vegetation on site has been established as a result of previous landscaping schemes associated with the existing use.
<b>PO7</b> Development does not adversely affect the tropical, tourist and residential character and amenity of the area in terms of traffic, noise, dust, odour, lighting or other physical or environmental impacts.	<b>AO7</b> No acceptable outcomes are prescribed.	Complies with PO7. The proposed development is consistent with the intent for the zone.
<b>PO8</b> Any loading/unloading areas, servicing areas and outdoor storage areas are screened from public view or adjacent sensitive uses.	<ul> <li>AO8</li> <li>Outdoor loading/unloading, servicing and storage areas are sited or screened so they are:</li> <li>(a) not visible from any off-site public place;</li> <li>(b) not located adjacent to premises used for sensitive uses.</li> </ul>	Complies with AO8. Loading and unloading is provided for within the Hotel building and servicing occurs from Crimmins Street.



<b>PO9</b> Tourist developments include recreational and ancillary services and facilities for the enjoyment of guests.	<ul> <li>AO9.1</li> <li>Development which includes accommodation for tourists incorporates a mix of the following recreational and ancillary services and facilities: <ul> <li>(a) swimming pools;</li> <li>(b) tennis courts;</li> <li>(c) barbecue areas;</li> <li>(d) outdoor lounging / recreation areas;</li> <li>(e) restaurants / bars;</li> <li>(f) tourist-focussed shopping;</li> <li>(g) tour booking office;</li> <li>(h) spa / health clubs.</li> </ul> </li> </ul>	Complies with AO 9.1 The Short Term Accommodation (Hotel) provides the following services exclusively for visitors- (a) swimming pools (b) Outdoor lounging/recreation areas (c) Restaurants (d) Spa/gym/wellness services/kids clubs etc.
	<ul> <li>AO9.2</li> <li>Any commercial services or facilities incorporated into a tourist development are small scale and predominantly service in-house guests only.</li> <li>AO9.3</li> <li>Where a commercial service or facility offers services to persons over and above in-house guests, the commercial component provides on- site car parking for 50% of the floor area available for use in accordance with the relevant requirements of the Parking and access code.</li> </ul>	Complies with AO9.2 The only commercial service that is available to external patrons are the Food and Drink Outlets. They are of an appropriate scale considering the size of the Hotel and will be used predominantly by visitors. Complies with AO 9.3. A detailed carparking analysis is provide in the Traffic Impact Assessment at Attachment 6 and in the Access, Parking, and Servicing code compliance.
<b>PO10</b> New lots contain a minimum area of 1000m <sup>2</sup> .	AO10 No acceptable outcomes are prescribed.	The proposed development does not technically comply with PO10. The reconfiguration outcomes in the Tourist Accommodation Zone code anticipate 1000m <sup>2</sup> lots. The purpose of this lot size is to facilitate Tourist Accommodation outcomes. The proposed development is for short-term accommodation and multiple dwellings and meets the intent of the Tourist Accommodation



		Zone code.The Reconfiguring a Lot aspect of the development is a technical aspect to create the Community Title Scheme Development for the Short Term Accommodation (Hotel lot) and the Short Term Accommodation/Multi Unit Dwelling (Villa) lots.Whilst the lots proposed are less than 1000m², the proposal meets the purpose of the Reconfiguring a Lot code and the Tourist Accommodation Zone Code.
Performance outcomes	Acceptable outcomes	Applicant response
PO11 New lots have a minimum road frontage of 20 metres.	AO11 No acceptable outcomes are prescribed.	<ul> <li>The proposed development does not technically comply with PO11.</li> <li>The reconfiguration outcomes in the Tourist Accommodation Zone code anticipate 20m lot frontages.</li> <li>The purpose of this lot size is to facilitate Tourist Accommodation outcomes.</li> <li>The proposed development is for short term accommodation and multiple dwellings and meets the intent of the Tourist Accommodation Zone code.</li> <li>The Reconfiguring a Lot aspect of the development is a technical aspect to create the Community Title Scheme Development for the Short Term Accommodation (Hotel lot) and the Short Term Accommodation/Multi Unit Dwelling (Villa) lots.</li> <li>In this circumstance the proposal meets the purpose of the Reconfiguring a Lot code and the Tourist Accommodation Zone Code.</li> </ul>



<b>PO12</b> New lots contain a 25 metre x 20 metre rectangle.	AO12 No acceptable outcomes are prescribed.	The proposed development does not technically comply with PO12.
		The reconfiguration outcomes in the Tourist Accommodation Zone code anticipate traditional rectangular lots.
		The purpose of this lot size is to facilitate Tourist Accommodation outcomes.
		The proposed development is for short term accommodation and multiple dwellings and meets the intent of the Tourist Accommodation Zone code.
		The Reconfiguring a Lot aspect of the development is a technical aspect to create the Community Title Scheme Development for the Short Term Accommodation (Hotel lot) and the Short Term Accommodation/Multi Unit Dwelling (Villa) lots.
		In this circumstance the proposal meets the purpose of the Reconfiguring a Lot code and the Tourist Accommodation Zone Code.

Table 6.2.14.3.b — Inconsistent uses within the Tourist accommodation zone

Inconsistent uses



Adult store	<ul> <li>Intensive horticulture</li> </ul>	<ul> <li>Permanent plantation</li> </ul>
Agricultural supplies store	Landing	<ul> <li>Port services</li> </ul>
Air services	Low impact industry	Renewable energy facility
<ul> <li>Animal husbandry</li> </ul>	Major electricity	Roadside stall
Animal keeping	infrastructure	<ul> <li>Rural industry</li> </ul>
Aquaculture	<ul> <li>Major sport, recreation and</li> </ul>	<ul> <li>Rural workers</li> </ul>
Brothel	entertainment facility	accommodation
Bulk landscape supplies	Marine industry	<ul> <li>Service station</li> </ul>
Cropping	Market	<ul> <li>Shopping centre</li> </ul>
Detention facility	<ul> <li>Medium impact industry</li> </ul>	Showroom
Extractive industry	<ul> <li>Motor sport facility</li> </ul>	<ul> <li>Special industry</li> </ul>
Funeral parlour	<ul> <li>Nightclub entertainment</li> </ul>	<ul> <li>Substation</li> </ul>
Garden centre	facility	Theatre
Hardware and trade	Office	<ul> <li>Transport depot</li> </ul>
supplies	<ul> <li>Outdoor sales</li> </ul>	<ul> <li>Veterinary services</li> </ul>
Health care services	<ul> <li>Outdoor sport and</li> </ul>	Warehouse
High impact industry	recreation	Wholesale nursery
Indoor sport and recreation	Outstation	Winery
Intensive animal industry	Park	-
,	<ul> <li>Parking station</li> </ul>	

Note – This table does not imply that all other uses not listed in the table are automatically consistent uses within the zone. Assessable development must still demonstrate consistency through the assessment process.



# 7.2.4 Port Douglas/Craiglie local plan code

#### 7.2.4.1 Application

- (1) This code applies to assessing development within the Port Douglas/Craiglie local plan area as identified on the Port Douglas/Craiglie local plan maps contained in Schedule 2.
- (2) When using this code, reference should be made to Part 5.

#### 6.2.5.2 Context and setting

Editor's note - This section is extrinsic material under section 15 of the Statutory Instruments Act 1992 and is intended to assist in the interpretation of the Port Douglas/Craiglie local plan code.

The Port Douglas/Craiglie local plan encompasses the traditional Port Douglas town centre and surrounding tourist and residential areas, including Four Mile Beach and Craiglie.

Port Douglas was officially named in 1877. It was initially settled as the port of entry and supply for the Hodgkinson goldfield on the Hann Tableland which was proclaimed in 1876. It was the dominant port in Far North Queensland until a decision was made to establish Cairns as the terminus for a new railway in 1884. This ended the town's dominance, and it gradually became a small centre for local residents and fishing activities. During the 1970s and 1980s, a renewed interest in Far North Queensland as a holiday destination led to a boom in large scale tourism and residential development with Port Douglas re-emerging as a premium destination.

The Captain Cook Highway runs north-south to the west of Port Douglas through Craiglie (Four Mile). Craiglie caters for the permanent resident population associated with Port Douglas, as well as providing for service industries to support business in the town. The majority of urban development is confined to the eastern side of the highway. The main entrance to Port Douglas at the intersection of Port Douglas Road is accentuated by mature oil palms lining both sides of the street for almost the entire length of the corridor into the heart of Port Douglas.

Flagstaff Hill is a prominent headland on the northern side of the Port Douglas town centre providing a green tropical backdrop to the town. Island Point Road runs to the top of Flagstaff Hill and provides access to the iconic lookout overlooking the sweep of Four Mile Beach.

Macrossan Street is the main shopping area in Port Douglas running in a general east-west direction at the base of Flagstaff Hill connecting Four Mile Beach to Dickson Inlet. Tourist and commercial development is concentrated towards the western side of Macrossan Street, with marine orientated activity focussed around the inlet. The western side of the inlet provides unspoiled views across mangroves to the distinctive formations and features of the coastal range.

The street pattern in the town centre is based on the original grid pattern survey of 1878. While the town has lost many of its original buildings to cyclones and redevelopment, a number of important built features remain including the Central Hotel, the Court House Hotel, a number of relocated buildings such as St Mary's Church, the former Clink Theatre and the Court House Museum and scattered memorials such as the Carstens memorial in Macrossan Street

DOUGLAS SHIRE

Douglas Shire Planning Scheme 2018 Version 1.0 Part 67 Local plans Code Compliance Table – 7.2.4 Port Douglas / Craiglie local plan code Page 1 of 35



and the Port Douglas War memorial in Wharf Street. The Sugar Wharf on Dickson Inlet was the original terminus of the tramline to Mossman. The tramline now terminates adjacent to the Port Douglas marina and operates as the Balley Hooley passenger service on four kilometres of track between the Port Douglas Marina and St Crispins Station.

A particular characteristic of the local plan area is its high quality, lush landscaping complementing the tropical resort town atmosphere. This theme will be carried throughout the local plan area with gateways, nodes and corridor planting emphasising the role of the town as a tropical tourist destination.

#### 7.2.4.3 Purpose

- (1) The purpose of the Port Douglas/Craiglie local plan code is to facilitate development outcomes consistent with community values, the local tropical built-form and protection of the natural environment within the Port Douglas/Craiglie local plan area, while providing a platform for investment and prosperity.
  - (a) In addition, the purpose of the code is supported by the Port Douglas Waterfront Master Plan which provides a clear strategic direction for the incremental transformation of the Port Douglas Waterfront, including the following objectives:
  - (b) To set out a vision for revitalisation of the waterfront;
  - (c) To protect and enhance the environmental attributes; and
- (2) To provide a flexible framework, expressed through several key strategies that will assist the Council and community in managing change.
- (3) The purpose of the code will be achieved through the following overall outcomes:
  - (a) Port Douglas will continue to develop as the premium destination for international and domestic tourists in the Far North Queensland Region, while also acting for permanent residents attracted to the associated lifestyle.
  - (b) Major tourist, retail, dining and entertainment facilities will consolidate in the Town Centre and the Waterfront North sub-precincts, with improved pedestrian connections between the town centre and the waterfront.
  - (c) Craiglie will develop as an integrated residential community with some low scale tourism development opportunities in appropriate locations. Craiglie will also function as small scale commercial and light industry node, providing employment opportunities for the Shire's permanent resident population.
  - (d) All forms of development will complement the tropical image of the town through distinctive tropical vernacular, urban design and landscaping.
  - (e) Character will be enhanced through the identification of gateway sites, landmarks, main approach routes and pedestrian thoroughfares and view corridors;
  - (f) The Flagstaff Hill, Dickson Inlet, Four Mile Beach and other areas of scenic and environmental significance will be protected from development. Vegetation cover will dominate over built form.



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- (g) Vegetation, iconic to the character of Port Douglas, including the avenues of Oil Palms, is retained and where appropriate supplemented.
- (h) Development will be indistinguishable from view from Four Mile Beach. In addition, any development on Flagstaff Hill will be indistinguishable when viewed from vantage points in Port Douglas.
- (i) Residential areas are designed as pleasant, functional and distinctive, in visually well-defined areas.
- (4) The purpose of the code will be further achieved through the following overall outcomes:
  - (a) Precinct 1 Port Douglas precinct
    - (i) Sub-precinct 1a Town Centre sub-precinct
    - (ii) Sub-precinct 1b Waterfront North sub-precinct
    - (iii) Sub-precinct 1c Waterfront South sub-precinct
    - (iv) Sub-precinct 1d Limited Development sub-precinct
    - (v) Sub-precinct 1e Community and recreation sub-precinct
    - (vi) Sub-precinct 1f Flagstaff Hill sub-precinct
  - (b) Precinct 2 Integrated Resort precinct
  - (c) Precinct 3 Craiglie Commercial and Light Industry precinct
  - (d) Precinct 4 Old Port Road / Mitre Street precinct
  - (e) Precinct 5 Very Low Density Residential/ Low Scale Recreation/Low Scale Educational/Low Scale Entertainment Uses precinct

#### Precinct 1 – Port Douglas precinct

- (5) In addition to the overall outcomes, the outcomes sought for the precinct are to ensure that:
  - (a) development will contribute to the incremental transformation of the township, preserving and enhancing maritime activities and environmental areas, delivering tropical open spaces and a high quality public realm, and allowing for tourism opportunities and investment.
  - (b) development contributes to the enhancement of the Port Douglas precinct through the following development outcomes:
    - (i) access and connectivity throughout the township is enhanced through a series of improvements to circulation and mobility, including:.
      - (A) access to, and connectivity along, the waterfront and foreshore areas is maintained and, where appropriate, enhanced;
      - (B) reducing reliance on the waterfront as a car parking resource.
    - (ii) the use of land in the Port Douglas precinct improves the cohesive layout of the township through:
      - (A) the establishment of distinct sub-precincts that reinforce the character and built form of the Port Douglas local plan area including:



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- Port Douglas centre sub-precinct 1a Town Centre sub-precinct;
- Port Douglas centre sub-precinct 1b Waterfront North sub-precinct;
- Port Douglas centre sub-precinct 1c Waterfront South sub-precinct;
- Port Douglas centre sub-precinct 1d Limited development sub-precinct;
- Port Douglas centre sub-precinct 1e Community and recreation precinct;
- Port Douglas centre sub-precinct 1f Flagstaff Hill sub-precinct;
- (B) facilitating marina facilities and supporting marine industry uses as a key part of the local economy;
- (C) reducing conflict between industry, community and commercial activities in the waterfront, without diminishing the marine industry capacity in the Port Douglas precinct;
- (iii) environment and sustainability is integrated into the township through:
  - (A) preservation and enhancement of the qualities and characteristics of environmental areas of the township;
  - (B) water sensitive urban design is considered as a means of water quality improvement and management of overland flow to ensure hard infrastructure solutions in Warner Street can be mitigated;
  - (C) design of buildings and access way improvements prioritises walking and cycling modes of transport.
- (iv) the tropical character of the Port Douglas precinct is enhanced by ensuring development:
  - (A) maintains and enhances the built form, local character, streetscapes and natural elements of the township;
  - (B) is compatible with the desired character and amenity of local places and neighbourhoods;
  - (C) does not exceed the height of buildings designations which contribute to the desired form of the township which contains three storey development heights in sub-precinct 1a – Town Centre sub-precinct and part of sub-precinct 1b – Waterfront North subprecinct;
  - (D) implements high quality landscaped environments around buildings and on streets;
  - (E) protects the recognisable character and locally significance sites throughout the precinct.
- (v) public spaces and the streetscape are enhanced through:
  - (A) an increase in the quantity and quality of public land and places throughout the precinct;
  - (B) consolidating community recreation and sporting uses to create a precinct of community focussed activity between Mudlo Street and Wharf Street;
  - (C) improved connections between the town centre and the waterfront marina, including an investigation of a plaza on the waterfront;



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- (D) improved streetscapes with high quality landscaping, surface treatments and shaded pedestrian environments;
- (E) the creation of a sense of place through aesthetic streetscapes and built-form character;
- (F) managing vegetation to ensure succession of planting and the ongoing presence of significant trees.
- (vi) advertising signage is small scale, low-key and complements the tropical character of the town.

#### Sub-precinct 1a - Town Centre sub-precinct

- (6) In addition to other overall development outcomes, development in the Town Centre sub-precinct facilitates the following development outcomes:
  - (a) tourist, retail, dining and entertainment activities are facilitated at an appropriate pedestrian scale;
  - (b) drive-through developments, bulky goods showrooms, outdoor sales, saleyards and other big-box retailing or entertainment facilities are not established;
  - (c) development contributes to a high quality public realm;
  - (d) parking (and associated infrastructure) does not undermine the relationship between buildings and street or pedestrian circulation patterns;
  - (e) consolidation of community and cultural land use activities along Mowbray Street between Wharf Street and Mudlo Street;
  - (f) active street frontages are established along Macrossan and Wharf Streets and other nearby streets as shown on the Port Douglas Centre Active Frontages and Pedestrian and Cycle Network Plan;
  - (g) Live entertainment activities are concentrated within the Live Entertainment Precinct and are subject to the recommendations of a suitably qualified acoustic engineer.

#### Sub- precinct 1b - Waterfront North sub-precinct

- (7) In addition to other overall development outcomes, development in the Waterfront North sub-precinct facilitates the following development outcomes:
  - (a) the precinct evolves as a revitalised open space and waterside development precinct;
  - (b) development within the precinct is designed to be sympathetic to the environmentally sensitive Dickson Inlet and mitigates any adverse impacts;
  - (c) the establishment of mixed-use development is facilitated to promote activity and vitality;
  - (d) public pedestrian access is maximised along the extent of the edge of the waterfront, consisting of a boardwalk or similar structure available for 24-hour use;
  - (e) development contributes to a high quality public realm;
  - (f) built form provides an attractive point of arrival from both land and sea;
  - (g) pedestrian connectivity is safe, efficient and provides for the needs of all users of the Port Douglas waterfront;



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- (h) parking (and associated infrastructure) does not undermine the relationship between buildings and street or pedestrian circulation patterns;
- the importance of existing marine-based industries to the area is recognised, not diminished and protected from incompatible uses. Relocation of marine based industries to an alternative precinct does not occur until such time that agreement has been reached among all relevant stakeholders such that development does not diminish the viability of marine based industrial uses that directly serve the Port Douglas tourist and fishing operators and private boat owners;
- (j) marine infrastructure is established to service the tourism, fishing and private boating community;
- (k) Live entertainment activities are concentrated within the Live Entertainment Precinct and are subject to the recommendations of a suitably qualified acoustic engineer;
- T (I) he functionality of the Balley Hooley tourist rail is retained.

#### Sub-precinct 1c – Waterfront South sub-precinct

- (8) In addition to all other overall development outcomes, development in the Waterfront South sub-precinct facilitates the following development outcomes:
  - (a) any use of land in the precinct does not affect the environmental, habitat, conservation or scenic values of Dickson Inlet and surrounding land;
  - (b) marine-based industries are established on appropriate land having regard to site suitability, accessibility, surrounding land uses, and location of utilities and services;
  - (c) marine-based industry achieves appropriate environmental standards;
  - (d) industrial buildings have a high standard of layout and building design;
  - (e) landscaping provides an attractive streetscape and screens utility, storage and car parking from the street and other public areas;
  - (f) the precinct is protected from encroachment of incompatible land use activities.

#### Sub-precinct 1d – Limited Development sub-precinct

- (9) In addition to all other overall development outcomes, development in the Limited Development sub-precinct facilitates the following development outcomes:
  - (a) any use of land in the precinct does not affect the environmental, habitat, conservation or scenic values of Dickson Inlet and surrounding land;
  - (b) the open nature and character of the precinct is retained maintaining view lines across the inlet;
  - (c) community and recreation land use activities are established that promote public access to the foreshore.



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#### Sub-precinct 1e – Community and recreation sub-precinct

- (10) In addition to all other overall development outcomes, development in the Community and recreation sub-precinct facilitates the following development outcomes:
  - (a) development for community uses, including sport and recreation is facilitated.
  - (b) sport and recreation activities predominantly involve outdoor activities;
  - (c) areas of natural vegetation are protected from further development;
  - (d) shade trees are increased, in appropriate locations, surrounding the sports fields.

#### Sub-precinct 1f – Flagstaff Hill sub-precinct

- (11) In addition to all other overall development outcomes, development in the Flagstaff Hill sub-precinct facilitates the following development outcomes:
  - (a) development is not established where it results in detriment to the vegetated and scenic qualities of Flagstaff Hill;
  - (b) development minimises excavation and filling;
  - (c) buildings and other works are unobtrusive when viewed from vantage points in Port Douglas and are designed and constructed of colours and materials which complement the hill's vegetated state;
  - (d) views from public viewing points within the precinct are protected.

#### Precinct 2 – Integrated Resort precinct

(12) In addition to the overall outcomes, development in the Integrated Resort precinct facilitates development in accordance with the Integrated Development Resort Act, 1987.

Editor's note – The development of land within this precinct is subject to the Integrated Development Resort Act 1987 (IDRA). Where a conflict exists between this planning scheme and the IDRA, the IDRA prevails.

#### Precinct 3 – Craiglie Commercial and Light Industry precinct

- (13) In addition to the overall outcomes, development in the Craiglie Commercial and Light Industry precinct facilitates the following overall outcomes:
  - (a) development supports the tourism and marine industries in Port Douglas, along with the small-scale commercial and light industry land uses that support the local economy that would otherwise be better suited to a location outside the Port Douglas Centre Precinct unless they pose a safety issue;
  - (b) development adjacent to the Captain Cook Highway presents an attractive appearance to the highway. The rain-trees, melaleucas and eucalypt trees along the Captain Cook Highway are retained where possible, taking into account the Department of Transport and main Road's requirements;



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- (c) retailing activities are generally restricted to those which are ancillary and necessarily associated with the primary service and light industry nature of the area;
- (d) adjacent residential areas are protected from industry nuisances;
- (e) lots fronting Downing Street, between Dickson Street and Beor Street, are provided with an appropriate standard of road access and infrastructure, prior to development occurring.

#### Precinct 4 – Old Port Road / Mitre Street precinct

- (14) In addition to the overall outcomes, development in the Old Port Road / Mitre Street precinct facilitates the following overall outcomes:
  - (a) the precinct is intended to be used for outdoor recreational land use activity, primarily as a golf course;
  - (b) areas of significant vegetation are protected from development and retained;
  - (c) other forms of development will only be considered if substantial areas of open space are retained adjacent to existing residential areas to maintain the existing residential amenity of open views across open space.

#### Precinct 5 – Very Low Density Residential/Low Scale Recreation/Low Scale Educational/Low Scale Entertainment Uses precinct

- (15) In addition to the overall outcomes, development in the Very Low Residential Density/Low Scale Recreation/Low Scale Educational/Low Scale Entertainment Uses precinct facilitates the following overall outcomes:
  - (a) residential accommodation does not exceed a maximum of 8.5 metres in building height;
  - (b) minimum lot sizes exceed 2 hectares;
  - (c) very low scale and intensity recreation/ very low scale and intensity educational/ and very low scale entertainment uses may be appropriate in areas of the precinct subject to erosion and other flooding constraints.

Note - Undeveloped lots in this precinct are located on very low-lying land. Council may consider a consolidation of existing land titles via lot reconfiguration to lot sizes less than 2 hectares, where the reconfigured lots are consolidated onto the highest terrain, to avoid a pattern of development consisting of dwelling houses located on isolated islands of raised building pads.



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#### Criteria for assessment

#### Table 7.2.4.4.a -Port Douglas / Craiglie local plan - assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable development		
Development in the Port Douglas / Craiglie local p	lan area generally	
<b>PO1</b> Pedestrians, cyclists, motorists and public transport users can easily move into and through the precinct along planned connectivity routes, identified on the Port Douglas / Craiglie local plan maps contained in Schedule 2.	<b>AO1</b> A pedestrian and cycle movement network is integrated and delivered through development.	Complies with AO1. The internal pedestrian and cycle movements throughout the site are well integrated and demonstrated. The site is connected via existing networks from Davidson Street.
<b>PO2</b> Development retains and enhances key landscape elements including character trees and areas of significant vegetation contributing to the character and quality of the local plan area and significant views and vistas and other landmarks important to the context of Port Douglas / Craiglie (as identified on the Port Douglas/ Craiglie Townscape Plan map contained in Schedule 2).	<ul> <li>AO2.1</li> <li>Development provides for the retention and enhancement of existing mature trees and character vegetation that contribute to the lush tropical character of the town, including: <ul> <li>(a) the tree covered backdrop of Flagstaff Hill;</li> <li>(b) natural vegetation along watercourses, in particular the Mowbray River, Beor Creek and Dickson Inlet;</li> <li>(c) the tidal vegetation along the foreshore;</li> <li>(d) beachfront vegetation along Four Mile Beach, including the fringe of Coconut Palms;</li> <li>(e) the oil palm avenues along the major roads;</li> <li>(f) the lush landscaping within major roundabouts at key nodes;</li> <li>(g) Macrossan Street and Warner Street;</li> <li>(h) Port Douglas waterfront.</li> </ul> </li> </ul>	Complies with PO2. Although the site does not impact significant views and vistas, it still seeks to retain and enhance key landscape features in this location. The proposed landscaping plan provided at Attachment 3 and landscaping architectural features contribute to the character and quality of the local plan area. This is critical to the luxury brand of the product.





Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>AO2.2 Development protects and does not intrude into important views and vistas as identified on the Port Douglas Townscape Plan map contained in Schedule 2, in particular: <ul> <li>(a) Flagstaff Hill;</li> <li>(b) Four Mile Beach;</li> <li>(c) Across to the ranges over Dickson Inlet;</li> <li>(d) Mowbray Valley.</li> </ul> </li> <li>AO2.3 Important landmarks, memorials and monuments are retained.</li> </ul>	
<b>PO3</b> Development contributes to the protection, reinforcement and where necessary enhancement of gateways and key intersections identified on the Port Douglas / Craiglie local plan maps contained in Schedule 2.	<b>AO3</b> Development adjacent to the gateways and nodes as identified on the Port Douglas / Craiglie local plan maps contained in Schedule 2 incorporates architectural features and landscaping treatments and design elements that enhance the sense of arrival and way finding within the town.	Not applicable.
<b>PO4</b> Landscaping of development sites complements the existing tropical character of Port Douglas and Craiglie.	<b>AO4</b> Landscaping incorporates the requirements of Planning scheme policy SC6.7 – Landscaping, in particular landscaping should be capable of achieving a 60% screening of development within 5 years and predominantly consists of endemic vegetation.	Complies with PO4 The proposed landscaping plan provided at Attachment 3 and landscaping architectural features contribute to and enhance the existing tropical character of Port Douglas and Craiglie. This is critical to the luxury brand of the product.
<b>PO5</b> Development does not compromise the safety and efficiency of the State-controlled road network.	<b>AO5</b> Direct access is not provided to a State-controlled road where legal and practical access from another road is available.	Complies with PO5. This is addressed in the Traffic Impact Assessment provided at Attachment 6 and



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Performance outcomes	Acceptable outcomes	Applicant response
		in more detail in the Traffic Network Overlay Code and State SDAP assessment.
		Legal and practical access exists from a State controlled road and will be retained. Servicing is provided from the local road network.



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Performance outcomes	Acceptable outcomes	Applicant response
For assessable development		
Additional requirements in Precinct 1 – Port Doug	las precinct	
<b>PO6</b> The views and vistas identified on the Port Douglas / Craiglie local plan maps contained in Schedule 2 are maintained.	<ul> <li>AO6.1 Development does not impede continued views to scenic vistas and key streetscapes within the local plan area.</li> <li>AO6.2 Unless otherwise specified within this Local Plan, buildings are set back not less than 6 metres from the primary street frontage.</li> </ul>	Not Applicable
<ul> <li>PO7</li> <li>Vehicle access, parking and service areas: <ul> <li>(a) do not undermine the relationship between buildings and street or dominate the streetscape;</li> <li>(b) are designed to minimise pedestrian vehicle conflict;</li> <li>(c) are clearly identified and maintain ease of access at all times.</li> </ul> </li> </ul>	<ul> <li>AO7.1 For all buildings, parking is: <ul> <li>(a) to the side of buildings and recessed behind the main building line; or</li> <li>(b) behind buildings; or</li> <li>(c) wrapped by the building façade, and not visible from the street.</li> </ul> AO7.2 Ground level parking incorporates clearly defined pedestrian routes. AO7.3 Any porte-cocheres, disabled and pedestrian accesses are accommodated within the boundary of new or refurbished development. AO7.4 Where the development is an integrated mixed-use development incorporating short term accommodation or multiple dwellings and either food and drink outlet or hotel or shop or shopping centre or office, on-site parking spaces are provided as per the number prescribed in the Parking and access code with a relaxation of 30% of spaces required for the non-residential uses.</li></ul>	Not Applicable





Performance outcomes	Acceptable outcomes	Applicant response
	<b>AO7.5</b> On-site car parking available for public use is clearly signed at the site frontage.	
	<b>AO7.6</b> Boom gates, pay machines or other regulatory devices to control access to a publicly available car parking area are not constructed or installed.	
<b>PO8</b> Precinct 1 – Port Douglas precinct is not characterised by a proliferation of advertising signs.	AO8 No acceptable outcomes are prescribed.	Not Applicable
Additional requirements for Sub-precinct 1a - Tow	vn Centre sub-precinct	
<ul> <li>PO9</li> <li>Building heights: <ul> <li>(a) do not overwhelm or dominate the town centre;</li> </ul> </li> <li>(b) respect the desired streetscape;</li> <li>(c) ensure a high quality appearance when viewed from both within the town centre subprecinct and external to the town centre subprecinct;</li> <li>(d) remain subservient to the natural environment and the backdrop of Flagstaff Hill.</li> <li>(e) do not exceed 3 storeys.</li> </ul>	AO9 Buildings and structures are not more than 3 storeys and 13.5 metres in height, with a roof height of not less than 3 metres. Note – Height is inclusive of the roof height.	Not Applicable
<b>PO10</b> Building design, the streetscape, pedestrian paths and street front spaces promote integration with the surrounding area and the rest of Precinct 1 – Port Douglas Precinct.	<b>AO10</b> No acceptable outcomes are prescribed.	Not Applicable



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DOUGLAS SHIRE PLANNING SCHEME

Performance outcomes	Acceptable outcomes	Applicant response
PO11 Buildings: (a) address street frontages; (b) ensure main entrances front the street or public spaces; (c) do not focus principally on internal spaces or parking areas.	<b>AO11</b> No acceptable outcomes are prescribed.	Not Applicable
<ul> <li>PO12</li> <li>Setbacks at ground level provide for: <ul> <li>(a) connection between pedestrian paths and public places;</li> <li>(b) areas for convenient movement of pedestrians;</li> <li>(c) changes in gradient of the street.</li> </ul> </li> </ul>	<ul> <li>AO12</li> <li>Setbacks at ground level: <ul> <li>(a) are clear of columns and other obstructions;</li> <li>(b) have pavement matching the gradient of adjoining footpaths and connecting pedestrian areas on adjoining sites;</li> <li>(c) connect without any lip or step to adjoining footpaths.</li> </ul> </li> </ul>	Not Applicable
AO13 Buildings do not result in a reduction of views and vistas from public places to: (a) Flagstaff Hill; (b) Dickson Inlet; (c) public open space; (d) places of significance.	AO13 No acceptable outcomes are prescribed.	Not Applicable
<b>PO14</b> Development enhances the distinctive tropical resort town and identity of Port Douglas and encourages pedestrian activity at street level including shade protection across the footpath for the length of the building.	A014 Development is built up to the street frontage/s at the street level and incorporates a light frame awning, a minimum of 3 metres in width for the length of the street frontage/s; or If a development includes an outdoor dining area at ground/footpath level, the dining area has a maximum setback of 3 metres and the required awning is still maintained along the length of the street frontage/s. Note – PO24 provides more detail on awning design.	Not Applicable

DOUGLAS SHIRE

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Performance outcomes	Acceptable outcomes	Applicant response
<b>PO15</b> Development is predominantly commercial in nature with any tourist accommodation having a secondary focus and not located on the street-level frontage where active frontages are encouraged as identified the Port Douglas local plan maps contained in Schedule 2.	<ul> <li>AO15.1</li> <li>Centre activities establish: at street level on active street frontages; a maximum of one level above street level.</li> <li>AO15.2</li> <li>Any residential development activities or short term accommodation is located above street level of the active frontage, but not on or up to the street frontage in any development, including mixed use development.</li> </ul>	Not Applicable
<ul> <li>PO16 Detailed building design: <ul> <li>(a) enhances the visual amenity of the streetscape;</li> <li>(b) has a legible and attractive built form that is visually enhanced by architectural elements;</li> <li>(c) contributes to a distinctive tropical north Queensland, seaside tourist town character;</li> <li>(d) integrates major landscaping elements to maximise their aesthetic value to ensure that the lush, vegetated character of the Town Centre sub-precinct is maintained.</li> </ul> </li> </ul>	AO16 No acceptable outcomes are prescribed.	Not Applicable
<ul> <li>PO17</li> <li>Buildings exhibit variations to their external appearance and the shape of the built form to provide visual interest through: <ul> <li>(a) surface decoration;</li> <li>(b) wall recesses and projections;</li> <li>(c) a variation in wall finishes; windows, balconies, awnings and other visible structural elements.</li> </ul> </li> </ul>	AO17 No acceptable outcomes are prescribed.	Not Applicable



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Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>(d) differentiating between the lower, middle and upper parts of the building by varying the façade and/or the shape of the built form, where comprised of more than two storeys.</li> </ul>		
<ul> <li>PO18 Roofs are not characterised by a cluttered display of plant and equipment, in particular: <ul> <li>(a) building caps and rooftops contribute to the architectural distinction of the building and create a coherent roofscape for the Town Centre sub-precinct; </li> <li>(b) service structures, lift motor rooms and mechanical plant and equipment are designed as an architectural feature of the building or are screened from public view; <ul> <li>(c) rooftops are not used for advertising.</li> </ul></li></ul></li></ul>	AO18 No acceptable outcomes are prescribed.	Not Applicable
<ul> <li>P019</li> <li>Windows and sun/rain control devices are used in the building form, in particular, sun shading devices are provided to: <ul> <li>(a) shade windows;</li> <li>(b) reduce glare;</li> <li>(c) assist in maintaining comfortable indoor temperatures;</li> <li>(d) minimising heat loads;</li> <li>(e) enrich the North Queensland tropical character of the Town Centre sub-precinct;</li> <li>(f) provide architectural interest to building façades.</li> </ul> </li> </ul>	AO19 No acceptable outcomes are prescribed.	Not Applicable



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Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>PO20</li> <li>Buildings are finished with high quality materials, selected for:</li> <li>(a) their ability to contribute the character of Town Centre sub-precinct;</li> <li>(b) easy maintenance, durability and an ability not to readily stain, discolour or deteriorate.</li> </ul>	AO20 No acceptable outcomes are prescribed	Not Applicable
<b>PO21</b> Buildings do not incorporate any type of glass or other materials that are likely to reflect the sun's rays in a manner that may create a nuisance, discomfort or a hazard.	AO21 No acceptable outcomes are prescribed.	Not Applicable
PO22 Façades and elevations do not include large blank walls. Openings and setbacks are used to articulate vertical building surfaces.	<ul> <li>AO22.1 Development has a maximum length of unbroken building facade of 20 metres and a maximum extent of overall development in the same style/design along the street frontage/s of 40 metres.</li> <li>AO22.2 Any break in the building façade varies the alignment by a 1 metre minimum deviation.</li> <li>AO22.3 A minimum of three of the following building design features and architectural elements detailed below are incorporated to break the extended facade of a development: (a) a change in roof profile; (b) a change in parapet coping; (c) a change in awning design; (d) a horizontal or vertical change in the wall plane; or (e) a change in the exterior finishes and exterior colours of the development.</li> </ul>	Not Applicable

