

23 August 2019

**CHIEF EXECUTIVE OFFICER
CITY OF GOLD COAST
PO BOX 5042
GOLD COAST MC 9729**

Attention: Planning, Building and Development Assessment

icubed consulting
innovation ingenuity inspiration
ABN 89 106 675 156

Dear Sir/Madam,

RE OPERATIONAL WORKS PERMIT (LANDSCAPING ON PRIVATE AND PUBLIC LAND AND VEGETATION CLEARING – TREE WORKS DEVELOPMENT) ON LAND DESCRIBED AS LOT 334 SP193431, LOCATED AT 84-160 CHRISTENSEN ROAD SOUTH, STAPYLTON.

ASSOCIATED DEVELOPMENT APPROVAL: RECONFIGURING A LOT – ONE (1) INTO SEVENTEEN (17) COMMUNITY TITLE SCHEME LOTS (SUBDIVISION) – COUNCIL REFERENCE: ROL201800026.

On behalf of the applicant, *MS Projects*, please find enclosed our application for a development permit for Operational Works (Landscaping on Private Land and Vegetation Clearing), over land currently described as Lot 334 on SP193431, located at 84-160 Christensen Road South, Stapylton, which includes the following documentation for your assessment;

1. Development Approval Conditions: ROL201800026;
2. DA Form 1;
3. City of Gold Coast Forms:
 - a. Application for Operational Works
4. Landscape Plans prepared by *i³ consulting pty ltd* (Appendix A);
5. Council Code Compliance (Appendix B);
6. Vegetation Management Plan prepared by *i³ consulting pty ltd* (Appendix C);
7. Pre-Clearing Report prepared by *i³ consulting pty ltd* (Appendix D);
8. Approved Bushfire Management Plan prepared by *Land and Environment Consultants* (Appendix E);
9. Erosion and Sediment Controls Plans prepared by *i³ consulting pty ltd* (Appendix F); and
10. Rehabilitation Management Plan prepared by *i³ consulting pty ltd* (Appendix G).

This application is for Operational Works (Landscaping on Private Land and Vegetation Clearing) over the site for development approval ROL201800026 for a reconfiguring a lot - one (1) into seventeen (17) community title scheme lots (subdivision), which was approved by *Gold Coast City Council* on the 2nd November, 2018 (Council Reference: ROL201800026).

Development Approval ROL201800026 conditions specifically requiring an operational works application for landscaping and vegetation clearing are tabulated below;

Condition No.	Condition	Response										
Environmental and Landscaping												
9	Landscaping works on private land a. In relation to the Stormwater Management Detention Basin and Wetlands within common property and within the subject site, obtain an operational works approval to landscape the site generally in accordance with the Statement of Landscape Intent listed below, prior to a request is made to Council to approve the plan of subdivision at no cost to Council: <table><tr><th>Drawing Title</th><th>Author</th><th>Date</th><th>Drawing No.</th><th>Ver</th></tr><tr><td>Water Quality Plant</td><td>i3 consulting pty ltd</td><td>15/09/17</td><td>DA02</td><td>A</td></tr></table> and include in particular: i. Planting to the allotment designated for stormwater management and treatment. ii. The locations and cross section of all proposed bio-retention systems as required by the sites approved Stormwater Management Plan and identify: Proposed filter media depths, surface treatments and planting species and densities. b. Construct and maintain the private landscaping identified above at no cost to Council at all times.	Drawing Title	Author	Date	Drawing No.	Ver	Water Quality Plant	i3 consulting pty ltd	15/09/17	DA02	A	Complies a. This application seeks approval for Operational Works (Landscaping and Vegetation Clearing) within the Wetlands and common property area within the subject site. It can be noted that the Landscape Plans have been prepared generally in accordance with the Water Quality Plant drawing prepared by i3 consulting pty ltd, dated 15th September, 2019. Refer to Appendix A – Landscape Plans for further details. b. The proposed landscaping will be constructed and maintained at no cost to Council at all times. Refer to Landscaping Notes (item 7) on the L01- Landscaping Plan, within Appendix A. It can be noted that the proposed operational works have been prepared in accordance with the applicable codes sought within the <i>Gold Coast City Plan, Version 6</i>. For further details please refer to Appendix B – Council Code Compliance.
Drawing Title	Author	Date	Drawing No.	Ver								
Water Quality Plant	i3 consulting pty ltd	15/09/17	DA02	A								

10	Vegetation clearing Obtain an operational works approval for vegetation clearing in accordance with the Vegetation management code of the City Plan, prior to a request is made to Council to approve the plan of subdivision for stage 1 at no cost to Council: and include in particular: i. The approved bushfire management plan. ii. A vegetation management plan. iii. A sediment and erosion control and construction management plan. iv. A letter from an EPA approved spotter catcher and any necessary fauna management plan or a QPWS endorsed fauna translocation management plan.	This application seeks approval for Operational Works for vegetation clearing, which includes the following for assessment; i. Approved Bushfire Management Plan prepared by <i>Land and Environment Consultants</i>. It can be noted that the Bushfire Management Plan was approved as part of the associated Reconfiguring a Lot Application (Council Ref: PN307555/02/DA11). Refer to Appendix E of this submission for further details. ii. A Vegetation Management Plan has been prepared by a suitably qualified consultant (CEnvP Ecologist). Refer to Appendix C for further details. iii. A sediment and erosion control can be found within Appendix F of this application. It can be noted that the proposed Sediment and Erosion Control Plans have been prepared by a RPEQ in accordance with the requirements sought within Condition 10. It can be noted that a Construction Management Plan will be prepared prior to the commencement of
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		works onsite, which can be conditioned as part of this application. iv. A letter and Fauna Management Plan from an EPA approved spotter catcher has been prepared. Refer to Appendix D of this submission for further details.
11	Landscaping woks within public open spaces a. Prior to a request is made to Council to approve the plan of subdivision for Stage 1 at no cost to Council And include in particular: i. Detail of an approved Rehabilitation Management Plan; ii. Landscape Works to all areas of public open space including stormwater infrastructure; iii. All built structures and planting associated with an entry statement must be located within private property; iv. Provide annual maintenance costings for all landscape items relevant to the development for the duration of the 'establishment' and 'on maintenance' period; and v. Detail of all access infrastructure to public open space including gates, fences and bollards. b. Construct and maintain the public open space identified above until the asset is accepted "off maintenance" by the City in accordance with the procedures in City Planning Policy SC6.9 – Land development guidelines, section 6.9.6.	This application seeks approval for Operational Works (Landscaping and Vegetation Clearing) and includes the following information; i. A rehabilitation management plan was lodged to Gold Coast City Council on the 29th August, 2019 (Council Reference Number: EMP/2019/91). The Rehabilitation Management Plan has been provided within Appendix G for further details. ii. Please refer to the rehabilitation management plan within Appendix G, which details the proposed rehabilitation within public open spaces (conservation buffer). The Landscape Plans within Appendix A detail the proposed Landscaping within the Detention Basin/ Wetland. iii. No built structures and planting associated with an entry statement

		is proposed as part of this application. iv. Annual maintenance costings will be provided in accordance with Condition 11. v. No access infrastructure to public open spaces (gates, fences and bollards) is proposed as part of this application.
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In addition to the above, Advice Notice E of ROL20180026 is applicable for this application, and has been tabulated below;

Advice Note	Advice Note	Response
Advice Note E	Further development permits/ compliance permits. Further development permits and/or compliance permits from Council are required to facilitate the development of the approved works identified in this decision notices. These include: Landscape Assessment - Operational Works – Landscape works Environmental Assessment - Operational Works – vegetation clearing	Complies This application seeks approval for Operational Works – Landscape works and Operational Works – Vegetation clearing. The proposed operational works have been prepared in accordance with the applicable codes sought within the <i>Gold Coast City Plan, Version 6</i>. For further details please refer to Appendix B – Council Code Compliance.

As per Section 5.8 of the *Gold Coast City Plan, Version 6.*, the proposed operational works application for landscape works and vegetation clearing triggers code assessment against the applicable assessment benchmarks identified within Table 5.8.3 and Table 5.8.4. Refer to the tables below for further details.

Development Activity	Assessment Category	Applicable Codes	Response
Operational Work- vegetation clearing			
Operational works – vegetation clearing that results in damage to assessable vegetation where not identified as a required outcome in Part A of the Vegetation management code	Code Assessment	- Airport Environs Overlay Code - Flood Overlay Code - Landslide Hazard Overlay Code - Healthy Waters Code - General development provisions code - Vegetation management code	Complies The proposed operational works application triggers code assessment, given that the proposed operational works results in damage to assessable vegetation being the vegetation on site that is greater than 4 metres in height. Assessment has been undertaken against the relevant assessment benchmarks stipulated within the <i>Gold Coast City Plan, Version 6</i>. For further details regarding compliance against the applicable assessment benchmarks, please refer to Appendix B of this submission.
Operational Work- landscape works			
Operational works – landscape works	Code Assessment	- High Impact Industry Zone Code - Airport Environs Overlay Code - Flood Overlay Code - Landslide Hazard Overlay Code - Healthy Waters Code - General development provisions Code - Landscape work Code	Complies The proposed operational works application triggers code assessment, given that the proposed operational works are neither minor nor associated with a dwelling house or caretaker's residence. Assessment has been undertaken against the relevant assessment benchmarks stipulated within the <i>Gold Coast City Plan, Version 6</i>. For further details regarding compliance against the applicable assessment benchmarks, please refer to Appendix B of this submission.

As per the above justification and supporting documentation, the proposed operational works are deemed compliant against the applicable assessment benchmarks and standards sought within the *Gold Coast City Plan, Version 6*.

The monetary value of the proposed operational works onsite is **\$132,515.00**, and thus the portable long service levy is not applicable in this instance given that the construction works do not exceed the QLeave threshold of \$150,000.000.

Given the above supporting material, we submit that this operational works (landscaping and vegetation clearing) application should be **APPROVED**.

Should you require any further information, please do not hesitate to contact Katherine Leggett on 07 3870 8888.

Yours faithfully,



Natasha Gouriev
Town Planner
i³ consulting pty ltd

Encl.