DOUGLAS SHIRE



Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>PO23 Building facades that face public spaces at ground level: <ul> <li>(a) complement the appearance of the development and surrounding streetscape;</li> <li>(b) enhance the visual amenity of the public place;</li> <li>(c) include a variety of human scale architectural elements and details;</li> <li>(d) provide an opportunity for the casual and convenient surveillance of public space from within the development. </li> </ul></li></ul>	<ul> <li>AO23</li> <li>Building facades at the ground floor of development that face public space are designed to ensure: <ul> <li>(a) a minimum of 70% of the façade area is comprised of windows, wall openings or shop fronts that permit the casual surveillance of the public space from the development;</li> <li>(b) a visually prominent main entrance that faces the principal public place;</li> <li>(c) vertical architectural elements and features are incorporated at 3 metre or less intervals along the length of the façade.</li> </ul> </li> </ul>	Not Applicable
<ul> <li>PO24 Awnings for pedestrian shelter are consistent with the character setting of the Town Centre sub-precinct and: <ul> <li>(a) extend and cover the footpath to provide protection from the sun and rain;</li> <li>(b) include lighting under the awning;</li> <li>(c) are continuous across the frontage of the site;</li> <li>(d) align to provide continuity with existing or future awnings on adjoining sites;</li> <li>(e) are a minimum of 3.0 metres in width and generally not more than 3.5 metres above pavement height;</li> <li>(f) do not extend past a vertical plane, 1.2 metres inside the kerb-line to enable street trees to be planted and grow; </li> <li>(g) are cantilevered from the main building with any posts within the footpath being non load-bearing.</li> </ul></li></ul>	AO24 No acceptable outcomes are prescribed.	Not Applicable




Performance outcomes	Acceptable outcomes	Applicant response
<b>PO25</b> Development integrates with the streetscape and landscaping improvements for Port Douglas.	AO25 Development fronting Davidson Street, Macrossan Street, Wharf Street, Mowbray Street and Warner Street is designed to integrate with the on-street landscaping and design improvements as outlined within the Port Douglas landscape master plan contained within Planning scheme policy SC6.7 – Landscaping. Note - Planning scheme policy SC6.7 - Landscaping provides guidance on meeting the Performance Outcome.	Not Applicable
Additional requirements for Sub-precinct 1b – Wa	terfront North sub-precinct	
<b>PO26</b> The establishment of uses is consistent with the outcomes sought for sub-precinct 1b – Waterfront North.	AO26 Uses identified as inconsistent uses in Table 7.2.4.b – Inconsistent uses in sub-precinct 1b Waterfront North sub precinct are not established in sub-precinct 1b - Waterfront North.	Not Applicable
<b>PO27</b> The bulk and scale of buildings is consistent with surrounding development and steps down to complement the open space areas in the adjoining limited development sub-precinct.	<ul> <li>AO27</li> <li>Buildings and structures are not more than: <ul> <li>(a) 3 storeys and 13.5 metres in height , with a roof height of not less than 3 metres, in those parts of the precinct south of Inlet Street;</li> <li>(b) 2 storeys and 8.5 metres in height, with a roof height of not less than 3 metres, in those parts of the precinct north of Inlet Street.</li> </ul> </li> <li>Note – Height is inclusive of roof height.</li> </ul>	Not Applicable
<b>PO28</b> Building design, streetscape, pedestrian paths and street front spaces promote integration with the surrounding area and the rest of Precinct 1 – Port Douglas Precinct	AO28 No acceptable outcomes are prescribed.	Not Applicable



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Performance outcomes	Acceptable outcomes	Applicant response
P029 Public pedestrian access along the water's edge is maximised.	<ul> <li>AO29.1 Public pedestrian access is provided along the frontage of the water's edge consisting of a boardwalk of a minimum width of 4 metres that is available of 24-hour use.</li> <li>AO29.2 A public plaza is incorporated into the design generally reflecting the requirements of the Port Douglas Waterfront Master Plan, focussing in the vicinity of the 'Duck Pond'.</li> <li>AO29.3 Built envelopes are setback a minimum of 3.0 metres from the board walk, with a shelter/shade zone between the building envelopes and the boardwalk consisting of shade structure, canopies, verandahs and the like.</li> </ul>	Not Applicable
<ul> <li>PO30</li> <li>Buildings: <ul> <li>(a) address street frontages;</li> <li>(b) ensure main entrances front the street or public spaces.</li> </ul> </li> </ul>	AO30 No acceptable outcomes are prescribed.	Not Applicable
<ul> <li>PO31</li> <li>Setbacks at ground level provide for: <ul> <li>(a) connection between pedestrian paths and public places;</li> <li>(b) areas for convenient movement of pedestrians;</li> <li>(c) changes in gradient.</li> </ul> </li> </ul>	<ul> <li>AO31</li> <li>Setbacks at ground level:</li> <li>(a) are clear of columns and other obstructions;</li> <li>(b) have pavement matching the gradient of adjoining footpaths and connecting pedestrian areas on adjoining sites;</li> <li>(c) connect without any lip or step to adjoining footpaths.</li> </ul>	Not Applicable





Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>PO32</li> <li>Buildings do not result in a reduction of views and vistas from public places to:</li> <li>(a) Dickson Inlet;</li> <li>(b) public open space;</li> <li>(c) places of significance.</li> </ul>	AO32 No acceptable outcomes are prescribed.	Not Applicable
<b>PO33</b> Development enhances the distinctive tropical resort town and identity of Port Douglas and encourages pedestrian activity at ground level including shade protection across the footpath and open space areas.	AO33 No acceptable outcomes are prescribed.	Not Applicable
<b>PO34</b> Development is predominantly commercial in nature with any tourist accommodation having a secondary focus and not located on the street-level frontage where active frontages are encouraged as identified the Port Douglas local plan maps contained in Schedule 2.	<ul> <li>AO34.1</li> <li>Centre activities establish: <ul> <li>(a) at street level on active street frontages;</li> <li>(b) a maximum of one level above street level.</li> </ul> </li> <li>AO34.2 <ul> <li>Residential development activities or short term accommodation is located above street /ground floor level of the active frontage, but not on or up to the street / public frontage in any development, including mixed use development.</li> </ul></li></ul>	Not Applicable
<ul> <li>PO35 Detailed building design: <ul> <li>(a) enhances the visual amenity of the streetscape;</li> <li>(b) has a legible and attractive built form that is visually enhanced by architectural elements;</li> <li>(c) contributes to a distinctive tropical north Queensland, seaside tourist town character;</li> <li>(d) integrates major landscaping elements to maximise their aesthetic value to ensure that the lush, vegetated character of the Waterfront North sub-precinct is maintained.</li> </ul></li></ul>	AO35 No acceptable outcomes are prescribed.	Not Applicable



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Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>PO36 Buildings exhibit variations to their external appearance and the shape of the built form to provide visual interest through: <ul> <li>(a) surface decoration;</li> <li>(b) wall recesses and projections;</li> <li>(c) a variation in wall finishes; windows, balconies, awnings and other visible structural elements.</li> <li>(d) differentiating between the lower, middle and upper parts of the building by varying the façade and/or the shape of the built form, where comprised of more than two storeys.</li> </ul></li></ul>	AO36 No acceptable outcomes are prescribed.	Not Applicable
<ul> <li>PO37</li> <li>Roofs are not characterised by a cluttered display of plant and equipment, in particular: <ul> <li>(a) building caps and rooftops contribute to the architectural distinction of the building and create a coherent roofscape for the Waterfront North sub-precinct;</li> <li>(b) service structures, lift motor rooms and mechanical plant and equipment are designed as an architectural feature of the building or are screened from public view;</li> <li>(c) rooftops are not used for advertising.</li> </ul> </li> </ul>	AO37 No acceptable outcomes are prescribed.	Not Applicable
<ul> <li>PO38</li> <li>Windows and sun/rain control devices are used in the building form, in particular, sun shading devices are provided to: <ul> <li>(a) shade windows;</li> <li>(b) reduce glare;</li> <li>(c) assist in maintaining comfortable indoor temperatures;</li> <li>(d) minimising heat loads;</li> </ul> </li> </ul>	AO38 No acceptable outcomes are prescribed.	Not Applicable



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Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>(e) enriching the North Queensland tropical character of the Waterfront North sub- precinct;</li> <li>(f) architectural interest to building façades.</li> </ul>		
<ul> <li>PO39 Buildings are finished with high quality materials, selected for: <ul> <li>(a) their ability to contribute the character of Waterfront North sub-precinct;</li> <li>(b) easy maintenance, durability and an ability not to readily stain, discolour or deteriorate.</li> </ul> </li> </ul>	AO39 No acceptable outcomes are prescribed.	Not Applicable
<b>PO40</b> Buildings do not incorporate any type of glass or other materials that are likely to reflect the sun's rays in a manner that may create a nuisance, discomfort or a hazard.	<b>AO40</b> No acceptable outcomes are prescribed.	Not Applicable
PO41 Façades and elevations do not include large blank walls and openings and setbacks are used to articulate vertical building surfaces.	<ul> <li>AO41.1 Development has a maximum length of unbroken building facade of 20 metres and a maximum extent of overall development in the same style/design along the street frontage/s of 40 metres.</li> <li>AO41.2 Any break in the building façade varies the alignment by a 1 metre minimum deviation.</li> <li>AO41.3 A minimum of three of the following building design features and architectural elements detailed below are incorporated to break the extended facade of a development: <ul> <li>(a) a change in roof profile;</li> <li>(b) a change in parapet coping;</li> <li>(c) a change in awning design;</li> </ul> </li> </ul>	Not Applicable





Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>(d) a horizontal or vertical change in the wall plane; or</li> <li>(e) a change in the exterior finishes and exterior colours of the development</li> </ul>	
<ul> <li>PO42 Building facades that face public spaces at ground level: <ul> <li>(a) complement the appearance of the development and surrounding streetscape;</li> <li>(b) enhance the visual amenity of the public place;</li> <li>(c) include a variety of human scale architectural elements and details;</li> <li>(d) provide an opportunity for the casual and convenient surveillance of public space from within the development.</li> </ul></li></ul>	<ul> <li>AO42</li> <li>Building facades at the ground floor of development that face public space are designed to ensure: <ul> <li>(a) a minimum of 70% of the façade area is comprised of windows, wall openings or shop fronts that permit the casual surveillance of the public space from the development;</li> <li>(b) a visually prominent main entrance that faces the principal public place;</li> <li>(c) vertical architectural elements and features are incorporated at 3 metre or less intervals along the length of the façade.</li> </ul> </li> </ul>	Not Applicable
<ul> <li>PO43</li> <li>Awnings for pedestrian shelter are consistent with the character setting of the Waterfront North subprecinct and: <ul> <li>(a) extend and cover the footpath to provide protection from the sun and rain;</li> <li>(b) include lighting under the awning;</li> <li>(c) are continuous across pedestrian circulation areas;</li> <li>(d) align to provide continuity with existing or future awnings on adjoining sites;</li> <li>(e) are a minimum of 3 metres in width and generally not more than 3.5 metres above pavement height;</li> <li>(f) do not extend past a vertical plane, 1.2 metres inside the street kerb-line to enable street trees to be planted and grow;</li> </ul> </li> </ul>	AO43 No acceptable outcomes are prescribed.	Not Applicable





Performance outcomes	Acceptable outcomes	Applicant response
(g) are cantilevered from the main building with any posts within the footpath being non load-bearing.		
<b>PO44</b> The Balley Hooley rail line and turn-table is retained and incorporated into development and maintains its functionality.	<ul> <li>AO44.1</li> <li>Bally Hooley rail line and turn-table is retained and incorporated into development to maintain its functionality.</li> <li>AO44.2</li> <li>Where development provides floor area for the Bally Hooley rail station, the gross floor area of the rail line and station does not generate a requirement for additional vehicle parking.</li> </ul>	Not Applicable
PO45Development recognises the importance of and relationship between the marina, commercial and residential development in the Waterfront North sub-precinct, and includes measures to mitigate the impact of:(a) noise;(b) odour;(c) hazardous materials;(d) waste and recyclable material storage.	AO45 No acceptable outcomes are prescribed.	Not Applicable
<b>PO46</b> Formalised public spaces and pedestrian paths/areas on freehold land are made accessible to the public.	AO46 No acceptable outcomes are prescribed.	Not Applicable



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Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>PO47</li> <li>Buildings, civic spaces, roads and pedestrian links are enhanced by: <ul> <li>(a) appropriate landscape design and planting;</li> <li>(b) themed planting that defines entry points, and creates strong 'entry corridors' into the waterfront;</li> </ul> </li> <li>(c) lighting and well-considered discrete signage that complements building and landscape design;</li> <li>(d) public artwork and other similar features that reflect the heritage and character of the Port Douglas Waterfront.</li> </ul>	AO47 No acceptable outcomes are prescribed.	Not Applicable
<b>PO48</b> Buildings are designed and sited to provide vistas along shared pedestrian/open space and movement areas in suitable locations.	AO48 No acceptable outcomes are prescribed.	Not Applicable
<b>PO49</b> Development does not diminish the viability of marine-based industrial uses that directly serve the Port Douglas tourist and fishing operators and private boat owners, particularly with respect to the slipway operation.	AO49 No acceptable outcomes are prescribed.	Not Applicable
<b>PO50</b> Marine infrastructure to service the tourism, fishing and private boating community is provided.	AO50 No acceptable outcomes are prescribed.	Not Applicable
<b>PO51</b> Changes to the Port Douglas Waterfront quay-line do not cause adverse impacts to the environmentally sensitive Dickson Inlet.	A051 Development that results in changes to the Port Douglas Waterfront quay-line is only established where an Ecological assessment report provides support to the changes. Note - Planning scheme policy SC6.8 – Natural environment provides guidance on preparing an ecological assessment report.	Not Applicable



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Performance outcomes	Acceptable outcomes	Applicant response
Additional requirements for Sub-precinct 1c – Wa	terfront South sub-precinct	
<b>PO52</b> The establishment of uses is consistent with the outcomes sought for Precinct 1c – Waterfront South.	AO52 Uses identified as inconsistent uses in Table 7.2.4.4.c are not established in Precinct 1c – Waterfront South.	Not Applicable
PO53 Development does not adversely impact on the natural environment, natural vegetation or watercourses.	<ul> <li>AO53.1 An Ecological assessment report is prepared identifying the environmental qualities of the surrounding natural and built features which are to be managed.</li> <li>Note - Planning scheme policy SC6.8 – Natural environment provides guidance on preparing an ecological assessment report.</li> <li>AO53.2 An Environmental Management Plan is prepared to manage potential impacts of the operation of the development on surrounding natural areas.</li> <li>Note - Planning scheme policy SC6.4 – Environmental management plans contains information to demonstrate compliance and guidance on preparing an Environmental Management Plan.</li> </ul>	Not Applicable
<b>PO54</b> Development of land at the end of Port Street adjacent to Dickson Inlet incorporates a slipway, or an alternative functioning facility, with capacity to service the Port Douglas marine and tourism industry.	<b>AO54</b> A master plan for the development is provided and implemented to demonstrate the integration of the slipway, or an alternative functioning facility, with other supporting service industry activities that service the marine and tourism industry of Port Douglas.	Not Applicable
<b>PO55</b> Buildings and structures are of a height, and are set back from side boundaries and other sensitive areas to ensure the scenic amenity and environmental qualities of the adjacent area are not adversely affected.	AO55.1 Development has a height of not more than 10 metres. AO55.2 Development is setback from all property boundaries not less than 3 metres.	Not Applicable



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Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>PO56 The site coverage of all buildings and structures ensures development: <ul> <li>(a) is sited in an existing cleared area or in an area approved for clearing;</li> <li>(b) has sufficient area for the provision of services;</li> <li>(c) development does not have an adverse effect on the environmental, habitat, conservation or landscape values of the onsite and surrounding sensitive areas. </li> </ul></li></ul>	AO56 No acceptable outcomes are prescribed.	Not Applicable
<ul> <li>PO57</li> <li>Premises include adequate provision for service vehicles, to cater for generated demand. Loading areas for service vehicles are designed to: <ul> <li>(a) be accommodated on-site;</li> <li>(b) maximise safety and efficiency of loading;</li> <li>(c) protect the visual and acoustic amenity of sensitive land use activities;</li> <li>(d) minimise adverse impacts on natural characteristics of adjacent areas.</li> </ul></li></ul>	<ul> <li>AO57.1 Sufficient manoeuvring area is provided on-site to allow a Medium Rigid Vehicle to enter and leave the site in a forward gear.</li> <li>AO57.2 Development is designed to ensure all service vehicles are contained within the site when being loaded/unloaded.</li> <li>AO57.3 Driveways, parking and manoeuvring areas are constructed and maintained to: <ul> <li>(a) minimise erosion from storm water runoff;</li> <li>(b) retain all existing vegetation.</li> </ul> </li> </ul>	Not Applicable
<b>PO58</b> Development ensures adverse impacts from service vehicles on the road network, external to the site, are minimised.	AO58 No acceptable outcomes are prescribed.	Not Applicable





Performance outcomes	Acceptable outcomes	Applicant response
<b>PO59</b> Entry to the site is landscaped to enhance the amenity of the area and provide a pleasant working environment.	<ul> <li>AO59</li> <li>Areas used for loading and unloading, storage, utilities and car parking are screened from public view:</li> <li>(a) by a combination of landscaping and screen fencing;</li> <li>(b) dense planting along any road frontage is a minimum width of 3 metres.</li> </ul>	Not Applicable
<b>PO60</b> Landscaping is informal in character and complementary to the existing natural environment, provides screening and enhances the visual appearance of the development.	<b>AO60</b> For any development landscaping is in accordance with the Plant species schedule in Planning scheme policy SC6.7– Landscaping.	Not Applicable
Additional requirements for Sub-precinct 1d – Limited Development sub-precinct		
<b>PO61</b> The height of buildings and structures contributes to the desired form and outcomes for the sub-precinct and are limited to a single storey.	AO61 Buildings and structures are not more than one storey and 4 metres in height. Note - Height is inclusive of the roof height.	Not Applicable
Additional requirements for Sub-precinct 1e - Con	mmunity and recreation sub-precinct	
<b>PO62</b> The precinct is developed for organised sporting activities and other community uses.	AO62 No acceptable outcomes are prescribed.	Not Applicable
Additional requirements for Sub-precinct 1f – Flagstaff Hill sub-precinct		
<b>PO63</b> Flagstaff Hill is protected from inappropriate development to protect the hill as an important natural landmark feature of Port Douglas and as a vegetated backdrop to the Town centre.	AO63 No acceptable outcomes are prescribed	Not Applicable





Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>PO64</li> <li>All development on Flagstaff Hill is designed to minimise the visibility of the development and to ensure development is subservient to the natural landscape and topography of the site, including through: <ul> <li>(a) building design which minimises excavation and filling;</li> <li>(b) buildings being designed to step down the site and incorporate foundations and footings on piers or poles;</li> <li>(c) buildings being visually unobtrusive and incorporating exterior finishes and muted colours which are non-reflective and complement the colours of the surrounding vegetation and view-shed;</li> <li>(d) protection of the views from public viewing points in the Port Douglas precinct.</li> </ul> </li> </ul>	AO64 No acceptable outcomes are prescribed.	Not Applicable
Additional requirements for Precinct 3 – Craiglie 0	Commercial and Light Industry precinct	
<b>PO65</b> Development supports the tourism and marine industries in Port Douglas, along with the small- scale commercial and light industry land uses that support the local economy that would otherwise be better suited to a location outside the Port Douglas Town Centre Precinct.	<b>AO65</b> Development consists of service and light industries and associated small scale commercial activities.	Not Applicable
<b>PO66</b> Development on lots adjacent to the Captain Cook Highway is sited, designed and landscaped to provide an attractive visual approach to Port Douglas with all buildings, structures and car parking areas setback a sufficient distance from the frontage to enable landscaping to soften or screen the appearance of the development.	<b>AO66.1</b> Buildings and structures are setback 8 metres from the Captain Cook Highway frontage, or no closer to the Captain Cook Highway frontage than buildings and structures on adjoining sites (averaged), whichever is the greater.	Not Applicable



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Performance outcomes	Acceptable outcomes	Applicant response
	<b>AO66.2</b> The setback area to the Captain Cook Highway frontage is landscaped with advanced dense planting including tree species (100 litre bag stock), which will, at maturity, exceed the height of the building(s) on the site.	
	AO66.3 Advertising signs are discreet in appearance with no large advertising signs, including tenancy signs, located on or near the Captain Cook Highway frontage, or within any landscaped setback area.	
	AO66.4 Car parking areas, loading and other service areas are designed to be screened from the Captain Cook Highway and are located so as to not be visually prominent from the Captain Cook Highway.	
Additional requirements for Precinct 6 – Very Low Uses precinct	v Residential Density / Low Scale Recreation / Low Sca	ale Educational / Low Scale Entertainment

PO67	A067	Not Applicable
<b>PO68</b> Reconfigured lots have a minimum lot size of 2 hectares, unless the lot reconfiguration transfers lots to the higher parts of the land, to avoid the need to fill existing lots to accommodate dwelling houses.	AO68 No acceptable outcomes are prescribed.	Not Applicable



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#### Table 7.2.4.4.b - Inconsistent uses in sub-precinct 1b - Waterfront North sub-precinct

Inconsistent uses		
<ul> <li>Agricultural supplies store</li> <li>Air services</li> <li>Animal husbandry</li> <li>Animal keeping</li> <li>Aquaculture</li> <li>Brothel</li> <li>Bulk landscape supplies</li> <li>Car wash</li> <li>Cemetery</li> <li>Crematorium</li> <li>Cropping</li> <li>Detention facility</li> <li>Dual occupancy</li> <li>Dwelling house</li> </ul>	<ul> <li>Extractive industry</li> <li>Funeral parlour</li> <li>High impact industry</li> <li>Intensive animal industry</li> <li>Intensive horticulture</li> <li>Major electricity infrastructure</li> <li>Major sport, recreation and entertainment facility</li> <li>Medium impact industry</li> <li>Motor sport facility,</li> <li>Outstation</li> <li>Permanent plantation</li> </ul>	<ul> <li>Relocatable home park</li> <li>Roadside stall</li> <li>Rural industry</li> <li>Rural workers accommodation</li> <li>Service station</li> <li>Showroom</li> <li>Special industry</li> <li>Tourist park</li> <li>Transport depot</li> <li>Veterinary services</li> <li>Warehouse</li> <li>Wholesale nursery</li> <li>Winery</li> </ul>



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#### Table 7.2.4.4.c - Inconsistent uses in sub-precinct 1c - Waterfront South sub-precinct

Inconsistent uses		
<ul> <li>Adult store</li> <li>Agricultural supplies store</li> <li>Air services</li> <li>Animal husbandry</li> <li>Animal keeping</li> <li>Brothel</li> <li>Bulk landscape supplies</li> <li>Car wash</li> <li>Cemetery</li> <li>Child care centre</li> <li>Community care centre</li> <li>Community residence</li> <li>Community use</li> <li>Crematorium</li> <li>Cropping</li> <li>Detention facility</li> <li>Dual occupancy</li> <li>Dwelling house</li> <li>Dwelling unit</li> </ul>	<ul> <li>Hardware and trade supplies</li> <li>Health care services</li> <li>Home based business</li> <li>Hospital</li> <li>Hotel</li> <li>Indoor sport and recreation</li> <li>Intensive animal industry</li> <li>Intensive horticulture</li> <li>Major electricity infrastructure</li> <li>Major sport, recreation and entertainment facility</li> <li>Market</li> <li>Motor sport facility</li> <li>Multiple dwelling</li> <li>Nature-based tourism</li> <li>Nightclub entertainment facility</li> <li>Outdoor sport and recreation</li> <li>Outdoor sport and recreation</li> <li>Outdoor sport and recreation</li> </ul>	<ul> <li>Permanent plantation</li> <li>Place of worship</li> <li>Relocatable home park</li> <li>Residential care facility</li> <li>Resort complex</li> <li>Retirement facility</li> <li>Roadside stall</li> <li>Rooming accommodation</li> <li>Rural industry</li> <li>Rural workers accommodation</li> <li>Sales office</li> <li>Shopping centre</li> <li>Short-term accommodation</li> <li>Showroom</li> <li>Special industry</li> <li>Theatre</li> <li>Tourist attraction</li> <li>Tourist park</li> <li>Transport depot</li> </ul>
<ul> <li>Extractive industry</li> <li>Function facility</li> <li>Euroral parlour</li> </ul>		<ul> <li>Veterinary services</li> <li>Warehouse</li> <li>Whalesale surgery</li> </ul>
Garden centre		Winery

Note -



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Table 7.2.4.4.b - Inconsistent uses in sub-precinct 1b - Waterfront North sub-precinct or



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Table 7.2.4.4.c – Inconsistent uses in sub-precinct 1c – Waterfront South sub-precinct do not imply that all other uses not listed in the table are automatically consistent uses within the zone. Assessable development must still demonstrate consistency through the assessment process.



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# 8.2.1 Acid sulfate soils overlay code

#### 8.2.1.1 Application

- (1) This code applies to assessing a material change of use, reconfiguring a lot, operational work or building work within the Acid sulfate soils overlay, if:
  - (a) self-assessable or assessable development where the code is identified as being applicable in the Assessment criteria for the Overlay Codes contained in the Levels of Assessment Tables in section 5.6;
  - (b) impact assessable development.
- (2) Land in the Acid sulphate soils overlay is identified on the Acid sulfate soils overlay map in Schedule 2 and includes the following sub-categories:
  - (a) Land at or below the 5m AHD sub-category;
  - (b) Land above the 5m AHD and below the 20m AHD sub-category.
- (3) When using this code, reference should be made to Part 5.

## 8.2.1.2 Purpose

- (1) The purpose of the acid sulfate soils overlay code is to:
  - (a) implement the policy direction in the Strategic Framework, in particular:
    - (i) Theme 2: Environment and landscape values, Element 3.5.4 Coastal zones.
  - (ii) Theme 3: Natural resource management, Element 3.6.2 land and catchment management, Element 3.6.3 Primary production, forestry and fisheries.
- (2) enable an assessment of whether development is suitable on land within the Acid sulfate soils overlay sub-categories.
- (3) The purpose of the code will be achieved through the following overall outcomes:
  - (a) Development ensures that the release of any acid and associated metal contaminant is avoided by not disturbing acid sulfate soils when excavating, removing soil or extracting ground water or filling land;
  - (b) Development ensures that disturbed acid sulfate soils, or drainage waters, are treated and, if required, on-going management practices are adopted that minimise the potential for environmental harm from acid sulfate soil and protect corrodible assets from acid sulfate soil.



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## Criteria for assessment

Table 8.2.1.3.a - Acid sulfate soils overlay code - assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For assessable development		
<b>PO1</b> The extent and location of potential or actual acid sulfate soils is accurately identified.	<ul> <li>AO1.1 No excavation or filling occurs on the site.</li> <li>or</li> <li>AO1.2 An acid sulfate soils investigation is undertaken.</li> <li>Note - Planning scheme policy SC 6.12– Potential and actual acid sulfate soils provides guidance on preparing an acid sulfate soils investigation.</li> </ul>	Complies with PO1. The main PASS materials are the marine clay unit. Marine clay starts generally between RL1.4 m to -2.7 and extends to about RL-2.8 m to -6.4 m. PASS is identified in the Geotechnical Report provided at Attachment 7 and has been considered during the development of the civil plans.
<b>PO2</b> Development avoids disturbing potential acid sulfate soils or actual acid sulfate soils, or is managed to avoid or minimise the release of acid and metal contaminants.	<ul> <li>AO2.1 The disturbance of potential acid sulfate soils or actual acid sulfate soils is avoided by: <ul> <li>(a) not excavating, or otherwise removing, soil or sediment identified as containing potential or actual acid sulfate soils;</li> <li>(b) not permanently or temporarily extracting groundwater that results in the aeration of previously saturated acid sulfate soils; <ul> <li>(c) not undertaking filling that results in:</li> <li>(i) actual acid sulfate soils being moved below the water table;</li> <li>(ii) previously saturated acid sulfate soils being aerated. </li> </ul></li></ul></li></ul>	The Development can be conditioned to comply with PO2 during construction and is capable of complying with this requirement.

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Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>AO2.2</li> <li>The disturbance of potential acid sulfate soils or actual acid sulfate soils is undertaken in accordance with an acid sulfate soils management plan and avoids the release of metal contaminants by: <ul> <li>(a) neutralising existing acidity and preventing the generation of acid and metal contaminants;</li> <li>(b) preventing the release of surface or groundwater flows containing acid and metal contaminants into the environment;</li> <li>(c) preventing the in situ oxidisation of potential acid sulfate soils and actual acid sulfate soils through ground water level management;</li> <li>(d) appropriately treating acid sulfate soils before disposal occurs on or off site;</li> <li>(e) documenting strategies and reporting requirements in an acid sulfate soils environmental management plan.</li> </ul> </li> </ul>	
<b>PO3</b> No environmental harm is caused as a result of exposure to potential acid sulfate soils or actual acid sulfate soils.	<b>AO3</b> No acceptable outcomes are prescribed.	The Development will comply with PO3 and can be conditioned to ensure compliance with PO3.



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#### Figure 8.2.1.3.a – Acid sulfate soils (SPP triggers)





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# 8.2.3 Coastal environment overlay code

## 8.2.3.1 Application

- (1) This code applies to assessing a material change of use, reconfiguring a lot, operational work or building work within the Coastal environment overlay, if:
  - (a) self assessable or assessable development where the code is identified as being applicable in the Assessment criteria for the Overlay Codes contained in the Levels of Assessment Tables in section 5.6;
  - (b) impact assessable development.
- (2) Land in the Coastal hazard overlay is identified on the Coastal environment overlay map in Schedule 2 and includes the following sub-categories:
  - (a) Coastal management district sub-category;
  - (b) Erosion prone area sub-category.
- (3) When using this code, reference should be made to Part 5.

## 8.2.3.2 Purpose

- (1) The purpose of the Coastal environment overlay code is to:
  - (a) implement the policy direction in the Strategic Framework, in particular:
    - (i) Theme 1 Settlement pattern: Element 3.4.7 Mitigation of hazards;
    - (ii) Theme 2 Environment and landscape values: Element 3.5.4 Coastal zones;
    - (iii) Theme 3 Natural resource management: Element 3.6.2 Land and catchment management.
  - (b) enable an assessment of whether development is suitable on land within the Coastal processes sub-categories.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) facilitate the protection of both coastal processes and coastal resources;
  - (b) facilitating coastal dependent development on the foreshore over other development;
  - (c) public access to the foreshore protects public safety;
  - (d) maintain the erosion prone area as a development free buffer zone (other than for coastal dependent, temporary or relocatable development);
  - (e) require redevelopment of existing permanent buildings or structures in an erosion prone area to avoid coastal erosion risks, manage coastal erosion risks through a strategy of planned retreat or mitigate coastal erosion risks;



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- (f) require development to maintain or enhance natural processes and the protective function of landforms and vegetation that can mitigate risks associated with coastal erosion;
- (g) locate and design community infrastructure to maintain the required level of functionality during and immediately after a coastal hazard event.

# Criteria for assessment

## Table 8.2.3.3.a - Coastal environment overlay code - self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable development		
PO1 No works other than coastal protection works extend seaward of the coastal building line.	<ul> <li>AO1.1 Development (including all buildings and other permanent structures such as swimming pools and retaining walls) does not extend seaward of a coastal building line.</li> <li>Note - Coastal building lines are declared under the Coastal Protection and Management Act 1995 and are administered by the State Department of Environment and Heritage Protection.</li> <li>AO1.2 Coastal protection works are only undertaken as a last resort where coastal erosion presents an immediate threat to public safety or existing buildings or structures and the property cannot be relocated or abandoned.</li> <li>AO1.3 Coastal protection works are as far landward as practicable on the lot containing the property to the maximum extent reasonable.</li> <li>AO1.4 Coastal protection work mitigates any increase in the</li> </ul>	Complies with AO 1.1 – AO1.4 There is no nominated coastal building line and coastal protection works are not proposed.





Performance outcomes	Acceptable outcomes	Applicant response	
For self-assessable and assessable development			
<b>PO2</b> Where a coastal building line does not exist on a lot fronting the coast or a reserve adjoining the coast, development is setback to maintain the amenity and use of the coastal resource.	<b>AO2</b> Where a coastal building line does not exist on a lot fronting the coast or a reserve adjoining the coast, development (including all buildings and structures such as swimming pools) and retaining walls are set back not less than 6 metres from the seaward boundary of the lot.	Complies with PO2. The adjacent reserve is not used as a coastal resource and is not visible to an extent it would cause an amenity issue. The setbacks are consistent with existing short term accommodation development fronting Davidson Street.	
For assessable development			
Erosion prone areas			
<b>PO3</b> Development identifies erosion prone areas (coastal hazards).	AO3 No acceptable outcomes are prescribed.	Complies with PO3 Erosion prone areas are identified in the supporting Planning Report at Attachment 4.	
PO4 Erosion prone areas are free from development to allow for natural coastal processes.	<ul> <li>AO4.1 Development is not located within the Erosion prone area, unless it can be demonstrated that the development is for: <ul> <li>(a) community infrastructure where no suitable alternative location or site exists for this infrastructure; or</li> <li>(b) development that reflects the preferred development outcomes in accordance with the zoning of the site (i.e. in the Low density residential zone, a dwelling house is a preferred development outcome in accordance with the zoning of the site)</li> </ul> </li> </ul>	Complies with PO4 The development reflects the preferred development outcomes in accordance with the zoning of the site. Additionally, development within the Erosion Prone area exists for all lots fronting Davidson Street in this location. The development allows for natural coastal processes to continue and this is addressed in s2.4 of the Flood Study provided at Attachment 8.	





Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>AO4.2</li> <li>Development involving existing permanent buildings and structures within an erosion prone area does not increase in intensity of its use by:</li> <li>(a) adding additional buildings or structures; or</li> <li>(b) incorporating a land use that will result in an increase in the number of people or employees occupying the site.</li> </ul>	
Coastal management districts		
PO5 Natural processes and protective functions of landforms and vegetation are maintained.	<ul> <li>PO5.1 Development within the coastal management district: <ul> <li>(a) maintains vegetation on coastal land forms where its removal or damage may:</li> <li>(i) destabilise the area and increase the potential for coastal erosion, or</li> <li>(ii) interrupt the natural sediment trapping processes or dune or land building processes;</li> </ul> </li> <li>(b) maintains sediment volumes of dunes and nearshore coastal landforms, or where a reduction in sediment volumes cannot be avoided, increased risks to development from coastal erosion are mitigated by location, design and construction and operating standards;</li> <li>(c) minimises the need for erosion control structures or riverine hardening through location, design and construction standards;</li> <li>(d) maintains physical coastal processes outside the development footprint for the development, including longshore transport of sediment along the coast;</li> <li>(e) reduces the risk of shoreline erosion for areas adjacent to the development footprint to the</li> </ul>	Not applicable.





Performance outcomes	Acceptable outcomes	Applicant response
	maximum extent feasible in the case of erosion control structures.	



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Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>PO5.2</li> <li>Where development proposes the construction of an erosion control structure: <ul> <li>(a) it is demonstrated that it is the only feasible option for protecting permanent structures from coastal erosion; and</li> <li>(b) those permanent structures cannot be abandoned or relocated in the event of coastal erosion occurring</li> </ul> </li> </ul>	
	<ul> <li>PO5.3 Development involving reclamation: <ul> <li>(a) does not alter, or otherwise minimises impacts on, the physical characteristics of a waterway or the seabed near the reclamation, including flow regimes, hydrodynamic forces, tidal water and riverbank stability; </li> <li>(b) is located outside active sediment transport area, or otherwise maintains sediment transport processes as close as possible to their natural state; </li> <li>(c) ensures activities associated with the operation of the development maintain the structure and condition of vegetation communities and avoid wind and water run-off erosion.</li></ul></li></ul>	
<b>PO6</b> Development avoids or minimises adverse impacts on coastal resources and their values to the maximum extent reasonable.	AO6.1 Coastal protection work that is in the form of beach nourishment uses methods of placement suitable for the location that do not interfere with the long-term use of the locality, or natural values within or neighbouring the proposed placement site. And	Not applicable.





Performance outcomes	Acceptable outcomes	Applicant response
	AO6.2 Marine development is located and designed to expand on or redevelop existing marine infrastructure unless it is demonstrated that it is not practicable to co-locate the development with existing marine infrastructure;	
	and	
	AO6.3 Measures are incorporated as part of siting and design of the development to maintain or enhance water quality to achieve the environmental values and water quality objectives outlined in the Environmental Protection (Water) Policy 2009.	
	and	
	AO6.4 Development avoids the disturbance of acid sulfate soils, or where it is demonstrated that this is not possible, the disturbance of acid sulfate soils is carefully managed to minimise and mitigate the adverse effects of disturbance on coastal resources.	
	and	
	<b>AO6.4</b> Design and siting of development protects and retains identified ecological values and underlying ecosystem processes within the development site to the greatest extent practicable.	





Performance outcomes	Acceptable outcomes	Applicant response
<b>PO7</b> Development is to maintain access to and along the foreshore for general public access.	<b>A07.1</b> Development provides for regular access points for pedestrians including approved walking tracks, boardwalks and viewing platforms.	Not applicable.
	AO7.2 Development provides for regular access points for vehicles including approved roads and tracks.	
	or <b>AO7.3</b> Development demonstrates an alternative solution to achieve an equivalent standard of performance.	
<b>PO8</b> Public access to the coast is appropriately located, designed and operated.	<b>AO8.1</b> Development maintains or enhances public access to the coast.	Not applicable.
	or AO8.2 Development is located adjacent to state coastal land or tidal water and minimises and offsets any loss of access to and along the foreshore within 500 metres. or	
	<b>AO8.3</b> Development adjacent to state coastal land or tidal water demonstrates an alternative solution to achieve an equivalent standard and quality of access	





Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>PO9</li> <li>Development adjacent to state coastal land or tidal water is located, designed and operated to: <ul> <li>(a) maintain existing access to and along the foreshore;</li> </ul> </li> <li>(b) minimise any loss of access to and along the foreshore, or</li> <li>(c) offset any loss of access to and along the foreshore by providing for enhanced alternative access in the general location.</li> </ul>	<ul> <li>AO9.1 Development adjacent to state coastal land or tidal water: <ul> <li>(a) demonstrates that restrictions to public access are necessary for: <ul> <li>(i) the safe and secure operation of development;</li> <li>(ii) the maintenance of coastal landforms and coastal habitat; or</li> </ul> </li> <li>(b) maintains public access (including public access infrastructure that has been approved by the local government or relevant authority) through the site to the foreshore for: <ul> <li>(i) pedestrians via access points including approved walking tracks, boardwalks and viewing platforms;</li> <li>(ii) vehicles via access points including approved roads or tracks.</li> </ul> </li> <li>AO9.2 Development adjacent to state coastal land or tidal water: <ul> <li>(a) is located and designed to:</li> <li>(i) allow safe unimpeded access to, over, under or around built infrastructure located on, over or along the foreshore, for example through the provision of esplanades or easement corridors to preserve future access;</li> <li>(ii) ensure emergency vehicles can access the area near the development.</li> </ul> </li> </ul></li></ul>	Not applicable.





Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>(b) minimises and offsets any loss of access to and along the foreshore within 500m of existing access points and development is located and designed to: <ul> <li>(i) allow safe unimpeded access to, over, under or around built infrastructure located on, over or along the foreshore, and</li> <li>(ii) ensure emergency vehicles can access the area near the development.</li> </ul> </li> </ul>	
AO10 Development that involves reconfiguring a lot for urban purposes adjacent to the coast is designed to ensure public access to the coast in consideration of public access demand from a whole-of- community basis and the maintenance of coastal landforms and coastal habitat.	<ul> <li>AO10.1         Development complies if consideration of public access demand from a whole-of-community basis and the maintenance of coastal landforms and coastal habitat is undertaken.         or         AO10.2         Development demonstrates an alternative solution to achieve an equivalent standard and quality of access.     </li> </ul>	Not applicable.
<b>PO11</b> Development maintains public access to State coastal land by avoiding private marine development attaching to, or extending across, non-tidal State coastal land.	<b>AO11</b> Private marine access structures and other structures such as decks or boardwalks for private use do not attach to or extend across State coastal land that is situated above high water mark	Not applicable.
<b>PO12</b> Development in connection with an artificial waterway enhances public access to coastal waters.	<b>AO12</b> The artificial waterway avoids intersecting with or connection to inundated land or leased land where the passage, use or movement of vessels in water on the land could be restricted or prohibited by the registered proprietor of the inundated land or leased land.	Not applicable.





Performance outcomes	Acceptable outcomes	Applicant response	
Coastal landscapes, views and vistas			
<b>PO13</b> Development maintains and / or enhances natural coastal landscapes, views and vistas.	AO13 No acceptable outcomes are prescribed.	Complies with PO13 There are no specific views or vistas impacted by the proposed development.	
<b>PO14</b> Coastal settlements are consolidated through the concentration of development within the existing urban areas through infill and conserving the natural state of the coastal area outside existing urban areas.	AO14 No acceptable outcomes are prescribed.	Complies with PO14 The proposed development is consolidated with existing short term accommodation and tourism offerings in an identified urban area.	
Private marine development			
<b>P015</b> Private marine development is to avoid attaching to, or extending across, non-tidal State coastal land.	AO15 Private marine development and other structures such as decks or boardwalks for private use do not attach to, or extend across, State coastal land that is situated above high water mark. Note – For occupation permits or allocations of State land, refer to the Land Act 1994.	Not applicable.	
<b>P016</b> The location and design of private marine development does not adversely affect the safety of members of the public access to the foreshore.	<b>AO16</b> Private marine development does not involve the erection or placement of any physical barrier preventing existing access, along a public access way to the foreshores.	Not applicable.	
<b>P017</b> Private marine development is of a height and scale and size compatible with the character and amenity of the location.	<ul> <li>AO17</li> <li>Private marine development has regard to: <ul> <li>(a) the height, scale and size of the natural features of the immediate surroundings and locality;</li> <li>(b) the height, scale and size of existing buildings or other structures in the immediate surroundings and the locality;</li> </ul> </li> </ul>	Not applicable.	





Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>(c) if the relevant planning scheme states that desired height, scale or size of buildings or other structures in the immediate surroundings or locality – the stated desired height, scale or size.</li> <li>Note – The prescribed tidal works code in the <i>Coastal Protection</i> <i>and Management Regulation 2003</i> outlines design and construction requirements that must be complied with.</li> </ul>	
<b>P018</b> Private marine development avoids adverse impacts on coastal landforms and coastal processes.	<b>AO18</b> Private marine development does not require the construction of coastal protection works, shoreline or riverbank hardening or dredging for marine access.	Not applicable.
For dry land marinas and artificial waterways		
<ul> <li>PO19</li> <li>Dry land marinas and artificial waterways: <ul> <li>(a) avoid impacts on coastal resources;</li> <li>(b) do not contribute to the degradation of water quality;</li> <li>(c) do not increase the risk of flooding;</li> <li>(d) do not result in the degradation or loss of MSES;</li> <li>(e) do not result in an adverse change to the tidal prism of the natural waterway to which development is connected.</li> <li>(f) does not involve reclamation of tidal land other than for the purpose of: <ul> <li>(i) coastal dependent development, public marine development; or</li> <li>(i) community infrastructure, where there is no feasible alternative; or</li> </ul> </li> </ul></li></ul>	AO19 No acceptable solutions are prescribed.	Not applicable.





Performan	ce outcomes	Acceptable outcomes	Applicant response
(iii)	strategic ports, boat harbours or strategic airports and aviation facilities in accordance with a statutory land use plan; or		
(iv)	coastal protection works or works necessary to protect coastal resources and processes.		





# 8.2.4 Flood and storm tide hazard overlay code

## 8.2.4.1 Application

- (1) This code applies to assessing a material change of use, reconfiguring a lot, operational work or building work within the Flood and storm tide hazard overlay, if:
  - (a) self assessable or assessable development where the code is identified as being applicable in the Assessment criteria for the Overlay Codes contained in the Levels of Assessment Tables in section 5.6;
  - (b) impact assessable development.
- (2) Land in the Flood and storm tide hazard overlay is identified on the Flood and storm tide hazard overlay map in Schedule 2 and includes the:
  - (a) Storm tide high hazard sub-category;
  - (b) Storm tide medium hazard sub-category;
  - (c) Flood plain assessment sub-category;
  - (d) 100 ARI Mossman, Port Douglas and Daintree Township Flood Studies sub-category.
- (3) When using this code, reference should be made to Part 5.

Note - The Flood and storm tide hazards overlay maps contained in Schedule 2 identify areas (Flood and storm tide inundation areas) where flood and storm tide inundation modelling has been undertaken by the Council. Other areas not identified by the Flood and inundation hazards overlay maps contained in Schedule 2 may also be subject to the defined flood event or defined storm tide event.

#### 8.2.4.2 Purpose

- (1) The purpose of the Flood and storm tide hazard overlay code is to:
  - (a) implement the policy direction in the Strategic Framework, in particular:
    - (i) Theme 1 Settlement pattern: Element 3.4.7 Mitigation of hazards;
    - (ii) Theme 6 Infrastructure and transport: Element 3.9.2 Energy.
  - (b) enable an assessment of whether development is suitable on land within the Flood and storm tide hazard sub-categories.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) development siting, layout and access responds to the risk of the natural hazard and minimises risk to personal safety;
  - (b) development achieves an acceptable or tolerable risk level, based on a fit for purpose risk assessment;
  - (c) the development is resilient to natural hazard events by ensuring siting and design accounts for the potential risks of natural hazards to property;





- (d) the development supports, and does not unduly burden disaster management response or recovery capacity and capabilities;
- (e) the development directly, indirectly and cumulatively avoids an unacceptable increase in severity of the natural hazards and does not significantly increase the potential for damage on site or to other properties;
- (f) the development avoids the release of hazardous materials as a result of a natural hazard event;
- (g) natural processes and the protective function of landforms and/or vegetation are maintained in natural hazard areas;
- (h) community infrastructure is located and designed to maintain the required level of functionality during and immediately after a hazard event.

## **Criteria for assessment**

#### Table 8.2.4.3.a - Flood and storm tide hazards overlay code -assessable development

Performance outcomes	Acceptable outcomes	Applicant response	
For self-assessable and assessable development			
PO1 Development is located and designed to: ensure the safety of all persons; minimise damage to the development and contents of buildings; provide suitable amenity; minimise disruption to residents, recovery time, and rebuilding or restoration costs after inundation events. Note – For assessable development within the flood plain assessment sub-category, a flood study by a suitably qualified professional is required to identify compliance with the intent of the acceptable outcome.	<ul> <li>AO1.1 Development is sited on parts of the land that is not within the Flood and Storm tide hazards overlay maps contained in Schedule 2; </li> <li>or For dwelling houses, </li> <li>AO1.2 Development within the Flood and Storm Tide hazards overlay maps (excluding the Flood plain assessment sub-category) is designed to provide immunity to the Defined Inundation Event as outlined within Table 8.2.4.3.b plus a freeboard of 300mm.</li></ul>	Complies with PO1 A detailed Flood Study was undertaken which considered the impacts for flood and storm tide hazards. The report concluded that the flood mapping showed that the proposed extent of the site was not impacted by flood waters for any of the modelled cases. The 2100 climate case had a small area of depth at the proposed entry to the underground parking. This was caused by the global initial water level being applied within the car park, this is not a concern in terms of the flooding for the site. Storm tide maps also indicated that storm tide flooding would not reach the site for the current and 2100 climate. An afflux	


Performance outcomes	Acceptable outcomes	Applicant response
		map was created that compared the existing and developed case.
		The afflux map indicated no change, meaning that surrounding properties would not be adversely impacted by the development
		A copy of the report is provided at Attachment 8.





Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>AO1.3 New buildings are: <ul> <li>(a) not located within the overlay area;</li> <li>(b) located on the highest part of the site to minimise entrance of flood waters;</li> <li>(c) provided with clear and direct pedestrian and vehicle evacuation routes off the site. </li> <li>AO1.4 In non urban areas, buildings and infrastructure are set back 50 metres from natural riparian corridors to maintain their natural function of reducing velocity of floodwaters. </li> </ul></li></ul>	
For assessable development		
<b>PO2</b> The development is compatible with the level of risk associated with the natural hazard.	<ul> <li>AO2</li> <li>The following uses are not located in land inundated by the Defined Flood Event (DFE) / Storm tide:</li> <li>(a) Retirement facility;</li> <li>(b) Community care facility;</li> <li>(c) Child care centre.</li> </ul>	Complies with AO2.
<b>PO3</b> Development siting and layout responds to flooding potential and maintains personal safety	<ul> <li>For Material change of use</li> <li>AO3.1</li> <li>New buildings are: <ul> <li>(a) not located within the overlay area;</li> <li>(b) located on the highest part of the site to minimise entrance of flood waters;</li> <li>(c) provided with clear and direct pedestrian and vehicle evacuation routes off the site.</li> </ul> </li> </ul>	Complies with PO3 A detailed Flood Study was undertaken which considered the impacts for flood and storm tide hazards. The report concluded that the flood mapping showed that the proposed extent of the site was not impacted by flood waters for any of the modelled cases.





Performance outcomes	Acceptable outcomes	Applicant response
Performance outcomes	Acceptable outcomes         AO3.2         The development incorporates an area on site that is at least 300mm above the highest known flood inundation level with sufficient space to accommodate the likely population of the development safely for a relatively short time until flash flooding subsides or people can be evacuated.         Or         AO3.3         Where involving an extension to an existing dwelling house that is situated below DFE /Storm tide, the maximum size of the extension does not exceed 70m <sup>2</sup> gross floor area.         Note – If part of the site is outside the Hazard Overlay area, this is the preferred location of all buildings.         For Reconfiguring a lot         AO3.4         Additional lots:         (a) are not located in the hazard overlay area; or         (b) are demonstrated to be above the flood level identified for the site.         Note - If part of the site is outside the Hazard Overlay area, this is the preferred location for all lots (excluding park or other open space and recreation lots).         Note - Buildings subsequently developed on the lots will need to	<ul> <li>Applicant response</li> <li>The 2100 climate case had a small area of depth at the proposed entry to the underground parking. This was caused by the global initial water level being applied within the car park, this is not a concern in terms of the flooding for the site.</li> <li>Storm tide maps also indicated that storm tide flooding would not reach the site for the current and 2100 climate. An afflux map was created that compared the existing and developed case.</li> <li>The afflux map indicated no change, meaning that surrounding properties would not be adversely impacted by the development</li> <li>A copy of the report is provided at Attachment 8.</li> </ul>
	Note – Buildings subsequently developed on the lots will need to comply with the relevant building assessment provisions under the <i>Building Act 1975</i> .	



Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>AO3.5 Road and/or pathway layout ensures residents are not physically isolated from adjacent flood free urban areas and provides a safe and clear evacuation route path: <ul> <li>(a) by locating entry points into the reconfiguration above the flood level and avoiding culs-de-sac or other non-permeable layouts; and</li> <li>(b) by direct and simple routes to main carriageways.</li> </ul> </li> <li>AO3.6 Signage is provided on site (regardless of whether the land is in public or private ownership) indicating the position and path of all safe evacuation routes off the site and if the site contains, or is within 100m of a floodable waterway, hazard warning signage and depth indicators are also provided at key hazard points, such as at floodway crossings or entrances to low-lying reserves.</li> <li>or</li> <li>AO3.7 There is no intensification of residential uses within the flood affected areas on land situated below the DFE/Storm tide.</li> </ul>	



Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>For Material change of use (Residential uses)</li> <li>AO3.8</li> <li>The design and layout of buildings used for residential purposes minimise risk from flooding by providing: <ul> <li>(a) parking and other low intensive, non-habitable uses at ground level;</li> </ul> </li> <li>Note - The high-set 'Queenslander' style house is a resilient low-density housing solution in floodplain areas. Higher density residential development should ensure only non-habitable rooms (e.g. garages, laundries) are located on the ground floor.</li> </ul>	
PO4 Development is resilient to flood events by ensuring design and built form account for the potential risks of flooding.	<ul> <li>For Material change of use (Non-residential uses) AO4.2</li> <li>Non residential buildings and structures allow for the flow through of flood waters on the ground floor.</li> <li>Note - Businesses should ensure that they have the necessary contingency plans in place to account for the potential need to relocate property prior to a flood event (e.g. allow enough time to transfer stock to the upstairs level of a building or off site).</li> <li>Note - The relevant building assessment provisions under the <i>Building Act 1975</i> apply to all building work within the Hazard Area and need to take into account the flood potential within the area.</li> <li>AO4.3</li> <li>Materials are stored on-site: <ul> <li>(a) are those that are readily able to be moved in a flood event;</li> <li>(b) where capable of creating a safety hazard by being shifted by flood waters, are contained in order to minimise movement in times of flood.</li> </ul> </li> <li>Notes - <ul> <li>(a) Businesses should ensure that they have the necessary contingency plans in place to account for the potential need to relocate property prior to a flood event (e.g. allow enough time to transfer stock to the upstairs level of a building or off site).</li> </ul> </li> </ul>	Complies with PO4. See discussion above.





Performance outcomes	Acceptable outcomes	Applicant response
	(b) Queensland Government Fact Sheet 'Repairing your House after a Flood' provides information about water resilient products and building techniques.	
PO5 Development directly, indirectly and cumulatively avoids any increase in water flow velocity or flood level and does not increase the potential flood damage either on site or on other properties. Note – Berms and mounds are considered to be an undesirable built form outcome and are not supported.	<ul> <li>For Operational works</li> <li>AO5.1</li> <li>Works in urban areas associated with the proposed development do not involve: <ul> <li>(a) any physical alteration to a watercourse or floodway including vegetation clearing; or</li> <li>(b) a net increase in filling (including berms and mounds).</li> </ul> </li> <li>AO5.2 Works (including buildings and earthworks) in non urban areas either: <ul> <li>(a) do not involve a net increase in filling greater than 50m<sup>3</sup>; or</li> <li>(b) do not result in any reductions of on-site flood storage capacity and contain within the subject site any changes to depth/duration/velocity of flood waters;</li> </ul> </li> <li>or <ul> <li>(c) do not change flood characteristics outside the subject site in ways that result in: <ul> <li>(i) loss of flood storage;</li> <li>(ii) loss of/changes to flow paths;</li> <li>(iii) acceleration or retardation of flows or any reduction in flood warning times elsewhere on the flood plain.</li> </ul> </li> </ul></li></ul>	Not applicable. This is not an application for Operational Works.





	For Material change of use	
	<ul> <li>AO5.3</li> <li>Where development is located in an area affected by DFE/Storm tide, a hydraulic and hydrology report, prepared by a suitably qualified professional, demonstrates that the development maintains the flood storage capacity on the subject site; and</li> <li>(a) does not increase the volume, velocity, concentration of flow path alignment of stormwater flow across sites upstream, downstream or in the general vicinity of the subject site; and</li> <li>(b) does not increase ponding on sites upstream, downstream or in the general vicinity of the subject site.</li> </ul>	
	For Material change of use and Reconfiguring a lot	
	<b>AO5.4</b> In non urban areas, buildings and infrastructure are set back 50 metres from natural riparian corridors to maintain their natural function of reducing velocity of floodwaters.	
	Note – Fences and irrigation infrastructure (e.g. irrigation tape) in rural areas should be managed to minimise adverse the impacts that they may have on downstream properties in the event of a flood.	
<b>PO6</b> Development avoids the release of hazardous	For Material change of use	Complies with AO6.1
materials into floodwaters.	<b>AO6.1</b> Materials manufactured or stored on site are not hazardous or noxious, or comprise materials that may cause a detrimental effect on the environment if discharged in a flood event;	There is no hazardous or noxious material use proposed as part of the development.





Performance outcomes	Acceptable outcomes	Applicant response
	or AO6.2 If a DFE level is adopted, structures used for the manufacture or storage of hazardous materials are: (a) located above the DFE level; or (b) designed to prevent the intrusion of floodwaters. AO6.3 Infrastructure is designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation by the DFE. AO6.4 If a flood level is not adopted, hazardous materials and their manufacturing equipment are located on the highest part of the site to enhance flood immunity and designed to prevent the intrusion of floodwaters. Note – Refer to <i>Work Health and Safety Act 2011</i> and associated Regulation and Guidelines, the <i>Environmental Protection Act 1994</i> and the relevant building assessment provisions under the <i>Building Act 1975</i> for requirements related to the manufacture and storage of hazardous materials.	
<b>PO7</b> The development supports, and does not unduly burden, disaster management response or recovery capacity and capabilities.	<ul> <li>A07</li> <li>Development does not: <ul> <li>(a) increase the number of people calculated to be at risk of flooding;</li> <li>(b) increase the number of people likely to need evacuation;</li> <li>(c) shorten flood warning times; and</li> </ul> </li> </ul>	Complies with AO7. See discussion above. There is no identified risk of flooding or storm tide inundation.





Performance outcomes	Acceptable outcomes	Applicant response
	(d) impact on the ability of traffic to use evacuation routes, or unreasonably increase traffic volumes on evacuation routes.	
PO8 Development involving community infrastructure: (a) remains functional to serve community need during and immediately after a flood event; is designed, sited and operated to avoid adverse impacts on the community or environment due to impacts of flooding on infrastructure, facilities or access and egress routes; retains essential site access during a flood event; is able to remain functional even when other infrastructure or services may be compromised in a flood event.	<ul> <li>AO8.1 The following uses are not located on land inundated during a DFE/Storm tide: <ul> <li>(a) community residence; and</li> <li>(b) emergency services; and</li> <li>(c) residential care facility; and</li> <li>(d) utility installations involving water and sewerage treatment plants; and</li> <li>(e) storage of valuable records or items of historic or cultural significance (e.g. archives, museums, galleries, libraries). </li> <li>or <ul> <li>AO8.2</li> </ul> </li> <li>The following uses are not located on land inundated during a 1% AEP flood event:</li> <li>(a) community and cultural facilities, including facilities where an education and care service under the Education and care Services National law (Queensland) is operated or child care service under the <i>Child Care Act 2002</i> is conducted,</li> <li>(b) community centres;</li> <li>(c) meeting halls;</li> <li>(d) galleries;</li> <li>(e) libraries.</li> </ul> </li> </ul>	Complies with AO8.1, 8.4 and 8.5 See discussion above. There is no identified risk of flooding or storm tide inundation and no uses listed in AO8.1 are proposed.







Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>The following uses are not located on land inundated during a 0.5% AEP flood event.</li> <li>(a) emergency shelters;</li> <li>(b) police facilities;</li> <li>(c) sub stations;</li> <li>(d) water treatment plant</li> </ul>	
	<ul> <li>The following uses are not located on land inundated during a 0.2% AEP flood event:</li> <li>(a) correctional facilities;</li> <li>(b) emergency services;</li> <li>(c) power stations;</li> <li>(d) major switch yards.</li> </ul>	
	and/or	
	<b>AO8.3</b> The following uses have direct access to low hazard evacuation routes as defined in	
	<ul> <li>Table 8.2.4.3.c:</li> <li>(a) community residence; and</li> <li>(b) emergency services; and</li> <li>(c) hospitals; and</li> <li>(d) residential care facility; and</li> <li>(e) sub stations; and</li> <li>(f) utility installations involving water and sewerage treatment plants.</li> </ul>	
	<b>AO8.4</b> Any components of infrastructure that are likely to fail to function or may result in contamination when inundated by flood, such as electrical switch gear and	





Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>motors, telecommunications connections, or water supply pipeline air valves are:</li> <li>(a) located above DFE/Storm tide or the highest known flood level for the site;</li> <li>(b) designed and constructed to exclude floodwater intrusion / infiltration.</li> </ul>	
	<b>AO8.5</b> Infrastructure is designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation by a flood.	

### Table 8.2.4.3.b - Minimum immunity (floor levels) for development

Minimum immunity to be achieved (floor levels)	Uses and elements of activities acceptable in the event
20% AEP level	Parks and open space.
5% AEP level	Car parking facilities (including car parking associated with use of land).
1% AEP level	All development (where not otherwise requiring an alternative level of minimum immunity).
0.5% AEP level	<ul> <li>Emergency services (if for a police station);</li> <li>Industry activities (if including components which store, treat or use hazardous materials);</li> <li>Substation;</li> <li>Utility installation.</li> </ul>
0.2% AEP level	<ul> <li>Emergency services;</li> <li>Hospital;</li> <li>Major electricity infrastructure;</li> <li>Special industry.</li> </ul>





#### Table 8.2.4.3.c - Degree of flood

Criteria	Low	Medium	High	Extreme
Wading ability	If necessary children and the elderly could wade. (Generally, safe wading velocity depth product is less than 0.25)	Fit adults can wade. (Generally, safe wading velocity depth product is less than 0.4)	Fit adults would have difficulty wading. (Generally, safe wading velocity depth product is less than 0.6)	Wading is not an option.
Evacuation distances	< 200 metres	200-400 metres	400-600 metres	600 metres
Maximum flood depths	< 0.3 metre	< 0.6 metre	< 1.2 metres	1.2 metres
Maximum flood velocity	< 0.4 metres per second	< 0.8 metres per second	< 1.5 metres per second	1.5 metres per second
Typical means of egress	Sedan	Sedan early, but 4WD or trucks later	4WD or trucks only in early stages, boats or helicopters	Large trucks, boats or helicopters
Timing Note: This category cannot be implemented until evacuation times have been established in the Counter Disaster Plan (Flooding)	Ample flood forecasting. Warning and evacuation routes remain passable for twice as long as evacuation time.	Evacuation routes remain trafficable for 1.5 times as long as the evacuation.	Evacuation routes remain trafficable for only up to minimum evacuation time.	There is insufficient evacuation time.

Note: The evacuation times for various facilities or areas would (but not necessarily) be included in the Counter Disaster Plan.

Generally safe wading conditions assume even walking surfaces and no obstructions, steps, soft underfoot etc.





# 8.2.6 Landscape values overlay code

### 8.2.6.1 Application

- (1) This code applies to assessing a material change of use, reconfiguring a lot, operational work or building work within the Landscape values overlay, if:
  - (a) self-assessable or assessable development where the code is identified as being applicable in the Assessment criteria for the Overlay Codes contained in the Levels of Assessment Tables in section 5.6;
  - (b) impact assessable development.
- (2) Land in the Landscape values overlay is identified on the Landscape values overlay map in Schedule 2 and includes in following sub-categories:
  - (a) High landscape value sub-category;
  - (b) Medium landscape value sub-category;
  - (c) Scenic route buffer / view corridor area sub-category;
  - (d) Coastal scenery area sub-category.
- (3) When using this code, reference should be made to Part 5.

# 8.2.6.2 Purpose

- (1) The purpose of the Landscape values overlay code is to:
  - (a) implement the policy direction of the Strategic Framework, in particular:
    - (i) Theme 2: Environment and landscape values Element 3.5.5 Scenic amenity;
    - (ii) Theme 3: Natural resource management Element 3.6.4 Resource extraction.
  - (b) enable an assessment of whether development is suitable on land within the Landscape values overlay sub-categories.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) areas of High landscape value are protected, retained and enhanced;
  - (b) areas of Medium landscape value are managed to integrate and limit the visual impact of development;
  - (c) the landscape values of the Coastal scenery area are managed to integrate and limit the visual impact of development;
  - (d) development maintains and enhances the significant landscape elements and features which contribute to the distinctive character and identity of Douglas Shire;
  - (e) ridges and vegetated hillslopes are not developed in a way that adversely impacts on landscape values;





- (f) watercourses, forested mountains and coastal landscape character types remain predominantly natural in appearance in order to maintain the region's diverse character and distinctive tropical image, in particular:
  - (i) areas in the coastal landscape character type which are predominantly natural and undeveloped in appearance retain this natural landscape character;
  - (ii) watercourses which are predominantly natural and undeveloped in appearance retain this natural landscape character;
  - (iii) the rural character of cane fields and lowlands landscape character types which are predominantly rural or natural in appearance are maintained;
  - (iv) landscape values are maintained when viewed from lookouts, scenic routes, gateways and public places.
- (g) views towards High landscape value areas and the Coral Sea are not diminished;
- (h) development is consistent with the prevailing landscape character of its setting, and is neither visually dominant nor visually intrusive;
- (i) advertising devices do not detract from the landscape values, character types or amenity of an area.

# **Criteria for assessment**

Table 8.2.6.3.z - Landscape values overlay code - assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For assessable development		
Development in a High landscape value area		
<ul> <li>PO1</li> <li>Development within High landscape value areas identified on the Landscape values overlay maps contained in Schedule 2: <ul> <li>(a) avoids detrimental impacts on the landscape values of forested skylines, visible hillslopes, ridgelines, the coastal foreshore or the shoreline of other water bodies through the loss of vegetation;</li> <li>(b) is effectively screened from view from a road, lookout or other public place by an existing natural landform or native vegetation, or will be effectively screened by native vegetation within 3 years of construction;</li> </ul> </li> </ul>	<ul> <li>AO1.1 Buildings and structures are not more than 8.5 metres and two storeys in height.</li> <li>Note - Height is inclusive of roof height.</li> <li>AO1.2 Buildings and structures are setback not less than 50 metres from ridgelines or peaks.</li> <li>AO1.3 Development is screened from view from roads or other public places by an existing natural landform or an existing native vegetation buffer.</li> </ul>	Not applicable.





Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>(c) retains existing vegetation and incorporates new landscaping to enhance existing vegetation and visually soften built form elements;</li> </ul>	AO1.4 Where development on land steeper than 1 in 6 (16.6%) cannot be avoided: (a) development follows the natural: contours of the	
<ul> <li>(d) incorporates development of a scale, design, height, position on site, construction materials and external finishes that are compatible with the landscape values of the locality;</li> </ul>	<ul> <li>site;</li> <li>buildings are split level or suspended floor construction, or a combination of the two;</li> <li>lightweight materials are used to areas with suspended floors.</li> </ul>	
<ul> <li>(e) avoids detrimental impacts on landscape values and excessive changes to the natural landform as a result of the location, position on site, scale, design, extent and alignment of earthworks, roads, driveways, retaining</li> </ul>	Note - Examples of suitable lightweight materials include timber or fibre cement boards or sheeting for walls and factory treated metal sheeting for walls and roofs.	
<ul> <li>walls and other on-ground or in-ground infrastructure;</li> <li>(f) avoids detrimental impacts on landscape values and views as a result of the location, position on site, scale, design and alignment of telecommunications facilities, electricity towers, poles and lines and other tall</li> </ul>	<ul> <li>AO1.5</li> <li>The external features, walls and roofs of buildings and structures have a subdued and non-reflective palette.</li> <li>Note - Examples of suitable colours include shades of green, olive green, blue green, grey green, green blue, indigo, brown, blue grey, and green yellow.</li> </ul>	
(g) extractive industry operations are avoided.	No clearing of native vegetation occurs on land with a slope greater than 1 in 6 (16.5%).	
Note - A visual impact assessment is undertaken in accordance with Planning scheme policy SC6.6 – Landscape values in order to satisfy performance outcomes.	<b>AO1.7</b> Where for accommodation activities or reconfiguration of a lot in a High landscape value area, development demonstrates that the height, design, scale, positioning on-site, proposed construction materials and external finishes are compatible with the landscape values.	
	Note - A visual impact assessment undertaken in accordance with Planning scheme policy SC6.6 – Landscape values may be required.	





Performance outcomes	Acceptable outcomes	Applicant response
	<b>AO1.8</b> Advertising devices do not occur.	
Development within the Medium landscape value	area	
<ul> <li>Development within the Medium landscape value</li> <li>PO2</li> <li>Development within Medium landscape value areas identified on the Landscape values overlay maps contained in Schedule 2: <ul> <li>(a) avoids detrimental impacts on the landscape values of forested skylines, visible hillslopes, ridgelines, the coastal foreshore or the shoreline of other water bodies through the loss of vegetation;</li> <li>(b) is effectively screened from view from a road, lookout or other public place by an existing natural landform or native vegetation, or will be effectively screened by native vegetation within 5 years of construction;</li> <li>(c) retains existing vegetation and incorporates new landscaping to enhance existing vegetation and visually soften built form elements;</li> <li>(d) incorporates development of a scale, design, height, position on site, construction materials and external finishes that are compatible with the landscape values of the locality;</li> </ul> </li> </ul>	<ul> <li>AO2.1 Buildings and structures are not more than 8.5 metres and two storeys in height.</li> <li>Note - Height is inclusive of the roof height.</li> <li>AO2.2 Development is screened from view from roads or other public places by an existing natural landform or an existing native vegetation buffer.</li> <li>AO2.3 Where development on land steeper than 1 in 6 (16.6%) cannot be avoided: <ul> <li>(a) development follows the natural; contours of the site;</li> <li>(b) buildings are split level or suspended floor construction, or a combination of the two;</li> <li>(c) lightweight materials are used to areas with suspended floors.</li> </ul> </li> <li>Note - Examples of suitable lightweight materials include timber or fibre cement boards or sheeting for walls and factory treated metal sheeting for walls and roofs.</li> </ul>	Not applicable.
values and excessive changes to the natural landform as a result of the location, position on site, scale, design and alignment of earthworks, roads, driveways, retaining walls and other on-ground or in-ground infrastructure;	AO2.4 The external features, walls and roofs of buildings and structures have a subdued and non-reflective palette. Note - Examples of suitable colours include shades of green, olive green, blue green, grey green, green blue, indigo, brown, blue grey, and green yellow.	





Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>(f) avoids detrimental impacts on landscape values and views as a result of the location, position on site, scale, design and alignment of telecommunications facilities, electricity towers, poles and lines and other tall infrastructure;</li> <li>(g) extractive industry operations are avoided, or where they cannot be avoided, are screened from view.</li> </ul>	<ul> <li>AO2.5</li> <li>No clearing of native vegetation occurs on land with a slope greater than 1 in 6 (16.6%).</li> <li>AO2.6</li> <li>Advertising devices do not occur.</li> </ul>	
Note - A visual impact assessment is undertaken in accordance with Planning scheme policy SC6.6 – Landscape values in order to satisfy performance outcomes.		
Development within a Scenic route buffer / view c	orridor area	
<ul> <li>PO3 Development within a Scenic route buffer / view corridor area as identified on the Landscape values overlay maps contained in Schedule 2: <ul> <li>(a) retains visual access to views of the surrounding landscape, the sea and other water bodies;</li> <li>(b) retains existing vegetation and incorporates landscaping to visually screen and soften built form elements whilst not impeding distant views or view corridors;</li> <li>(c) incorporates building materials and external finishes that are compatible with the visual amenity and the landscape character;</li> <li>(d) minimises visual impacts on the setting and views in terms of:</li> <li>(e) the scale, height and setback of buildings;</li> <li>(f) the extent of earthworks and impacts on the landform including the location and configuration of access roads and driveways;</li> </ul> </li> </ul>	<ul> <li>AO3.1</li> <li>Where within a Scenic route buffer / view corridor area, the height of buildings and structures is not more than identified within the acceptable outcomes of the applicable zone code.</li> <li>AO3.2</li> <li>No clearing of native vegetation is undertaken within a Scenic route buffer area.</li> <li>AO3.3</li> <li>Where within a Scenic route buffer / view corridor area development is set back and screened from view from a scenic route by existing native vegetation with a width of at least 10 metres and landscaped in accordance with the requirements of the landscaping code.</li> <li>AO3.4</li> <li>Development does not result in the replacement of, or creation of new, additional, or enlarged advertising devices</li> </ul>	Complies with PO3 The lot is within the scenic route buffer for the entry to Port Douglas along Port Douglas Road/ Davidson Street. The features of this scenic route are dense tropical landscaping and appropriate height and setbacks for development. The proposed development necessitates the removal of some onsite vegetation for yield and constructability but it is replaced by expertly designed, dense tropical landscaping particularly to the Davidson Street frontage. The buildings are finished in high quality natural materials which integrate into the surrounding vegetation





Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>(g) the scale, extent and visual prominence of advertising devices.</li> <li>Note - A visual impact assessment is undertaken in accordance with Planning scheme policy SC6.6 – Landscape values in order</li> </ul>		The scale, height and setback of the buildings is in keeping with the Acceptable Outcomes of the relevant zone code.
to satisfy performance outcomes.		The proposed development will deliver a superior result in terms of scenic amenity when compared to the current on site development.
		It is a critical feature of this luxury hotel and Villas.
Development within the Coastal scenery area		
PO4 The landscape values of the Coastal scenery zone as identified on the Landscape values overlay maps contained in Schedule 2 are managed to integrated and limit the visual impact of development. Note - A visual impact assessment is undertaken in accordance with Planning scheme policy SC6.6 – Landscape values in order to satisfy performance outcomes.	<ul> <li>AO4.1 The dominance of the natural character of the coast is maintained or enhanced when viewed from the foreshore.</li> <li>AO4.2 Where located adjacent to the foreshore buildings and structures are setback:</li> <li>(a) Where no adjoining development, a minimum of 50 metres from the coastal high water mark and the setback area is landscaped with a native vegetation buffer that has a minimum width of 25 metres; or</li> <li>(b) Where there is adjoining development, setbacks will be consistent with that of adjoining buildings and structures, but not less than 10 metres from the coastal high water mark. The setback area is landscaped in accordance with the requirements of the Landscaping code.</li> <li>AO4.3</li> </ul>	Not applicable.





Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>Where separated from the foreshore by land contained within public ownership (e.g. unallocated State land, esplanade or other public open space), buildings and structures area setback:</li> <li>(a) where no adjoining development, a minimum of 6 metres from the coastward property boundary. The setback area is landscaped in accordance with the requirements of the Landscaping code; or</li> <li>(b) where there is adjoining development, setbacks will be consistent with that of adjoining buildings and structures. The setback area is landscaped in accordance with the requirements of the Landscaping code.</li> </ul>	
PO5 Development is to maximise opportunities to maintain and/or enhance natural landscape values through the maintenance and restoration of vegetated buffers between development and coastal waters, where practical. Note – A visual impact assessment is undertaken in accordance with Planning scheme policy SC6.6 – Landscape values in satisfaction of a performance outcome.	AO5 No clearing of native vegetation is undertaken within a Coastal scenery area zone, except for exempt vegetation damage undertaken in accordance with the Vegetation management code	



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# 8.2.10 Transport network overlay code

### 8.2.10.1 Application

- (1) This code applies to assessing a material change of use, reconfiguring a lot, operational work or building work within the Transport network overlay; if:
  - (a) self-assessable or assessable development where the code is identified as being applicable in the Assessment criteria for the Overlay Codes contained in the Levels of Assessment Tables in section 5.6;
  - (b) impact assessable development.
- (2) Land within the Transport network overlay is identified on the Transport network (Road Hierarchy) overlay map and the Transport network (Pedestrian and Cycle) overlay map in Schedule 2 and includes the following sub-categories:
  - (a) Transport network (Road Hierarchy) overlay sub-categories:
    - (i) State controlled road sub-category;
    - (ii) Sub-arterial road sub-category;
    - (iii) Collector road sub-category;
    - (iv) Access road sub-category;
    - (v) Industrial road sub-category;
    - (vi) Major rural road sub-category;
    - (vii) Minor rural road sub-category;
    - (viii) Unformed road sub-category;
    - (ix) Major transport corridor buffer area sub-category.
  - (b) Transport network (Pedestrian and Cycle) overlay sub-categories:
    - (i) Principal route;
    - (ii) Future principal route;
    - (iii) District route;
    - (iv) Neighbourhood route;
    - (v) Strategic investigation route.





### 8.2.10.2 Purpose

- (1) The purpose of the Transport network overlay code is to:
  - (a) implement the policy direction of the Strategic Framework, in particular:
    - (i) Theme 1: Settlement pattern Element 3.4.2 Urban settlement, Element 3.4.3 Activity centres;
    - (ii) Theme 6: Infrastructure and transport Element 3.9.4 Transport;
  - (b) enable an assessment of whether development is suitable on land within the Transport network overlay.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) development provides for transport infrastructure (including active transport infrastructure);
  - (b) development contributes to a safe and efficient transport network;
  - (c) development supports the existing and future role and function of the transport network;
  - (d) development does not compromise the safety and efficiency of major transport infrastructure and facilities.

### **Criteria for assessment**

#### Table 8.2.10.3 a - Transport network overlay code - assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For assessable development		
PO1	A01.1	Complies with AO 1.1 – 1.2
region.	Development is compatible with the intended role and function of the transport network as identified on the	A detailed Traffic Impact Assessment has been prepared by GHD and is provided as
Note -A Traffic impact assessment report prepared in accordance with Planning scheme policy SC6.10 - Parking and access is one way to demonstrate achievement of the Performance Outcomes.	Transport network overlay maps contained in Schedule 2.	Attachment 6.
	A01.2	This proposal is a redevelopment of an
	Development does not compromise the safety and efficiency of the transport network.	accommodation venture.
		The development is compatible with the intended transport network overlay maps and is demonstrated not to compromise





Performance outcomes	Acceptable outcomes	Applicant response
		the safety and efficiency of Davidson Street or the local road network. Servicing access will be provided via Crimmins Street but the main access is provided from Davidson Street (service road) which is within a State-Controlled Road corridoor. This is consistent with the existing development on site. The Traffic Impact Assessment concludes the increase in estimated equivalent persons generated by the proposed development is negligible compared to the estimated equivalent persons generated by the existing businesses.
Performance outcomes	Acceptable outcomes	Applicant response
	AO1.3 Development is designed to provide access via the lowest order road, where legal and practicable access can be provided to that road.	Complies with AO 1.2 The Development fronts and is accessed from the Davidson Street service road which is adjacent the primary State Controlled Port Douglas Road/Davidson Street. The traffic movements generated by the proposed development are consistent with the existing onsite development. Servicing and access is also provided from Crimmins Street which forms part of the local road network.





Performance outcomes	Acceptable outcomes	Applicant response
		A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.
PO2 Transport infrastructure is provided in an integrated and timely manner. Note - A Traffic impact assessment report prepared in accordance with Planning scheme policy SC6.10 - Parking and access is one way to demonstrate achievement of the Performance Outcomes.	<ul> <li>AO2 Development provides infrastructure (including improvements to existing infrastructure) in accordance with: <ul> <li>(a) the Transport network overlay maps contained in Schedule 2;</li> <li>(b) any relevant Local Plan.</li> </ul> Note – The Translink Public Transport Infrastructure Manual provides guidance on the design of public transport facilities.</li></ul>	Not applicable. There is no additional public transport infrastructure proposed as part of the Development.
<b>PO3</b> Development involving sensitive land uses within a major transport corridor buffer area is located, designed and maintained to avoid or mitigate adverse impacts on amenity for the sensitive land use.	AO3 No acceptable outcomes are prescribed. Note – Part 4.4 of the Queensland Development Code provides requirements for residential building design in a designated transport noise corridor.	Complies with PO3. The Development has incorporated a built design response to any impacts from Davidson Street and is consistent with the design, setbacks and built form of similar developments in this location. Notwithstanding, Davidson Street functions in a similar manner to a Local network road. This is also addressed further in SDAP State Code 1 and 6.
PO4 Development does not compromise the intended role and function or safety and efficiency of major transport corridors. Note - A Traffic impact assessment report prepared in accordance with Planning scheme policy SC6.10 - Parking and access is one way to demonstrate achievement of the Performance Outcomes.	<ul><li>AO4.1 Development is compatible with the role and function (including the future role and function) of major transport corridors.</li><li>AO4.2</li></ul>	Complies with PO4. The development fronts Davidson Street (service road) which accesses the State- controlled Port Douglas Road/Davidson Street from the Crimmins Street and Port Street intersections.





Performance outcomes	Acceptable outcomes	Applicant response
	Direct access is not provided to a major transport corridor where legal and practical access from another road is available.	The existing development has three (3) separate access locations to Davidson Street (service road).
		The proposed development consolidates a single ingress and single egress to Davidson Street (service road) central to the site. Servicing is also provided from Crimmins Street.
		Davidson Street (service road) is a straight road with a low speed environment and no impediments to site lines.
		The proposed new access locations are between 65m and 130m to the closest intersection with Crimmins Street.
		Additionally, the Traffic Impact Assessment concludes the increase in estimated equivalent persons generated by the proposed development is negligible compared to the estimated equivalent persons generated by the existing businesses currently operating from these lots.
		A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.





Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>AO4.3</li> <li>Intersection and access points associated with major transport corridors are located in accordance with:</li> <li>(a) the Transport network overlay maps contained in Schedule 2; and</li> <li>(b) any relevant Local Plan.</li> <li>AO4.4</li> <li>The layout of development and the design of the associated access is compatible with existing and future boundaries of the major transport corridor or major transport facility.</li> </ul>	
<b>PO5</b> Development retains and enhances existing vegetation between a development and a major transport corridor, so as to provide screening to potential noise, dust, odour and visual impacts emanating from the corridor.	AO5 No acceptable outcomes are prescribed.	Complies with PO5. Extensive landscaping is proposed to the streetscape of Davidson Street to enhance the tropical character of the area. This landscaping also results in improved screening to potential noise, dust, odour, and visual impacts when compare to the current form of development. A detailed landscaping plan is provided at Attachment 3.
Pedestrian and cycle network		
<b>PO6</b> Lot reconfiguration assists in the implementation of the pedestrian and cycle movement network to achieve safe, attractive and efficient pedestrian and cycle networks	<ul> <li>AO6.1</li> <li>Where a lot is subject to, or adjacent to an element of the pedestrian and cycle Movement network (identified on the Transport network overlay maps contained in Schedule 2) the specific location of this element of the pedestrian and cycle network is incorporated in the design of the lot layout.</li> <li>AO6.2</li> </ul>	Not applicable. The lot configuring is an internal CMS arrangement. There are existing pedestrian and cycle networks along the Davidson Street frontage.
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Performance outcomes	Acceptable outcomes	Applicant response
	The element of the pedestrian and cycle network is constructed in accordance with the Design Guidelines set out in Sections D4 and D5 of the Planning scheme policy SC6.5 – FNQROC Regional Development Manual.	



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# 9.3.3 Centre activities code

# 9.3.3.1 Application

- (1) This code applies to assessing development for:
- (a) for Centre activities; and
- (b) all development in a Centre zone, if:

(i) if assessable development where the code is an applicable code identified in the assessment criteria column of a table of assessment; or

(ii) impact assessable.

(2) When using this code, reference should be made to Part 5.

# 9.3.3.2 Purpose

(1) The purpose of the Centre activities code is to facilitate the timely establishment of centre activities within the Centre zone.

(2) The purpose of the code will be achieved through the following overall outcomes;

- (a) within the Centre zone, to ensure that centre activities:
  - (i) facilitates the timely establishment of specified uses that require only minor building work to an existing premises;

(ii) has a scale, intensity and operation of the use of premises that is consistent with existing floor space and infrastructure.

# 9.3.3.3 Criteria for assessment

#### Table 9.3.3.3.a - Centre activities code - assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable developme	nt	
Change of use within existing building or facility	ties	
PO1 Development that involves a change of use within an existing building ensures: (a) changes to floor space of the centre activity is minor; (b) the appropriate design and amenity standards for the centre activity is maintained.	AO1 The centre activity: (a) is a use listed in Schedule 1, Table SC1.1.1.2 – Centre Activities; (b) is not a use listed in Schedule 1, Table SC1.1.1.2 – Large format retail activities; (c) is located within the Centre zone; (d) is for a tenancy change only; (e) involves only minor building work to an existing building; (f) complies with the car parking requirements specified in	Not applicable.



	<ul> <li>(g) Table 9.4.1.3.b in the Access, parking and servicing code.</li> <li>Note - The whole development means the entire building or activity on a site (or sites) where shared parking areas are utilised.</li> </ul>	
<b>PO2</b> Building plant or equipment cannot be viewed from public places.	AO2.1 Plant or equipment is not located on roofs; or AO2.2 Where plant or equipment is placed on roofs, it is appropriately screened from the streetscape behind a parapet or similar design feature.	Not applicable.
For assessable development		
<ul> <li>PO3</li> <li>Development is located:</li> <li>(a) within an existing Centre zone;</li> <li>(b) a building containing an existing centre activity;</li> <li>(c) on a site identified as being suitable for Centre activities in a Local plan.</li> </ul>	<b>AO3</b> No acceptable outcomes are prescribed.	Complies with PO3. The Tourist Accommodation Zone identifies Food and Drink Outlets associated with Tourist Accommodation as a code assessable use within that zone.



Performance outcomes	Acceptable outcomes	Applicant response
<b>PO4</b> A centre activity is only established outside an	AO4 No acceptable outcomes are prescribed.	Complies with PO4
<ul> <li>appropriately identified area where:</li> <li>(a) community need is demonstrated for the centre;</li> <li>(b) the centre activity does not compromise the establishment of consolidated activity centres with distinct roles and functions across the Far North Queensland Region;</li> <li>(c) the centre activity does not compromise the established hierarchy of activity centres in the Far North Queensland Region; the centre activity does not compromise the established hierarchy of activity centres in the Far North Queensland Region; the centre activity does not compromise the character and amenity of surrounding areas.</li> <li>Note – An appropriately identified area is defined in PO3 of this code.</li> <li>Note – Refer to the Far North Queensland Regional Plan to determine the distinct roles and functions, and the established hierarchy of activity centres in Far North Queensland.</li> </ul>		The Tourist Accommodation Zone identifies Food and Drink Outlets associated with Tourist Accommodation as a code assessable use within that zone.
<b>PO5</b> The siting of buildings contributes to the desired amenity and character of the area and protect the amenity of other land uses.	<ul> <li>AO5.1</li> <li>Buildings setbacks to road frontages are: <ul> <li>(a) in accordance with the provisions of any applicable Local plan;</li> <li>(b) a minimum of 6 metres where no Local plan applies or there are no particular provisions specified in the Local pan for the site.</li> </ul> </li> <li>AO5.2 Where adjoining land in the Industry Zone, buildings are setback: <ul> <li>(a) 0 metres from the side and rear boundaries; or</li> <li>(b) 2.5 metres or ¼ of the height of the building, which ever if the greater; and</li> <li>(c) not any distance between 0 metres and 2.5 metres.</li> </ul> AO5.3 Where adjoining land in any other zone, buildings</li></ul>	Complies with PO5 The proposed centre activity (Food and Drink Outlet associated with Tourist accommodation) is contained within a Short Term Accommodation Hotel and the proposed building contributes to the amenity and character of the area and protects the amenity of other land uses that are proximate to the proposed development.



<b>PO6</b> The site coverage of buildings ensures that there is sufficient space available to cater for services, landscaping and on-site parking.	<ul> <li>are setback 3.0 metres or ¼ of the height of the building, whichever if the greater and are provided with an acoustic barrier in accordance with the recommendations of a qualified acoustic expert.</li> <li>AO5.4</li> <li>Setback areas are provided with a 2 metre landscaped strip capable of deep planting, which is kept clear of service equipment and storage areas: <ul> <li>(a) adjacent to the road frontage in all areas not required for pedestrian or vehicular access for the setback area nominated in AO5.1(b) above;</li> <li>(b) adjacent to the boundary with the other zone for the setback</li> </ul> </li> <li>AO6</li> <li>Site coverage does not exceed 50%, unless otherwise specified in a Local plan.</li> </ul>	Complies with AO6 The centre activity is contained within a Short Term Accommodation Hotel and these elements are addressed in the applicable zone and use codes.
<b>PO7</b> Building façades are articulated and finished in ways that respond to the attractive elements of surrounding buildings, and enhances existing streetscape character.	AO7 Building facades are articulated and finished with design elements such as: (a) variations in plane shape, such as curves, steps, recesses or projections; (b) variations in treatment and patterning of windows, sun protection devices, or other elements of the façade; (c) elements of finer scale, than the main structural framing.	Complies with AO7 The centre activity is contained within a Short Term Accommodation Hotel and these elements are addressed in the applicable zone and use codes.



<b>D</b> O0	1004	
PO8	AU8.1 Cround floor lovels of buildings incomparate activities	Complies with PO8
	Ground noor levels of buildings incorporate activities	
INAL: (a) contributes to a high level of emerity for	that are likely to loster casual, social or	The centre activity is contained within a Short
(a) contributes to a high level of amenity for	pusiness interaction for extended periods (such	Term Accommodation Hotel and these elements
pations and pedestinans,	as Shops, Food and drink outlets and the like).	are addressed in the applicable zone and use
(b) lacinitates interactions between the public and	109.2	codes.
private realm.	AU0.2 Whore a huilding has frontage to a public street	
	or other public or semi public space, an active	
	frontage is provided which includes a minimum of	
	75% of the facade consisting of transparent or	
	semi-transparent windows or diazed doors	
	semi-transparent windows of glazed doors.	
	A08.3	
	Frontages to public streets or other public or semi	
	public spaces are articulated with vertical elements	
	that emphasise a finer-grain and human	
	scale to the building frontage.	
	5 5	
	AO8.4	
	Where buildings are constructed up to a road	
	frontage, a cantilever awning is to be provided over	
	the footpath of the site, to the full frontage of	
	the site, with a setback of 1 metre from the face	
	of the kerb, and;	
	(a) with a maximum height of 3 metres to the	
	underside of the awning; or	
	(b) at a height consistent with, or stepping up or	
	down to, the awning structures on buildings	
	on adjoining sites.	
PO9	AO9.1	Complies with PO9
Development provides for the site to be landscaped	A minimum of 10% of the site is set aside for	
in a manner that is consistent with the function,	landscape planting.	The centre activity is contained within a Short
location and setting of the		Term Accommodation Hotel and these elements
development.	AO9.2	are addressed in the applicable zone and use
	Landscaping is provided in accordance with the	codes.
	tollowing:	
	(a) a mixture of snade trees and low planting is	
	provided along street frontages where	
	pulldings are setback from the frontage;	
	(b) snade trees are provided in car parks;	



(c) a landscaped area is provided between the	
centre activity, associated car parking and	
any adjacent residential use or zone which:	
(i) has a minimum width of 3 metres and is	
not used for storage or mechanical plant;	
(ii) is planted with a variety of hardy	
screening shrubs and trees;	
(iii) incorporates a minimum 1.8 metre high	
solid screen fence.	
Note – Additional fencing requirements beyond the minimum	
standard may be required for acoustic and lighting attenuation	
purposes in accordance with AO5.3.	



# 9.3.13 Multiple dwelling, short term accommodation and retirement facility code

## 9.3.13.1 Application

- (1) This code applies to assessing development for a Multiple dwelling, short term accommodation, residential care facility or retirement facility if:
  - (a) assessable development where the code is an applicable code identified in the assessment criteria column of a table of assessment for a material change of use; or
  - (b) impact assessable development.
- (2) When using this code, reference should be made to Part 5.

## 9.3.13.2 Purpose

- (1) The purpose of the Multiple dwelling, short term accommodation and retirement facility code is to assess the suitability of development to which this code applies.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) development is compatible with and complementary to surrounding development, with regard to scale, bulk, and streetscape patterns;
  - (b) master planning is undertaken for larger developments to ensure connectivity and integration with adjoining uses and the wider neighbourhood;
  - (c) development does not adversely impact on the natural features on the site;
  - (d) the design of development creates a pleasant living environment and is appropriate for the tropical climate of the region;
  - (e) the impacts of development on adjoining premises are managed.

# 9.3.13.3 Criteria for assessment

Table 9.3.13.3.a - Multiple dwelling, short term accommodation and retirement facility code - assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For assessable development		



<ul> <li>PO1</li> <li>The site has sufficient area and frontage to: <ul> <li>(a) accommodate the scale and form of buildings considering site features;</li> <li>(b) achieve communal open space areas and private outdoor spaces;</li> <li>(c) deliver viable areas of deep planting and landscaping to retain vegetation and protect or establish tropical planting;</li> <li>(d) achieve safe and convenient vehicle and pedestrian access;</li> <li>(e) accommodate on-site car parking and manoeuvring for residents, visitors and service providers.</li> </ul> </li> </ul>	AO1.1 The site has a minimum area of 1000m <sup>2</sup> . AO1.2 The site has a minimum frontage of 25 metres.	Complies with AO1.1 The proposed site is 2.59Ha. Complies with AO1.2 The site frontage is approximately 202m to Davidson Street (service road).
<ul> <li>PO2</li> <li>Development for large-scale multiple dwellings, short term accommodation and retirement villages contributes to the neighbourhood structure and integrates with the existing neighbourhood through:</li> <li>(a) the establishment and extension of public streets and pathways;</li> <li>(b) the provision of parks and other public</li> </ul>	AO2 Development on a site 5,000m <sup>2</sup> or greater is in accordance with a structure plan. Note – Guidance on preparing a structure plan is provided within Planning scheme policy SC6.14 – Structure planning.	Complies with AO2 A structure plan has been provided to support the proposed development.



Performance outcomes	Acceptable outcomes		Applicant response	
<ul> <li>spaces as appropriate to the scale of the development;</li> <li>(c) inclusion of a mix of dwelling types and tenures and forms;</li> <li>(d) buildings that address the street;</li> <li>(e) building height and setback transitions to adjoining development of a lower density or scale.</li> </ul>				
<ul> <li>PO3</li> <li>Development ensures that the proportion of buildings to open space is:</li> <li>(a) in keeping with the intended form and character of the local area and immediate streetscape;</li> <li>(b) contributes to the modulation of built form;</li> </ul>	AO3.1 The site cover is not more th AO3.2 The development has a gros more than:	nan 40%. ss floor area of not	Complies with PO3. Site cover in the Tourist Accommodation zone allows for 50%. As the proposal is for multiple development	
(c) supports residential amenity including access to breezes, natural light and sunlight;	Zone	Maximum GFA	needs to be considered on its merits.	
<ul> <li>(d) supports outdoor tropical living,</li> <li>(e) provides areas for deep tropical planting and / ar for the retention of mature vegetation</li> </ul>	Low-medium density residential	0.8 x site area	The development has been designed to reflect	
or for the retention of mature vegetation.	Medium density residential	1.2 x site area	Accommodation Zone on Davidson Street. The	
	Tourist accommodation	1.2 x site area	Villas set amidet lush tronical landscaning	
	All other zones	No acceptable outcome specified	improves the immediate streetscape of the site.	
			The built form of the hotel allows for articulation and the use of Villas at the site boundaries provides modulation of built form.	
			The Development has been designed specifically with luxury residential living in mind and responds to the sites characteristics in terms of access to breezes and natural light.	
			The site provides extensive and expertly designed tropical landscaping and where mature vegetation cannot be retained, vegetation	



		capable of reaching maturing in the short term is proposed.
<ul> <li>PO4 Development is sited so that the setback from boundaries: <ul> <li>(a) provides for natural light, sunlight and breezes;</li> <li>(b) minimises the impact of the development on the amenity and privacy of neighbouring residents;</li> <li>(c) provides for adequate landscaping.</li> </ul> </li> </ul>	<ul> <li>AO4.1 Buildings and structures are set back not less than 6 metres from a road frontage.</li> <li>AO4.2 Buildings and structures are setback not less than 4 metres to the rear boundary.</li> <li>AO4.3 The side boundary setback for buildings and structures is: <ul> <li>(a) for buildings up to 2 storeys not less than 2.5 metres for the entire building;</li> <li>(b) for buildings up to 3 storeys not less than 3.5 metres for the entire building.</li> </ul> </li> </ul>	Complies with PO4. A detailed setback plan is provided in the Development Plans at Attachment 3. The setbacks are as follows- (a) Main Street Frontage – 6m – 23.6m (b) Secondary Street Frontage – 4m – 4.5m (c) Rear Boundary – 3.3m – 6.8m (d) Side boundary – 1m – 3.8m. The Main Street Frontage and Secondary Street Frontage setbacks comply with the AO. The rear boundary abuts a wide road reserve which contains Railway Service Lane which has minimal use. The reduced setback in this location is considered appropriate as there is an extensive vegetated buffer between the site boundary and the formed road. There are reduced setbacks to the site boundary adjacent Lychee Tree Holiday apartments. The apartments at that location face internally to the site and are separated from the property boundary by existing landscaping. As such, the reduced setbacks still achieve sufficient separation from the adjoining units. The height of the buildings in this location is only 6.3 – 6.7m


<ul> <li>PO5 Building depth and form must be articulated to <ul> <li>(a) ensure that the bulk of the development is in keeping with the form and character intent of the area;</li> <li>(b) provide adequate amenity for residents in terms of natural light and ventilation. </li> <li>Note - Planning scheme policy SC6.1 – Building design and architectural elements provides guidance on reducing building bulk.</li> </ul></li></ul>	<ul> <li>AO5.1 <ul> <li>(a) The maximum length of a wall in any direction is 30 metres with substantial articulation provided every 15 metres.</li> <li>(b) The minimum distance between buildings on a site is not less than 6 metres;</li> </ul> </li> <li>AO5.2 <ul> <li>The length of any continuous eave line does not exceed 18 metres.</li> </ul> </li> </ul>	Complies with PO5. The overall length of the hotel building technically exceeds 30 metres but the large open entrance ensures that it does not appear bulky or obtrusive. The built form provides for a high degree of articulation and landscaping. The length is necessitated by the curved appearance of the structure.
PO6 Development reduces the appearance of building bulk, ensures a human-scale, demonstrates variations in horizontal and vertical profile and	AO6.1 Development incorporates a number of the following design elements: (a) balconies;	Complies with AO 6.1 & AO 6.2 Balconies and patios are spacious and open in keeping with the tropical design of the built form. The Facades of the buildings and structures are finished with natural tones and materials and are non-reflective. Additionally, the built form is screened by extensive landscaping both on the building façade and at ground level. The finishes are detailed in Attachment 3 and generally consist of the following-



Performance outcomes	Acceptable outcomes	Applicant response
supports streetscape character.	<ul><li>(b) verandahs;</li><li>(c) terraces;</li><li>(d) recesses.</li></ul>	
	<ul> <li>AO6.2</li> <li>Development reduces building bulk by: <ul> <li>(a) variation in building colours, materials and textures;</li> <li>(b) the use of curves, recesses, projections or variations in plan and elevation;</li> <li>(c) recession and projection of rooflines and the inclusion of interesting roof forms, such as cascading roof levels, gables, skillions or variations in pitch;</li> <li>(d) use of sun-shading devices and other façade features;</li> <li>(e) use of elements at a finer scale than the main structural framing of the building.</li> </ul> </li> </ul>	
<ul> <li>PO7</li> <li>Development provides a building that must define the street to facilitate casual surveillance and enhance the amenity of the street through: <ul> <li>(a) orientation to the street;</li> <li>(b) front boundary setback;</li> <li>(c) balconies and windows to provide overlooking and casual surveillance;</li> <li>(d) building entrances.</li> </ul> </li> </ul>	<ul> <li>A07.1 Development provides a building that is not set back further than 2m beyond the minimum required street front setback.</li> <li>A07.2 Development provides balconies and windows from the primary living area that face and overlook the street or public space.</li> </ul>	Complies with AO 7.1 and AO7.2 The Villa aspect of the Development is not setback further than 2m beyond the minimum required street front setback. Whilst balconies face inwards, windows of habitable rooms front Davidson Street and allow for passive surveillance. Also the nature of a luxury brand hotel will mean continuous operations of the facility which allows for passive surveillance of the site boundaries and street frontge.



PO8 Buildings exhibit tropical design elements to support Douglas Shire's tropical climate, character and lifestyle.	<ul> <li>AO8.1 Development has floor to ceiling heights of 2.7 metres;</li> <li>AO8.2 Buildings include weather protection and sun shading to all windows to all external doors and windows of habitable rooms.</li> <li>AO8.3 Development incorporates deep recesses, eaves and sun-shading devices</li> <li>AO8.4 Western orientated facades are shaded using building and landscape elements, such as adjustable screens, awnings or pergolas or dense tropical planting.</li> <li>AO8.5 Individual dwelling units are not located on both sides of an enclosed central corridor (i.e. not double banked).</li> </ul>	Complies with PO8. Details of the architectural design considerations are provided in detail in Attachment 3. The Luxury Hotel and Villas have been designed by Hunt Design who have been instrumental in developing the tropical design elements that define Port Douglas today.
PO9 Development minimises direct overlooking between buildings through appropriate building layout, location and the design of windows and balconies or screening devices. Note—Siting and building separation is used to minimise	AO9.1 Development where the dwelling is located within 2 metres at ground level or 9 metres above ground level of a habitable room window or private open space of an existing dwelling house, ensures habitable rooms and any private outdoor spaces have:	Complies with PO9 The Hotel has been designed to allow for alternate terrace and pool views to prevent overlooking. The Villas are separated by internal roadways and landscaping. The Villas abutting the Hotel are separated by extensive landscaping. Screening will be used where required as part of a built form solution to prevent overlooking.



Performance outcomes	Acceptable outcomes	Applicant response
privacy screening requirements.	<ul> <li>(a) an offset from the habitable room or private open space of the existing dwelling to limit direct outlook; or</li> <li>(b) sill heights a minimum of 1.5m above floor level; or</li> <li>(c) fixed obscure glazing in any part of the window below 1.5m above floor level; or</li> <li>(d) fixed external screens; or</li> <li>(e) in the case of screening for a ground floor level unit, fencing to a minimum 1.8m above the ground storey floor level.</li> </ul>	
	<b>AO9.2</b> Development where a direct view is available from balconies, terraces, decks or roof decks into windows of habitable rooms, balconies, terraces or decks in an adjacent existing dwelling house, is screened from floor level to a height above 1.5m above floor level.	
	<b>AO9.3</b> Development provides screening devices that are solid translucent screens, perforated or slatted panels or fixed louvres that have a maximum of 25% openings, with a maximum opening dimension of 50mm, and that are permanent and durable.	
	Note—The screening device is offset a minimum of 0.3m from the wall around any window. Note—Screening devices are hinged or otherwise attached to facilitate emergency occess	
<b>PO10</b> Development provides accessible and functional landscaping and recreation area for the benefit of residents/guests.	AO10 A minimum of 35% of the site is allocated as landscaping and recreation area.	



<b>P011</b> Landscaping must contribute positively to the amenity of the area, streetscape and public spaces.	<ul> <li>AO11</li> <li>Development provides landscaping as follows: <ul> <li>(a) A dense landscape planting strip of at least 2 metres width suitable for deep planting is provided and maintained along all street frontages;</li> <li>(b) A dense landscape planting strip of at least 1.5 metres width suitable for deep planting is provided along all side and rear boundaries.</li> </ul> </li> </ul>	
<b>PO12</b> The landscaping and recreation area provides for functional communal open space for all developments exceeding five dwellings on one site	<ul> <li>AO12.1</li> <li>Communal open space is provided at:</li> <li>(a) a minimum of 5% of site area of 50m<sup>2</sup> whichever is the greater; and</li> <li>(b) a minimum dimension of 5 metres</li> </ul>	Complies with PO12. Over 35% of the site consists of garden areas, parkland, or water bodies which form part of the
Site.	<ul> <li>AO12.2</li> <li>Development provides communal open space that:</li> <li>(a) is consolidated into one useable space;</li> <li>(b) where communal open space exceeds 100m<sup>2</sup>, the communal open space may be</li> </ul>	hard landscaping. A minimum 6m frontage is proposed for the front setback. This areas is extensively landscaped providing a sense of arrival at a luxury tropical hotel.
		Extensive landscaping is proposed throughout the development and at each property boundary. The development also benefits from the existing vegetation on Davidson Street, the Railway Service Lane reserve and Crimmins Street.
		Detailed site plans and landscaping plans are provided at Attachment 3.



Performance outcomes	Acceptable outcomes	Applicant response
	split into two, and so forth incrementally.	
	<ul> <li>AO12.3</li> <li>Communal open space: <ul> <li>(a) is a minimum of 50% open to the sky;</li> <li>(b) achieves 25% shading by trees in 5 years;</li> <li>(c) does not include vehicle driveways and manoeuvring;</li> <li>(d) does not contain surface structures such as rainwater tanks, fire hydrants, transformers or water boosters.</li> </ul> </li> </ul>	
	<ul> <li>AO12.4</li> <li>Communal open space is designed to provide for a range of facilities, typically including some, or all, of the following elements:</li> <li>(a) seating;</li> <li>(b) barbecue;</li> <li>(c) play equipment;</li> <li>(d) swimming pool;</li> <li>(e) communal clothes drying;</li> <li>(f) vegetable garden.</li> </ul>	
	<b>AO12.5</b> Development involving 5 or fewer dwellings on one lot can allocate additional private open space to a ground storey dwelling instead of providing communal open space.	



		-
PO13 Development must provide attractive and functional private open space for residents and guests.	<ul> <li>AO13.1 Development provides private open space which: <ul> <li>(a) for ground storey dwellings, comprises of a minimum area of 35m<sup>2</sup> with a minimum dimension of 3 metres;</li> <li>(b) for dwellings above ground storey, comprises of a balcony with minimum area of 12m<sup>2</sup> and a minimum dimension of 3 metres. </li> <li>AO13.2 Development provides private open space areas that are: <ul> <li>(a) directly accessible from internal primary living area of the dwelling (not bedrooms);</li> <li>(b) provided with a screened area of 2m<sup>2</sup> minimum dimension capable of screening air conditioning plant, private clothes drying etc </li> <li>(c) provided with adjustable, moveable or operable privacy screening where appropriate.</li> <li>AO13.3 Development provides balconies that are located to the front or rear of the building except where adequate building separation can be achieved to maintain privacy. </li> </ul></li></ul></li></ul>	The proposed Development complies with PO13. Overall, the proposal complies with AO13.1, AO13.3, AO 13.4, and AO13.5. Each Villa has extensive private recreational space consisting of roof terraces, balconies, and courtyards. Each Hotel room has a balcony of $13m^2 - 15m^2$ . The proposal does not achieve compliance with AO1.2 as some outdoor recreational space is provided via bedroom access.
	AO13.4 Where secondary balconies are provided to a	
	PO13 Development must provide attractive and functional private open space for residents and guests.	<ul> <li>PO13         Development must provide attractive and functional private open space for residents and guests.         AO13.1         Development provides private open space which:             <ul></ul></li></ul>



Performance outcomes	Acceptable outcomes	Applicant response
	side of a building for additional amenity or services, such as clothes drying or to articulate facades, the setback may be reduced to the minimum setback, but these areas are not included in the calculation of private open space requirements.	
	<ul> <li>AO13.5</li> <li>Private open space: <ul> <li>(a) does not include vehicle driveways and manoeuvring;</li> <li>(b) does not contain surface structures such as rainwater tanks, fire hydrants, transformers or water boosters.</li> </ul> </li> </ul>	



<ul> <li>PO14 Development provides front fencing and retaining walls that must: <ul> <li>(a) facilitate casual surveillance of the street and public space;</li> <li>(b) enable use of private open space;</li> <li>(c) assist in highlighting entrances to the property;</li> <li>(d) provide a positive interface to the streetscape.</li> </ul></li></ul>	<ul> <li>AO14.1 Development ensures that, where fencing is provided, the height of any new fence located on any common boundary to a street or public space is a maximum of: <ul> <li>(a) 1.2m, where fence construction is solid or less than 50% transparent;</li> <li>(b) 1.5m, where fence construction is at least 50% transparent;</li> <li>(c) 1.8m and solid only where the site is on an arterial road or higher order road.</li> </ul> AO14.2 Development incorporating solid front fences or walls that front the street or other public spaces and are longer than 10m, indentations, material variation or landscaping is provided to add visual interest and soften the visual impact AO14.3 Development for a retaining wall is: <ul> <li>(a) stepped to minimise impact on the streetscape and pedestrian environment;</li> <li>(b) a maximum of 0.6m in height if directly abutting the edge of the adjoining road reserve verge</li> </ul></li></ul>	The Development is able to comply with AO14.1 – 14.3 and can be conditioned to comply to the extent that any fencing is proposed.
<b>PO15</b> Development minimises light nuisances.	AO15 Outdoor lighting is in accordance with AS 4282- 1997 Control of the obtrusive effects of outdoor lighting.	The Development will comply with AO15 and can be conditioned to comply.



#### Complies with AO 16. PO16 AO16 Waste and recyclable material storage areas are: Waste and recyclable material storage areas: (a) convenient and accessible to residents and (a) are located on site: Waste and recyclable material storage areas waste and recyclable material collection (b) are sited and designed to be unobtrusive and are provided on site and are sited and designed screened from view from the street frontage: services: to be unobtrusive and screened from view from (b) located and designed to mitigate adverse (c) are imperviously sealed roofed and bunded. the street frontage. and contain a hose down area draining to impacts: (i) within the site: Council's sewer network: (d) are of a sufficient size to accommodate bulk The areas will be imperviously sealed roofed and (ii) on adjoining properties; bunded, and contain a hose down area draining (iii) to the street. (skip) bins: (e) have appropriate access and sufficient on site to Council's sewer network. manoeuvrability area for waste and The waste collection will be managed by the recyclable material collection services. Hotel most likely with a standard vehicle and trailer to collect and take to the service basement compactor - similar to many group title townhouses.