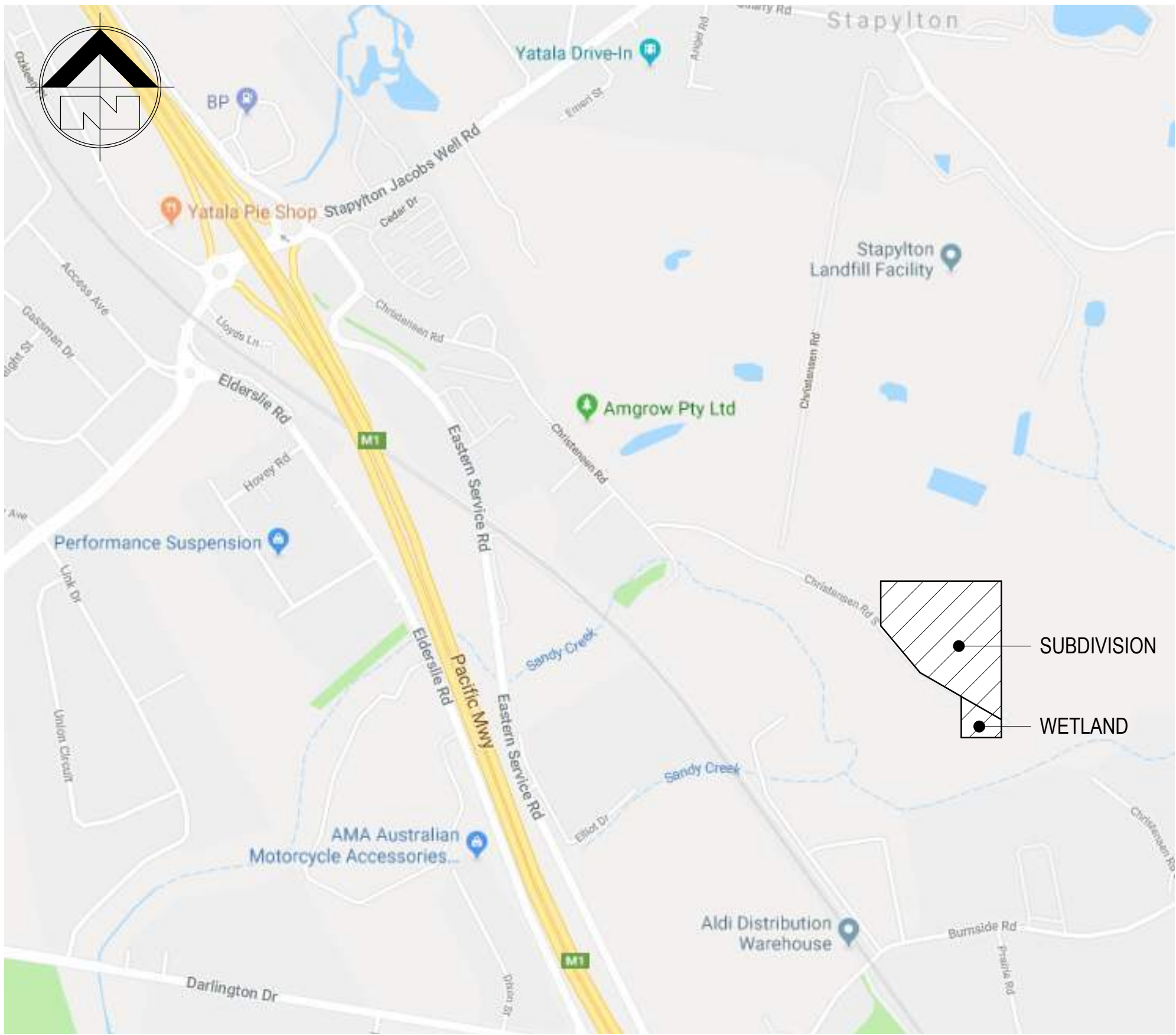
Landscape Plans prepared by *i³ consulting pty ltd* (Appendix A);
Council Code Compliance (Appendix B);
Vegetation Management Plan prepared by *i³ consulting pty ltd* (Appendix C);
Pre-Clearing Report prepared by *i³ consulting pty ltd* (Appendix D);
Approved Bushfire Management Plan prepared by *Land and Environment Consultants* (Appendix E);
Erosion and Sediment Control Plans prepared by *i³ consulting pty ltd* (Appendix F); and
Rehabilitation Management Plan prepared by *i³ consulting pty ltd* (Appendix G).



Landscape Plans prepared by *i³ consulting pty ltd* (Appendix A);



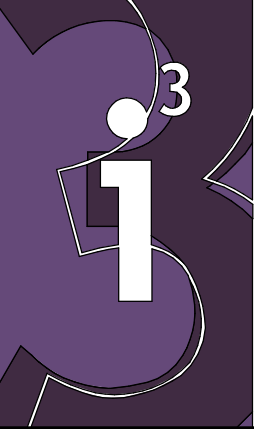
1 LANDSCAPE OVERALL SUBDIVISION PLAN
1 : 1000



2 LANDSCAPE LOCALITY PLAN
NTS

PROJECT TEAM

Consulting Engineer:



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A	COUNCIL APPROVAL	13.08.2019	N.G.
REV	DESCRIPTION	DATE	BY
Status			
FOR TENDER			
Project			
PROPOSED SUBDIVISION AT 86-160 CHRISTENSEN ROAD SOUTH, STAPYLTON for BURNSIDE DEVELOPMENT P/L & YELLOWSTONE INVESTMENTS P/L			
Title			
LANDSCAPE SITE & LOCALITY PLAN			
Drawn	Date	Chkd	Date
N.G.	13.08.2019	R.J.	
Design	Date	Apprd	Date
Designer			
Scale	A1	Certif	Date
1 : 1000			
Project No.	Dwg. No.	Rev	
17-209	L00	A	
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ACN 106 675 156

LANDSCAPING NOTES

1. PLANT SPACING AND DENSITY - REFER TO PLANTING SCHEDULE.
2. PLANT SPACINGS SHOWN SCHEMATICALLY. LANDSCAPING CONTRACTOR TO EVENLY SPACE PLANTS WITHIN SPACING GUIDELINES AND ARRANGEMENT OF PLANTS.
3. ALL TREES (3) AND SHRUBS (1) TO BE STAKED AND TIED. TIES TO ALLOW FOR GROWTH.
4. PROVIDE SLOW RELEASE FERTILISER AND WATER BEADS TO ALL PLANTS.
5. IN ACCORDANCE WITH THE COUNCIL APPROVAL FOR THE ASSOCIATED RECONFIGURING A LOT, THE APPLICANT IS RESPONSIBLE FOR A 24-MONTH 'ON MAINTENANCE' PERIOD FOR THE WETLAND SYSTEM.
6. DURING THE MAINTENANCE PERIOD, THE FOLLOWING REQUIREMENTS MUST BE FULFILLED AT NO COST TO COUNCIL:
 - MAINTAINING STORMWATER TREATMENT DEVICES;
 - RECTIFYING ANY DEFECTS AND ANY DAMAGE THAT OCCURS, UNLESS THE DAMAGE IS DIRECTLY ATTRIBUTABLE TO COUNCIL ACTIVITIES;
 - CIVIL CONTRACTOR TO UNDERTAKE WATER QUALITY MONITORING AND SUBMITTING THE RESULTS TO COUNCIL FOR MONTHLY ASSESSMENT.
7. MAINTAIN THE WETLAND SYSTEM AT NO COST TO COUNCIL, UNTIL THE ASSET IS ACCEPTED "OFF MAINTENANCE" BY THE CITY IN ACCORDANCE WITH THE PROCEDURES IN THE CITY PLANNING POLICY SC6.9 - LAND DEVELOPMENT GUIDELINES.

Planting Schedule				
Code	Botanical Name	Pot Size	Zone	Density

Sub-canopy				
ACA dis	Acacia dispartima	TUBESTOCK	Batters	1 Qty/9m²
ACA lei	Acacia leiocalyx	TUBESTOCK	Batters	1 Qty/9m²
ALP exc	Alphitonia excelsa	TUBESTOCK	Batters	1 Qty/9m²

Shrub				
DOD tri	Dodonaea triquetra	TUBESTOCK	Batters	1 Qty/6m²
JAC sco	Jacksonia scoparia	TUBESTOCK	Batters	1 Qty/6m²
OZO dio	Ozothamnus diosmifolius	TUBESTOCK	Batters	1 Qty/6m²
PUL spi	Pultenaea spinosa	TUBESTOCK	Batters	1 Qty/6m²

Ground Cover				
BAU art	Baumea articulata	TUBESTOCK	Deep Marsh	6-8 Qty/m²
BOL flu	Bolboschoenus fluviatilis	TUBESTOCK	Deep Marsh	4-6 Qty/m²
CAR vas	Carex fascicularis	TUBESTOCK	Shallow Marsh	6-8 Qty/m²
CYM ref	Cymbopogon refractus	TUBESTOCK	Batters	1 Qty/2-3m²
CYP pol	Cyperus polystachyos	TUBESTOCK	Batters	1 Qty/m²
LOM lon	Lomandra longifolia	TUBESTOCK	Batters	1 Qty/m²
MYR pap	Myriophyllum papillosum	TUBESTOCK	Pool	1 Qty/m²
PHI lan	Philydrium lanuginosum	TUBESTOCK	Shallow Marsh	6-8 Qty/m²
POT cri	Potamogeton crispus	TUBESTOCK	Pool	1 Qty/m²
SCH lit	Schoenoplectus litoralis	TUBESTOCK	Deep Marsh	4-6 Qty/m²
SCH muc	Schoenoplectus mucronatus	TUBESTOCK	Shallow Marsh	4-6 Qty/m²
THE tri	Themeda triandra	TUBESTOCK	Batters	1 Qty/2-3m²
VAL nan	Vallisneria nana	TUBESTOCK	Pool	1 Qty/m²
VIO hed	Viola hederacea	TUBESTOCK	Batters	1 Qty/m²

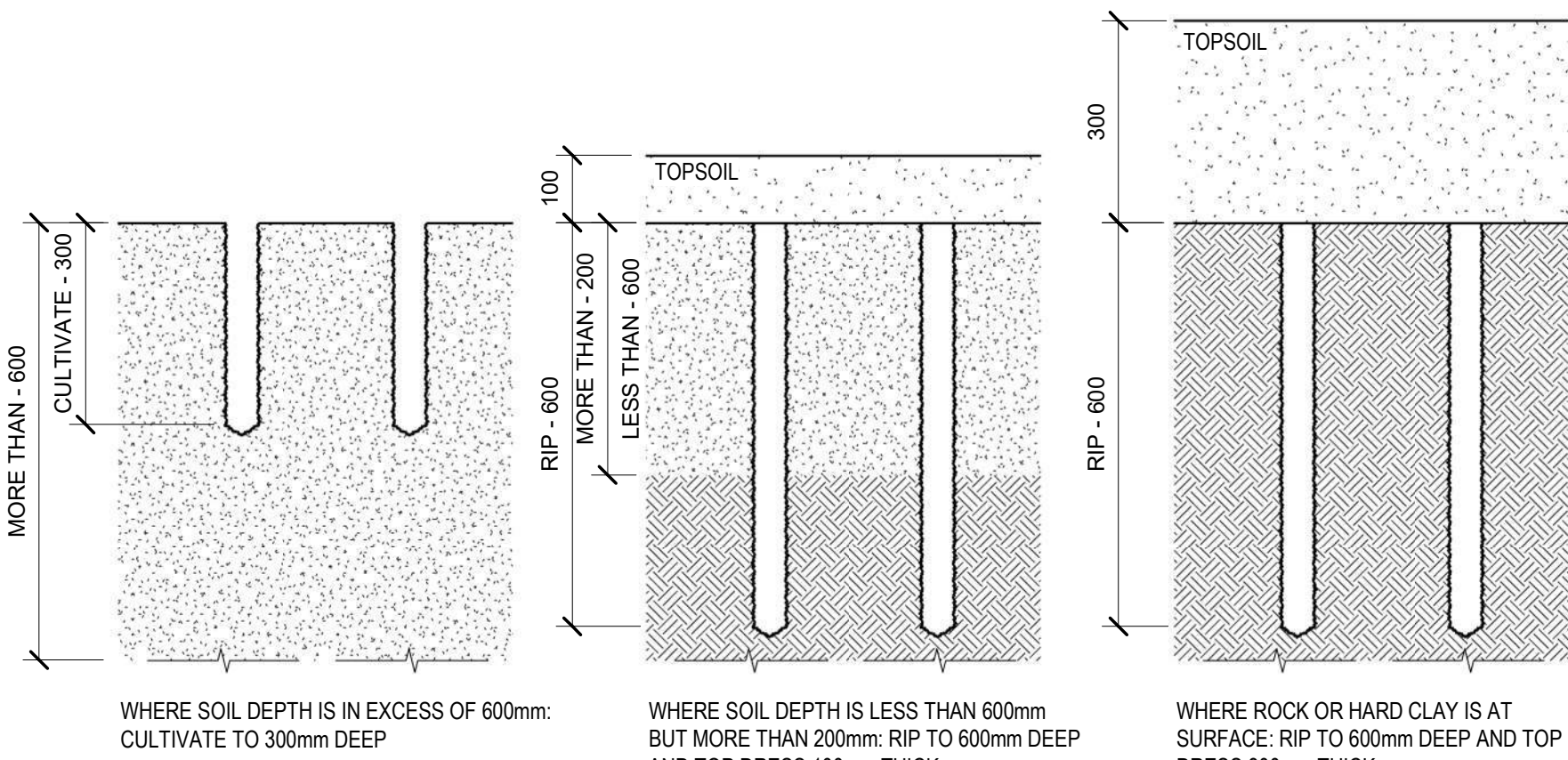
Canopy			
COR cit	Corymbia citriodora	50L	Batters 1 Qty/36m²
EUC cre	Eucalyptus crebra	50L	Batters 1 Qty/36m²
EUC tin	Eucalyptus tindaliae	50L	Batters 1 Qty/36m²

PLANTING AREAS PER ZONE	
ZONE	AREA
BATTERS	2,829m²
INLET POOL	76m²
OULET POOL	323m²
INTERMEDIATE POOL	308m²
DEEP MARSH 1	806m²
DEEP MARSH 2	313m²
DEEP MARSH 3	656m²
SHALLOW MARSH	2,001m²



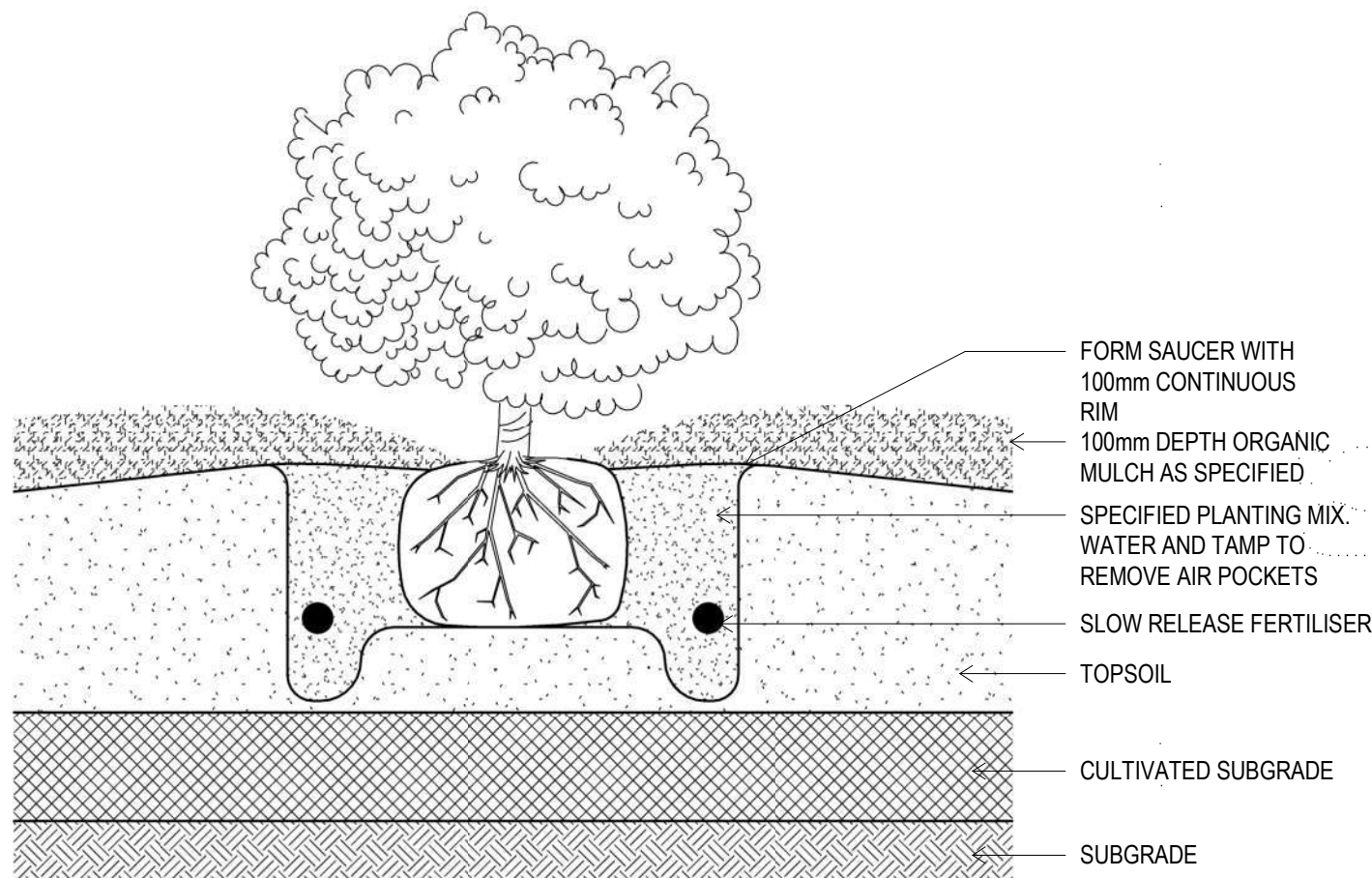
1 LANDSCAPING PLAN

1:500



2 CULTIVATION DETAILS

1:10



3 GROUNDCOVER-SHRUB PLANTING DETAIL

1:10

C	COUNCIL APPROVAL	13.08.2019	N.G.
B	FOR TENDER	03.06.2019	N.G.
A	FOR APPROVAL	08.05.2019	N.G.
REV	DESCRIPTION	DATE	BY

FOR TENDER
NOT TO BE USED FOR CONSTRUCTION
Project
**PROPOSED SUBDIVISION AT
86-160 CHRISTENSEN ROAD
SOUTH, STAPYLTON**
for
BURNSIDE DEVELOPMENT P/L &
YELLOWSTONE INVESTMENTS P/L

Title LANDSCAPE PLAN			
Drawn	Date	Chkd	Date
N.G.	13.08.2019	C.J.C.	
Design	Date	Apprd	Date
C.J.C.			
Scale	A1	Certif	Date
As indicated			
Project No.	17-209	Dwg. No.	Rev
		L01	C

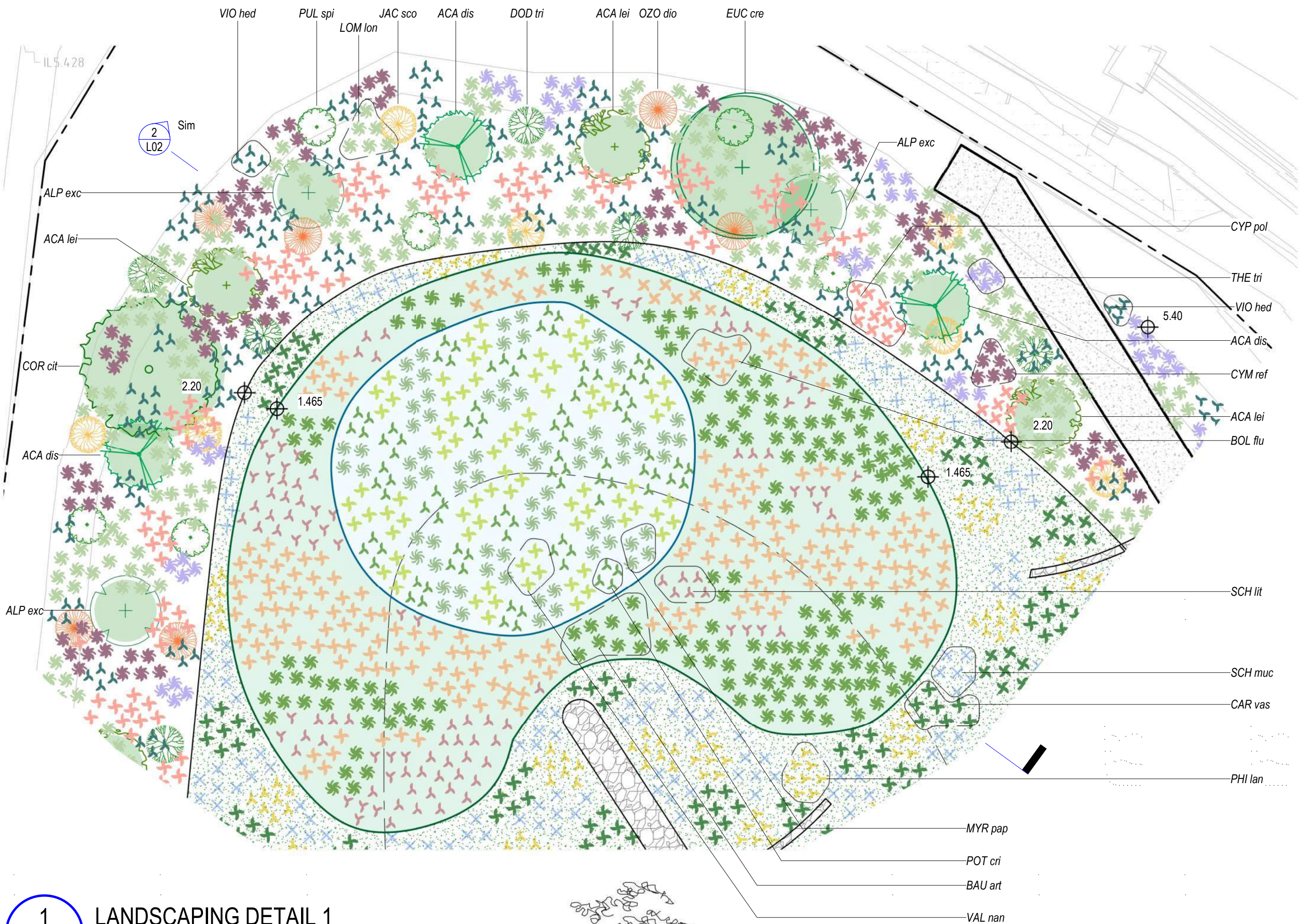
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PROJECT TEAM

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ABN 89 106 675 156 ACN 106 675 156
p. 07 3870 8888



Planting Schedule				
Code	Botanical Name	Pot Size	Zone	Density

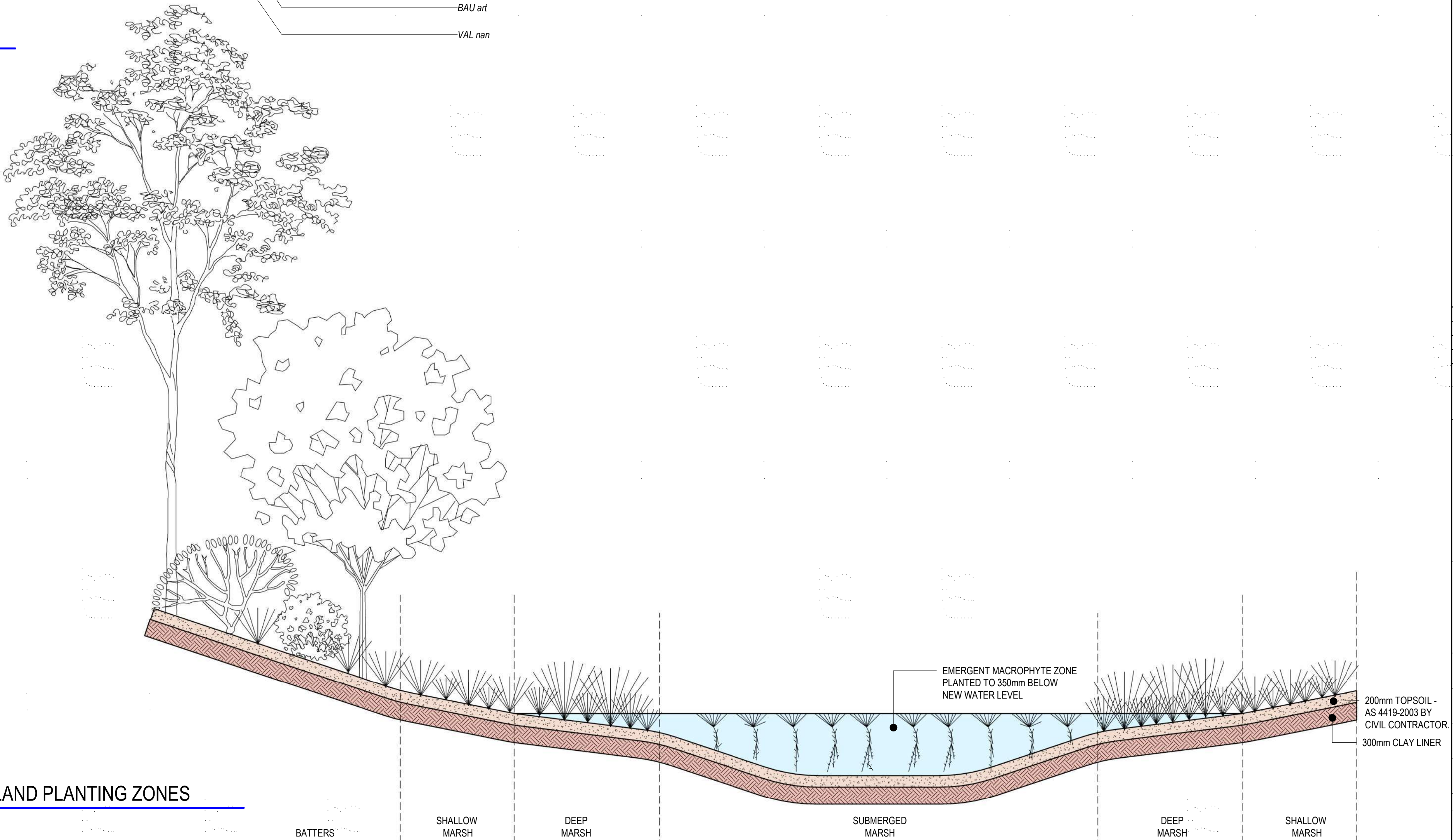
Sub-canopy				
ACA dis	Acacia disparima	TUBESTOCK	Batters	1 Qty/9m²
ACA lei	Acacia leiocalyx	TUBESTOCK	Batters	1 Qty/9m²
ALP exc	Alphitonia excelsa	TUBESTOCK	Batters	1 Qty/9m²