Performance outcomes	Acceptable outcomes	Applicant response
	Note - The Environmental performance code contains requirements for waste and recyclable material storage.	
PO17 Development provides a secure storage area for each dwelling.	<ul> <li>AO17</li> <li>A secure storage area for each dwelling: <ul> <li>(a) is located to enable access by a motor vehicle or be near to vehicle parking;</li> <li>(b) has a minimum space of 3.5m<sup>2</sup> per dwelling;</li> <li>(c) has a minimum height of 2 metres;</li> <li>(d) is weather proof;</li> <li>(e) is lockable;</li> <li>(f) has immunity to the 1% AEP inundation event.</li> </ul> </li> <li>Note – A cupboard within a unit will not satisfy this requirement</li> </ul>	Complies with AO17. The Villas have sufficient storage space incorporated into the design.
Additional requirements for a Retirement facility		
<b>PO18</b> Retirement facilities are located in areas which offer convenience to residents, and are designed to be compatible with the locality and surrounding area in which they are located.	AO18 Retirement facilities are conveniently located in established areas close to public transport, shopping facilities and health care services.	Not applicable.



<b>PO19</b> Retirement facilities are designed to provide for the amenity and security of residents.	<b>AO19.1</b> The Retirement facility incorporates covered walkways wide enough to accommodate wheel chairs and ramps, and where necessary, provide on-site weather protection between all parts of the complex.	Not applicable.
	<b>AO19.2</b> Internal pathways have firm, well drained and non-slip surfaces.	
	<b>AO19.2</b> Security screens are provided to all dwelling units or residential rooms to ensure the safety and security of residents.	
	<b>AO19.3</b> An illuminated sign and site map of the layout of the development is located near the main entrance to the facility.	
<b>PO20</b> The internal layout of a Retirement facility and the location of the retirement facility allows for safe evacuation of residents in an emergency and provides emergency services to efficiently access the site.	<ul> <li>AO20.1</li> <li>The design of the Retirement facility ensures that external circulation and access and egress points on the site facilitate the evacuation of the site in an efficient manner.</li> <li>AO20.2</li> <li>The site of a Retirement facility is not prone to inundation.</li> </ul>	Not applicable.
	<b>AO20.3</b> The location of the Retirement facility is readily accessible to emergency vehicles.	



Performance outcomes	Acceptable outcomes	Applicant response
<b>PO21</b> The development is designed for the needs of the age group, and to allow 'aging in place' to occur.	<ul> <li>AO21.1</li> <li>Development applies adaptable housing principles.</li> <li>AO21.2</li> <li>A range of housing designs and sizes are provided in the development to cater for different individual and household needs.</li> </ul>	Not applicable.



# 9.4.1 Access, parking and servicing code

## 9.4.1.1 Application

- (1) This code applies to assessing:
  - (a) operational work which requires a compliance assessment as a condition of a development permit; or
  - (b) a material change of use or reconfiguring a lot if:
    - (i) self-assessable or assessable development where this code is identified in the assessment criteria column of the table of assessment;
    - (ii) impact assessable development, to the extent relevant.
- (2) When using this code, reference should be made to Part 5.

## 9.4.1.2 Purpose

- (1) The purpose of the Access, parking and servicing code is to assess the suitability of access, parking and associated servicing aspects of a development.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) sufficient vehicle parking is provided on-site to cater for all types of vehicular traffic accessing and parking on-site, including staff, guests, patrons, residents and short term delivery vehicles;
  - (b) sufficient bicycle parking and end of trip facilities are provided on-site to cater for customer and service staff;
  - (c) on-site parking is provided so as to be accessible and convenient, particularly for any short term uses;
  - (d) development provides walking and cycle routes through the site which link the development to the external walking and cycling network;
  - (e) the provision of on-site parking, loading / unloading facilities and the provision of access to the site do not impact on the efficient function of street network or on the area in which the development is located;
  - (f) new vehicular access points are safely located and are not in conflict with the preferred ultimate streetscape character and local character and do not unduly disrupt any current or future on-street parking arrangements.

### 9.4.1.3 Criteria for assessment

Table 9.4.1.3.a - Access, parking and servicing code - assessable development

Performance outcomes	Acceptable outcomes	Applicant response	
For self-assessable and assessable development			



#### Complies with PO1 PO1 AO1.1 Sufficient on-site car parking is provided to cater The minimum number of on-site vehicle parking for the amount and type of vehicle traffic spaces is not less than the number prescribed in The Short Term Accommodation (Hotel) and expected to be generated by the use or uses of Table 9.4.1.3 b for that particular use or uses. Food and Drink Outlets (associated with Tourist the site, having particular regard to: Accommodation) require the following (a) the desired character of the area: Note - Where the number of spaces calculated from the table carparkingis not a whole number, the number of spaces provided is the (b) the nature of the particular use and its next highest whole number specific characteristics and scale: Short Term Accommodation – 91 (c) the number of employees and the likely AO1.2 number of visitors to the site: Food and Drink Outlets - 12 Car parking spaces are freely available for the (d) the level of local accessibility: Total - 103 parking of vehicles at all times and are not used (e) the nature and frequency of any public for external storage purposes, the display of transport serving the area: products or rented/sub-leased The proposed development provides for 96 (f) whether or not the use involves the retention carparking spaces inclusive of accessible parking. An additional 14 Motorcycle spaces are provided. The Short Term Accommodation/Multi Unit Dwelling Villas require 66 spaces. The design of the Villas accommodates 88 spaces. Overall, the development achieves compliance with AO1.1 but for practical application each aspect of the development is considered separately. The Short Term Accommodation (Hotel) and Food and Drink Outlets (associated with Tourist Accommodation) aspect of the development is 7 carparking spaces short. This does not consider the 2% allowable for motorcycles which results in a shortfall of only 5 spaces. Parking calculations and assumptions are attached to this compliance table and are further articulated in the Traffic Impact Assessment at Attachment 6.



Realistically, the majority of patrons to the Food and Drink outlet will be guests of the Hotel or residents/guests of the adjoining Villas. It is also likely that patronage will be received from adjacent Tourism Accommodation which will be pedestrian traffic.
It is also reasonable to assume that patrons of the Food and Drink outlet will come from Port Douglas and are likely to take alternative modes of transport like a taxi, courtesy shuttle, or Uber if they are intending to enjoy a drink with lunch or dinner.
On this basis, the minor non-compliance with the carparking rates is considered reasonable and will not impact the operations of the Hotel.
For completion, car parking spaces are located such that the are freely available for parking at all times. Sufficient space has been allowed for external storage purposes and there is no intent to lease or rent the carparks commercially.



Performance outcomes	Acceptable outcomes	Applicant response
of an existing building and the previous requirements for car parking for the building (g) whether or not the use involves a heritage building or place of local significance; (h) whether or not the proposed use involves the retention of significant vegetation.	<ul> <li>AO1.3 Parking for motorcycles is substituted for ordinary vehicle parking to a maximum level of 2% of total ordinary vehicle parking.</li> <li>AO1.4 For parking areas exceeding 50 spaces parking, is provided for recreational vehicles as a substitute for ordinary vehicle parking to a maximum of 5% of total ordinary vehicle parking rate.</li> </ul>	Complies with AO 1.3 Motorcycle parking is provided in addition to the amount required to achieve compliance with PO1. A total of 14 Motorcycle parks are provided for on site. AO1.4 is not applicable to this application as RV parking is not required to service the Short Term Accommodation component as the accommodation is provided on site. If the site is accessed by a patron requiring RV parking, there is sufficient on street parking available.
<b>PO2</b> Vehicle parking areas are designed and constructed in accordance with relevant standards.	<ul> <li>AO2</li> <li>Vehicle parking areas are designed and constructed in accordance with Australian Standard:</li> <li>(a) AS2890.1;</li> <li>(b) AS2890.3;</li> <li>(c) AS2890.6.</li> </ul>	Complies with AO2. Vehicle parking is designed in accordance with the Australia Standards. This can further be conditioned to comply.



## PO3

Access points are designed and constructed:

- (a) to operate safely and efficiently;
- (b) to accommodate the anticipated type and volume of vehicles
- (c) to provide for shared vehicle (including cyclists) and pedestrian use, where appropriate;
- (d) so that they do not impede traffic or pedestrian movement on the adjacent road area;
- (e) so that they do not adversely impact upon existing intersections or future road or intersection improvements;
- (f) so that they do not adversely impact current and future on-street parking arrangements;
- (g) so that they do not adversely impact on existing services within the road reserve adjacent to the site;
- (h) so that they do not involve ramping, cutting of the adjoining road reserve or any built structures (other than what may be necessary to cross over a stormwater channel).

# AO3.1

Access is limited to one access cross over per site and is an access point located, designed and constructed in accordance with:

- (a) Australian Standard AS2890.1;
- (b) Planning scheme policy SC6.5 FNQROC Regional Development Manual - access crossovers.

# AO3.2

Access, including driveways or access crossovers:

- (a) are not placed over an existing:
  - (i) telecommunications pit;
  - (ii) stormwater kerb inlet;
  - (iii) sewer utility hole;
  - (iv) water valve or hydrant.
- (b) are designed to accommodate any adjacent footpath;
- (c) adhere to minimum sight distance requirements in accordance with AS2980.1.

# AO3.3

Driveways are:

- (a) designed to follow as closely as possible to the existing contours, but are no steeper than the gradients outlined in Planning scheme policy SC6.5 – FNQROC Regional Development Manual;
- (b) constructed such that where there is a grade shift to 1 in 4 (25%), there is an area with a grade of no more than 1 in in 6 (16.6%) prior to this area, for a distance of at least 5 metres;

(c) on gradients greater than 1 in 6 (16.6%) driveways are constructed to ensure the cross-fall of the driveway is one way and directed into the hill, for vehicle safety and drainage purposes; Complies with PO3.

The development fronts Davidson Street (service road) which accesses the Statecontrolled Port Douglas Road/Davidson Street from the Crimmins Street and Port Street intersections.

The existing development has three (3) separate access locations to Davidson Street (service road).

The proposed development consolidates a single ingress and single egress to Davidson Street (service road) central to the site. Servicing is also provided from Crimmins Street.

Davidson Street (service road) is a straight road with a low speed environment and no impediments to site lines.

The proposed new access locations are approximately 90m to the closest intersection with Crimmins Street.

Additionally, the Traffic Impact Assessment concludes the increase in estimate equivalent persons generated by the proposed development is negligible compared to the estimated equivalent persons generated by the existing businesses currently operating from these lots.

A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.



Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>(d) constructed such that the transitional change in grade from the road to the lot is fully contained within the lot and not within the road reserve;</li> <li>(e) designed to include all necessary associated drainage that intercepts and directs storm water runoff to the storm water drainage system.</li> </ul>	
	<b>AO3.4</b> Surface construction materials are consistent with the current or intended future streetscape or character of the area and contrast with the surface construction materials of any adjacent footpath.	
<b>PO4</b> Sufficient on-site wheel chair accessible car parking spaces are provided and are identified and reserved for such purposes.	<b>AO4</b> The number of on-site wheel chair accessible car parking spaces complies with the rates specified in AS2890 Parking Facilities.	Complies with AO4 6 accessible carparking spaces are provided which is in accordance with the rates specified in AS2890 Parking Facilities.
<b>PO5</b> Access for people with disabilities is provided to the building from the parking area and from the street.	<b>AO5</b> Access for people with disabilities is provided in accordance with the relevant Australian Standard.	Complies with AO5 See comments above.
<b>P06</b> Sufficient on-site bicycle parking is provided to cater for the anticipated demand generated by the development.	AO6 The number of on-site bicycle parking spaces complies with the rates specified in Table 9.4.1.3.b.	Complies with AO6. The development requires 33 bicycle parks and the plans proposes approximately 74 bicycle parks across all aspects with 30 dedicated to the Short Term Accommodation (Hotel) component. Detail is provided in the carparking requirements



<ul> <li>PO7</li> <li>Development provides secure and convenient bicycle parking which: <ul> <li>(a) for visitors is obvious and located close to the building's main entrance;</li> <li>(b) for employees is conveniently located to provide secure and convenient access between the bicycle storage area, end-of-trip facilities and the main area of the building;</li> <li>(c) is easily and safely accessible from outside the site.</li> </ul> </li> </ul>	<ul> <li>A07.1 Development provides bicycle parking spaces for employees which are co-located with end-of-trip facilities (shower cubicles and lockers);</li> <li>A07.2 Development ensures that the location of visitor bicycle parking is discernible either by direct view or using signs from the street.</li> <li>A07.3 Development provides visitor bicycle parking which does not impede pedestrian movement.</li> </ul>	<ul> <li>Complies with PO7.</li> <li>The development provides secure and convenient bicycle parking which: <ul> <li>for visitors is obvious and located close to the building's main entrance.</li> <li>for employees is conveniently located to provide secure and convenient access between the bicycle storage area, end-oftrip facilities and the main area of the building.</li> </ul> </li> <li>All parking is easily and safely accessible from outside the site.</li> </ul>
<ul> <li>PO8</li> <li>Development provides walking and cycle routes through the site which:</li> <li>(a) link to the external network and pedestrian and cyclist destinations such as schools, shopping centres, open space, public transport stations, shops and local activity centres along the safest, most direct and convenient routes;</li> <li>(b) encourage walking and cycling;</li> <li>(c) ensure pedestrian and cyclist safety.</li> </ul>	<ul> <li>AO8</li> <li>Development provides walking and cycle routes which are constructed on the carriageway or through the site to:</li> <li>(a) create a walking or cycle route along the full frontage of the site;</li> <li>(b) connect to public transport and existing cycle and walking routes at the frontage or boundary of the site.</li> </ul>	Complies with AO8 This site frontage is already connected by a dedicated footpath/cycle way between Davidson Street (service road) and Davidson Street.
<b>PO9</b> Access, internal circulation and on-site parking for service vehicles are designed and constructed: (a) in accordance with relevant standards;	<b>AO9.1</b> Access driveways, vehicle manoeuvring and on- site parking for service vehicles are designed and constructed in accordance with AS2890.1 and	Complies with AO9.1 – AO9.3 The access design is detailed in the Civil Report provided as Attachment 5. All servicing and loading occurs from within the site. The Traffic Impact Assessment provided as Attachment 6 details site circulation to ensure the movement of service vehicles does not impact on the parking or site circulation.



Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>(b) so that they do not interfere with the amenity of the surrounding area;</li> <li>(c) so that they allow for the safe and convenient movement of pedestrians, cyclists and other vehicles.</li> </ul>	AS2890.2. AO9.2 Service and loading areas are contained fully within the site. AO9.3 The movement of service vehicles and service operations are designed so they: (a) do not impede access to parking spaces; (b) do not impede vehicle or pedestrian traffic movement.	
PO10 Sufficient queuing and set down areas are provided to accommodate the demand generated by the development.	<ul> <li>AO10.1 Development provides adequate area on-site for vehicle queuing to accommodate the demand generated by the development where drive through facilities or drop-off/pick-up services are proposed as part of the use, including, but not limited to, the following land uses: <ul> <li>(a) car wash;</li> <li>(b) child care centre;</li> <li>(c) educational establishment where for a school;</li> <li>(d) food and drink outlet, where including a drive-through facility;</li> <li>(e) hardware and trade supplies, where including a drive-through facility;</li> <li>(f) hotel, where including a drive-through facility;</li> <li>(g) service station.</li> </ul> </li> <li>AO10.2 Queuing and set-down areas are designed and constructed in accordance with AS2890.1.</li></ul>	Complies with PO10. The site is serviced by a single ingress and separate egress which allows for sufficient queuing and efficient site circulation.

#### Table 9.4.1.3.b – Access, parking and servicing requirements

Note – Where the number of spaces is not a whole number, the number of spaces to be provided is the next highest whole number.

Note – Where the proposed development involves one or more land use, the minimum number of spaces for the proposed development will be calculated using the minimum number of spaces specified for each land use component.



Land use	Minimum number of ordinary vehicle parking spaces	Minimum number of bicycle spaces	End of trip facilities	Minimum standard design service vehicle (refer to Table 9.4.1.3c)
Agricultural supplies store	1 space per 50m <sup>2</sup> of GFA and outdoor display area.	1 space per 200m² of GFA.	n/a	LRV
Air services	1 car space per 20m <sup>2</sup> of covered reception area, plus 1 car space per 2 staff, plus a covered bus set down area adjacent to the entry of the reception area and 2 bus parking spaces.	n/a	n/a	LRV



Land use	Minimum number of ordinary vehicle parking spaces	Minimum number of bicycle spaces	End of trip facilities	Minimum standard design service vehicle (refer to Table 9.4.1.3c)
Bulk landscape supplies	1 space per 50m <sup>2</sup> GFA and outdoor display area.	1 space per 200m <sup>2</sup> of GFA.	n/a	MRV
Caretaker's accommodatio n	A minimum of 1 space	n/a	n/a	n/a
Child care centre	1 space per 10 children to be used for setting down and picking up of children, with a minimum of 3 car spaces to be provided for set down and collection; plus 1 space per employee. Any drive-through facility can provide tandem short term parking for 3 car spaces for setting down/picking up of children, on the basis that a passing lane is provided and line- marked to be kept clear of standing vehicles at all times.	n/a	n/a	VAN
Club	Unlicensed clubrooms: 1 space per 45m2 of GFA. Licensed clubrooms: 1 space per 15m <sup>2</sup> of GFA.	1 space per 4 employees.	n/a	Licensed and equal or greater than 1500m <sup>2</sup> : RCV Other: VAN
Community care centre	1 space per 20m <sup>2</sup> of GFA.	A minimum of 1 space.	n/a	RCV



Community residence	A minimum of 2 spaces.	A minimum of 1 space.	n/a	VAN
Community use	1 space per 15m <sup>2</sup> GFA.	1 space per 100m2 of GFA.	n/a	RCV
Dual occupancy	A minimum of 2 spaces per dwelling unit which may be in tandem with a minimum of 1 covered space per dwelling unit.	n/a	n/a	n/a
Dwelling house	A minimum of 2 spaces which may be in tandem plus 1 space for a secondary dwelling	n/a	n/a	n/a
Dwelling unit	<ul><li>1.5 spaces per one or two</li><li>bedroom unit; or</li><li>2 spaces per three bedroom unit.</li></ul>	n/a	n/a	n/a
Educational establishment	Primary school or secondary schools: 1 car space per 2 staff members, plus provision of space to be used	Primary school or secondary schools: 1 space per 5	Required for all educational establishments with a GFA	RCV



Land use	Minimum number of ordinary vehicle parking spaces	Minimum number of bicycle spaces	End of trip facilities	Minimum standard design service vehicle (refer to Table 9.4.1.3c)
	for setting down and picking up of students. Tertiary and further education: 1 car space per 2 staff members, plus 1 car space per 10 students, plus provision of space to be used for setting down and picking up of students.	students over year 4. Tertiary and further education: 2 spaces per 50 full time students.	greater than 2000m².	
Food and drink outlet	1 space per 25m <sup>2</sup> GFA and outdoor dining area. or If within Precinct 1 : Port Douglas precinct in the Port Douglas / Craiglie local plan or if with Precinct 5: Town centre precinct in the Mossman local plan: 1 space per 50m <sup>2</sup> of GFA, and outdoor dining area.	1 space per 100m <sup>2</sup> of GFA, and outdoor dining area.	n/a	See Table 9.4.1.3.d
Function facility	1 space per 15m <sup>2</sup> GFA.	1 space per 100m² of GFA.	n/a	RCV
Funeral parlour	1 space per 15m <sup>2</sup> GFA.	n/a	n/a	RCV
Garden centre	1 space per 50m <sup>2</sup> GFA and outdoor display area	1 space per 200m <sup>2</sup> of GFA.	n/a	AV
Hardware and trade supplies	1 space per 50m <sup>2</sup> GFA and outdoor display area	1 space per 200m <sup>2</sup> of GFA.	n/a	AV



Health care services	1 space per 20m2 of GFA.	1 space per 100m <sup>2</sup> of GFA.	Required for all health care services with a GFA greater than 2000m <sup>2</sup> .	VAN
High impact industry	1 space per 90m <sup>2</sup> of GFA.	n/a	n/a	AV
Home based business	The parking required for the dwelling house, plus 1 space per bedroom where the Home based business involves the provision of accommodation; or 1 space per 25m <sup>2</sup> GFA for any other Home Based Business.	n/a	n/a	n/a
Hospital	The greater of 1 space per 2 bedrooms or 1 space per 4 beds; plus 1 car space for ambulance parking, designated accordingly.	1 space per 100m <sup>2</sup> of GFA.	Required for all hospitals with a GFA greater than 2000m <sup>2</sup> .	RCV
Hotel	1 space per 10m2 GFA and	1 space per	n/a	LRV



Land use	Minimum number of ordinary vehicle parking spaces	Minimum number of bicycle spaces	End of trip facilities	Minimum standard design service vehicle (refer to Table 9.4.1.3c)
	licensed outdoor area; plus For 1 space per 50m <sup>2</sup> GFA of floor area of liquor barn or bulk liquor sales area; plus, if a drive in bottle shop is provided, queuing lane/s on site for 12 vehicles. Note - Use standard for any Short Term Accommodation for hotel accommodation use.	100m <sup>2</sup> of GFA.		
Indoor sport and recreation	Squash court or another court game: 4 spaces per court. Basketball, netball, soccer, cricket: 25 spaces per court / pitch. Ten pin bowling: 3 spaces per bowling lane. Gymnasium: 1 space per 15m <sup>2</sup> of GFA.	1 space per 4 employees.	n/a	RCV
Low impact industry	1 space per 90m <sup>2</sup> of GFA.	n/a	n/a	AV
Marine industry	1 space per 90m <sup>2</sup> of GFA.	n/a	n/a	AV
Medium impact industry	1 space per 90m <sup>2</sup> of GFA.	n/a	n/a	AV



Multiple dwelling	If within Precinct 1 : Port Douglas precinct in the Port Douglas / Craiglie Local plan: 1 car space per dwelling unit. If outside Precinct 1 : Port Douglas precinct in the Port Douglas / Craiglie Local plan: 1.5 car spaces per dwelling unit In all cases 60% of the car parking area is to be covered.	1 bicycle space per 3 units and 1 visitor bicycle space per 12 units.	n/a	RCV (over 10 units)
Office	1 space per 25m <sup>2</sup> of GFA or If within Precinct 1 : Port Douglas precinct in the Port Douglas / Craiglie local plan or if with Precinct 5: Town centre precinct in the Mossman local plan: 1 space per 50m <sup>2</sup> of GFA	1 space per 200m² GFA	Required for all office development with a GFA greater than 2000m <sup>2</sup> .	See Table 9.4.1.3.e
Outdoor sales	1 space per 50m <sup>2</sup> GFA and outdoor display area	1 space per 200m <sup>2</sup> of GFA.	n/a	AV
Outdoor sport and recreation	Coursing, horse racing, pacing, trotting: 1 space per 5 seated spectators,	Football: 5 space per field.	n/a	RCV



Land use	Minimum number of ordinary vehicle parking spaces	Minimum number of bicycle spaces	End of trip facilities	Minimum standard design service vehicle (refer to Table 9.4.1.3c)
	<ul> <li>plus 1 space per 5m<sup>2</sup> of other spectator areas.</li> <li>Football: 50 spaces per field.</li> <li>Lawn bowls: 30 spaces per green.</li> <li>Swimming pool: 15 spaces; plus 1 space per 100m<sup>2</sup> of useable site area.</li> <li>Tennis court or other court game: 4 spaces per court. Golf course: 4 spaces per tee on the course.</li> <li>Note - Use standard for Club for clubhouse component.</li> </ul>	Lawn bowls: 5 spaces per green. Swimming pool: 1 space per swimming lane. Tennis court or other court game: 4 space per court. Golf course: 1 space per 15m <sup>2</sup> of GFA for clubhouse component.		
Place of worship	1 space per 15m <sup>2</sup> of GFA.	1 space per 100m <sup>2</sup> of GFA.	n/a	LRV
Relocatable home park	1 space per relocatable home site; plus 0.1 space per relocatable home site for visitor parking; plus 1 space for an on-site manager	n/a	n/a	LRV



Research and technology industry	1 space per 90m <sup>2</sup> of GFA.	n/a	n/a	MRV
Residential care facility	1 visitor car space per 5 bedroom units; plus 1 car space per 2 staff members	n/a	n/a	LRV
Resort complex	Use standard for relevant standard for each component. For example: Use Short Term Accommodation standard for accommodation component and Food and Drink Outlet for restaurant component.	Use standard for relevant standard for each component. For example: Use Short Term Accommodatio n standard for accommodatio n component and Food and	n/a	RCV



Land use	Minimum number of ordinary vehicle parking spaces	Minimum number of bicycle spaces	End of trip facilities	Minimum standard design service vehicle (refer to Table 9.4.1.3c)
		Drink Outlet for restaurant component.		
Retirement facility	1 space per dwelling unit; plus 1 visitor space per 5 dwelling units; plus 1 visitor car space per 10 hostel units, nursing home or similar beds, plus 1 car space per 2 staff members; plus 1 car parking space for ambulance parking.	n/a	n/a	LRV
Sales office	A minimum of 1 space.	n/a	n/a	n/a
Service industry	1 space per 90m <sup>2</sup> of GFA.	n/a	n/a	SRV
Service station	1 space per 25m <sup>2</sup> of GFA	n/a	n/a	AV
Shop	1 space per 25m <sup>2</sup> of GFA. or If within Precinct 1 : Port Douglas precinct in the Port Douglas / Craiglie local plan or if with Precinct 5: Town centre precinct in the Mossman local plan: 1 space per 50m <sup>2</sup> of GFA.	1 space per 100m <sup>2</sup> of GFA.	Required for all shops with a GFA greater than 2000m <sup>2</sup> .	See Table 9.4.1.3.d



Shopping centre	1 space per 25m <sup>2</sup> of GFA. or If within Precinct 1 : Port Douglas precinct in the Port Douglas / Craiglie local plan or if with Precinct 5: Town centre precinct in the Mossman local plan: 1 space per 50m <sup>2</sup> of GFA.	1 space per 200m <sup>2</sup> GFA.	Required for all shopping centres with a GFA greater than 2000m <sup>2</sup> .	See Table 9.4.1.3.d
Short term accommodatio n	If within Precinct 1 : Port Douglas precinct in the Port Douglas / Craiglie local plan: 0.5 car spaces per dwelling unit. If outside Precinct 1 : Port Douglas precinct in the Port Douglas / Craiglie local plan: For up to 5 units: 1 car space per dwelling unit, plus 1 space for visitors and 1 service/staff spaces. For 5 – 10 units: 1 car space per dwelling unit, plus 2 spaces for visitors and 1 service/staff spaces.	1 space per 10 rooms	n/a	SRV



Land use	Minimum number of ordinary vehicle parking spaces	Minimum number of bicycle spaces	End of trip facilities	Minimum standard design service vehicle (refer to Table 9.4.1.3c)
	For over 10 units: 0.75 car spaces per dwelling unit, plus 3 spaces for visitors and 2 service/staff parking for the first 10 units and 0.5 additional service/staff space per 10 units, there-above. In all cases 60% of the car parking area is to be covered. Note: Where Short term accommodation is to be inter-changeable with a Multiple dwelling land use, multiple dwelling parking rates apply.			
Showroom	1 space per 50m <sup>2</sup> GFA.	1 space per 200m² GFA.	n/a	AV
Special industry	1 space per 90m <sup>2</sup> of GFA.	n/a	n/a	AV
Tourist park	1 car space per caravan site, tent site or cabin; plus 1 visitor car space per 10 caravan sites, tent sites or cabins; plus 1 car space for an on-site manager.	n/a	n/a	LRV
Theatre	Indoor: 1 space per 15m <sup>2</sup> of GFA. Outdoor cinema: 1 space per 5m <sup>2</sup> of designated viewing area, plus 1 car space per 2 employees.	1 space per 200m <sup>2</sup> GFA.	n/a	VAN



Veterinary services	1 space per 50m <sup>2</sup> of GFA.	n/a	n/a	VAN
Warehouse	1 space per 90m <sup>2</sup> of GFA.	n/a	n/a	Where self- storage: RCV Other: AV
Any use not otherwise specified in this table.	Sufficient spaces to accommodate number of vehicles likely to be parked at any one time.	Sufficient spaces to accommodate number of vehicles likely to be parked at any one time.		To be determined



#### Table 9.4.1.3.c – Design vehicles

VAN	A 99.8th percentile vehicle equivalent to a large car.
SRV	Small rigid vehicle as in AS2890.2-2002 parking facilities – Off-street commercial vehicle facilities, but incorporating a body width of 2.33m
MRV	Medium rigid vehicle equivalent to an 8-tonne truck.
LRV	Large rigid vehicle described by AS2890.2-2002 parking facilities – Off-street commercial vehicle facilities as heavy rigid vehicle.
RCV	Industrial refuse collection vehicle
AV	19 metre articulated vehicle from AUSTROADS

## Table 9.4.1.3.d – Standard number of service bays required for Food and drink outlet, Shop or Shopping centre

Gross floor area (m²)	Service bays required					
	VAN	SRV	MRV	LRV		
0-199	-	1	-	-		
200 – 599	1	-	1	-		
600 – 999	1	1	1	-		
1000 – 1499	2	1	1	-		
1500 – 1999	2	2	1	-		
2000 – 2799	2	2	2	-		
2800 – 3599	2	2	2	1		
3600 and over		To be determined via a parking study.				

#### Table 9.4.1.3.e – Standard number of service bays required for Office

Gross floor area (m²)	Service bays required					
	VAN	SRV	MRV	LRV		
0-999	-	1	-	-		



1000 – 2499	1	-	1	-
2500 – 3999	2	1	1	-
4000 – 5999	3	1	1	-
6000 – 7999	4	1	1	-
8000 – 9999	4	2	1	-
10000 and over	To be determined via a parking study.			
Carparking Requirements				
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Aspect of Development	Area/Unit Number	Douglas Shire Planning Scheme 2018 v1	Scheme Requirement	Proposed Development
		HOTEL		
Short Term Accommodation (Hotel)	107 x 1bdrm units	<ul> <li>Car: For over 10 units: 0.75 car spaces per dwelling unit, plus 3 spaces for visitors and 2 service/staff parking for the first 10 units and 0.5 additional service/staff space per 10 units, there-above. In all cases 60% of the car parking area is to be covered.</li> <li>Bicycle: 1 space per 10 rooms</li> </ul>	Car = 91 Bike = 11	
Food and Drink Outlets (associated with Tourist Accommodation)	592 m <sup>2</sup> GFA/outdoor dining	<ul> <li>Car: 1 space per 25m2 GFA and outdoor dining area.</li> <li>Bicycle: 1 space per 100m2 of GFA, and outdoor dining area.</li> <li>Note: Where a commercial service or facility offers services to persons over and above in-house guests, the commercial component provides on- site car parking for 50% of the floor area available for use in accordance with the relevant requirements of the Parking and access code.</li> </ul>	Car = 12 Bike = 3	
			Total Car= 103 Total Bike= 14	Total Car = 96 Total Motorcycle =14 Total Bike = 30
		VILLAS		
Short Term Accommodation/Multi Unit Dwelling (Villas)	44 x 3bdrm units	<b>Car:</b> 1.5 car spaces per dwelling unit. In all cases 60% of the car parking area is to be covered.	Total Car = 66 Total Bike = 19	Total Car = 88 Total Bike = 44

<b>Bicycle:</b> 1 bicycle space per 3 units and 1 visitor bicycle space per 12 units.	
Note: Where Short term accommodation is to be inter- changeable with a Multiple dwelling land use, multiple dwelling parking rates apply.	



## 9.4.3 Environmental performance code

## 9.4.3.1 Application

- (1) This code applies to assessing:
  - (a) building work for outdoor lighting;
  - (b) a material change of use or reconfiguring a lot if:
    - (i) assessable development where the code is identified in the assessment criteria column of a table of assessment; or
    - (ii) impact assessable development, to the extent relevant.

Note – Where for the purpose of lighting a tennis court in a Residential zone, a compliance statement prepared by a suitably qualified person must be submitted to Council with the development application for building work.

(2) When using this code, reference should be made to Part 5.

## 9.4.3.2 Purpose

- (1) The purpose of the Environmental performance code is to ensure development is designed and operated to avoid or mitigate impacts on sensitive receiving environments.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) activities that have potential to cause an adverse impact on amenity of adjacent and surrounding land, or environmental harm is avoided through location, design and operation of the development;
  - (b) sensitive land uses are protected from amenity related impacts of lighting, odour, airborne particles and noise, through design and operation of the development;
  - (c) stormwater flowing over, captured or discharged from development sites is of a quality adequate to enter receiving waters and downstream environments;
  - (d) development contributes to the removal and ongoing management of weed species.

### 9.4.3.3 Criteria for assessment

Table 9.4.3.3.a - Environmental performance code - assessable development

Performance outcomes	Acceptable outcomes	Applicant response
Lighting		



<b>PO1</b> Lighting incorporated within development does not cause an adverse impact on the amenity of adjacent uses and nearby sensitive land uses.	<ul> <li>AO1.1 Technical parameters, design, installation, operation and maintenance of outdoor lighting comply with the requirements of Australian standard AS4282-1997 Control of the obtrusive effects of outdoor lighting. </li> <li>AO1.2 Development that involves flood lighting is restricted to a type that gives no upward component of light where mounted horizontally. AO1.3 Access, car parking and manoeuvring areas are designed to shield nearby residential premises from impacts of vehicle headlights.</li></ul>	Complies with AO1.1 Outdoor lighting will be designed to comply with the requirements of Australian standard AS4282-1997 Control of the obtrusive effects of outdoor lighting. AO1.2 -Not applicable Complies with AO1.3 Access, car parking and maneuvering areas have been designed to shield the proposed Villas. Additional consideration has been given to Lychee Tree Holiday apartments in the design of site circulation.
Noise		
PO2	AO2.1	Complies with AO 2.1 The development is for short term accommodation and multi unit dwellings which is the form of development anticipated in this zone.
Potential noise generated from the development is avoided through design, location and operation of the activity. Note – Planning Scheme Policy SC6.4 – Environmental	Development does not involve activities that would cause noise related environmental harm or nuisance; or	



Performance outcomes	Acceptable outcomes	Applicant response
management plans provides guidance on preparing a report to demonstrate compliance with the purpose and outcomes of the code.	AO2.2 Development ensures noise does not emanate from the site through the use of materials, structures and architectural features to not cause an adverse noise impact on adjacent uses. AO2.3	Complies with AO2.3
	The design and layout of development ensures	
	<ul> <li>car parking areas avoid noise impacting directly on adjacent sensitive land uses through one or more of the following:</li> <li>(a) car parking is located away from adjacent sensitive land uses;</li> <li>(b) car parking is enclosed within a building;</li> <li>(c) a noise ameliorating fence or structure is established adjacent to car parking areas where the fence or structure will not have a visual amenity impact on the adjoining premises;</li> <li>(d) buffered with dense landscaping.</li> </ul>	The development has been designed to ensure carparking is provided within the building and existing and proposed sensitive land uses are additionally screened by the provision of dense landscaping.
Airborne particles and other emissions	is avoided.	
PO3	AQ3 1	Complies with AO 3.1 and AO3.2
Potential airborne particles and emissions	Development does not involve activities that will	
generated from the development are avoided through design, location and operation of the activity.	result in airborne particles or emissions being generated;	The proposed uses on site to do result in any airborne particles or emissions.
Note – Planning Scheme Policy SC6.4 – Environmental management plans provides guidance on preparing a report to demonstrate compliance with the purpose and outcomes of the code.	AO3.2 The design, layout and operation of the development activity ensures that no airborne particles or emissions cause environmental harm or nuisance.	