Shrub				
DOD tri	Dodonaea triquetra	TUBESTOCK	Batters	1 Qty/6m²
JAC sco	Jacksonia scoparia	TUBESTOCK	Batters	1 Qty/6m²
OZO dio	Ozothamnus diosmifolius	TUBESTOCK	Batters	1 Qty/6m²
PUL spi	Pultenaea spinosa	TUBESTOCK	Batters	1 Qty/6m²

Ground Cover				
BAU art	Baumea articulata	TUBESTOCK	Deep Marsh	6-8 Qty/m²
BOL flu	Bolboschoenus fluviatilis	TUBESTOCK	Deep Marsh	4-6 Qty/m²
CAR vas	Carex fascicularis	TUBESTOCK	Shallow Marsh	6-8 Qty/m²
CYM ref	Cymbopogon refractus	TUBESTOCK	Batters	1 Qty/2-3m²
CYP pol	Cyperus polystachyos	TUBESTOCK	Batters	1 Qty/m²
LOM lon	Lomandra longifolia	TUBESTOCK	Batters	1 Qty/m²
MYR pap	Myriophyllum papillosum	TUBESTOCK	Pool	1 Qty/m²
PHI lan	Philydrium lanuginosum	TUBESTOCK	Shallow Marsh	6-8 Qty/m²
POT cri	Potamogeton crispus	TUBESTOCK	Pool	1 Qty/m²
SCH lit	Schoenoplectus littoralis	TUBESTOCK	Deep Marsh	4-6 Qty/m²
SCH muc	Schoenoplectus mucronatus	TUBESTOCK	Shallow Marsh	4-6 Qty/m²
THE tri	Themeda triandra	TUBESTOCK	Batters	1 Qty/2-3m²
VAL nan	Vallisneria nana	TUBESTOCK	Pool	1 Qty/m²
VIO hed	Viola hederacea	TUBESTOCK	Batters	1 Qty/m²

Canopy				
COR cit	Corymbia citriodora	50L	Batters	1 Qty/36m²
EUC cre	Eucalyptus crebra	50L	Batters	1 Qty/36m²
EUC tin	Eucalyptus tindalliae	50L	Batters	1 Qty/36m²

1 LANDSCAPING DETAIL 1
L01 1:200



2 WETLAND PLANTING ZONES
L02 1:50

C	COUNCIL APPROVAL	13.08.2019	N.G.
B	FOR TENDER	03.06.2019	N.G.
A	FOR APPROVAL	08.05.2019	N.G.
REV	DESCRIPTION	DATE	BY

FOR TENDER
NOT TO BE USED FOR CONSTRUCTION

Project
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86-160 CHRISTENSEN ROAD
SOUTH, STAPYLTON**
for
**BURNSIDE DEVELOPMENT P/L &
YELLOWSTONE INVESTMENTS P/L**

Title
**LANDSCAPING DETAIL PLAN
SHEET 1**

Drawn	Date	Chkd	Date
N.G.	13.08.2019	C.J.C	
Design	Date	Apprd	Date
N.G.			
Scale	A1	Certif	Date
As indicated			
Project No.	17-209	Dwg. No.	L02
		Rev	C

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Consulting Engineer:



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mail@icubed.com.au
 ACN 106 675 156

p 07 3870 8888



1 LANDSCAPING DETAIL 3
L01 1:200

Planting Schedule				
Code	Botanical Name	Pot Size	Zone	Density

Sub-canopy				
ACA dis	Acacia disarrima	TUBESTOCK	Batters	1 Qty/9m ²
ACA lei	Acacia leiocalyx	TUBESTOCK	Batters	1 Qty/9m ²
ALP exc	Alphitonia excelsa	TUBESTOCK	Batters	1 Qty/9m ²

Shrub				
DOD tri	<i>Dodonaea triquetra</i>	TUBESTOCK	Batters	1 Qty/6m ²
JAC sco	<i>Jacksonia scoparia</i>	TUBESTOCK	Batters	1 Qty/6m ²
OZO dio	<i>Ozothamnus diosmifolius</i>	TUBESTOCK	Batters	1 Qty/6m ²
PUL spi	<i>Pultenaea spinosa</i>	TUBESTOCK	Batters	1 Qty/6m ²

Ground Cover				
BAU art	Baumea articulata	TUBESTOCK	Deep Marsh	6-8 Qty/m ²
BOL flu	Borophoscoenus fluviatilis	TUBESTOCK	Deep Marsh	4-6 Qty/m ²
CAR vas	Carex fascicularis	TUBESTOCK	Shallow Marsh	6-8 Qty/m ²
CYM ref	Cymbopogon refractus	TUBESTOCK	Batters	1 Qty/2-3m ²
CYP pol	Cyperus polystachyos	TUBESTOCK	Batters	1 Qty/m ²
LON lon	Lomandra longifolia	TUBESTOCK	Batters	1 Qty/m ²
MYR pap	Myriophyllum papillosum	TUBESTOCK	Pool	1 Qty/m ²
PHI lan	Philydium lanuginosum	TUBESTOCK	Shallow Marsh	6-8 Qty/m ²
POT cri	Potamogeton crispus	TUBESTOCK	Pool	1 Qty/m ²
SCH lit	Schoenoplectus litoralis	TUBESTOCK	Deep Marsh	4-6 Qty/m ²
SCH muc	Schoenoplectus mucronatus	TUBESTOCK	Shallow Marsh	4-6 Qty/m ²
THE tri	Thermesia triandra	TUBESTOCK	Batters	1 Qty/2-3m ²
VAL nan	Vallisneria nana	TUBESTOCK	Pool	1 Qty/m ²
VIH hed	Viola hederacea	TUBESTOCK	Batters	1 Qty/m ²

Canopy				
COR cit	<i>Corymbia citriodora</i>	50L	Batters	1 Qty/36m ²
EUC cre	<i>Eucalyptus crebra</i>	50L	Batters	1 Qty/36m ²
EUC tin	<i>Eucalyptus tindaliae</i>	50L	Batters	1 Qty/36m ²

C	COUNCIL APPROVAL	13.08.2019	N.G.
B	FOR TENDER	03.06.2019	N.G.
A	FOR APPROVAL	08.05.2019	N.G.
REV	DESCRIPTION	DATE	BY

[illegible]

FOR TENDER NOT TO BE USED FOR CONSTRUCTION	
Project	PROPOSED SUBDIVISION AT 86-160 CHRISTENSEN ROAD SOUTH, STAPYLTON for BURNSIDE DEVELOPMENT P/L & YELLOWSTONE INVESTMENTS P/L

Title

LANDSCAPING DETAIL PLAN
SHEET 2

Drawn	Date	Chkd	Date
N.G.	13.08.2019	C.J.C	
Design	Date	Apprd	Date
C.J.C.			
Scale	A1	Certif	Date
1 : 200			
Project No.	Dwg. No.	Rev	
17-209	L03	C	

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MACROPHYTE ZONE/
SHALLOW MARSH



Schoenoplectus mucronatus - SCH muc
Star Club-rush
Schoenoplectus mucronatus grows in a stationary and slow running fresh water bodies. This species is used in water plantings and helps with the stabilisation near dams and waterways and also provides habitat for water birds. It is a common species, which occurs from the coast and northern inland areas. This species is a clump forming macrophyte with lime/green triangular foliage. The Star Club-rush flowers over summer with a cluster of seed heads near the top of the rush.
CULTIVATION: The Star Club-rush is uncommon in cultivation, however it is recommended to prune to remove dead material and promote new growth.
ASPECTS:
Low maintenance Frost tolerant
Bird attracting



Carex fascicularis - CAR fas
Tassel Sedge
Carex fascicularis is a densely tufted sedge that grows on the coastal and inland areas on the edge of fresh and brackish water and grows to a height of approximately 0.6 to 1.5m. This species typically contains leaves 9mm wide and flowers in pendulous 6cm x 10mm spikes at the end of leaves. The flower spikes subtended by leaf-like bracts and also provides habitat to birds.
CULTIVATION: May be pruned annually to remove old foliage.
ASPECTS:
Tolerates periods of inundation
Bird Attracting



Philydrum lanuginosum - PHI lan
Woolly Water Lily, Frogmouth
The Philydrum lanuginosum is tufted, herbaceous, aquatic macrophyte plant, one of three species constituting the plant family Philydraceae. This species typically contains spongy, soft, herbaceous foliage. The foliage grows upright in tufts up to 80cm high, from from short-creeping and branching stems rooted in the mud. The stems grow up taller than the leaves, becoming green and wooly spikes up to 2m high. The spikes successively open many, attractive, fine yellow flowers. Long, pointed, green and wooly bracts up to 7cm enclosed each bud.
CULTIVATION: The Woolly Water Lily is uncommon in cultivation, being wary of basic soil, partial sunlight and water preferences.
ASPECTS:
Bird Attracting Low Maintenance

POOL



Vallisneria nana- VAL nan
Ribbonweed
Submerged, tufted herb forming dense mats, usually in flowing water, spreading by underground stolons. Leaves are strap-like, to 2m x 15mm, often brownish-green, minutely toothed near apex, and usually contain 3 major longitudinal veins, as well as red-brown narrow longitudinal stripes. This species produces offshoots very readily, so compact vegetation will soon develop in good conditions.
CULTIVATION: Propagates by runners, easy to grow, tolerates a broad range of conditions.
ASPECTS:
Low maintenance Aquatic Plant
Stoloniferous



Myriophyllum papillosum- MYR pap
Common Water-milfoil
The Common Water-milfoil is a versatile plant for ponds and water gardens, which is primarily utilised for oxygenating water, providing protection and spawning of fish and reducing algae. The Comon Water-milfoil contains small green pine-needle like leaves which are carried on ascending stems. This species is a fully emergent perennial herb rooting at nodes and is grown in full sun to part shade in shallow bodies of fresh water (i.e. ponds, dams and wetlands) and is submerged 5-20cm deep.
CULTIVATION: Fertilise in spring to encourage new growth at the start of the growing season. Fertilise again at the start of summer and autumn to encourage healthy growth and green foliage.
ASPECTS:
Oxygenator Freshwater aquatic plant Frost hardy



Potamogeton crispus- POT cr
Curly-leaf pondweed
A common submerged water plant, often in fast-moving, shallow streams, but also in deeper, slower sections. Leaves alternate, to 7cm x 15mm with 3 to 5 longitudinal veins and appears reddish-brown in water. Leaves are conspicuously toothed along serrulated margins, sessile (attached directly to the stem), narrowly, along and undulate with a conspicuous mid-vein. This species forms floating mats in littoral areas in fresh water bodies and is commonly foud in alkaline and high nutrient waters, preferring soft substrate and shallow water depths.
CULTIVATION: Long-term management requires the reduction or elimination of turions to interrupt the lifecycle.
ASPECTS:
Tolerance of low light conditions Aquatic Plant