	Note - examples of activities which generally cause airborne particles include spray painting, abrasive blasting, manufacturing activities and car wash facilities. Examples of emissions include exhaust ventilation from basement or enclosed parking structures, air conditioning/refrigeration ventilation and exhaustion. The <i>Environmental Protection (Air) Policy 2008</i> , Schedule 1 provides guidance on air quality objectives to ensure environmental harm (including nuisance) is avoided.	
Odours		
<b>PO4</b> Potential odour causing activities associated with the development are avoided through design, location and operation of the activity. Note – Planning Scheme Policy SC6.4 – Environmental management plans provides guidance on preparing a report to demonstrate compliance with the purpose and outcomes of the code.	AO4.1 The development does not involve activities that create odorous emissions; or AO4.2 The use does not result in odour that causes	Complies with AO 4.1 and AO4.2 The proposed uses on site to do result in any activities that create odorous emissions.



Performance outcomes	Acceptable outcomes	Applicant response
	environmental harm or nuisance with respect to surrounding land uses.	
Waste and recyclable material storage		
PO5 Waste and recyclable material storage facilities are located and maintained to not cause adverse impacts on adjacent uses. Note – Planning Scheme Policy SC6.4 – Environmental management plans provides guidance on preparing a report to demonstrate compliance with the purpose and outcomes of the code.	<ul> <li>AO5.1 The use ensures that all putrescent waste is stored in a manner that prevents odour nuisance and is disposed of at regular intervals. </li> <li>AO5.2 Waste and recyclable material storage facilities are located, designed and maintained to not cause an adverse impact on users of the premises and adjacent uses through consideration of: <ul> <li>(a) the location of the waste and recyclable material storage areas in relation to the noise and odour generated;</li> <li>(b) the number of receptacles provided in relation to the collection, maintenance and use of the receptacles; <ul> <li>(c) the durability of the receptacles, sheltering and potential impacts of local climatic conditions; <li>(d) the ability to mitigate spillage, seepage or leakage from receptacles into adjacent areas and sensitive receiving waters and environments. </li> <li>Editor's note - the <i>Environmental Protection (Waste Management) Policy 2008</i> provides guidance on the design of waste containers (receptacles) to ensure environmental harm (including nuisance) is avoided.</li> </li></ul></li></ul></li></ul>	Complies with AO 5.1 and 5.2 Waste and recyclable material storage areas are provided on site and are sited and designed to be unobtrusive and screened from view from the street frontage. The areas will be imperviously sealed roofed and bunded, and contain a hose down area draining to Council's sewer network. The waste collection will be managed by the Hotel most likely with a standard vehicle and trailer to collect and take to the service basement compactor – similar to many group title townhouses.
Sensitive land use activities		



<b>PO6</b> Sensitive land use activities are not established in areas which will receive potentially incompatible impacts on amenity from surrounding, existing development activities and land uses.	<ul> <li>AO6.1</li> <li>Sensitive land use activities are not established in areas that will be adversely impacted upon by existing land uses, activities and potential development possible in an area;</li> <li>or</li> <li>AO6.2</li> <li>Sensitive land activities are located in areas where potential adverse amenity impacts mitigate all potential impacts through layout, design, operation and maintenance.</li> </ul>	Complies with AO6.1 and AO6.2 The development of short term accommodation and multiple dwellings is anticipated and encouraged in the Tourist Accommodation Zone.
Stormwater quality		
<ul> <li>PO7</li> <li>The quality of stormwater flowing over, through or being discharged from development activities into watercourses and drainage lines is of adequate quality for downstream environments, with respect to: <ul> <li>(a) the amount and type of pollutants borne from the activity;</li> <li>(b) maintaining natural stream flows;</li> </ul> </li> </ul>	<ul> <li>A07.1</li> <li>Development activities are designed to ensure stormwater over roofed and hard stand areas is directed to a lawful point of discharge.</li> <li>A07.2</li> <li>Development ensures movement of stormwater over the site is not impeded or directed through potentially polluting activities.</li> </ul>	Complies with AO 7.1 to AO 7.3 All stormwater is directed to a lawful point of discharge and in accordance with FNQROC's Design Manual D5 Stormwater Quality Management and the State Planning Policy, the proposed drainage outlet locations will be provided with quality control devices which have been modelled in MUSIC to ensure nutrient reduction loading compliance.



Performance outcomes	Acceptable outcomes	Applicant response
<ul><li>(c) the amount and type of site disturbance;</li><li>(d) site management and control measures.</li></ul>	AO7.3 Soil and water control measures are incorporated into the activity's design and operation to control sediment and erosion potentially entering watercourses, drainage lines and downstream receiving waters. Note - Planning scheme policy - FNQROC Regional Development Manual provides guidance on soil and water control measures to meet the requirements of the <i>Environmental Protection Act 1994</i> . During construction phases of development, contractors and builders are to have consideration in their work methods and site preparation for their environmental duty to protect stormwater quality.	
Pest plants (for material change of use on vacan	t land over 1,000m²)	
P08         Development activities and sites provide for the removal of all pest plants and implement ongoing measures to ensure that pest plants do not reinfest the site or nearby sites.         Editor's note - This does not remove or replace all land owner's obligations or responsibilities under the Land Protection (Pest and Stock Route Management) Act 2002.	<ul> <li>AO8.1 The land is free of declared pest plants before development establishes new buildings, structures and practices;</li> <li>or</li> <li>AO8.2 Pest plants detected on a development site are removed in accordance with a management plan prepared by an appropriately qualified person prior to construction of buildings and structures or earthworks.</li> <li>Note - A declaration from an appropriately qualified person validates the land being free from pest plants.</li> <li>Declared pest plants include locally declared and State declared pest plants.</li> </ul>	Not applicable.



## 9.4.4 Filling and excavation code

### 9.4.4.1 Application

- (1) This code applies to assessing:
  - (a) operational work for filling or excavation which is self-assessable or code assessable development if this code is an applicable code identified in the assessment criteria column of a table of assessment; or
  - (b) a material change of use or reconfiguring a lot if:
    - (i) assessable development where this code is identified as a prescribed secondary code in the assessment criteria column of a table of assessment; or
    - (ii) impact assessable development, to the extent relevant.

Note—This code does not apply to building work that is regulated under the Building Code of Australia.

(2) When using this code, reference should be made to Part 5.

## 9.4.4.2 Purpose

- (1) The purpose of the Filling and excavation code is to assess the suitability of development for filling or excavation.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) filling or excavation does not impact on the character or amenity of the site and surrounding areas;
  - (b) filling and excavation does not adversely impact on the environment;
  - (c) filling and excavation does not impact on water quality or drainage of upstream, downstream or adjoining properties;
  - (d) filling and excavation is designed to be fit for purpose and does not create land stability issues;
  - (e) filling and excavation works do not involve complex engineering solutions.

### 9.4.4.3 Criteria for assessment

#### Table 9.4.4.3.a - Filling and excavation code - for self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Applicant response	
For self-assessable and assessable development			
Filling and excavation - General			



## PO1

All filling and excavation work does not create a detrimental impact on the slope stability, erosion potential or visual amenity of the site or the surrounding area.

### AO1.1

The height of cut and/or fill, whether retained or not, does not exceed 2 metres in height.

and

Cuts in excess of those stated in A1.1 above are separated by benches/ terraces with a minimum width of 1.2 metres that incorporate drainage provisions and screen planting.

# AO1.2

Cuts are supported by batters, retaining or rock walls and associated benches/terraces are capable of supporting mature vegetation.

## AO1.3

Cuts are screened from view by the siting of the building/structure, wherever possible.

Complies with PO1.

The Excavation and Filling Code is only an assessment benchmark for the Reconfiguring a Lot aspect of the Development Application. It is not required to be addressed in response to the Material Change of Use Application.

The Reconfiguring a Lot aspect of this Development Application is required to create a Community Title Scheme for the Short Term Accommodation (Hotel lot) and the Short Term Accommodation/Multiple Dwelling (Villa) lot.

The excavation and filling occurs as a result of the primary material change of use.

This code will be addressed in detail at the Operational Works stage of the development.

Existing ground levels across the site generally range from low RL 3s along the rear boundary to high RL 4's along the Davidson Street frontage.

The finished surface level of the hotel of RL 5.8m AHD is set by the service basement's minimum head height of 4.5m, and gradient of the basement entrance ramp from Crimmins Street and the desire to limit excavation within any probable ASS/PASS material.

The finished surface level of the hotel and the need for connectivity with the surrounding buildings results in the site requiring the importation of fill and the retaining of the majority of the site's perimeter.



	The perimeter retaining wall is generally keep below a height of 1.5m in the areas which are likely visible to the general public (i.e., north, east and south boundaries), however the height increase to approximately 2.6m high along the rear boundary which is visually shielded by the existing vegetation.
	Preliminary 12D modelling of the sites finished levels, basements and pools indicates earthworks volumes are in the order of the following amounts: • Cut 9,500 m3 • Fill 24,500 m3
	After consideration of bulking factors and fill won from services and retaining walls, the imported fill amount required for the proposed development is expected to be approximately 15,000m3.



Performance outcomes	Acceptable outcomes	Applicant response
	<b>AO1.4</b> Topsoil from the site is retained from cuttings and reused on benches/terraces.	
	<b>AO1.5</b> No crest of any cut or toe of any fill, or any part of any retaining wall or structure is closer than 600mm to any boundary of the property, unless the prior written approval of the adjoining landowner has been obtained.	
	<b>AO1.6</b> Non-retained cut and/or fill on slopes are stabilised and protected against scour and erosion by suitable measures, such as grassing, landscaping or other protective/aesthetic measures.	
Visual Impact and Site Stability		
<b>PO2</b> Filling and excavation are carried out in such a manner that the visual/scenic amenity of the area and the privacy and stability of adjoining properties is not compromised.	<ul> <li>AO2.1 The extent of filling and excavation does not exceed 40% of the site area, or 500m<sup>2</sup> whichever is the lesser, </li> <li>except that AO2.1 does not apply to reconfiguration of 5 lots or more.</li> <li>AO2.2 Filling and excavation does not occur within 2 metres of the site boundary.</li></ul>	Complies with PO2 Filling and excavation will be carried out in such a manner that the visual/scenic amenity of the area and the privacy and stability of adjoining properties is not compromised
Flooding and drainage		



PO3 Filling and excavation does not result in a change to the run off characteristics of a site which then have a detrimental impact on the site or nearby land or adjacent road reserves.	<ul> <li>AO3.1 Filling and excavation does not result in the ponding of water on a site or adjacent land or road reserves. </li> <li>AO3.2 Filling and excavation does not result in an increase in the flow of water across a site or any other land or road reserves. </li> <li>AO3.3 Filling and excavation does not result in an increase in the volume of water or concentration of water in a watercourse and overland flow paths. </li> <li>AO3.4 Filling and excavation complies with the specifications set out in Planning Scheme Policy No SC5 – FNQROC Development Manual.</li></ul>	<ul> <li>Complies with AO3.1 – AO3.4</li> <li>Filling and excavation does not result in stormwater run-off or overland flow that- <ul> <li>Increases the flow of water across the site or any other land/road reserves.</li> <li>Increases the volume of water or concentration of water in a watercourse and overland flow paths.</li> </ul> </li> <li>The filling and excavation will not result in ponding of water on a site or adjacent road reserves.</li> <li>The flood modelling concludes that base on a 1% AEP Design Event peak flood depth (m) for the 2100 climate case for Port Douglas there is no worsening effect on surrounding properties or road reserve.</li> <li>A supporting civil engineering report is provided as Attachment 5. A detailed flood study is provided at Attachment 8. The Site's hydraulic design is provided at Attachment 9.</li> </ul>
<b>PO4</b> Filling and excavation does not result in a reduction of the water quality of receiving waters.	AO4 Water quality is maintained to comply with the specifications set out in Planning Scheme Policy No SC5 – FNQROC Development Manual.	The proposed development can be conditioned to comply with AO4.



Performance outcomes	Acceptable outcomes	Applicant response
Infrastructure		
<b>P05</b> Excavation and filling does not impact on Public Utilities.	<b>AO5</b> Excavation and filling is clear of the zone of influence of public utilities.	The proposed development can be conditioned to comply with AO5.



## 9.4.5 Infrastructure works code

## 9.4.5.1 Application

- (1) This code applies to assessing:
  - (a) operational work which requires an assessment as a condition of a development permit or is assessable development if this code is identified in the assessment criteria column of a table of assessment;
  - (b) a material change of use or reconfiguring a lot if:
    - (i) assessable development where this code is identified in the assessment criteria column of the table of assessment;
    - (ii) impact assessable development, to the extent relevant.
- Note The Filling and excavation code applies to operational work for filling and excavation.
- (2) When using this code, reference should be made to Part 5.

### 9.4.5.2 Purpose

- (1) The purpose of the Infrastructure works code is to ensure that development is safely and efficiently serviced by, and connected to, infrastructure.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) the standards of water supply, waste water treatment and disposal, stormwater drainage, local electricity supply, telecommunications, footpaths and road construction meet the needs of development and are safe and efficient;
  - (b) development maintains high environmental standards;
  - (c) development is located, designed, constructed and managed to avoid or minimise impacts arising from altered stormwater quality or flow, wastewater discharge, and the creation of non-tidal artificial waterways;
  - (d) the integrity of existing infrastructure is maintained;
  - (e) development does not detract from environmental values or the desired character and amenity of an area.

## 9.4.5.3 Criteria for assessment

#### Table 9.4.5.3.a - Infrastructure works code -assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable development		
Works on a local government road		



	-
<ul> <li>AO1.1 Footpaths/pathways are located in the road verge and are provided for the hierarchy of the road and located and designed and constructed in accordance with Planning scheme policy SC5 – FNQROC Regional Development Manual. </li> <li>AO1.2 Kerb ramp crossovers are constructed in accordance with Planning scheme policy SC 5 – FNQROC Regional Development Manual. </li> <li>AO1.2 Kerb ramp crossovers are constructed in accordance with Planning scheme policy SC 5 – FNQROC Regional Development Manual. </li> <li>AO1.3 New pipes, cables, conduits or other similar infrastructure required to cross existing footpaths: (a) are installed via trenchless methods; or (b) where footpath infrastructure is removed to install infrastructure, the new section of footpath is installed to the standard detailed</li></ul>	Complies AO 1.1 The site is serviced by an existing footpath/pathway between the Davidson Street service road and Davidson Street. The path is well utilised and fit for purpose and well shaded. No additional footpaths are proposed. Complies with AO 1.2 The ingress and egress crossover on Davidson Street and the crossover to Crimmins Street are designed in accordance with FNQROC Standards. Detailed civil plans are provided at Attachment 5. Complies with AO1.3 and AO1.4 New infrastructure will not impact existing footpaths.
	<ul> <li>AO1.1 Footpaths/pathways are located in the road verge and are provided for the hierarchy of the road and located and designed and constructed in accordance with Planning scheme policy SC5 – FNQROC Regional Development Manual. </li> <li>AO1.2 Kerb ramp crossovers are constructed in accordance with Planning scheme policy SC 5 – FNQROC Regional Development Manual. </li> <li>AO1.3 New pipes, cables, conduits or other similar infrastructure required to cross existing footpaths: <ul> <li>(a) are installed via trenchless methods; or</li> <li>(b) where footpath infrastructure is removed to install infrastructure, the new section of footpath is installed to the standard detailed </li> </ul></li></ul>



Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>in the Planning scheme policy SC5 – FNQROC Regional Development Manual, and is not less than a 1.2 metre section.</li> <li>AO1.4</li> <li>Where existing footpaths are damaged as a result of development, footpaths are reinstated ensuring: <ul> <li>(a) similar surface finishes are used;</li> <li>(b) there is no change in level at joins of new and existing sections;</li> <li>(c) new sections are matched to existing in terms of dimension and reinforcement.</li> </ul> </li> <li>Note – Figure 9.4.5.3.a provides guidance on meeting the outcomes.</li> <li>AO1.5 Decks, verandahs, stairs, posts and other structures located in the road reserve do not restrict or impede pedestrian movement on footpaths or change the level of the road verges.</li> </ul>	AO1.5 is not applicable to the proposed development.
Accessibility structures		
PO2 Development is designed to ensure it is accessible for people of all abilities and accessibility features do not impact on the efficient and safe use of footpaths. Note – Accessibility features are those features required to ensure access to premises is provided for people of all abilities and include ramps and lifts.	<ul> <li>AO2.1</li> <li>Accessibility structures are not located within the road reserve.</li> <li>AO2.2</li> <li>Accessibility structures are designed in accordance with AS1428.3.</li> <li>AO2.3</li> <li>When retrofitting accessibility features in existing buildings, all structures and changes in grade are contained within the boundaries of the lot and not within the road reserve.</li> </ul>	Complies with AO2.1 – 2.3. All accessibility structures are located within the site boundary and where required, are designed in accordance with AS1428.3.
Water supply		



<b>PO3</b> An adequate, safe and reliable supply of potable, fire fighting and general use water is provided.	<b>A03.1</b> The premises is connected to Council's reticulated water supply system in accordance with the Design Guidelines set out in Section D6 of the Planning scheme policy SC5 – FNQROC Regional Development Manual;	Complies with AO 3.1 An existing 150mm AC Watermain and a 450mm DICL Trunk Watermain runs parallel to the front boundary.
	or <b>AO3.2</b> Where a reticulated water supply system is not available to the premises, on site water storage tank/s with a minimum capacity of 10,000 litres of stored water, with a minimum 7,500 litre tank, with the balance from other sources (e.g. accessible swimming pool, dam etc.) and access to the tank/s for fire trucks is provided for each new house or other development. Tank/s are to be fitted with a 50mm ball valve with a camlock fitting and installed and connected prior to	Connection will be in accordance with the FNQROC Development Manual. Civil Plans are provided at Attachment 5.



Performance outcomes	Acceptable outcomes	Applicant response
	occupation of the house and sited to be visually unobtrusive.	
Treatment and disposal of effluent		
<b>PO4</b> Provision is made for the treatment and disposal of effluent to ensure that there are no adverse impacts on water quality and no adverse ecological impacts as a result of the system or as a result of increasing the cumulative effect of systems in the locality.	AO4.1 The site is connected to Council's sewerage system and the extension of or connection to the sewerage system is designed and constructed in accordance with the Design Guidelines set out in Section D7 of the Planning scheme policy SC5 – FNQROC Regional Development Manual; or AO4.2 Where not in a sewerage scheme area, the proposed disposal system meets the requirements of Section 33 of the <i>Environmental</i> <i>Protection Policy (Water) 1997</i> and the proposed on site effluent disposal system is designed in accordance with the <i>Plumbing and Drainage Act</i> <i>(2002).</i>	Complies with AO 4.1 An existing 150mm AC Sewer main traverses inside the property along the rear boundary. The sewer main connects to a Sewer Pump Station in the South Western corner of the Site with a rising main directed towards the Council Sewer Treatment Plant. The proposed sewer gravity main will run along the rear property boundary within the existing road reserve in accordance with the Civil Report provided at Attachment 5.
Stormwater quality		



## PO5

Development is planned, designed, constructed and operated to avoid or minimise adverse impacts on stormwater quality in natural and developed catchments by:

- (a) achieving stormwater quality objectives;
- (b) protecting water environmental values;
- (c) maintaining waterway hydrology.

### AO5.1

A connection is provided from the premises to Council's drainage system;

or

## AO5.2

An underground drainage system is constructed to convey stormwater from the premises to Council's drainage system in accordance with the Design Guidelines set out in Sections D4 and D5 of the Planning scheme policy SC5 – FNQROC Regional Development Manual.

## AO5.3

A stormwater quality management plan is prepared, and provides for achievable stormwater quality treatment measures meeting design objectives listed in Table 9.4.5.3.b and Table 9.4.5.3.c, reflecting land use constraints, such as:

- (a) erosive, dispersive and/or saline soil types;
- (a) erosive, dispersive and/or same son types (b) landscape features (including landform):
- (c) acid sulfate soil and management of nutrients
- of concern;
- (d) rainfall erosivity.

# AO5.4

Erosion and sediment control practices are designed, installed, constructed, monitored, maintained, and carried out in accordance with an erosion and sediment control plan.

## AO5.5

Development incorporates stormwater flow

Complies with AO5.1 and 5.3 and can be conditioned to comply with AO 5.4 and 5.5.

The site currently discharges run-off to the western and southern road reserves primarily via overland flow.

Upright kerb and channel extends for the full length of the Davidson Street frontage and for the constructed section of Crimmins Street.

A stormwater pit is located where the constructed section of Crimmins Street terminates which connects a table drain on the southern side of the road before discharging to the drainage feature to the west.

It is proposed that the internal drainage system discharge to the pit in Crimmins Street and that 3 additional piped outlets be installed in the western road reserve, discharging directly to the mapped drainage feature.

All outlets are proposed to be fitted with Gross Pollutant Traps. As the ultimate point of discharge does not require post-development flows to be directed via the urban stormwater network in a way that might result in worsening impacts on downstream properties, on-site detention measures are not proposed.

Refer to Engineering Assessment Report provided as Attachment 5 for further details.



Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>control measures to achieve the design objectives set out in Table 9.4.5.3.b and Table 9.4.5.3.c, including management of frequent flows, peak flows, and construction phase hydrological impacts.</li> <li>Note – Planning scheme policy SC5 – FNQROC Regional Development Manual provides guidance on soil and water control measures to meet the requirements of the <i>Environmental Protection Act 1994</i>.</li> <li>Note – During construction phases of development, contractors and builders are to have consideration in their work methods and site preparation for their environmental duty to protect stormwater guality.</li> </ul>	
Non-tidal artificial waterways		



<ul> <li>PO6</li> <li>Development involving non-tidal artificial waterways is planned, designed, constructed and operated to: <ul> <li>(a) protect water environmental values;</li> <li>(b) be compatible with the land use constraints for the site for protecting water environmental values;</li> <li>(c) be compatible with existing tidal and non-tidal waterways;</li> <li>(d) perform a function in addition to stormwater management;</li> <li>(e) achieve water quality objectives.</li> </ul> </li> </ul>	<ul> <li>AO6.1 Development involving non-tidal artificial waterways ensures: <ul> <li>(a) environmental values in downstream waterways are protected;</li> <li>(b) any ground water recharge areas are not affected;</li> <li>(c) the location of the waterway incorporates low lying areas of the catchment connected to an existing waterway;</li> <li>(d) existing areas of ponded water are included.</li> </ul> AO6.2 Non-tidal artificial waterways are located: <ul> <li>(a) outside natural wetlands and any associated buffer areas;</li> <li>(b) to minimise disturbing soils or sediments;</li> <li>(c) to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazardous areas. </li> </ul></li></ul>	Not applicable.
	<ul> <li>AO6.3</li> <li>Non-tidal artificial waterways located adjacent to, or connected to a tidal waterway by means of a weir, lock, pumping system or similar ensures:</li> <li>(a) there is sufficient flushing or a tidal range of &gt;0.3 m; or</li> <li>(b) any tidal flow alteration does not adversely impact on the tidal waterway; or</li> <li>(c) there is no introduction of salt water into freshwater environments.</li> <li>AO6.4</li> <li>Non-tidal artificial waterways are designed and managed for any of the following end-use purposes:</li> </ul>	
	<ul> <li>(a) amenity (including aesthetics), landscaping or recreation; or</li> <li>(b) flood management, in accordance with a drainage catchment management plan; or</li> <li>(c) stormwater harvesting plan as part of an</li> </ul>	



integrated water cycle management plan; or (d) aquatic habitat.	



Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>AO6.5</li> <li>The end-use purpose of the non-tidal artificial waterway is designed and operated in a way that protects water environmental values.</li> <li>AO6.6</li> <li>Monitoring and maintenance programs adaptively manage water quality to achieve relevant water quality objectives downstream of the waterway.</li> <li>AO6.7</li> <li>Aquatic weeds are managed to achieve a low percentage of coverage of the water surface area, and pests and vectors are managed through design and maintenance</li> </ul>	
Wastewater discharge		



## **PO7**

Discharge of wastewater to waterways, or off site:

- (a) meets best practice environmental management;
- (b) is treated to:
  - (i) meet water quality objectives for its receiving waters;
  - (ii) avoid adverse impact on ecosystem health or waterway health;
  - (iii) maintain ecological processes, riparian vegetation and waterway integrity;
  - (iv) offset impacts on high ecological value waters.

## AO7.1

A wastewater management plan is prepared and addresses:

- (a) wastewater type;
- (b) climatic conditions;
- (c) water quality objectives;
- (d) best practice environmental management.

# AO7.2

The waste water management plan is managed in accordance with a waste management hierarchy that:

- (a) avoids wastewater discharge to waterways; or
- (b) if wastewater discharge cannot practicably be avoided, minimises wastewater discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water and ground water.

# AO7.3

Wastewater discharge is managed to avoid or minimise the release of nutrients of concern so as to minimise the occurrence, frequency and intensity of algal blooms.

# A07.4

Development in coastal catchments avoids or minimises and appropriately manages soil disturbance or altering natural hydrology and:

- (a) avoids lowering ground water levels where potential or actual acid sulfate soils are present;
- (b) manages wastewater so that:
  - the pH of any wastewater discharges is maintained between 6.5 and 8.5 to avoid mobilisation of acid, iron, aluminium and other metals;
  - (ii) holding times of neutralised wastewater ensures the flocculation and removal of any dissolved iron prior to release;

The Development is capable of complying with the Acceptable outcomes and can be conditioned to comply.



(iii) visible iron floc is not present in any	



Performance outcomes	Acceptable outcomes	Applicant response
	<ul> <li>discharge;</li> <li>(iv) precipitated iron floc is contained and disposed of;</li> <li>(v) wastewater and precipitates that cannot be contained and treated for discharge on site are removed and disposed of through trade waste or another lawful method.</li> </ul>	
Electricity supply		
PO8 Development is provided with a source of power that will meet its energy needs.	<ul> <li>AO8.1 <ul> <li>A connection is provided from the premises to the electricity distribution network;</li> </ul> </li> <li>or <ul> <li>AO8.2</li> <li>The premises is connected to the electricity distribution network in accordance with the Design Guidelines set out in Section D8 of the Planning scheme policy SC5 – FNQROC Regional Development Manual.</li> <li>Note - Areas north of the Daintree River have a different standard.</li> </ul> </li> </ul>	Complies with AO8.1 Th Development can be readily accommodated by the local energy authority (Ergon Energy) via their high voltage (22kV) reticulation system which runs along the street frontage on Davidson Street. It is anticipated that a total of 2No. 1000kVA transformers will be required to power the site. There is already an existing transformer powering the caravan site. This will become redundant due to its location being at the northern end of the site. The proposed location for a new substation for this site will be at the southern end of the site at



<b>PO9</b> Development incorporating pad-mount electricity infrastructure does not cause an adverse impact on amenity.	<ul> <li>AO9.1</li> <li>Pad-mount electricity infrastructure is: <ul> <li>(a) not located in land for open space or sport and recreation purposes;</li> <li>(b) screened from view by landscaping or fencing;</li> <li>(c) accessible for maintenance.</li> </ul> </li> <li>AO9.2</li> <li>Pad-mount electricity infrastructure within a building, in a Town Centre is designed and located to enable an active street frontage.</li> <li>Note – Pad-mounts in buildings in activity centres should not be located on the street frontage.</li> </ul>	Complies with AO9.1 See commentary above and detailed report provided at Attachment 10 AO9.2 is not applicable.
Telecommunications		
<ul> <li>PO10 Development is connected to a telecommunications service approved by the relevant telecommunication regulatory authority. </li> <li>PO11 Provision is made for future telecommunications services (e.g. fibre optic cable).</li></ul>	AO10 The development is connected to telecommunications infrastructure in accordance with the standards of the relevant regulatory authority. AO11 Conduits are provided in accordance with Planning scheme policy SC5 – FNQROC Regional Development Manual.	Complies with AO10. See commentary in detailed report provided at Attachment 10 Complies with AO1`. See commentary in detailed report provided at Attachment 10
Road construction		
<ul><li>PO12</li><li>The road to the frontage of the premises is constructed to provide for the safe and efficient movement of:</li><li>(a) pedestrians and cyclists to and from the site;</li></ul>	AO12.1 The road to the frontage of the site is constructed in accordance with the Design Guidelines set out in Sections D1 and D3 of the Planning scheme policy SC5 – FNQROC Regional Development	Complies with PO12 Davidson Street and Crimmins Street are constructed and generally fit for purpose. The development proposes a minor upgrade to Crimmins Street to provide a 3.5m wide commercial cross over and a 3.5 wide service road with passing bay for servicing the proposed development.



		Details are provided in the Civil Report at Attachment 5.
Performance outcomes	Acceptable outcomes	Applicant response
<ul> <li>(b) pedestrians and cyclists adjacent to the site;</li> <li>(c) vehicles on the road adjacent to the site;</li> <li>(d) vehicles to and from the site;</li> <li>(e) emergency vehicles.</li> </ul>	Manual, for the particular class of road, as identified in the road hierarchy. <b>AO12.2</b> There is existing road, kerb and channel for the full road frontage of the site. <b>AO12.3</b> Road access minimum clearances of 3.5 metres wide and 4.8 metres high are provided for the safe passage of emergency vehicles.	
Alterations and repairs to public utility services		
<b>PO13</b> Infrastructure is integrated with, and efficiently extends, existing networks.	<b>AO13</b> Development is designed to allow for efficient connection to existing infrastructure networks.	Complies with AO13. Details are provided in the Civil Report at Attachment 5.
<b>PO14</b> Development and works do not affect the efficient functioning of public utility mains, services or installations.	<ul> <li>AO14.1 Public utility mains, services and installations are not required to be altered or repaired as a result of the development; </li> <li>or AO14.2 Public utility mains, services and installations are altered or repaired in association with the works so that they continue to function and satisfy the relevant Design Guidelines set out in Section D8 of the Planning scheme policy SC5 – FNQROC Regional Development Manual.</li></ul>	Development complies with AO14.2. Details are provided in the Civil Report at Attachment 5.



Construction management		
<b>P015</b> Work is undertaken in a manner which minimises adverse impacts on vegetation that is to be retained.	<ul> <li>AO15</li> <li>Works include, at a minimum: <ul> <li>(a) installation of protective fencing around retained vegetation during construction;</li> <li>(b) erection of advisory signage;</li> <li>(c) no disturbance, due to earthworks or storage of plant, materials and equipment, of ground level and soils below the canopy of any retained vegetation;</li> <li>(d) removal from the site of all declared noxious weeds.</li> </ul> </li> </ul>	The proposed development can be conditioned to comply with AO15.
<b>P016</b> Existing infrastructure is not damaged by construction activities.	AO16 Construction, alterations and any repairs to infrastructure is undertaken in accordance with the Planning scheme policy SC5 – FNQROC Regional Development Manual. Note - Construction, alterations and any repairs to State- controlled roads and rail corridors are undertaken in accordance with the Transport Infrastructure Act 1994.	The proposed development can be conditioned to comply with AO16.



Performance outcomes	Acceptable outcomes	Applicant response
For assessable development		
High speed telecommunication infrastructure		
<b>PO17</b> Development provides infrastructure to facilitate the roll out of high speed telecommunications infrastructure.	AO17 No acceptable outcomes are prescribed.	Development complies with PO17. See Attachment 10 for further details.
Trade waste		
<ul> <li>PO18</li> <li>Where relevant, the development is capable of providing for the storage, collection treatment and disposal of trade waste such that: <ul> <li>(a) off-site releases of contaminants do not occur;</li> <li>(b) the health and safety of people and the environment are protected;</li> <li>(c) the performance of the wastewater system is not put at risk.</li> </ul> </li> </ul>	AO18 No acceptable outcomes are prescribed.	Development can be conditioned to comply with PO18.
Fire services in developments accessed by com		
PO19 Hydrants are located in positions that will enable fire services to access water safely, effectively and efficiently.	<ul> <li>AO19.1 Residential streets and common access ways within a common private title places hydrants at intervals of no more than 120 metres and at each intersection. Hydrants may have a single outlet and be situated above or below ground.</li> <li>AO19.2 Commercial and industrial streets and access ways within a common private title serving commercial properties such as factories and warehouses and offices are provided with above or below ground fire hydrants located at not more than 90 metre intervals and at each intersection. Above ground fire hydrants have dual-valved outlets.</li> </ul>	Complies with PO 19. See Attachment 9 for further details.



<b>PO20</b> Hydrants are suitable identified so that fire	AO20 No acceptable outcomes are prescribed.	Complies with PO 20.
services can locate them at all hours. Note – Hydrants are identified as specified in the Department of Transport and Main Roads Technical Note: 'Identification of street hydrants for fire fighting purposes' available under		See Attachment 9 for further details.
'Publications'.		



### Table 9.4.5.3.b – Stormwater management design objectives (Construction phase).

Issue	Design objectives
Drainage control (Temporary drainage works)	<ul> <li>(a) Design life and design storm for temporary drainage works:</li> <li>(i) Disturbed open area for &lt;12 months – 1 in 2 year ARI event;</li> <li>(ii) Disturbed open area for 12-24 months – 1 in 5 year ARI event;</li> <li>(iii) Disturbed open area for &gt;24 months – 1 in 10 year ARI event.</li> <li>(b) Design capacity excludes minimum 150mm freeboard.</li> <li>(c) Temporary culvert crossing – minimum of 1 in 1-year ARI hydraulic capacity.</li> </ul>
Erosion control (Erosion control measures)	<ul> <li>(a) Minimise exposure of disturbed soils at any time.</li> <li>(b) Divert water run-off from undisturbed areas around disturbed areas.</li> <li>(c) Determine erosion risk rating using local rainfall erosivity, rainfall depth, soil loss rate or other acceptable methods.</li> <li>(d) Implement erosion control methods corresponding to identified erosion risk rating.</li> </ul>
Sediment control measures (sediment control measures, design storm for sediment control basins, Sediment basin dewatering)	<ul> <li>(a) Determine appropriate sediment control measures using: <ul> <li>(i) potential soil loss rate; or</li> <li>(ii) monthly erosivity; or</li> <li>(iii) average monthly rainfall.</li> </ul> </li> <li>(b) Collect and drain stormwater from disturbed soils to sediment basin for design storm event: <ul> <li>(i) design storm for sediment basin sizing is 80th% five-day event or similar.</li> </ul> </li> <li>(c) Site discharge during sediment basin dewatering: <ul> <li>(i) TSS &lt; 50mg/L TSS;</li> <li>(ii) Turbidity not &gt; 10% receiving water's turbidity;</li> <li>(iii) pH 6.5-8.5.</li> </ul> </li> </ul>
Water quality (Litter and other waste, hydrocarbons and other contaminants)	<ul> <li>(a) Avoid wind-blown litter; remove grass pollutants.</li> <li>(b) Ensure there is no visible oil or grease sheen on released waters.</li> <li>(c) Dispose of waste containing contaminants at authorised facilities.</li> </ul>
Waterway stability and flood flow management (Changes to the natural hydraulics and hydrology)	(a) For peak flow for the 100% AEP event and 1% AEP event, use constructed sediment basins to attenuate the discharge rate of stormwater from the site.



### Table 9.4.5.3.c – Stormwater management design objectives (post-construction phase)

Design objectives		Application		
Minimum reductions in mean annual load from unmitigated development (%)				
Total suspended solids (TSS)	Total phosphorus (TP)	Total nitrogen (TN)	Gross pollutants >5mm	
		Development for urban purposes		
80 60 40 90	90	Excludes development that is less than 25% pervious.		
		In lieu of modelling, the default bio-retention treatment area to comply with load reduction targets of 1.5% of contributing catchment area.		
Water stability management (a) Limit peak 100% AEP event discharge within the receiving waterway to the pre-development peak 100% AEP event discharge.		Catchments contributing to un-lined receiving waterway. Degraded waterways may seek alternative discharge management objectives to achieve waterway stability.		
			For peak flow for the 100% AEP event, use co-located storages to attenuate site discharge rate of stormwater.	

Figure 9.4.5.3.a – New footpath sections






#### 9.4.6 Landscaping code

#### 9.4.6.1 Application

- (1) This code applies to assessing:
  - (a) operational work which requires a compliance assessment as a condition of a development permit; or
  - (b) a material change of use or reconfiguring a lot if:
    - (i) assessable development where this code is identified in the assessment criteria column of the table of assessment;
    - (ii) impact assessable development, to the extent relevant.
- (2) When using this code, reference should be made to Part 5.