DEEP MARSH



Schoenoplectus littoralis - SCH lit
River Club-rush
A tall perennial sedge with a rhizomatous root system, which naturally occurs at the edge of still or slow flowing water bodies. The River Club-rush is a tall reed with light green stems that forms large open clumps of foliage. This species stems from 100-200cm high and 3-10mm diameter, without nodes. Leaves are typically absent or reduced to less than 10cm long. Flower-heads are umbrella-like with branches 1-8cm long and 1-4 spikelets per branch.
CULTIVATION: Easy to keep in medium to bright light, along shady creek margins as well as out in the full sun. Grows well in pH 7, GH 50 ppm, KH 60 ppm, temp 20 to 30 deg C.
ASPECTS:
Rhizomatous perennial Frost tolerant
Prevents bank erosion Provides habitat for birds

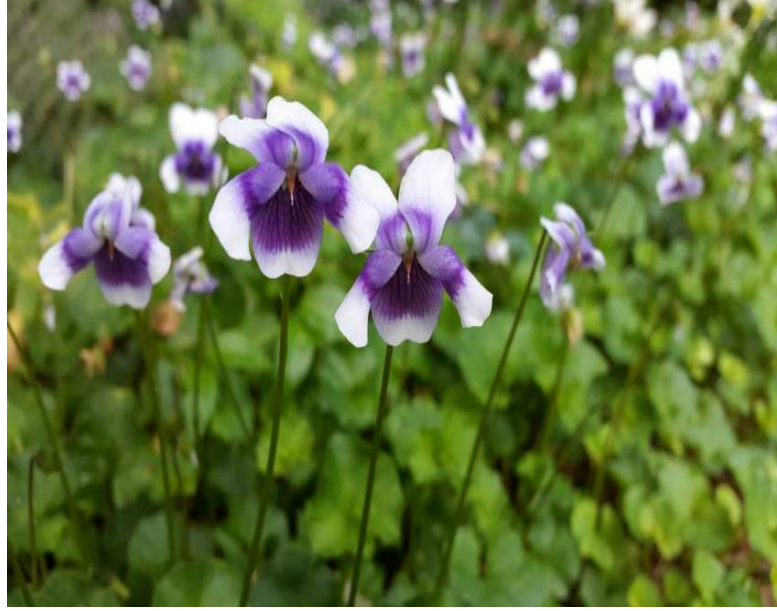


Baumea articulata - BAU art
Jointed Twig-rush
Tufted perennial sedge with spreading from stout underground stems. Nodeless flowering stems are ridged, round in cross section 4-10mm wide with partitions across the stem. Leaves are dark green and originate from the base and are reduced to greyish papery sheaths. The upper leaves have a soft hollow blade up to 120cm long. The stems are up to 180cm high, hollow and cylindrical. This species provides habitat, particularly for nesting bird life.
CULTIVATION: This species is uncommon in cultivation. No maintenance is required, however may be trimmed back (approximately 1/3 of leaf) if desired.
ASPECTS:
Low maintenance Provides habitat for birds
Water waste treatment Hardy and long lived



Bolboschoenus fluviatilis - BOL flu
Marsh Club-rush
Native rhizomatous perennial to 2.5m tall that usually forms from tubers. Provides shelter for wildlife, favoured as nesting material for swans; a useful species for stabilising banks as it will not spread into deep waters. Dies back slightly in winter in cooler areas.
CULTIVATION: Enjoys damp conditions.
ASPECTS:
Suitable for poorly drained areas Suitable for heavy shade

BATTERS (GROUND COVER)



Viola hederacea - VIO hed
Native Violet
A spreading herbaceous perennial with attractive deep green foliage and delicate blue violet flowers which bloom throughout most of the year. An outstanding ground cover that flowers well in deep shade and moist areas. Rosettes of dark green kidney-shaped to semicircular leaves 15-20mm x 20-30mm, dull greyish-green below; tip rounded, margin obscurely toothed.
CULTIVATION: Provide plenty of water until the plant is established and regularly in dry periods. Feed with liquid fertiliser monthly during spring and summer for lush coverage.
ASPECTS:
Low Maintenance Perennial
Evergreen Tolerates light frost



Lomandra longifolia- LOM lon
Spiny-headed Mat Rush
Variable species forming tussocks 30-70cm high. Narrow strap-like leaves are relatively stiff. Bears crowded, spiny flower spikes held on flattened stems.
CULTIVATION: Grows in almost any soil and aspect. Hardy and often used in median strips.
ASPECTS:
Suitable for poorly drained areas
Low maintenance
Frost-hardy
Suitable for tropical areas
Pleasant scent
Suitable for heavy shade



Cyperus polystachyos - CYP pol
Bunchy Sedge
A tufted, long-lived, grass-like plant with upright flowering stems growing up to 80cm tall. Its rigid stems are hairless and triangular in cross-section and its narrow leaves (1-4mm wide) are grass-like in appearance. Its seed-head is an irregular cluster of brownish-coloured spikes subtended by three to six green leafy bracts. This seed-head may be unbranched or with several short branches up to 6 cm long its elongated flower spikelets (5-15 mm long and about 2 mm wide) are borne in dense clusters. This species typically grows naturally in damp habitats and occasionally also on drier sandy soils.
CULTIVATION: This species is uncommon in cultivation and should only be removed from non-natural habitats.
ASPECTS:
Appropriate among varying ecosystems Low maintenance

PROJECT TEAM

Development Consultant:

3

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C	COUNCIL APPROVAL	13.08.2019	N.G.
B	FOR TENDER	03.06.2019	N.G.
A	FOR APPROVAL	08.05.2019	N.G.
REV	DESCRIPTION	DATE	BY

Status

FOR TENDER

NOT TO BE USED FOR CONSTRUCTION

Project

PROPOSED SUBDIVISION AT
86-160 CHRISTENSEN ROAD
SOUTH, STAPYLTON
for
BURNSIDE DEVELOPMENT P/L &
YELLOWSTONE INVESTMENTS P/L

Title

PLANT SPECIES LIST SHEET 1

Drawn	Date	Chkd	Date
N.G.	29.04.2019	C.J.C.	
Design	Date	Apprd	Date
Designer			
Scale	A1	Certif	Date
1 : 1			
Project No.	Dwg. No.	Rev	
17-209	L04	C	

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BATTERS (CANOPY)



Corymbia citriodora - COR cit
Lemon-scented gum, Spotted gum
A beautiful, tall growing tree with a distinctive, often powdery white to grey coloured bark which curls and flakes off in Spring. Its leaves are green, long and slender with an amazing, strong lemon fragrance when crushed. This species grows up to 50m high and is a great feature tree that needs significant space.
CULTIVATION: Prefers full sun in well drained soil. Can tolerate most soils and grows well with or without moisture.
ASPECTS:
Low Maintenance Attracts wildlife
Tolerates light frost Evergreen
Spreading Fast growing
Drought resistant



Eucalyptus crebra - EUC cre
Narrow-leaved red ironbark
A small to medium-sized ironbark tree with a very wide distribution in eastern Australia. A member of the large genus Eucalyptus, this tree is in the Myrtaceae family and can grow to a large spreading tree up to 35 m high. The rough furrowed bark is grey mottled with yellow and orange. The tree's name ironbark stems from the rough and unyielding texture of the cambium on the outmost layer of the plant.
CULTIVATION: This species grows best in areas where annual daytime temperatures are within the range 26 - 36°C. Requires a sunny position. Prefers a light to medium, well-drained soil, succeeding in soils of low fertility
ASPECTS:
Evergreen Frost-hardy
Attracts wildlife



Eucalyptus tindaliae - EUC tin
Tindal's stringybark
A small to tall stringybark tree widespread in coastal and subcoastal areas. Eucalyptus tindaliae has long-fibred rough (stringy) bark extending to the branchlets, concolorous leaves, a slightly bluish green crown, ovoid buds and rather crowded large fruit. A tree up to 30 metres tall. It has rough, fibrous stringy bark usually coloured grey over brown. Adult leaves are 7 to 13 cm long, 1.3 to 3 cm wide, a glossy green. The same colour above and below the leaf.
CULTIVATION: Requires a sunny position. Prefers a light to medium, well-drained soil, succeeding in soils of low fertility
ASPECTS:
Evergreen Frost-hardy
Attracts wildlife

BATTERS (SUB-CANOPY)



Acacia dispartima - ACA dis
Hickory Wattle
Arborescent shrubs 3-5 m tall or small trees 3-9 (-12) m tall mostly in coastal areas and fringes throughout Queensland. Branchlets slender with the uppermost few cm angled. Phyllodes somewhat curved, pale grey to blue green with numerous parallel veins, pointed tip. Greenish phyllode stalk with dust-like covering.
CULTIVATION: Generally adaptable in cultivation, responds to sunny, reasonably well drained positions in most soils. Will respond to light pruning after flowering.
ASPECTS:
Frost-hardy
Attracts wildlife
Recommended for its foliage



Acacia leiocalyx - ACA lei
Black Wattle, Early Black Wattle
Shrub or tree to 6 m high or sometimes more; bark slightly corrugated to fissured, flaky-fibrous; branchlets sharply angled, usually red-brown, glabrous, sometimes slightly scurfy. This species will grow into a shrub 1.5 m tall by 2 m across. Even where it occurs naturally the plant is quite dense, a habit which makes it an excellent subject for gardens where a minimum amount of maintenance is desired.
CULTIVATION: Although not commonly cultivated, this species is suitable for a number of situations and specifically grows well in coastal areas.
ASPECTS:
Low-maintenance Pollution tolerant
Drought resistant Fast growing
Evergreen Attracts wildlife



Alphitonia excelsa - ALP exc
Red Ash, Leatherjacket, Coopers Wood
Alphitonia excelsa, commonly called Red Ash or Soap Tree, is a generally evergreen, medium tree growing up to 35m tall in wild rainforest settings but usually only reaching about 10m under cultivation. Alphitonia excelsa has an umbrella-shaped, round, spreading canopy that is 5m across. The undersurface of the leaf blade is silvery/white. The leaves frequently look tatty after being ravaged by various leaf chewing insects which in turn are eaten by many native birds.
CULTIVATION: Water every 2-3 days a week for the first month when planted. Cut back watering to once or twice a week after the first month. Lightly prune after the flowering season to increase the foliage growth.
ASPECTS:
Low-maintenance Erosion Control Fast growing ability

BATTERS (SHRUB)



Jacksonia scoparia - JAC sco
Dogwood
Jacksonia are pea-flowered shrubs or small trees found wild only in Australia. Their distinctive feature is flat, angular or winged branchlets which are entirely leafless except in young growth. Jacksonia scoparia reaches about 4 m high and is an interesting small shade tree, specimen or fence cover. Most of the year the general effect is of a dense and softly drooping crown, with many thin branchlets somewhat tufted, and of a dull or greyish green. The slender trunk becomes dark and furrowed with age.
CULTIVATION: It has proven to be a hardy and adaptable species for a range of well drained soils in full sun or partial shade. It is certainly a plant worthy of much wider cultivation.
ASPECTS:
Hardy & well adaptable Fast growing ability



Ozothamnus diosmifolius - OZO dio
Sago Flower
Fast growing medium shrub with fine green leaves and white or pink buds/creamy white flowers appearing in spring/summer. Tolerant of most well-drained soils, full sun & moderate frosts. Plants respond to pruning and are grown commercially for cut flowers. Once established, this species is deemed a good waterwise plant.
CULTIVATION: Adaptable to most well drained soils and will grow in sun or partial shade.
ASPECTS:
Hardy & well adaptable Low maintenance
Drought resistant Evergreen
Pollution tolerant Dense foliage



Dodonaea triquetra - DOD tri
Hop Bush
Dodonaea triquetra is a soft, erect shrub 2-3 m, very leafy in new growth areas but it can be straggly. The mid-green shiny leaves of Dodonaea triquetra are broad but soft, 4-10cm long, tapering towards the base. Thrives in dry or wet sclerophyll forest usually on sand, or similarly well drained soil.
CULTIVATION: Adaptable to most well drained soils and will grow in sun or partial shade.
ASPECTS:
Hardy & well adaptable
Frost-tolerant
Low maintenance
Bird Attracting

BATTERS (SHRUB)



Pultenaea spinosa - PUL spi
Grey Bush-pea, Prickly Pea, Spiny Bush-pea
Shrub, which reach approximately 3m. Stems sometimes glaucous, hairless to hairy. Leaves usually sharp tipped, alternating up the stems or in whorls of three, rarely opposite each other, 0.2-2 cm long, 1.5-21 mm wide. Flowers pea shaped, with 5 petals, 2 joined together to form the keel. Standard petal 6-14 mm long, orange to yellow, rarely whitish, usually with red markings. Wings orange to yellow, rarely whitish. Keel red-brown to orange or yellow, rarely whitish.
CULTIVATION: Well-drained soil in partial sun. Tolerates drought and frost.
ASPECTS:
Low-maintenance Pollution tolerant
Drought resistant Fast growing
Evergreen Attracts wildlife

BATTERS (GROUND COVER)



Themeda triandra - THE tri
Kangaroo grass
Themeda triandra is a tufted perennial that can grow to 1.5 m tall and 0.5 m across. Its leaves are 10-50 cm long and 2-5 mm wide, green to grey drying to an orange brown in summer. It produces distinct large red-brown spikelets, which occur on branched stems. Spikelets have long distinguishing spathes at their base and bare florets with black awns 4-7 cm long, which remain with the seed when it falls.
CULTIVATION: The grass clumps do not need a lot of maintenance; dead leaves can be raked out and old seed heads removed from the base. If a neater appearance is required, the clumps can be cut back to encourage new green growth. This plant does not suffer any significant pest or disease problems.
ASPECTS:
Hardy & well adaptable Drought tolerant



Cymbopogon refractus - CYM ref
Lemongrass, Barbed Wire Grass
Cymbopogon refractus is a clump-forming perennial warm season grass 1 m in height when in flower. It grows in woodlands and grasslands in full sun to partial shade. It is widespread on poor or low nutrient soils but also grows in a wide range of soil textures from sands to clays. It is an attractive species, with striking seed heads and the crushed foliage has a pleasant lemony scent.
CULTIVATION: Fresh seed germinates readily and shows no dormancy but should not be buried deeply. Seed should be sown into a weed-free seedbed in early spring, or later with irrigation, or summer rainfall.
ASPECTS:
Hardy & well adaptable
Drought tolerant

PROJECT TEAM

Consulting Engineer:

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A	FOR APPROVAL	08.05.2019	N.G.
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PROPOSED SUBDIVISION AT
86-160 CHRISTENSEN ROAD
SOUTH, STAPYLTON
for
BURNSIDE DEVELOPMENT P/L &
YELLOWSTONE INVESTMENTS P/L

Title			
PLANT SPECIES LIST SHEET 2			
Drawn	Date	Chkd	Date
N.G.	29.04.2019	C.J.C	
Design	Date	Apprd	Date
C.J.C.			
Scale	A1	Certif	Date
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Project No.	Dwg. No.	Rev	
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LANDSCAPE SPECIFICATION

SCOPE

THE SCOPE OF THE LANDSCAPE WORKS TO BE COMPLETED BY THE APPOINTED CONTRACTOR IN ORDER TO SATISFY THE REQUIREMENTS OF THIS CONSTRUCTION SPECIFICATION INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING TASKS:

- SITE PREPARATION (INC. MINOR GRADING, SUB-GRADE CULTIVATION AND MECHANICAL RIPPING)
- PLANT SET OUT AS SHOWN ON PLANS IS INDICATIVE ONLY. ALL PLANTS ARE TO BE DISTRIBUTED IN EVEN GROUPING TO PROVIDE A VARIETY IN GROUP ARRANGEMENT WHILST KEEPING TO THE REQUIRED SET OUT OF PLANT SPACINGS.
- SUPPLY AND INSTALLATION OF ADVANCED TREES
- SUPPLY AND INSTALLATION OF TOPSOIL, ORGANIC MULCH AND ROCK MULCH (AS SPECIFIED)
- SUPPLY AND INSTALLATION OF BASALT BOULDERS
- LANDSCAPE ESTABLISHMENT AND MAINTENANCE
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACCURACY OF ALL WORKS DURING THEIR PROGRESS AND MAKE GOOD ANY ERRORS CAUSED BY A FAILURE TO COMPLY WITH THE APPROVED DOCUMENTATION, OR OTHERWISE NEGLIGENCE AND POOR WORKMANSHIP ON THEIR PART

1.0 INDUSTRY STANDARDS

ALL WORKS ADDRESSED WITHIN THIS SPECIFICATION MUST BE IMPLEMENTED IN ACCORDANCE WITH THE FOLLOWING AUSTRALIAN LANDSCAPE STANDARDS

- AS 1289 METHODS OF TESTING SOILS FOR ENGINEERING PURPOSES
- AS 4419-1998 SOILS FOR LANDSCAPING AND GARDEN USE
- AS 4454-1999 COMPOSTS, SOIL CONDITIONERS AND MULCHES

2.0 SITE LEVELS

- CONFIRM SITE LEVELS BEFORE COMMENCING LANDSCAPING WORK
- UNLESS OTHERWISE SHOWN ON DRAWINGS ALL FINISHED SURFACE LANDSCAPE LEVELS ARE TO FINISH FLUSH WITH SURROUNDING CONCRETE PATHS, KERBS, FIELD INLETS, INSPECTION CHAMBERS ETC.
- TURF AND PLANTING AREAS ARE TO FALL AT A MINIMUM GRADIENT OF 1:50 AWAY FROM THE BASE OF EXISTING AND PROPOSED BUILDINGS.
- ENSURE POSITIVE DRAINAGE OFF LANDSCAPE AREAS AND GARDEN BEDS

3.0 DRAINAGE AND SERVICES

REFER TO ENGINEER'S DRAWINGS FOR GRADING, DRAINAGE AND SERVICES INFORMATION

4.0 FIRE ANTS

- ALL IMPORTED MATERIALS TO BE CERTIFIED AND RECORDED AS FREE OF FIRE ANTS.

5.0 EROSION

- ALL NECESSARY PRECAUTIONS ARE TO BE IMPLEMENTED TO PREVENT EROSION AND SEDIMENT DISPERSAL FROM SITE.
- ENSURE COMPLIANCE WITH ALL RELEVANT LOCAL COUNCIL ENVIRONMENTAL CONDITIONS AND STANDARDS .

6.0 CULTIVATION

- CULTIVATE EXISTING SUBGRADE TO ALL GARDEN AND TURF AREAS TO A MINIMUM 300mm DEPTH BY MECHANICAL RIPPING AND DIGGING
- REMOVE ANY ROCK, STONES, EXTRANEOUS VEGETATION OR BUILDING REFUSE GREATER THAN 100mm BROUGHT TO THE SURFACE
- DO NOT DISTURB SERVICES OR EXISTING TREE ROOTS
- GRADE CULTIVATED SURFACE IN PREPARATION FOR TOPSOIL SPREADING

7.0 TOPSOIL

- IMPORTED TOPSOIL TO BE A HIGH GRADE FERTILE MIX OF 'SOIL BLEND', AS PER AUSTRALIAN STANDARDS AS4419 - 1998 (SOILS FOR LANDSCAPE AND GARDEN USE). SIMILAR TO ULTRAGROW PREMIUM ORGANIC GARDEN BLEND (CLS-UG1) INCORPORATING 'HYDROCELL' AS PER MANUFACTURER'S INSTRUCTIONS TO REQUIRED DEPTHS.
- SOIL TO BE GENERALLY DESCRIBED AS MEDIUM SANDY LOAM AND SHALL NOT SET AND BECOME DIFFICULT TO WORK AS A CONSEQUENCE OF SATURATION OR DESICCATION.
- IMPORTED TOPSOIL IS CLEAN AND FREE OF EXTRANEOUS MATTER INCLUDING STONES (>25mm DIA.) WEEDS, ROOTS, RUBBISH AND ANY OTHER MATERIAL POTENTIALLY TOXIC TO PLANT GROWTH
- IMPORTED SOIL TO BE MIN. 2% ORGANIC, PH 5.5 -7, SALT < 0.06%
- APPLY GYPSUM OVER CULTIVATED SITE SURFACE AT 0.25KG/M² PRIOR TO SPREADING TOPSOIL
- SPREAD TOPSOIL TO AN EVEN 100mm DEPTH TO ALL PLANTING AREAS AND 50mm TO TURF AREAS.

8.0 ORGANIC MULCH AND ROCK BEDS

- ALL MULCH TO BE AN ORGANIC MEDIUM GRADE 'ULTRAGROW' 'EARTHGROW MULCH' OR OTHER SIMILAR TO COMPLY WITH AS 4454, APPLIED EVENLY TO A MIN. 100mm DEPTH AND RAKED SMOOTH TO FEATHER AWAY FROM SURROUNDING FINISHED LANDSCAPE LEVELS.
- ALL MULCH TO BE SET BACK AWAY MIN. 50mm FROM PLANT STEMS/FLARES
- CREEK STONES TO BE WASHED 'RIVER ROCK' OR EQUAL APPROVED (100-300mm MAX. DIA.)

9.0 FERTILISER

- AN APPROVED 10GM SLOW RELEASE FERTILISER TABLET SUCH AS SIERRA CHEMICAL COMPANY 'AGRIFORM' PLANTING TABLETS, USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
- A SURFACE DRESSING OF 'BLOOD AND BONE' FERTILISER SHALL BE PLACED ON THE SOIL WITHIN 300mm DIA. OF EACH PLANT AT MANUFACTURER'S RECOMMENDED RATE

10.0 PLANTS

- ALL SOURCED PLANTS AS SPECIFIED BY THE PLANT SCHEDULE SHALL BE HEALTHY AND VIGOROUS AND TRUE TO THEIR SPECIES, TYPE AND FORM
- ALL PLANTS ARE TO BE VIGOROUS AND WELL ESTABLISHED, SUN HARDENED AND HAVE NO EVIDENCE OF ROOT CURL, RESTRICTION OR DAMAGE
- NO SUBSTITUTIONS SHALL BE MADE WITHOUT PRIOR APPROVAL FROM THE LANDSCAPE DESIGNER
- PLANTS TO BE COMPLETELY FREE OF PESTS, DISEASES AND FUNGAL CONTAMINATION (INC. ROOTS)
- DO NOT VARY LOCATION OF PLANTS, UNLESS NECESSARY TO AVOID SERVICE LINES, PIPES ETC
- DO NOT SET ROOT BALL BELOW SOIL SURFACE THAT IT REMAINS FLUSH WITH SURROUNDING LEVELS
- BACKFILL PITS WITH IMPORTED TOPSOIL AND SITE SOIL MIX, INCLUDING 3x SLOW RELEASE FERTILISER TABLETS FOR NATIVE PLANTS (I.E. AGRIFORM OR EQUIVALENT) TO MANUFACTURER'S SPECIFICATION
- APPLY 5 LITRES OF WATER TO EACH PLANT IMMEDIATELY AFTER PLANTING