#### 9.4.6.2 Purpose

- (1) The purpose of the Landscaping code is to assess the landscaping aspects of a development.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) The tropical, lush landscape character of the region is retained, promoted and enhanced through high quality landscape works;
  - (b) The natural environment of the region is enhanced;
  - (c) The visual quality, amenity and identity of the region is enhanced;
  - (d) Attractive streetscapes and public places are created through landscape design;
  - (e) As far as practical, existing vegetation on site is retained, and protected during works and integrated with the built environment;
  - (f) Landscaping is provided to enhance the tropical landscape character of development and the region;
  - (g) Landscaping is functional, durable, contributes to passive energy conservation and provides for the efficient use of water and ease of ongoing maintenance;
  - (h) Landscaping takes into account utility service protection;
  - (i) Weed species and invasive species are eliminated from development sites;
  - (j) Landscape design enhances personal safety and incorporates CPTED principles.

#### 9.4.6.3 Criteria for assessment

Table 9.4.6.3.a - Landscaping code -assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable development		
Landscape design		



PO1	AO1	Complies with PO1
Development provides landscaping that	Development provides landscaping:	
contributes to and creates a high quality	(a) in accordance with the minimum area,	The Development meets the landscaping
landscape character for the site, street and local	dimensions and other requirements of	requirements of the Tourist Accommodation Zone.
areas of the Shire by:	applicable development codes;	
(a) promoting the Shire's character as a tropical	(b) that is designed and planned in a way that	The landscaping for the site is a key feature in
(b) softening the built form of development:	in Planning Scheme Policy SC6.7 –	creating a tropical environment at the streetscape
(c) enhancing the appearance of the	Landscaping.	and internal to the development.
development from within and outside the	(c) that is carried out and maintained in	
development and makes a positive	accordance with a landscaping plan that	All servicing and equipment will be appropriately
contribution to the streetscape;	meets the guidelines for landscaping outlined	screen internal and external to the site.
(d) screening the view of buildings, structures,	in Planning Scheme Policy SC6.7 –	
open storage areas, service equipment,	Landscaping.	The proposed development will deliver a
machinery plant and the like from public	Note - Planning scheme policy SC6.7 – Landscaping provides	superior result in terms of scenic amenity when
development:	guidance on meeting the outcomes of this code. A landscape	compared to the current on-site development.
(e) where necessary ensuring the privacy of	plan submitted for approval in accordance with the Planning	
(c) where neededary, cheaning the privacy of	policy is one way to achieve this outcome.	Dense tropical landscaping is a critical feature
		of this luxury hotel and villas.
		A detailed landscaping plan is provided at
		Attachment 3.



Ре	rformance outcomes	Acceptable outcomes	Applicant response
(f) (g) (h) (i) (j) (k)	habitable rooms and private outdoor recreation areas; contributing to a comfortable living environment and improved energy efficiency, by providing shade to reduce glare and heat absorption and re-radiation from buildings, parking areas and other hard surfaces; ensuring private outdoor recreation space is useable; providing long term soil erosion protection; providing a safe environment; integrating existing vegetation and other natural features of the premises into the development; not adversely affecting vehicular and pedestrian sightlines and road safety.		
Fo	r assessable development		
PO Lai fun stro dev	<b>2</b> ndscaping contributes to a sense of place, is ctional to the surroundings and enhances the eetscape and visual appearance of the velopment.	<ul> <li>AO2.1 No acceptable outcomes are specified.</li> <li>Note - Landscaping is in accordance with the requirements specified in Planning scheme policy SC6.7 – Landscaping.</li> <li>AO2.2 Tropical urbanism is incorporated into building design</li> </ul>	Complies with AO2.2. The building design incorporates Tropical Urbanism and includes internal features which incorporate extensive landscaping. The external façade is designed to incorporate a number of aspects of tropical urbanism
		Note – 'Tropical urbanism' includes many things such as green walls, green roofs, podium planting and vegetation incorporated into the design of a building.	A detailed landscaping plan is provided at Attachment 3. Elevations and renders of the built form of the short term accommodation demonstrate Tropical Urbanism features.



<b>PO3</b> Development provides landscaping that is , as far as practical, consistent with the existing desirable	<b>AO3.1</b> Existing vegetation on site is retained and incorporated into the site design, wherever	Complies with PO3. The proposed development does require the
trees, vegetation and other features of ecological, recreational, aesthetic and cultural value.	principles outline in AS4970-2009 Protection of Trees on Development Sites.	removal of trees on site and within the streetscape.
	<b>AO3.2</b> Mature vegetation on the site that is removed or damaged during development is replaced with advanced species.	A detailed landscaping plan and palette has been designed to ensure the proposed development is not only consistent with the landscaped character of the area but promotes an exemplary standard of landscaping in the tropics.
	<b>AO3.3</b> Where there is an existing landscape character in a street or locality which results from existing vegetation, similar species are incorporated into new development.	Dense planting is proposed at the street frontage and throughout the development and species selection ensures mature planting on site is achievable.
	<b>AO3.4</b> Street trees are species which enhance the landscape character of the streetscape, with species chosen from the Planning scheme policy SC6.7 – Landscaping.	Details of vegetation removal and a detailed landscaping plan is provided at Attachment 3.
<b>PO4</b> Plant species are selected with consideration to	AO4 Species are selected in accordance with Planning	Complies with AO4.
the scale and form of development, screening, buffering, streetscape, shading and the locality of	scheme policy SC6.7 – Landscaping.	The species selected generally correspond to the Planning Scheme policy.



Performance outcomes	Acceptable outcomes	Applicant response
the area.		
<b>PO5</b> Shade planting is provided in car parking areas where uncovered or open, and adjacent to driveways and internal roadways.	AO5 Species are selected in accordance with Planning scheme policy SC6.7 – Landscaping.	Complies with PO5. Internal roadways will be landscaped in accordance with the provided landscaping plan. Lush internal landscaping within the site in a defining feature of this development proposed.
<b>P06</b> Landscaped areas are designed in order to allow for efficient maintenance.	<ul> <li>AO6.1 <ul> <li>A maintenance program is undertaken in accordance with Planning scheme policy SC6.7 – Landscaping.</li> </ul> </li> <li>AO6.2 <ul> <li>Tree maintenance is to have regard to the 'Safe Useful Life Expectancy of Trees (SULE).</li> <li>Note – It may be more appropriate to replace trees with a SULE of less than 20 years (as an example), and replant with younger healthy species.</li> </ul> </li> </ul>	The Development can be conditioned to comply with AO6.1 & 6.2.
<b>P07</b> Podium planting is provided with appropriate species for long term survival and ease of maintenance, with beds capable of proper drainage.	<ul> <li>A07.1 Podium planting beds are provided with irrigation and are connected to stormwater infrastructure to permit flush out.</li> <li>A07.2 Species of plants are selected for long term performance designed to suit the degree of access to podiums and roof tops for maintenance.</li> </ul>	Complies with PO7. Where podium planting is proposed it has been designed for ease of maintenance and proper drainage. As the brand is a luxury hotel, operational processes will be in place to ensure landscaping is adequately maintained.
<b>PO8</b> Development provides for the removal of all weed and invasive species and implement on-going measures to ensure that weeds and invasive species do not reinfest the site and nearby premises.	<b>AO8</b> Weed and invasive species detected on a development site are removed in accordance with a management plan prepared by an appropriately qualified person.	Complies with AO8. Any weed species detected on the development site will be removed during construction and prior to landscaping.



<b>PO9</b> The landscape design enhances personal safety and reduces the potential for crime and vandalism.	AO9 No acceptable outcomes are specified. Note - Planning scheme policy SC6.3 – Crime prevention through environmental design (CPTED) provides guidance on meeting this outcome.	Complies with PO9. The landscaping plan has adopted CPTED principles in design.
<b>PO10</b> The location and type of plant species does not adversely affect the function and accessibility of services and facilities and service areas.	AO10 Species are selected in accordance with Planning scheme policy SC6.7 – Landscaping.	Complies with PO10. The landscaping has been designed specifically to ensure continued access to and function of services.



#### 9.4.7 Reconfiguring a lot code

#### 9.4.7.1 Application

- (1) This code applies to assessing reconfiguring a lot if:
  - (a) assessable development where the code is an applicable code identified in the assessment criteria column of a table of assessment;
  - (b) impact assessable development, to the extent relevant.
- (2) When using this code, reference should be made to Part 5.

#### 9.4.7.2 Purpose

- (1) The purpose of the Reconfiguring a lot code is to regulate development for reconfiguring a lot.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) development results in a well-designed pattern of streets supporting walkable communities;
  - (b) lots have sufficient areas, dimensions and shapes to be suitable for their intend use taking into account environmental features and site constraints;
  - (c) road networks provide connectivity that is integrated with adjoining existing or planned development while also catering for the safe and efficient access for pedestrians, cyclists and for public transport;
  - (d) lots are arranged to front all streets and parkland such that development enhances personal safety, traffic safety, property safety and security; and contributes to streetscape and open space quality;
  - (e) development does not diminish environmental and scenic values, and where relevant, maintains and enhances public access and use of natural areas, rivers, dams, creeks and the foreshore, in a way that protects natural resources;
  - (f) people and property are not placed at risk from natural hazards;
  - (g) a range of functional parkland, including local and district parks, major areas of parkland with a region-wide focus and open space links are available for the use and enjoyment of residents and visitors to the region;
  - (h) the appropriate standard of infrastructure is provided.

#### 9.4.7.3 Criteria for assessment

Table 9.4.7.3.a - Reconfiguring a lot code - assessable development

Performance outcomes	Acceptable outcomes	Applicant response
General lot design standards		
<b>PO1</b> Lots comply with the lot reconfiguration outcomes of the applicable Zone code in Part 5.	<b>AO1</b> No acceptable outcomes are prescribed.	The proposed development does not technically comply with PO1.
		The reconfiguration outcomes in the Tourist Accommodation Zone code anticipate 1000m <sup>2</sup> lots.



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		The purpose of this lot size is to facilitate Tourist Accommodation outcomes.
		The proposed development is for short term accommodation and multiple dwellings and meets the intent of the Tourist Accommodation Zone code.
		The Reconfiguring a Lot aspect of the development is a technical aspect to create the Community Title Scheme (CTS) Development for the Short Term Accommodation (Hotel lot) and the Short Term Accommodation/Multi Unit Dwelling (Villa) lots.
		In this circumstance the proposal meets the purpose of the Reconfiguring a Lot code and the Tourist Accommodation Zone Code.
PO2	AO2 Boundary angles are not less than 45 degrees	Complies with PO2.
functional areas for land uses intended by the zone.	boundary angles are not less than 40 degrees.	The proposed CTS lots are generally rectangular in shape and contain functional areas for the intended land use of the zone which is demonstrated by the MCU component of this development.
		The Short Term Accommodation (Hotel) lot is not rectangular in shape but corresponds directly to the form of the proposed development.
PO3	AO3 Each lot is provided with:	Complies with PO3.
road.	<ul> <li>(a) direct access to a gazetted road reserve; or</li> <li>(b) access to a gazetted road via a formal access arrangement registered on the title.</li> </ul>	The site has direct access to Davidson Street and Crimmins Street.
		The proposed lots have access to a road frontage contained within common property.



<b>PO4</b> Development responds appropriately to its local context, natural systems and site features.	<ul> <li>A04</li> <li>Existing site features such as:</li> <li>(a) significant vegetation and trees;</li> <li>(b) waterways and drainage paths;</li> <li>(c) vistas and vantage points are retained and/or</li> </ul>	Complies with PO4. The proposed development responds directly to the local context and natural site features. This is dealt with at length in other code compliance including the environmental performance code, vegetation management code, landscaping code, landscape values code, and coastal environment overlay code.
Performance outcomes	Acceptable outcomes	Applicant response
	are incorporated into open space, road reserves, near to lot boundaries or as common property.	
<b>PO5</b> New lots which have the capability of being further reconfigured into smaller lots at a later date are designed to not compromise ultimate development outcomes permitted in the relevant zone.	<b>AO5</b> The ability to further reconfigure land at a later date is demonstrated by submitting a concept plan that meets the planning scheme requirements for the applicable Zone.	Not applicable.
<ul> <li>PO6</li> <li>Where existing buildings or structures are to be retained, development results in: <ul> <li>(a) boundaries that offer regular lot shapes and usable spaces;</li> <li>(b) existing improvements complying with current building and amenity standards in relation to boundary setbacks.</li> </ul> </li> <li>Note - This may require buildings or structures to be modified, relocated or demolished to meet setback.</li> </ul>	A06 Development ensures setbacks between existing buildings or structures and proposed boundaries satisfy relevant building standards or zone code requirements, whichever is the greater.	Not applicable.
modified, relocated or demolished to meet setback standards, resolve encroachments and the like.		



Not applicable.

#### **PO7**

Where rear lots are proposed, development:

- (a) provides a high standard of amenity for residents and other users of the site and adjoining properties;
- (b) positively contributes to the character of adjoining properties and the area;
- (c) does not adversely affect the safety and efficiency of the road from which access is gained.

#### AO7.1

Where rear lots are to be established:

- (a) the rear lot is generally rectangular in shape, avoiding contrived sharp boundary angles;
- (b) no more than 6 lots directly adjoin the rear lot:
- (c) no more than one rear lot occurs behind the road frontage lot;
- (d) no more than two access strips to rear lots directly adjoin each other;
- (e) access strips are located only on one side of the road frontage lot.

#### AO7.2

Access strips to the rear lot have a minimum width dimension of:

- (a) 4.0 metres in Residential Zones.
- (b) 8.0 metres in Industrial Zones category.
- (c) 5.0 metres in all other Zones.

Note - Rear lots a generally not appropriate in non-Residential or non-Rural zones.

#### AO7.3

Access strips are provided with a sealed pavement of sufficient width to cater for the intended traffic, but no less than:

- (a) 3.0 metres in Residential Zone.
- (b) 6.0 metres in an Industrial Zone.
- (c) 3.5 metres in any other Zone.



Performance outcomes	Acceptable outcomes	Applicant response
Structure plans		
Additional requirements for: (a) a site which is more than 5,000m <sup>2</sup> in any of the	e Residential zones; or	
within these zones, and (b) creates 10 or more lots; or (c) involves the creation of new roads and/or public use land. or		
<ul> <li>(d) For a material change of use involving:</li> <li>(i) preliminary approval to vary the effect of the planning scheme;</li> <li>(ii) establishing alternative Zones to the planning scheme.</li> </ul>		
Note - This part is to be read in conjunction with the other parts of the code		
<b>PO8</b> A structure plan is prepared to ensure that neighbourhood design, block and lot layout, street network and the location and provision on any open space recognises previous planning for the area and its surroundings, and integrates appropriately into its surroundings.	<ul> <li>AO8.1</li> <li>Neighbourhood design, lot and street layout, and open space provides for, and integrates with, any:</li> <li>(a) approved structure plan;</li> <li>(b) the surrounding pattern of existing or approved subdivision.</li> <li>Note - Planning scheme policy SC14– Structure planning provides guidance on meeting the performance outcomes.</li> </ul>	Not applicable.
	<b>AO8.2</b> Neighbourhood design, lot and street layouts enable future connection and integration with adjoining undeveloped land.	



PO9 Neighbourhood design results in a connected network of walkable streets providing an easy choice of routes within and surrounding the neighbourhood.	<ul> <li>AO9.1 Development does not establish cul-de-sac streets unless: <ul> <li>(a) cul-de-sacs are a feature of the existing pattern of development in the area;</li> <li>(b) there is a physical feature or incompatible zone change that dictates the need to use a cul-de- sac streets.</li> </ul> </li> <li>AO9.2 Where a cul-de-sac street is used, it: <ul> <li>(a) is designed to be no longer than 150 metres in length;</li> <li>(b) is designed so that the end of the cul-de-sac is visible from its entrance;</li> <li>(c) provides connections from the top of the cul- de-sac to other streets for pedestrians and cyclists, where appropriate.</li> </ul> </li> <li>AO9.3 No more than 6 lots have access to the turning circle or turning-tee at the end of a cul-de-sac street.</li> </ul>	Not applicable.
<b>PO10</b> Neighbourhood design supports diverse housing choices through block sizes and lot design. In developing areas, significant changes in lot size and frontage occur at the rear of lots rather than on opposite sides of a street.	<b>PO10</b> No acceptable outcomes are prescribed.	Not applicable.



Performance outcomes	Acceptable outcomes	Applicant response
PO11 Provision of physical and social infrastructure in developing residential neighbourhoods is facilitated through the orderly and sequential development of land. Note - Part 4 – Local government infrastructure plan may identify specific levels of infrastructure to be provided within development sites.	<ul> <li>AO11.1 New development adjoins adjacent existing or approved urban development.</li> <li>AO11.2 New development is not established beyond the identified Local government infrastructure plan area.</li> </ul>	Not applicable.
Urban parkland and environmental open space		
<b>PO12</b> Where appropriate development maintains and enhances public access and use of natural areas, rivers, dams, creeks and the foreshore.	<b>AO12</b> No acceptable outcomes are prescribed.	Not applicable.
<ul> <li>PO13 Development provides land to: <ul> <li>(a) meet the recreation needs of the community;</li> <li>(b) provide an amenity commensurate with the structure of neighbourhoods and land uses in the vicinity; and adjacent to open space areas;</li> <li>(c) provide for green corridors and linkages.</li> </ul></li></ul>	AO13 No acceptable outcomes are prescribed. Note - Part 4 – Priority infrastructure plan and Planning scheme policy SC14 – Structure Plans provides guidance in providing open space and recreation land.	Not applicable.



#### AO14

Lot size, dimensions, frontage and orientation permits buildings to be established that will facilitate casual surveillance to urban parkland and environmental open space.

#### AO14.1

Urban parkland is regular in shape.

AO14.2

At least 75% of the urban parkland's frontage is provided as road.

#### AO14.3

Urban parkland and environmental open space areas are positioned to be capable of being overlooked by surrounding development.

#### AO14.4

Surrounding lots are orientated so that facades will front and overlook the urban parkland and environmental open space.

#### AO14.5

The number of lots that back onto, or are sideorientated to the urban parkland and environmental open space is minimised.



Inconsistent design solution - low total number of lots complying with the acceptable outcomes.

Not applicable.



Performance outcomes	Acceptable outcomes	
	Lots orientated to front and overlook park to provide casual surveillance. Consistent design solution - high total number of lots complying with the acceptable outcomes.	
Private subdivisions (gated communities)		
<b>PO15</b> Private subdivisions (gated communities) do not compromise the establishment of connected and integrated infrastructure and open space networks.	<b>PO15</b> No acceptable outcomes are prescribed.	Complies with PO15. The site has a demonstrated internal cycle and pedestrian connection and does not compromise established open space networks.
Additional requirements for reconfiguration in	volving the creation of public streets or roads	
<b>PO16</b> The function of new roads is clearly identified and legible and provides integration, safety and convenience for all users.	AO16 No acceptable outcomes are prescribed. Note - The design and construction standards are set out in Planning scheme policy SC5 – FNQROC Regional Development Manual, with reference to the specifications set out in Sections D1 and D3.	Not applicable.
<ul> <li>PO17</li> <li>Street design supports an urban form that creates walkable neighbourhoods. Street design:</li> <li>(a) is appropriate to the function(s) of the street;</li> <li>(b) meets the needs of users and gives priority to the needs of vulnerable users.</li> </ul>	AO17 No acceptable outcomes are prescribed.	Not applicable.



Public transport network		
<b>PO18</b> Development provides a street pattern that caters for the extension of public transport routes and infrastructure including safe pedestrian pick-up and set-down up facilities.	AO18 No acceptable outcomes are prescribed.	Not applicable.
Pest plants		
<ul> <li>PO19</li> <li>Development activities and sites provide for the removal of all pest plants and implement ongoing measures to ensure that pest plants do not reinfest the site or nearby sites.</li> <li>Editor's note - This does not remove or replace all land owner's obligations or responsibilities under the Land Protection (Pest and Stock Route Management) Act 2002.</li> </ul>	AO19 Pest plants detected on a development site are removed in accordance with a management plan prepared by an appropriately qualified person prior to earthworks commencing. Note - A declaration from an appropriately qualified person validates the land being free from pest plants. Declared pest plants include locally declared and State declared pest plants.	The proposal can be conditioned to comply with AO19.



#### 9.4.9 Vegetation management code

#### 9.4.9.1 Application

- (1) This code applies to assessing operational works for vegetation damage if:
  - (a) assessable development where the code is an applicable code identified in the assessment criteria column of a table of assessment;
  - (b) impact assessable development, to the extent relevant.
- (2) When using this code, reference should be made to Part 5.

#### 9.4.9.2 Purpose

- (1) The purpose of the Vegetation management code is achieved through the overall outcomes.
- (2) The purpose of the code will be achieved through the following overall outcomes:
  - (a) vegetation is protected from inappropriate damage;
  - (b) where vegetation damage does occur it is undertaken in a sustainable manner;
  - (c) significant trees are maintained and protected;
  - (d) biodiversity and ecological values are protected and maintained;
  - (e) habitats for rare, threatened and endemic species of flora and fauna are protected and maintained;
  - (f) landscape character and scenic amenity is protected and maintained;
  - (g) heritage values are protected and maintained.

#### 9.4.9.3 Criteria for assessment

#### Table 9.4.9.3.a - Vegetation management -assessable development

Note - All vegetation damage is to have regard to the provisions of AS4373-2009 Pruning of Amenity Trees

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable development		



PO1	A01.1	Complies with PO1.
<ul> <li>PO1</li> <li>Vegetation is protected to ensure that: <ul> <li>(a) the character and amenity of the local area is maintained;</li> <li>(b) vegetation damage does not result in fragmentation of habitats;</li> <li>(c) vegetation damage is undertaken in a sustainable manner;</li> <li>(d) the Shire's biodiversity and ecological values are maintained and protected;</li> <li>(e) vegetation of historical, cultural and / or visual significance is retained;</li> <li>(f) vegetation is retained for erosion prevention and slope stabilisation.</li> </ul> </li> </ul>	<ul> <li>AO1.1</li> <li>Vegetation damage is undertaken by a statutory authority on land other than freehold land that the statutory authority has control over;</li> <li>on damage does not result in tation of habitats;</li> <li>on damage is undertaken in a ible manner;</li> <li>e's biodiversity and ecological values tained and protected;</li> <li>on of historical, cultural and / or visual nce is retained;</li> <li>on is retained for erosion prevention be stabilisation.</li> <li>AO1.1</li> <li>Vegetation damage is undertaken by or on behavior or operated by the local government;</li> <li>or</li> <li>AO1.2</li> <li>Vegetation damage is undertaken by or on behavior of historical, cultural and / or visual nce is retained;</li> <li>on is retained for erosion prevention be stabilisation.</li> <li>AO1.3</li> <li>Vegetation damage, other than referenced in AO1.1 or AO1.2 is the damage of:         <ul> <li>(a) vegetation declared as a pest pursuant to the local protection (Pest and Stock Boute</li> </ul> </li> </ul>	Complies with PO1. The Vegetation Management Code is only an assessment benchmark for the Reconfiguring a Lot aspect of the Development Application. It is not required to be addressed in response to the Material Change of Use Application. The Reconfiguring a Lot aspect of this Development Application is required to create a Community Title Scheme for the Short Term Accommodation (Hotel lot) and the Short Term Accommodation/Multiple Dwelling (Villa) lot. The vegetation clearing occurs as a result of the primary material change of use. Notwithstanding, this code has been addressed
	<ul> <li>Management) Act 2002; or</li> <li>(b) vegetation identified within the local government's register of declared plants pursuant to the local government's local laws; or</li> <li>(c) vegetation is located within a Rural zone and</li> </ul>	in detail. The site is not mapped as containing any protected vegetation or natural areas.
	the trunk is located within ten metres of an existing building; or (d) vegetation is located within the Conservation zone or Environmental management zone	All vegetation on site has been established as a result of previous landscaping schemes associated with the existing use.
		The vegetation to be removed is plotted on the Development Plans provided at Attachment 3.
		Whilst there are some reasonably large trees to be removed, most trees are palms and mangoes and other landscaped species.
		Given the extent of development already occurring on site, additional vegetation damage will not result in fragmentation of habitats or



	have any impact on Shire's biodiversity and ecological values.
	There is no known vegetation of historical, cultural and / or visual significance on site.
	Additionally, vegetation is not required to be retained for erosion prevention and slope stabilisation.
	Finally, the character and amenity of the local area is improved as a result of the proposed landscaping plan provided at Attachment 3.



Performance outcomes	Acceptable outcomes	Applicant response
	and the trunk is located within three metres of an existing or approved structure, not including a boundary fence;.	
	or	
	<ul> <li>AO1.4</li> <li>Vegetation damage that is reasonably necessary for carrying out work that is:</li> <li>(a) authorised or required under legislation or a local law;</li> <li>(b) specified in a notice served by the local government or another regulatory authority;</li> </ul>	
	or	
	<b>AO1.5</b> Vegetation damage for development where the damage is on land the subject of a valid development approval and is necessary to give effect to the development approval;	
	or	
	AO1.6 Vegetation damage is in accordance with an approved Property Map of Assessable Vegetation issued under the <i>Vegetation Management Act</i> <i>1999;</i>	
	or	
	<b>AO1.7</b> Vegetation damage is essential to the maintenance of an existing fire break;	
	or	
	<b>AO1.8</b> Vegetation damage is essential to prevent interference to overhead service cabling;	
	or	

AO1.9



Performance outcomes	Acceptable outcomes	Applicant response
	remove one tree in order to protect an adjacent more significant tree (where they are growing close to one another).	
	<b>AO1.12</b> Private property owners may only remove dead, dying, structurally unsound vegetation following receipt of written advice from, at minimum, a fully qualified Certificate V Arborist. A copy of the written advice is to be submitted to Council for its records, a minimum of seven business days prior to the vegetation damage work commencing.	
<b>PO2</b> Vegetation damaged on a lot does not result in a nuisance	AO2.1 Damaged vegetation is removed and disposed of at an approved site; or	The development can be conditioned to comply with AO2.1 and AO 2.2.
	AO2.2 Damaged vegetation is mulched or chipped if used onsite.	
For assessable development		
<b>PO3</b> Vegetation damage identified on the Places of significance overlay lot does not result in a negative impact on the site's heritage values.	AO3 No acceptable outcomes are prescribed.	Not applicable.

# Attachment 12

Assessment against SDAP Provisions



# State code 1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
Buildings, structures, infrastructure, services	and utilities	
<b>PO1</b> The location of the development does not create a safety hazard for users of the <b>state-controlled road</b> .	<ul> <li>AO1.1 Development is not located in a state-controlled road.</li> <li>AND</li> <li>AO1.2 Development can be maintained without requiring access to a state-controlled road.</li> </ul>	Complies with AO 1.1 and AO 1.2 Development is not located in a State-Controlled Road and can be maintained without access to the state-controlled road. The Development fronts and is accessed from the Davidson Street service road which is adjacent the State Controlled Port Douglas Road/Davidson Street.
PO2 The design and construction of the development does not adversely impact the structural integrity or physical condition of the state-controlled road or road transport infrastructure.	No acceptable outcome is prescribed.	Complies with PO2. The construction of the development will have no impact on the structural integrity of physical condition of the state-controlled road. The Development fronts and in accessed from the Davidson Street service road which is adjacent the State Controlled Port Douglas Road/Davidson Street.
<b>PO3</b> The location of the development does not obstruct <b>road transport infrastructure</b> or adversely impact the operating performance of the <b>state-controlled road</b> .	No acceptable outcome is prescribed.	Complies with PO3.

## Table 1.1 Development in general

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Performance outcomes	Acceptable outcomes	Response
		The location of the development does not obstruct road transport infrastructure or impact the performance of the state-controlled road.
		The Development fronts and is accessed from the Davidson Street service road which is adjacent the State Controlled Port Douglas Road/Davidson Street.
PO4 The location, placement, design and	No acceptable outcome is prescribed.	Complies with PO4.
operation of advertising devices, visible from the <b>state-controlled road</b> , do not create a safety hazard for users of the <b>state-controlled</b> <b>road</b> .		There are no advertising devices proposed. If required, they will form part of a subsequent application.
<b>P05</b> The design and construction of buildings and <b>structures</b> does not create a safety hazard by distracting users of the <b>state-controlled</b> <b>road</b> .	<b>AO5.1</b> Facades of buildings and <b>structures</b> fronting the <b>state-controlled road</b> are made of non-reflective materials. AND	Complies with AO5.1 – AO5.4 Facades of the buildings and structures fronting the state-controlled road are made of non-reflective material and screened by extensive landscaping.
	<b>AO5.2</b> Facades of buildings and <b>structures</b> do not direct or reflect point light sources into the face of oncoming traffic on the <b>state-controlled road</b> .	The finishes are detailed in Attachment 3 and generally consist of the following-
	AND	
	<b>AO5.3</b> External lighting of buildings and <b>structures</b> is not directed into the face of oncoming traffic on the <b>state-controlled road</b> .	
	AND	
	<b>AO5.4</b> External lighting of buildings and <b>structures</b> does not involve flashing or laser lights.	

Performance outcomes	Acceptable outcomes	Response
PO6 Road, pedestrian and bikeway bridges	AO6.1 Road, pedestrian and bikeway bridges	Not applicable.
over a state-controlled road are designed and	over the state-controlled road include throw	
thrown onto the state controlled road	4 11 of the Design Criteria for Bridges and	
thrown onto the state-controlled road.	4.11 of the Design Chiefla for Bhoges and Other Structures Manual Department of	
	Transport and Main Roads 2020	
<b>PO7</b> The location of landscaping does not	A07.1 Landscaping is not located in a state-	Complies with $A071 - A073$
create a safety hazard for users of the <b>state-</b>	controlled road	
controlled road.		Landscaping is proposed within the site boundary.
	AND	A landscaping plan is provided at Attachment 3.
	<b>AO7.2</b> Landscaping can be maintained without	
	requiring access to a <b>state-controlled road</b> .	
	AND	
	A07.3 Landscaping does not block or obscure	
	the sight lines for vehicular access to a <b>state-</b>	
	controlled road.	
Stormwater and overland flow	•	•
<b>PO8</b> Stormwater run-off or overland flow from	No acceptable outcome is prescribed.	Complies with PO8.
the development site does not create or		
exacerbate a safety hazard for users of the		Stormwater run-off or overland flow from the
state-controlled road.		development site does not create or exacerbate a
		safety hazard for users of the state-controlled road.
		The flood modelling concludes that base on a 1%
		AEP Design Event peak flood depth (m) for the
		2100 climate case for Port Douglas there is no
		worsening effect on surrounding properties or the
		State Controlled road.
		A supporting civil orginopring report is provided at
		A supporting tivil engineering report is provided at Attachment 5. A detailed flood study is provided at
		Allachment 5. A detailed nood study is provided at

Performance outcomes	Acceptable outcomes	Response
		Attachment 8. The Site's hydraulic design is
<b>DOO</b> Otemanistan mus off on supplement flow from		provided at Attachment 9.
the development site does not result in a	No acceptable outcome is prescribed.	Complies with PO9.
material worsening of the operating		The fleed modelling concludes that base on a 1%
performance of the state-controlled road or		AEP Design Event peak flood depth (m) for the
road transport infrastructure.		2100 climate case for Port Douglas there is no
		worsening effect on surrounding properties or the
		State Controlled road.
		A supporting civil engineering report is provided at
		Attachment 5. A detailed flood study is provided at
		Attachment 8. The Site's hydraulic design is
		provided at Attachment 9.
PO10 Stormwater run-off or overland flow from	No acceptable outcome is prescribed.	Complies with PO10.
the development site does not adversely impact		The fleed we deliver seveludes that have an a 40/
the state-controlled road or road transport		AEP Design Event neak flood donth (m) for the
infrastructure.		2100 climate case for Port Douglas there is no
		worsening effect on surrounding properties or the
		State Controlled road.
		A supporting civil engineering report is provided at
		Attachment 5. A detailed flood study is provided at
		Attachment 8. The Site's hydraulic design is
		provided at Attachment 9.
<b>PO11</b> Development ensures that stormwater is	AO11.1 Development does not create any new	Complies with AO11.1 – 11.4.
iawiuliy discharged.	points of discharge to a state-controlled road.	The lawful point of discharge is the western read
		reserve discharging directly to the manner drainage
		feature.
	AO11.2 Development does not concentrate	
	flows to a state-controlled road.	A supporting civil engineering report is provided as
		Attachment 5. The Site's hydraulic design is
	AND	provided at Attachment 9.

Performance outcomes	Acceptable outcomes	Response
	AO11.3 Stormwater run-off is discharged to a lawful point of discharge.	
	AND	
	AO11.4 Development does not worsen the condition of an existing lawful point of discharge to the state-controlled road.	
Flooding	•	
P012 Development does not result in a material worsening of flooding impacts within a state-controlled road.	<ul> <li>AO12.1 For all flood events up to 1% annual exceedance probability, development results in negligible impacts (within +/- 10mm) to existing flood levels within a state-controlled road.</li> <li>AND</li> <li>AO12.2 For all flood events up to 1% annual exceedance probability, development results in negligible impacts (up to a 10% increase) to existing peak velocities within a state-controlled road.</li> <li>AND</li> </ul>	Complies with AO12.1 -12.3 The flood modelling concludes that base on a 1% AEP Design Event peak flood depth (m) for the 2100 climate case for Port Douglas there is no worsening effect on surrounding properties or the State Controlled road. A supporting civil engineering report is provided at Attachment 5. A detailed flood study is provided at Attachment 8. The Site's hydraulic design is provided at Attachment 9.
	AO12.3 For all flood events up to 1% annual exceedance probability, development results in negligible impacts (up to a 10% increase) to existing time of submergence of a state-controlled road.	
Drainage Infrastructure		
<b>PO13</b> Drainage infrastructure does not create a safety hazard for users in the <b>state-controlled road</b> .	<b>AO13.1</b> Drainage infrastructure is wholly contained within the development site, except at the <b>lawful point of discharge</b> .	Complies with AO13.1 and 13.2. Drainage infrastructure is wholly contained within
		the site and can be maintained without access to

Performance outcomes	Acceptable outcomes	Response
	AND AO13.2 Drainage infrastructure can be maintained without requiring access to a <b>state</b> - <b>controlled road</b> .	the State Controlled Road. The lawful point of discharge is to a drainage feature to the west of the site and the site fronts the Davidson Street service road only. A supporting civil engineering report is provided at Attachment 5.
<b>P014</b> Drainage infrastructure associated with, or within, a <b>state-controlled road</b> is constructed, and designed to ensure the <b>structural integrity</b> and physical condition of existing drainage infrastructure and the surrounding drainage network.	No acceptable outcome is prescribed.	Complies with PO14. No drainage infrastructure is proposed that is associated with or constructed in the State Controlled Road. A supporting civil engineering report is provided at Attachment 5.

## Table 1.2 Vehicular access, road layout and local roads

Performance outcomes	Acceptable outcomes	Response
Vehicular access to a state-controlled road or w	ithin 100 metres of a state-controlled road interse	ection
PO15 The location, design and operation of a new or changed access to a state-controlled	No acceptable outcome is prescribed.	Complies with PO15.
road does not compromise the safety of users of the state-controlled road.		The development fronts Davidson Street (service road) which accesses the State- controlled Port Douglas Road/Davidson Street from the Crimmins Street and Port Street intersections. The existing development has three (3) separate access locations to Davidson Street (service road). The proposed development consolidates a single ingress and a single egress to Davidson Street (service road) central to the site. Servicing is also provided from Crimmins Street

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Performance outcomes	Acceptable outcomes	Response
		Davidson Street (service road) is a straight road with a low speed environment and no impediments to site lines.
		The ingress crossover is located approximately 65m north of the Davidson Street-Crimmins Street intersection and the egress crossover approximately 130m from the intersection.
		Additionally, the Traffic Impact Assessment concludes the increase in estimate equivalent persons generated by the proposed development is negligible compared to the estimated equivalent persons generated by the existing businesses currently operating from these lots. A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.
<b>PO16</b> The location, design and operation of a <b>new or changed access</b> does not adversely impact the <b>functional requirements</b> of the <b>state-controlled road</b> .	No acceptable outcome is prescribed.	Complies with PO16. The development fronts Davidson Street (service road) which accesses the State- controlled Port Douglas Road/Davidson Street from the Crimmins Street and Port Street intersections.
		The existing development has three (3) separate access locations to Davidson Street (service road).
		The proposed development consolidates a single ingress and egress to Davidson Street (service road) central to the site. Servicing is also provided from Crimmins Street.