11.0 ADVANCED TREES AND STAKES

- INSTALL ADVANCED TREES AS PER LANDSCAPE PLANS IN PITS TWICE THE WIDTH OF THE ROOT-BALL, WITH SCARIFIED SIDES TO PREVENT ROOT CONSTRICTION
- FILL HOLE WITH WATER AND LET DRAIN THOROUGHLY PRIOR TO PLANTING. NOTIFY LANDSCAPE DESIGNER IF DRAINAGE PROBLEMS FROM THE HOLES EXIST
- DUE TO EXISTING ROCK CONDITIONS DRAINAGE MAY BE REQUIRED FROM TREE PITS
- CULTIVATE BASE OF HOLE TO A FURTHER DEPTH OF 100mm
- APPLY 0.5KG OF GYPSUM AND PIKE THE HOLE BASE BEFORE PLANT INSTALLATION TO PREVENT WATER WELLING
- WHERE POSSIBLE POSITION THE TREE SO THAT THE BRANCHES DO NOT RUB AGAINST STAKES OR WILL IN FUTURE, CONFLICT WITH BUILDINGS OR OVERHEAD WIRES
- POSITION THE TREE SO THAT THE TOPSOIL LEVEL OF THE ROOT-BALL IS LEVEL WITH THE SURROUNDING FINISHED SURFACE
- ALL TREES TO BE SUPPORTED WITH UNTREATED HARDWOOD TIMBER STAKES, DRIVEN 600mm INTO GROUND OUTSIDE THE PERIMETER OF THE TREE ROOT-BALL TO PREVENT DAMAGE TO ROOTS (SEE DETAIL)
- TREES TO BE SUPPORTED BY A LOOSE HESSIAN TIE SET IN FIGURE-EIGHT PATTERN AT A THIRD OF THE STEM HEIGHT WHICH IS NAILED (FLATHEAD) OR STAPLED TO THE STAKES
- TREES SHOULD STAND PLUMB AND IN THE CENTRE OF THE HOLE AFTER STAKING
- STAKES SHOULD BE REMOVED 6 MONTHS AFTER INSTALLATION
- BACKFILL BY HAND WITH AN EVEN MIXTURE OF SITE SOIL AND IMPORTED TOPSOIL
- PLACE 3x SLOW RELEASE FERTILISER TABLETS AT QUARTER THE DEPTH OF THE ROOT BALL
- DO NOT ALLOW TABLETS TO COME INTO CONTACT WITH ROOTS
- DO NOT STAMP SOIL ABOUT TREE BASE
- TAMP BACKFILL LIGHTLY AND FORM A TEMPORARY WATERING RING
- WATER TREE THOROUGHLY TO ELIMINATE AIR POCKETS
- TREATMENT WITH 100mm DEPTH OF 25-50mm FOREST BARK MULCH

12.0 WATERING

- WATER IMMEDIATELY AFTER LAYING UNTIL THE TOPSOIL IS MOISTENED TO ITS FULL DEPTH
- CONTINUE WATERING TO MAINTAIN MOISTURE TO THIS DEPTH
- BATTER PLANTS MUST BE REGULARLY IRRIGATED DURING THE ESTABLISHMENT PHASE. REFER IRRIGATION NOTES FOR FURTHER DETAILED REQUIREMENTS

13.0 IRRIGATION

THE FOLLOWING PERFORMANCE SPECIFICATION OUTLINES THE RESPONSIBILITIES AND COMMITMENTS WHICH NEED TO BE ADDRESSED BY THE APPOINTED IRRIGATION CONTRACTOR IN ORDER TO COMPLETE THE TERMS OF THEIR ENGAGEMENT.

- ALL UNESTABLISHED AND UNSUCCESSFUL PLANTS ARE TO BE REPLACED ACCORDINGLY AND BE SUBJECT TO MAINTENANCE PERIOD REQUIREMENTS, IN ACCORDANCE WITH THE ASSOCIATED COUNCIL APPROVAL FOR A RECONFIGURING A LOT.

- THE WETLAND VEGETATION IS CONSIDERED 'ESTABLISHED' WHEN THE PLANTS HAVE REACHED REPRODUCTIVE MATURITY AND SUFFICIENT VEGETATION COVER HAS BEEN ESTABLISHED ACROSS THE WETLAND.

- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE WATERING FOR ESTABLISHMENT TO ENSURE THE SUSTAINABILITY OF ALL PLANTS.

- TERRESTRIAL AND EPHERMAL BATTER PLANTS MUST BE REGULARLY IRRIGATED DURING THE ESTABLISHMENT PERIOD. THE FOLLOWING PROGRAM OUTLINED BELOW MUST BE FOLLOWED UNLESS A VARIATION IS AGREED BY THE SUPERINTENDENT.

WEEK 1-6 FIVE IRRIGATION DAYS PER WEEK
WEEK 6-10 THREE IRRIGATION DAYS PER WEEK
WEEK 11-15 TWO IRRIGATION DAYS PER WEEK

- IN THE ABSENCE OF RAIN IT IS RECOMMENDED THAT EACH PLANT RECEIVES 2.5-SL OF WATER PER WEEK DURING THE FIRST SIX WEEKS (APPROXIMATELY 40mm OF WATERING PER WEEK DURING ESTABLISHMENT).

- AFTER AN INITIAL FOUR MONTH PERIOD, IRRIGATION MAY STILL BE REQUIRED, PARTICULARLY DURING THE FIRST WINTER OR DRY PERIOD. WATERING REQUIREMENTS FOR HEALTHY VEGETATION CAN BE DETERMINED BY ONGOING INSPECTIONS.

- POOLS ARE REQUIRED TO BE FILLED BY CIVIL CONTRACTOR WITH WATER PRIOR TO COMMENCEMENT OF PLANTING DEEP MARSH AND POOL PLANTS.

14.0 MAINTENANCE/ WEED CONTROL

- REGULAR WEED CONTROL IS REQUIRED TO ENSURE THAT WEEDS DO NOT OUT COMPETE THE BENEFICIAL WETLAND PLANTS.
- WEEDS ARE TO BE MANAGED THROUGH THE LANDSCAPE ESTABLISHMENT PERIOD THROUGH REGULAR INSPECTION AND REMOVAL OF WEEDS.
- REGULAR WEEDING MUST BE UNDERTAKEN TO MINIMISE THE ESTABLISHMENT OF WEED COVER IN THE WETLAND. REGULAR WEED REMOVAL ENSURES THE WEEDS ARE UNABLE TO ESTABLISH LARGE POPULATIONS AND PROPOGATE.

15.0 ESTABLISHMENT AND COMPLETION

- THROUGHOUT THE PLANTING ESTABLISHMENT PERIOD, THE CONTRACTOR IS TO CONTINUE TO CARRY OUT ALL RECURRENT WORKS OF A MAINTENANCE NATURE, INCLUDING BUT NOT LIMITED TO, THE WATERING IN OF INSTALLED PLANTS IN ACCORDANCE WITH COUNCIL REGULATION, WEEDING, RUBBISH REMOVAL, FERTILISING, PEST AND DISEASE CONTROL, RETURNING, STAKING AND TYING, PLANT REPLACEMENT, MULCH TOPPING UP, SOIL CULTIVATION PRUNING, AERATING, RENOVATING, TOP DRESSING, ADJUSTMENT OF JUTE MAT AND KEEPING THE SITE NEAT AND TIDY - ALL TO THE EXTENT REQUIRED TO ENSURE THAT THE PLANTS AND GRASSED AREAS ARE IN THE BEST POSSIBLE CONDITION AT THE END OF THE PLANTING ESTABLISHMENT PERIOD
- REGULARLY REMOVE, BY HAND, RUBBISH AND WEED GROWTH THAT MAY OCCUR OR RECUR THROUGHOUT TURFED, PLANTED AND MULCHED AREAS.

PROJECT TEAM

Consulting Engineer:



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C	COUNCIL APPROVAL	13.08.2019	N.G.
B	FOR TENDER	03.06.2019	N.G.
A	FOR APPROVAL	08.05.2019	N.G.
REV	DESCRIPTION	DATE	BY

Status

FOR TENDER

Project

**PROPOSED SUBDIVISION AT
86-160 CHRISTENSEN ROAD
SOUTH, STAPYLTON**
for
**BURNSIDE DEVELOPMENT P/L &
YELLOWSTONE INVESTMENTS P/L**

Title

LANDSCAPING DETAILS

Drawn	Date	Chkd	Date
N.G.	29.04.2019	C.J.C.	
Design	Date	Apprd	Date
C.J.C			
Scale	A1	Certif	Date
1 : 1			
Project No.	Dwg. No.	Rev	
17-209	L06	C	

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Council Code Compliance (Appendix B);

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

6.2.11 High impact industry zone code

6.2.11.1 Application

This code applies to assessing all development in the High impact industry zone.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

Where development is identified in the **Future high impact industry precinct**, additional outcomes will apply to assessment.

Note: To the extent there is any inconsistency with the outcomes applying to the whole of the zone, the precinct outcomes will prevail.

6.2.11.2 Purpose

- (1) The purpose of the High impact industry zone is to provide for high impact industry uses.

It may include non-industrial and business uses that support the industrial activities where they do not compromise the long-term use of the land for industrial purposes.

Activities considered appropriate in this zone are defined as high impact industry in the schedule of definitions.

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

- (a) Land uses –

- (i) include a wide range of industrial activities which are appropriately located away from sensitive land uses, such as high impact industry, medium impact industry, marine industry, low impact industry, warehouses, research and technology and bulk garden supplies;

- (ii) which are industry based and have the potential for significant amenity impacts may be considered, these include aquaculture and renewable energy facilities;
 - (iii) include a limited range of complementary uses that support the immediate industrial area such as service stations, food and drink outlets and hardware and trade supplies;
 - (iv) that may not be appropriate in other areas due to their scale and nature will be considered providing they do not compromise the short or long-term use of the zone for industrial activities. These include crematoriums, intensive horticulture, wholesale nurseries, animal keeping, intensive animal industries, rural industries, parking stations and transport depots;
 - (v) include brothels;
 - (vi) that are incompatible and have the potential to compromise the industrial operation of the zone such as sensitive land uses are not supported; and
 - (vii) include special industry uses in very limited circumstances.
- (b) Character consists of –
- (i) land with the largest separation from sensitive land uses, occupied by functional industrial buildings;
 - (ii) legible and attractive streetscapes with wide streets that provide easy site access; and
 - (iii) extensive landscaping where adjoining non-industrial uses and transport corridors.
- (c) Built form –
- (i) is of a height that is consistent with the surrounding industrial development and allows for a flexible range of large scale industrial activities.
- (d) Lot design –
- (i) allows for the efficient operation of high impact industrial activities.
- (e) Variations in the zone are –
- (i) **Future high impact industry precinct.**

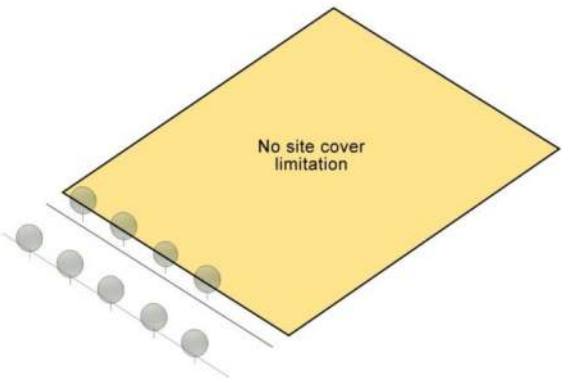
Future high impact industry precinct

- (3) The purpose of the **Future high impact industry precinct** will be achieved through the following additional overall outcomes:
- (a) To identify and protect land reserves for High impact industry that currently lacks the adequate infrastructure.
 - (b) Industrial development is staged and designed to provide for appropriate infrastructure to meet Council's desired standard of service for industrial uses.
 - (c) Development out-of sequence with water/sewer infrastructure secures agreements from downstream land holders and bares the full cost of providing the necessary infrastructure to Council's standards.
 - (d) Interim land uses and subdivisions do not compromise the capacity of the precinct to develop intensively for high impact industry activities.

- (e) Interim land uses and subdivisions do not compromise the intention for buffering or transition areas close to sensitive uses or values in the surrounding area.

6.2.11.3 Specific benchmarks for assessment

Table 6.2.11-2: High impact industry zone code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Site cover			
			
Figure 6.2.11-1 Illustration showing High impact industry zone site cover outcomes			
Height			
PO1 Development is of a height that: (a) is consistent with the surrounding industrial built form; and (b) allows for the effective operation of the use.	AO1 Building height does not exceed 15m. AND Structures do not exceed a height of 15m.	AO1 NOT APPLICABLE This application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing). Accordingly, no buildings are proposed as part of this application.	