Performance outcomes	Acceptable outcomes	Response
		Davidson Street (service road) is a straight road with a low speed environment and no impediments to site lines.
		The ingress crossover is located approximately 65m north of the Davidson Street-Crimmins Street intersection and the egress crossover approximately 130m from the intersection.
		Additionally, the Traffic Impact Assessment concludes the increase in estimate equivalent persons generated by the proposed development is negligible compared to the estimated equivalent persons generated by the existing businesses currently operating from these lots. A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.
<b>PO17</b> The location, design and operation of a <b>new or changed access</b> is consistent with the <b>future intent</b> of the <b>state-controlled road</b> .	No acceptable outcome is prescribed.	Complies with PO17. There are no known changes to the future intent of Davidson Street. A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.
<ul> <li>PO18 New or changed access is consistent with the access for the relevant limited access road policy:</li> <li>1. LAR 1 where direct access is prohibited; or</li> <li>2. LAR 2 where access may be permitted, subject to assessment.</li> </ul>	No acceptable outcome is prescribed.	Not applicable.
<b>PO19 New or changed access</b> to a <b>local road</b> within 100 metres of an intersection with a <b>state</b> -	No acceptable outcome is prescribed.	Complies with PO19.

Performance outcomes	Acceptable outcomes	Response
controlled road does not compromise the safety of users of the state-controlled road.		The proposed new access is just within 100m of the intersection with a State Controlled Road. The ingress crossover is located approximately 65m north of the Davidson Street-Crimmins Street intersection and the egress crossover approximately 130m from the intersection.
		The Traffic Impact Assessment concludes the increase in estimate equivalent persons generated by the proposed development is negligible compared to the estimated equivalent persons generated by the existing businesses currently operating from these lots. A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.
<b>PO20 New or changed access</b> to a <b>local road</b> within 100 metres of an intersection with a <b>state-controlled road</b> does not adversely impact on the operating performance of the intersection.	No acceptable outcome is prescribed.	Complies with PO20. The proposed new access is just within 100m of the intersection with a State Controlled Road. The ingress crossover is located approximately 65m north of the Davidson Street-Crimmins Street intersection and the egress crossover approximately 130m from the intersection.
		The Traffic Impact Assessment concludes the increase in estimate equivalent persons generated by the proposed development is negligible compared to the estimated equivalent persons generated by the existing businesses currently operating from these lots. A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.

Performance outcomes	Acceptable outcomes	Response
Public passenger transport and active transport		
<b>PO21</b> Development does not compromise the safety of users of <b>public passenger transport</b>	No acceptable outcome is prescribed.	Complies with PO21.
infrastructure, public passenger services and active transport infrastructure.		There is no impact on or changes to public passenger transport infrastructure, public passenger services and active transport infrastructure.
<b>PO22</b> Development maintains the ability for people to access <b>public passenger transport</b> <b>infrastructure, public passenger services</b> and <b>active transport infrastructure</b> .	No acceptable outcome is prescribed.	Complies with PO22. There is no impact on or changes to public passenger transport infrastructure, public passenger services and active transport infrastructure.
<b>PO23</b> Development does not adversely impact the operating performance of <b>public passenger transport infrastructure, public passenger services</b> and <b>active transport infrastructure</b> .	No acceptable outcome is prescribed.	Complies with PO23. There is no impact on or changes to public passenger transport infrastructure, public passenger services and active transport infrastructure.
<b>PO24</b> Development does not adversely impact the <b>structural integrity</b> or physical condition of <b>public passenger transport infrastructure</b> and <b>active transport infrastructure</b> .	No acceptable outcome is prescribed.	Complies with PO24. There is no impact on or changes to public passenger transport infrastructure, public passenger services and active transport infrastructure.

## Table 1.3 Network impacts

Performance outcomes	Acceptable outcomes	Response
<b>PO25</b> Development does not compromise the safety of users of the <b>state-controlled road</b>	No acceptable outcome is prescribed.	Complies with PO25.
network.		This proposal is a redevelopment of an existing and operational tourism accommodation venture.

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Performance outcomes	Acceptable outcomes	Response
		The Traffic Impact Assessment concludes the increase in estimate equivalent persons generated by the proposed development is negligible compared to the estimated equivalent persons generated by the existing businesses currently operating from these lots.
		A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.
<b>PO26</b> Development ensures <b>no net worsening</b> of the operating performance of the <b>state</b> controlled	No acceptable outcome is prescribed.	Complies with PO26.
road network.		This proposal is a redevelopment of an existing and operational tourism accommodation venture.
		The Traffic Impact Assessment concludes the increase in estimate equivalent persons generated by the proposed development is negligible compared to the estimated equivalent persons generated by the existing businesses currently operating from these lots.
		A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.
<b>PO27</b> Traffic movements are not directed onto a	No acceptable outcome is prescribed.	Complies with PO27.
accommodated on the <b>local road</b> network.		The Development fronts and in accessed from the Davidson Street service road which is adjacent the State Controlled Port Douglas Road/Davidson Street.

Performance outcomes	Acceptable outcomes	Response
		The traffic movements generated by the proposed development are consistent with the existing onsite development.
		Servicing and access is also provided from Crimmins Street which forms part of the local road network.
		A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.
<b>PO28</b> Development involving haulage exceeding 10,000 tonnes per year does not adversely impact the pavement of a <b>state-controlled road</b> .	No acceptable outcome is prescribed.	Not applicable.
PO29 Development does not impede delivery of planned upgrades of state-controlled roads	No acceptable outcome is prescribed.	Complies with PO29.
		There are no known planned upgrades of Davidson Street.
<b>PO30</b> Development does not impede delivery of <b>corridor improvements</b> located entirely within	No acceptable outcome is prescribed.	Complies with PO30.
the state-controlled road corridor.		There are no known planned upgrades of Davidson Street.

## Table 1.4 Filling, excavation, building foundations and retaining structures

Performance outcomes	Acceptable outcomes	Response
<b>PO31</b> Development does not create a safety hazard for users of the <b>state-controlled road</b> or	No acceptable outcome is prescribed.	Complies with PO31.
road transport infrastructure.		The proposed development fronts the service road which is adjacent the primary State controlled road.
		A supporting Civil Engineering Report is provided as Attachment 5.

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Performance outcomes	Acceptable outcomes	Response
<b>PO32</b> Development does not adversely impact the operating performance of the <b>state-controlled</b>	No acceptable outcome is prescribed.	Complies with PO32.
road.		The proposed development fronts the service road which is adjacent the primary State controlled road.
		A supporting Civil Engineering Report is provided as Attachment 5.
<b>PO33</b> Development does not undermine, damage or cause subsidence of a <b>state-controlled road</b> .	No acceptable outcome is prescribed.	Complies with PO33.
		The proposed development fronts the service road which is adjacent the primary State controlled road.
		A supporting Civil Engineering Report is provided as Attachment 5. This is further supported by a Geotechnical Assessment provided at Attachment 7.
<b>PO34</b> Development does not cause ground water disturbance in a <b>state-controlled road</b> .	No acceptable outcome is prescribed.	Complies with PO34.
		The proposed development fronts the service road which is adjacent the primary State controlled road.
		A supporting Civil Engineering Report is provided as Attachment 5. This is further supported by a Geotechnical Assessment provided at Attachment 7.
<b>PO35</b> Excavation, boring, piling, blasting and fill compaction do not adversely impact the physical	No acceptable outcome is prescribed.	Complies with PO35.
condition or structural integrity of a state- controlled road or road transport infrastructure.		The proposed development fronts the service road which is adjacent the primary State controlled road.
		A supporting Civil Engineering Report is provided as Attachment 5. This is further

Performance outcomes	Acceptable outcomes	Response
		supported by a Geotechnical Assessment provided at Attachment 7.
<b>PO36</b> Filling and excavation associated with the construction of <b>new or changed access</b> do not compromise the operation or capacity of existing drainage infrastructure for a <b>state-controlled road</b> .	No acceptable outcome is prescribed.	Complies with PO36. The proposed development fronts the service road which is adjacent the primary State controlled road. Limited filling and excavation are required for the construction of the changed access. A supporting Civil Engineering Report is provided as Attachment 5. This is further supported by a Geotechnical Assessment provided at Attachment 7.

## **Table 1.5 Environmental emissions**

Statutory note: Where a **state-controlled road** is co-located in the same transport corridor as a railway, the development should instead comply with Environmental emissions in State code 2: Development in a railway environment.

Performance outcomes	Acceptable outcomes	Response
Reconfiguring a lot		
Involving the creation of 5 or fewer new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor		
PO37 Development minimises free field noise	<b>AO37.1</b> Development provides a noise barrier or	Not Applicable.
intrusion from a state-controlled road.	earth mound which is designed, sited and	
	constructed:	
	1. to achieve the maximum free field acoustic	
	levels in reference table 2 (item 2.1);	
	2. in accordance with:	
	a. Chapter 7 integrated noise barrier design	
	of the Transport Noise Management	
	Code of Practice: Volume 1 (Road Traffic	
	Noise), Department of Transport and	
	Main Roads, 2013;	
	b. Technical Specification-MRTS15 Noise	
	Fences, Transport and Main Roads,	
	2019;	

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Performance outcomes	Acceptable outcomes	Response
	c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020.	
	OR	
	<b>AO37.2</b> Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by <b>alternative noise attenuation measures</b> where it is not practical to provide a noise barrier or earth mound.	
	OR	
	AO37.3 Development provides a solid gap-free	
	fence or other solid gap-free structure along the full extent of the boundary closest to the state-	
	controlled road.	
Involving the creation of 6 or more new resident	tial lots adjacent to a state-controlled road or type	1 multi-modal corridor
<b>PO38</b> Reconfiguring a lot minimises free field	AO38.1 Development provides noise barrier or	Complies with PO38.
noise intrusion from a state-controlled road.	earth mound which is designed, sited and	
	constructed:	The Development adopts a built design
	1. to achieve the maximum free field acoustic	response to achieving the field acoustic levels
	2 in accordance with:	as a mound is not practical.
	<ul> <li>a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise) Department of Transport and</li> </ul>	In addition, Davidson Street functions as a local road network despite being a state-controlled road.
	Main Roads 2013	There are no other examples of noise barriers
	b. Technical Specification-MRTS15 Noise	or earth mounds for residential or tourist
	Fences, Transport and Main Roads, 2019:	development fronting Davidson Street.
	c. Technical Specification-MRTS04 General	
	Earthworks, Transport and Main Roads, 2020.	

Performance outcomes	Acceptable outcomes	Response
	OR <b>AO38.2</b> Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by <b>alternative noise attenuation measures</b> where it is not practical to provide a noise barrier or earth mound.	
Material change of use (accommodation activity Ground floor level requirements adjacent to a st	) ate-controlled road or type 1 multi-modal corrido	r
PO39 Development minimises noise intrusion from a state-controlled road in private open space.	<ul> <li>AO39.1 Development provides a noise barrier or earth mound which is designed, sited and constructed:</li> <li>1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.2) for private open space at the ground floor level;</li> <li>2. in accordance with: <ul> <li>a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013;</li> <li>b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019;</li> <li>c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020.</li> </ul> </li> </ul>	Complies with PO39. The Development adopts a built design response to achieving the field acoustic levels as a mound is not practical. In addition, Davidson Street functions as a local road network despite being a state- controlled road. There are no other examples of noise barriers or earth mounds for residential or tourist development fronting Davidson Street.
	OR AO39.2 Development achieves the maximum free field acoustic level in reference table 2 (item 2.2) for <b>private open space</b> by <b>alternative noise</b>	

Performance outcomes	Acceptable outcomes	Response
	<b>attenuation measures</b> where it is not practical to provide a noise barrier or earth mound.	
PO40 Development (excluding a relevant residential building or relocated building) minimises noise intrusion from a state- controlled road in habitable rooms at the facade.	<ul> <li>AO40.1 Development (excluding a relevant residential building or relocated building) provides a noise barrier or earth mound which is designed, sited and constructed:</li> <li>1. to achieve the maximum building façade acoustic level in reference table 1 (item 1.1) for habitable rooms;</li> <li>2. in accordance with: <ul> <li>a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic</li> </ul> </li> </ul>	Complies with PO40. The Development adopts a built design response to achieving the field acoustic levels as a mound is not practical. In addition, Davidson Street functions as a local road network despite being a state- controlled road. There are no other examples of noise barriers
	<ul> <li>Noise), Department of Transport and Main Roads, 2013;</li> <li>b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019;</li> <li>c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020.</li> </ul>	or earth mounds for residential or tourist development fronting Davidson Street.
	AO40.2 Development (excluding a relevant residential building or relocated building) achieves the maximum building façade acoustic level in reference table 1 (item 1.1) for habitable rooms by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	
<b>PO41 Habitable rooms</b> (excluding a <b>relevant</b> <b>residential building</b> or <b>relocated building</b> ) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).	No acceptable outcome is provided.	Complies with PO41. Habitable rooms will be designed to achieve appropriate internal acoustic levels

Performance outcomes	Acceptable outcomes	Response
Above ground floor level requirements (accomm	nodation activity) adjacent to a state-controlled ro	ad or type 1 multi-modal corridor
<ol> <li>PO42 Balconies, podiums, and roof decks include:</li> <li>a continuous solid gap-free structure or balustrade (excluding gaps required for drainage purposes to comply with the Building Code of Australia);</li> <li>highly acoustically absorbent material treatment for the total area of the soffit above balconies, podiums, and roof decks.</li> </ol>	No acceptable outcome is provided.	Complies with PO42. The Development adopts a built design response to achieving the field acoustic levels as a mound is not practical. In addition, Davidson Street functions as a local road network despite being a state- controlled road.
<ul> <li>PO43 Habitable rooms (excluding a relevant residential building or relocated building) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).</li> <li>Material change of use (other uses)</li> </ul>	No acceptable outcome is provided.	Complies with PO43. Habitable rooms will be designed to achieve appropriate internal acoustic levels
Ground floor level requirements (childcare centri corridor	re, educational establishment, hospital) adjacent	to a state-controlled road or type 1 multi-modal
<ul> <li>PO44 Development:</li> <li>1. provides a noise barrier or earth mound that is designed, sited and constructed: <ul> <li>a. to achieve the maximum free field acoustic level in reference table 2 (item 2.3) for all outdoor education areas and outdoor play areas;</li> <li>b. in accordance with: <ul> <li>i. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013;</li> <li>ii. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019;</li> </ul> </li> </ul></li></ul>	No acceptable outcome is provided.	Not applicable.

Pe	rformance outcomes	Acceptable outcomes	Response
	iii. Technical Specification-MRTS04		
	General Earthworks, Transport		
_	and Main Roads, 2020; or		
2.	achieves the maximum free field acoustic		
	level in reference table 2 (item 2.3) for all		
	outdoor education areas and outdoor		
	play areas by alternative noise		
	attenuation measures where it is not		
	practical to provide a noise partier or earth		
	mound.	No accontable outcome is provided	Not applicable
ore	ducational establishment	No acceptable outcome is provided.	Not applicable.
1	provides a noise barrier or earth mound that		
	is designed, sited and constructed:		
2.	to achieve the maximum building facade		
	acoustic level in reference table 1 (item		
	1.2);		
3.	in accordance with:		
	a. Chapter 7 integrated noise barrier design		
	of the Transport Noise Management		
	Code of Practice: Volume 1 (Road Traffic		
	Noise), Department of Transport and		
	Main Roads, 2013;		
	<ul> <li>b. Technical Specification-MRTS15 Noise</li> </ul>		
	Fences, Transport and Main Roads,		
	2019;		
	c. Technical Specification-MRTS04 General		
	Earthworks, Transport and Main Roads,		
4	2020, Of		
4.	achieves the maximum building lacade		
	1.2) by alternative noise attenuation		
	measures where it is not practical to provide		
	a noise barrier or earth mound		
PO	46 Development involving:	No acceptable outcome is provided	Not applicable.
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Performance outcomes	Acceptable outcomes	Response
1. indoor education areas and indoor play		
areas; or		
<ol><li>sleeping rooms in a childcare centre; or</li></ol>		
<ol><li>patient care areas in a hospital achieves the</li></ol>	e	
maximum internal acoustic level in reference		
table 3 (items 3.2-3.4).		
Above ground floor level requirements (childo modal corridor	are centre, educational establishment, hospital) ac	ljacent to a state-controlled road or type 1 multi-
PO47 Development involving a childcare centre	No acceptable outcome is provided.	Not applicable.
or educational establishment which have		
balconies, podiums or elevated <b>outdoor play</b>		
areas predicted to exceed the maximum free		
field acoustic level in reference table 2 (item 2.3)		
due to noise from a <b>state-controlled road</b> are		
provided with:		
1. a continuous <b>solid gap-free structure</b> or		
balustrade (excluding gaps required for		
drainage purposes to comply with the Building	1	
Code of Australia);		
2. nighty acoustically absorbent material		
treatment for the total area of the solid above		
Datcomes of elevated <b>outdoor play areas</b> .	No accontable autoema is provided	Not applicable
1 indeer education areas and indeer play	No acceptable outcome is provided.	Not applicable.
areas in a childcare centre or educational		
establishment: or		
2 sleeping rooms in a <b>childcare centre</b> : or		
3. patient care areas in a hospital located		
above ground level, is designed and		
constructed to achieve the maximum internal		
acoustic level in reference table 3 (items 3.2-		
3.4).		
Air, light and vibration		

Performance outcomes	Acceptable outcomes	Response
PO49 Private open space, outdoor education areas and outdoor play areas are protected from air quality impacts from a state-controlled road.	AO49.1 Each dwelling or unit has access to a private open space which is shielded from a state-controlled road by a building, solid gap-free fence, or other solid gap-free structure.	Not applicable.
	OR	
	AO49.2 Each outdoor education area and outdoor play area is shielded from a state- controlled road by a building, solid gap-free fence, or other solid gap-free structure.	
PO50 Patient care areas within hospitals are protected from vibration impacts from a state- controlled road or type 1 multi-modal corridor.	<b>AO50.1 Hospitals</b> are designed and constructed to ensure vibration in the patient treatment area does not exceed a vibration dose value of 0.1m/s <sup>1.75</sup> .	Not applicable.
	AND	
	<b>AO50.2 Hospitals</b> are designed and constructed to ensure vibration in the ward of a <b>patient care area</b> does not exceed a vibration dose value of 0.4m/s <sup>1.75</sup> .	
<b>PO51</b> Development is designed and sited to ensure light from infrastructure within, and from users of, a <b>state-controlled road</b> or <b>type 1 multi-</b>	No acceptable outcomes are prescribed.	Not applicable.
modal corridor, does not:		
to 6am);		
<ol> <li>create unreasonable disturbance during evening hours (6pm to 10pm).</li> </ol>		

## Table 1.6: Development in a future state-controlled road environment

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Performance outcomes	Acceptable outcomes	Response
<b>PO52</b> Development does not impede delivery of a <b>future state-controlled road</b> .	AO52.1 Development is not located in a future state-controlled road.	Not applicable.
	OR ALL OF THE FOLLOWING APPLY:	
	<b>AO52.2</b> Development does not involve filling and excavation of, or material changes to, a <b>future state-controlled road</b> .	
	AND	
	<b>AO52.3</b> The intensification of lots does not occur within a <b>future state-controlled road</b> .	
	AND	
	AO52.4 Development does not result in the landlocking of parcels once a future state-controlled road is delivered.	
<b>PO53</b> The location and design of <b>new or</b> <b>changed access</b> does not create a safety hazard for users of a <b>future state-controlled road</b> .	AO53.1 Development does not include <b>new or</b> changed access to a future state-controlled road.	Not applicable.
<b>PO54</b> Filling, excavation, building foundations and <b>retaining structures</b> do not undermine, damage or cause subsidence of a <b>future state-controlled road</b> .	No acceptable outcome is prescribed.	Not applicable.
<b>PO55</b> Development does not result in a material worsening of stormwater, flooding, overland flow or drainage impacts in a <b>future state-controlled road</b> or <b>road transport infrastructure</b> .	No acceptable outcome is prescribed.	Not applicable.
<b>PO56</b> Development ensures that stormwater is lawfully discharged.	<b>AO56.1</b> Development does not create any new points of discharge to a <b>future state-controlled road</b> .	Not applicable.

Performance outcomes	Acceptable outcomes	Response
	AND	
	<b>AO56.2</b> Development does not concentrate flows to a <b>future state-controlled road</b> .	
	AND	
	AO56.3 Stormwater run-off is discharged to a lawful point of discharge.	
	AND	
	<b>AO56.4</b> Development does not worsen the condition of an existing <b>lawful point of discharge</b>	
	to the future state-controlled road.	

## **State code 6: Protection of state transport networks**

## Table 6.2 Development in general

Performance outcomes	Acceptable outcomes	Response
Network impacts		
<b>PO1</b> Development does not compromise the safety of users of the <b>state-controlled road</b>	No acceptable outcome is prescribed.	Complies with PO1.
network.		The development fronts Davidson Street
		(service road) which accessed the State-
		Street from the Crimmins Street and Port
		Street intersections.
		The existing development has three (3) separate access locations to Davidson Street (service road).
		The proposed development consolidates a single ingress and egress to Davidson Street (service road) central to the site. Servicing is also provided from Crimmins Street.
		Davidson Street (service road) is a straight road with a low speed environment and no impediments to site lines.
		The proposed new access locations are between 65m and 130m to the closest intersection with Crimmins Street.
		Additionally, the Traffic Impact Assessment concludes the increase in estimate equivalent persons generated by the proposed
		estimated equivalent persons generated by

Performance outcomes	Acceptable outcomes	Response
		the existing businesses currently operating
		from these lots.
		A detailed Traffic Impact Assessment is
		provided as Attachment 6 Civil Design is
		provided as Attachment 5.
PO2 Development does not adversely impact	No acceptable outcome is prescribed	Complies with PO2
the structural integrity or physical condition of a		
state-controlled road or road transport		The proposed development fronts the service
infrastructure		road which is adjacent the primary State
		controlled road.
		A supporting Civil Engineering Report is
		provided as Attachment 5. This is further
		supported by a Geotechnical Assessment
		provided at Attachment 7.
PO3 Development ensures no net worsening of	No acceptable outcome is prescribed.	Complies with PO3.
the operating performance the <b>state-controlled</b>		
road network.		This proposal is a redevelopment of an
		existing and operational tourism
		accommodation venture
		The Traffic Impact Assessment concludes the
		increase in estimate equivalent persons
		generated by the proposed development is
		negligible compared to the estimated
		equivalent persons generated by the existing
		businesses currently operating from these
		lots.
		A detailed Traffic Impact Assessment is
		provided as Attachment 6. Civil Design is
		provided as Attachment 5.
<b>PO4</b> Traffic movements are not directed onto a	No acceptable outcome is prescribed.	Complies with PO4.
state-controlled road where they can be		
accommodated on the local road network.		The Development fronts and is accessed
		from the Davidson Street service road which
		is adjacent the State Controlled Port Douglas
		Road/Davidson Street.

Performance outcomes	Acceptable outcomes	Response
		The traffic movements generated by the proposed development are consistent with the existing onsite development. Servicing and access is also provided from Crimmins Street which forms part of the local road network.
		A detailed Traffic Impact Assessment is provided as Attachment 6. Civil Design is provided as Attachment 5.
<b>PO5</b> Development involving haulage exceeding 10,000 tonnes per year does not damage the pavement of a <b>state-controlled road</b> .	No acceptable outcome is prescribed.	Not applicable.
<b>PO6</b> Development does not require a new <b>railway</b> level crossing.	No acceptable outcome is prescribed.	Not applicable.
<b>PO7</b> Development does not adversely impact the operating performance of an existing <b>railway crossing</b> .	No acceptable outcome is prescribed.	Not applicable.
<b>PO8</b> Development does not adversely impact on the safety of an existing <b>railway crossing</b> .	No acceptable outcome is prescribed.	Not applicable.
<b>PO9</b> Development is designed and constructed to allow for on-site circulation to ensure vehicles do not queue in a <b>railway crossing</b> .	No acceptable outcome is prescribed.	Not applicable.
<b>PO10</b> Development does not create a safety hazard within the <b>railway corridor</b> .	No acceptable outcome is prescribed.	Not applicable.
<b>PO11</b> Development does not adversely impact the operating performance of the <b>railway corridor</b> .	No acceptable outcome is prescribed.	Not applicable.
<b>PO12</b> Development does not interfere with or obstruct the <b>railway transport infrastructure</b> or <b>other rail infrastructure</b> .	No acceptable outcome is prescribed.	Not applicable.
<b>PO13</b> Development does not adversely impact the structural integrity or physical condition of a <b>railway corridor</b> or <b>rail transport</b> <b>infrastructure</b> .	No acceptable outcome is prescribed.	Not applicable.
Stormwater and overland flow		
<b>PO14</b> Stormwater run-off or overland flow from the development site does not create or	No acceptable outcome is prescribed.	Complies with PO14.

Performance outcomes	Acceptable outcomes	Response
exacerbate a safety hazard for users of a state transport corridor or state transport infrastructure.		Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of the state-controlled road.
		The flood modelling concludes that base on a 1% AEP Design Event peak flood depth (m) for the 2100 climate case for Port Douglas there is no worsening effect on surrounding properties or the State Controlled road.
		A supporting civil engineering report is provided as Attachment 5. A detailed flood study is provided at Attachment 8. The Site's hydraulic design is provided at Attachment 9.
<b>PO15</b> Stormwater run-off or overland flow from the development site does not result in a material worsening of operating performance of a <b>state transport corridor</b> or <b>state transport</b> <b>infrastructure</b> .	No acceptable outcome is prescribed.	Complies with PO15. Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of the state-controlled road.
		The flood modelling concludes that base on a 1% AEP Design Event peak flood depth (m) for the 2100 climate case for Port Douglas there is no worsening effect on surrounding properties or the State Controlled road.
		A supporting civil engineering report is provided as Attachment 5. A detailed flood study is provided at Attachment 8. The Site's hydraulic design is provided at Attachment 9.
<b>P016</b> Stormwater run-off or overland flow from the development site does not interfere with the structural integrity or physical condition of the state transport corridor or state transport infrastructure.	No acceptable outcome is prescribed.	Complies with PO16. The flood modelling concludes that base on a 1% AEP Design Event peak flood depth (m) for the 2100 climate case for Port Douglas there is no worsening effect on surrounding properties or the State Controlled road.

Performance outcomes	Acceptable outcomes	Response
		A supporting civil engineering report is provided as Attachment 5. A detailed flood study is provided at Attachment 8. The Site's hydraulic design is provided at Attachment 9.
PO17 Development associated with a state- controlled road or road transport infrastructure ensures that stormwater is lawfully discharged.	<ul> <li>AO17.1 Development does not create any new points of discharge to a state transport corridor or state transport infrastructure.</li> <li>AND</li> <li>AO17.2 Development does not concentrate flows to a state transport corridor.</li> <li>AND</li> <li>AO17.3 Stormwater run-off is discharged to a lawful point of discharge.</li> <li>AND</li> <li>AO17.4 Development does not worsen the condition of an existing lawful point of discharge to a state transport corridor or exist a transport corridor or exist a state transport corridor or exist a transport corridor or exist a transport corridor or exist a state transport corridor or exist a transport corri</li></ul>	Complies with AO17.1 – 17.4. The lawful point of discharge is to the rear of the site. A supporting civil engineering report is provided as Attachment 5. The Site's hydraulic design is provided at Attachment 9.
Flooding		
PO18 Development does not result in a material worsening of flooding impacts within a state transport corridor or state transport infrastructure	<ul> <li>For a state-controlled road or road transport infrastructure, all of the following apply:</li> <li>AO18.1 For all flood events up to 1% annual exceedance probability, development ensures there are negligible impacts (within +/- 10mm) to existing flood levels within a state transport corridor.</li> <li>AND</li> <li>AO18.2 For all flood events up to 1% annual exceedance probability, development ensures there are negligible impacts (up to a 10%</li> </ul>	Complies with AO18.1 – 18.3. The flood modelling concludes that base on a 1% AEP Design Event peak flood depth (m) for the 2100 climate case for Port Douglas there is no worsening effect on surrounding properties or the State Controlled road. A supporting civil engineering report is provided as Attachment 5. A detailed flood study is provided at Attachment 8. The Site's hydraulic design is provided at Attachment 9.

Performance outcomes	Acceptable outcomes	Response
	increase) to existing peak velocities within a <b>state transport corridor</b> .	
	AND	
	<b>AO18.3</b> For all flood events up to 1% annual exceedance probability, development ensures there are negligible impacts (up to a 10% increase) to existing time of submergence of a <b>state transport corridor</b> .	
	No acceptable outcome is prescribed for a railway corridor or rail transport infrastructure.	
Drainage infrastructure		
PO19 Drainage infrastructure does not create a safety hazard in a state transport corridor.	<ul> <li>For a state-controlled road environment, both of the following apply:</li> <li>AO19.1 Drainage infrastructure associated with, or in a state-controlled road is wholly contained within the development site, except at the lawful point of discharge.</li> <li>AND</li> <li>AO19.2 Drainage infrastructure can be maintained without requiring access to a state transport corridor.</li> <li>For a railway environment both of the following apply:</li> <li>AO19.3 Drainage infrastructure associated with a railway corridor or rail transport infrastructure is wholly contained within the development site.</li> </ul>	Complies with AO19.1 – 19.4. Drainage infrastructure is wholly contained within the site and can be maintained without access to the State Controlled Road. The lawful point of discharge is to the rear of the site and the site fronts the Davidson Street service road only. A supporting civil engineering report is provided as Attachment 5.
	AND	

Performance outcomes	Acceptable outcomes	Response
	AO19.4 Drainage infrastructure can be	
	maintained without requiring access to a <b>state</b>	
	transport corridor.	
<b>PO20</b> Drainage infrastructure associated with, or	No acceptable outcome is prescribed.	Complies with PO20.
in a state-controlled road or road transport		
infrastructure is constructed and designed to		No drainage infrastructure is proposed that is
ensure the structural integrity and physical		associated with or constructed in the State
condition of existing drainage infrastructure and		Controlled Road.
the surrounding drainage network is maintained.		
		A supporting civil engineering report is
		provided as Attachment 5.
Planned upgrades		
PO21 Development does not impede delivery of	No acceptable outcome is prescribed.	Complies with PO21.
planned upgrades of state transport		
infrastructure.		There are no known upgrades to Davidson
		Street.

## Table 6.3 Public passenger transport infrastructure and active transport

Performance outcomes	Acceptable outcomes	Response
<b>PO22</b> Development does not damage or interfere with <b>public passenger transport</b> <b>infrastructure</b> , <b>active transport infrastructure</b> or <b>public passenger services</b> .	No acceptable outcome is prescribed.	Complies with PO22. There is no impact on or changes to public passenger transport infrastructure, public passenger services and active transport infrastructure.
<b>PO23</b> Development does not compromise the safety of <b>public passenger transport infrastructure</b> , <b>public passenger services</b> and <b>active transport infrastructure</b> .	No acceptable outcome is prescribed.	Complies with PO23. There is no impact on or changes to public passenger transport infrastructure, public passenger services and active transport infrastructure.
<b>PO24</b> Development does not adversely impact the operating performance of <b>public passenger</b> <b>transport infrastructure</b> , <b>public passenger</b> <b>services</b> and <b>active transport infrastructure</b> .	No acceptable outcome is prescribed.	Complies with PO24. There is no impact on or changes to public passenger transport infrastructure, public

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Performance outcomes	Acceptable outcomes	Response
		passenger services and active transport infrastructure.
<b>PO25</b> Development does not adversely impact the structural integrity or physical condition of <b>public passenger transport infrastructure</b> and <b>active transport infrastructure</b> .	No acceptable outcome is prescribed.	Complies with PO25. There is no impact on or changes to public passenger transport infrastructure, public passenger services and active transport infrastructure.
PO26 Upgraded or new public passenger transport infrastructure and active transport infrastructure is provided to accommodate the demand for public passenger transport and active transport generated by the development.	No acceptable outcome is prescribed.	Not applicable.
PO27 Development is designed to ensure the location of public passenger transport infrastructure prioritises and enables efficient public passenger services.	No acceptable outcome is prescribed.	Not applicable.
<b>PO28</b> Development enables the provision or extension of <b>public passenger services</b> , <b>public</b> <b>passenger transport infrastructure</b> and <b>active</b> <b>transport infrastructure</b> to the development and avoids creating indirect or inefficient routes for <b>public passenger services</b> .	No acceptable outcome is prescribed.	Not applicable.
<b>PO29</b> New or modified road networks are designed to enable development to be serviced by <b>public passenger services</b> .	<ul> <li>AO29.1 Roads catering for buses are arterial or sub-arterial roads, collector or their equivalent.</li> <li>AND</li> <li>AO29.2 Roads intended to accommodate buses are designed and constructed in accordance with:</li> <li>1. Road Planning and Design Manual, 2nd Edition, Volume 3 – Guide to Road Design; Department of Transport and Main Roads;</li> <li>2. Supplement to Austroads Guide to Road Design (Parts 3, 4-4C and 6), Department of Transport and Main Roads;</li> </ul>	Not applicable.

Performance outcomes	Acceptable outcomes	Response
	<ol> <li>Austroads Guide to Road Design (Parts 3, 4- 4C and 6);</li> <li>Austroads Design Vehicles and Turning Path Templates;</li> <li>Queensland Manual of Uniform Traffic Control Devices, Part 13: Local Area Traffic Management and AS 1742.13-2009 Manual of Uniform Traffic Control Devices – Local Area Traffic Management;</li> </ol>	
	AND	
	<b>AO29.3</b> Traffic calming devices are not installed on roads used for buses in accordance with section 2.3.2 Bus Route Infrastructure, Public Transport Infrastructure Manual, Department of Transport and Main Roads, 2015.	
<b>PO30</b> Development provides safe, direct and convenient access to existing and future <b>public</b> <b>passenger transport infrastructure</b> and <b>active</b> <b>transport infrastructure</b> .	No acceptable outcome is prescribed.	Complies with PO30. The development will be serviced by access to the existing public passenger transport infrastructure and active transport infrastructure.
<b>PO31</b> On-site vehicular circulation ensures the safety of both <b>public passenger transport services</b> and pedestrians.	No acceptable outcome is prescribed.	Not applicable.
<b>PO32 Taxi facilities</b> are provided to accommodate the demand generated by the development.	No acceptable outcome is prescribed.	Complies with PO32. There is a setdown area associated with the Hotel.
<b>PO33</b> Facilities are provided to accommodate the demand generated by the development for community transport services, courtesy transport services, and <b>booked hire services</b> other than taxis.	No acceptable outcome is prescribed.	Complies with PO33. The site is well serviced by alternative transport options that are associated with most luxury hotel brands.

Performance outcomes	Acceptable outcomes	Response
PO34 Taxi facilities are located and designed to	AO34.1 A taxi facility is provided parallel to the	Complies with PO34.
provide convenient, safe and equitable access	kerb and adjacent to the main entrance.	
for		Taxi access is provided at the main foyer and
passengers.	AND	is not required parallel to the kerb at the main
		entrance.
	AO34.2 Taxi facilities are designed in	
	accordance with:	
	1. AS2890.5–1993 Parking facilities – on-street	
	parking and AS1428.1–2009 Design for	
	access and mobility – general requirements	
	for access – new building work;	
	2. AS1/42.11–1999 Parking controls – manual	
	of uniform traffic control devices	
	3. AS/NZS 2890.0-2009 Parking lacilities -01	
	Disability standards for accessible public	
	<ol> <li>Disability statual us for accessible public</li> <li>transport 2002 made under section 31(1) of</li> </ol>	
	the Disability Discrimination Act 1992:	
	$6  AS/NZS \ 1158 \ 3 \ 1 - 1 \ ighting for roads and$	
	nublic spaces Part 3.1: Pedestrian area	
	(category P) lighting – Performance and	
	design requirements:	
	7. Chapter 7 Taxi Facilities, Public Transport	
	Infrastructure Manual, Department of	
	Transport and Main Roads, 2015.	
PO35 Educational establishments are designed	AO35.1 Educational establishments are	Not applicable.
to ensure the safe and efficient operation of	designed in accordance with the provisions of	••
public passenger services, pedestrian and	the Planning for Safe Transport Infrastructure at	
cyclist access and active transport	Schools, Department of Transport and Main	
infrastructure.	Roads, 2011.	