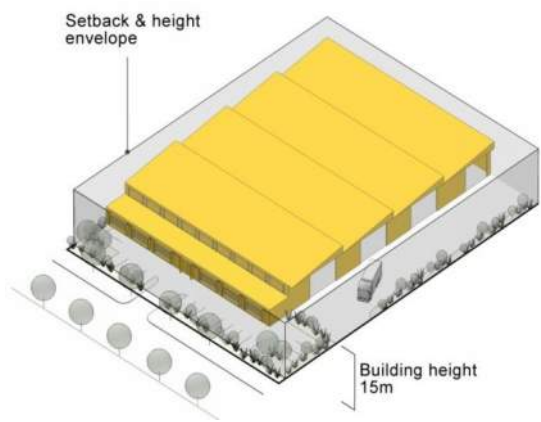
Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
			

Figure 6.2.11-2
Illustration showing High impact industry zone setbacks and height outcomes

Lot design (for subdivision only)

PO2 Lots are of a size that support high impact industrial activity and configured to operate efficiently and effectively.	AO2.1 Minimum lot size is 4,000m ² or that shown on the Minimum lot size overlay map , whichever is greater, exclusive of any access strip or access easement for rear lots. OR When access is proposed from an industrial collector road the minimum lot size is 6,000m ² or that shown on the Minimum lot size overlay map , whichever is greater.	AO2.1 NOT APPLICABLE This application does not seek approval for a reconfiguring a lot (subdivision). It can be noted that this Operational Works Application has been prepared in accordance with Development Approval – ROL201800026 for a reconfiguring a lot – one (1) into seventeen (17) community title scheme lots (subdivision), which was approved by Gold Coast City Council on the 2 nd November, 2018.	
	AO2.2 Minimum road frontage and average lot width is 25m. OR For rear lots the average lot width is 25m.	AO2.2 NOT APPLICABLE This application does not seek approval for a reconfiguring a lot (subdivision). It can be noted that this Operational Works Application has been prepared in accordance with Development Approval – ROL201800026 for a reconfiguring a lot – one (1) into seventeen (17) community title scheme lots (subdivision), which was approved by Gold Coast City Council on the 2 nd November, 2018.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
		Council on the 2 nd November, 2018.	
PO3 Future high impact industry precinct Lots are of a size that do not compromise the capacity of the precinct to develop intensively for high impact industry activities.	AO3 Future high impact industry precinct Minimum lot size is 20ha.	AO3 NOT APPLICABLE This application does not seek approval for a reconfiguring a lot (subdivision). It can be noted that this Operational Works Application has been prepared in accordance with Development Approval – ROL201800026 for a reconfiguring a lot – one (1) into seventeen (17) community title scheme lots (subdivision), which was approved by Gold Coast City Council on the 2nd November, 2018.	
Out of sequence development			
PO4 Future high impact industry precinct Where development does not have an immediate connection to adequate infrastructure the proposal must demonstrate that: (a) the development is staged and designed to provide for appropriate infrastructure to meet Council's standard of service; (b) downstream property owner agreements are secured for the provision of the necessary infrastructure through their land; (c) interim land uses do not compromise the capacity of the precinct to develop intensively for high impact industry activities or to accommodate buffer or transition areas to nearby sensitive uses and other values; and (d) the necessary infrastructure is provided to Council's standards, at no cost to Council.	AO4 Future high impact industry precinct No acceptable outcome provided.	AO4 NOT APPLICABLE The subject site is not located within a Future High Impact Industry Precinct.	

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

8.2.2 Airport environs overlay code

8.2.2.1 Application

This code applies to assessing any Operational work or Material change of use where indicated as accepted subject to requirements or assessable development within **Part 5.10 Categories of development and assessment – Overlays**.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

8.2.2.2 Purpose

- (1) The airport environs overlay deals with issues relating to development in the vicinity of certain airports and aviation facilities. This includes:
- the Obstacle Limitation Surface (OLS)
 - public safety area
 - wildlife hazard buffer zones
 - lighting area buffer zones
 - Australian Noise Exposure Forecast (ANEF) contour
 - Procedures for Air Navigation Services – Aircraft Operational (PANS-OPS) surfaces
 - aviation facilities
 - it may also include locally identified issues that relate to airport environments.

- (2) The purpose of the Airport environs overlay code is to
- (a) recognise Gold Coast Airport as essential economic infrastructure and protect and assure its ongoing operation and continued development;
 - (b) regulate development that may affect the operational efficiency of Gold Coast Airport at Coolangatta and the Airservices Australia Aviation Facilities related to the operation of the airport;
 - (c) minimise incompatible development within the public safety area adjacent to the airport;
 - (d) minimise the adverse impacts of airport noise on residential and other noise sensitive land uses in the vicinity of the airport.
- (3) The purpose of the code will be achieved through the following overall outcomes:
- (a) The Gold Coast Airport continues to contribute to the tourism industry, the business sector and communities of Gold Coast.
 - (b) Development does not impact on the operation of Gold Coast Airport.
 - (c) The maximum height of buildings and other structures, within the area designated as the airport's 'prescribed airspace' pursuant to the Airports (Protection of Airspace) Regulations 1996, as shown in the mapping of the **Obstacle Limitation Surface (OLS)** and the **Procedures for Air Navigation Services – Aircraft Operational (PANS-OPS) surfaces**, is not exceeded.
 - (d) Buildings and other structures do not encroach into the sensitive areas around aviation facilities pursuant to International Civil Aviation Organisation (ICAO) principles and *Air Services Act 1996*.
 - (e) The operation of artificial lighting sources does not exceed the maximum light source intensities imposed by the Gold Coast Airport Master Plan and the Civil Aviation Safety Authority.
 - (f) Potential hazards to safety of aircraft operations brought about by bird or bat strikes are minimised.
 - (g) Potential hazards to safety of aircraft operations resulting from the emission of smoke, dust or other particulate matter, or creation of air turbulence are minimised.
 - (h) Potential hazards to safety of aircraft operations resulting from reflection of sunlight, and any another potential causes of temporary interference with pilot vision are minimised.
 - (i) New development within the public safety area of the airport does not significantly increase population density or the use and storage of hazardous materials within this area.
 - (j) Potential impacts on residential and other noise-sensitive development in close proximity to the airport are minimised by ensuring that new development is subject to appropriate acoustic treatment pursuant to *AS2021:2015 Acoustics – Aircraft noise intrusion – Building siting and construction*, according to noise contours shown on **Airport environs – Australian Noise Exposure Forecast (ANEF) contour overlay map**.

8.2.2.3 Specific benchmarks for assessment**Table 8.2.2-2: Airport environs overlay code – for assessable development**

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Heights of buildings and other structures			
PO1 Building height and structure height does not affect the current or future operational efficiency of Gold Coast Airport or create a hazard to the safe navigation of aircraft using the airport's prescribed airspace. Note: The requirements associated with the heights of buildings are also applicable to temporary intrusions into prescribed airspace, such as cranes utilised during building construction. <i>Editor's note – A development proposal involving a building, structure, crane or other construction equipment which exceeds 110m is required to be notified to CASA. Furthermore, any building, structure, crane or other construction equipment which exceeds 150m above ground level must be regarded as an obstacle unless assessed otherwise by CASA. Council is required to refer such development proposals to the airport manager for assessment, who will then refer the proposal to CASA. Refer to the SPP guidelines for more information regarding the Australian Government's role and assessment processes for intrusions into operational airspace of strategic airports.</i>	AO1 Building height and structure height does not exceed the current maximum allowable height applicable to the subject site, as identified on Airport environs – Procedures for Air Navigation Services – Aircraft Operational (PANS-OPS) surfaces overlay map and Airport environs – Obstacle Limitation Surface (OLS) overlay map. <i>Editor's note – A development proposal involving a building, structure, crane or other construction equipment which encroaches into the operational airspace of a Leased Federal or other strategic airport must be referred by Council to the airport manager for assessment, who will on refer the proposal to the Australian Government if required.</i>	PO1 COMPLIES As per the Gold Coast City Council v6 Interactive Mapping System, the subject site is located within the Procedures for Air Navigation Services, Aircraft Operational (PANS-OPS) surfaces sub-category. It can be noted that the proposed development does not produce any runway like structures, or lighting such as upward shining lights, flare plumes, flashing lights, laser lights and sodium lights that may potentially impact or cause confusion to the pilot's vision. Thus, consideration of this element is not applicable in this instance. No additional buildings are proposed as part of this application, and thus will not exceed the height restrictions stipulated Airports (Protection of Airspace) Regulations 1996. Accordingly, the use will not affect the operational efficiency of the Gold Coast Airport.	
Acoustic treatment to buildings to lessen the impact of aircraft noise (on land within the Airport environs – Airport Noise Exposure Forecast (ANEF) contour overlay map)			
PO2 Development, other than an extension to an existing Dwelling house, on land within the 20 ANEF contour or greater as shown on the latest approved ANEF plan	AO2 Development within the 20 ANEF contour or greater, as identified on Airport environs – Australian Noise Exposure Forecast (ANEF) contour	AO2 NOT APPLICABLE The subject site is not located within the Airport Environs Exposure Forecast (ANEF) contour overlay map.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
for Gold Coast Airport, is designed and constructed to prevent adverse impacts from aircraft noise . Note: The current ANEF mapping for Gold Coast Airport as at the date of adoption of the planning scheme is shown in Airport environs – Australian Noise Exposure Forecast (ANEF) contour overlay map.	overlay map is acoustically insulated to the applicable standard required by <i>AS2021:2015 Acoustics – Aircraft noise intrusion – Building siting and construction</i> .		
Reflective roof materials, advertising devices and artificial light sources (on land within the Gold Coast Airport lighting zone)			
PO3 Development involving reflective roof materials, illuminated advertising devices or other artificial light sources, including street lighting and coloured lights, do not create a visual hazard for aircraft operation on approach to, or take off from, the Gold Coast Airport. Note: For advice on how to meet aviation safety requirements refer to <i>Civil Aviation Safety Authority (CASA) guidelines: Lighting in the Vicinity of Aerodromes – Advice to Lighting Designers</i> . Note: Use of a reflective roof surface in the Lighting Zone of Gold Coast Airport constitutes a 'controlled activity', and requires approval from the operator of Gold Coast Airport. (Roof materials having solar absorbcency greater than 0.35 are deemed to be pre-approved).	AO3.1 The illuminated advertising device or artificial light source does not exceed the maximum intensity of illumination within the respective light intensity zone, as identified on Airport environs – lighting area buffer zones overlay map .	AO3.1 NOT APPLICABLE The proposed development is not located within the Gold Coast Airport lighting zone.	
	AO3.2 Configurations of lights in straight parallel lines 500m to 1,000m long (e.g. sporting fields and large parking areas) are not located within the Outer lighting zone, as identified on Airport environs – lighting area buffer zones overlay map .	AO3.2 NOT APPLICABLE The proposed development is not located within the Gold Coast Airport lighting zone.	
	AO3.3 Glare or flashes (e.g. sporting stadia), flare plumes, refineries, upward shining lights, laser lights, flashing or sodium (yellow) lighting are not located within 6 km of the airport runway, as identified on Airport environs – lighting area buffer zones overlay map .	AO3.3 NOT APPLICABLE The proposed development is not located within the Gold Coast Airport lighting zone.	
	AO3.4 The roof of any building located on land identified on Airport environs –	AO3.4 NOT APPLICABLE The proposed development is not located within the Gold Coast Airport lighting zone.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	lighting area buffer zones overlay map has a solar absorbency greater than 0.35.		
Development within public safety areas			
PO4 Development within the Public Safety Area for Gold Coast Airport as identified on Airport environs – public safety area overlay map does not increase the amount of people living and using the area or increase the risk to airport operations.	AO4 Development within the Public Safety Area for the Gold Coast Airport as identified on the Airport environs – public safety area overlay map does not: (a) Increase the number of people living in the area, and proposes no greater density than a Dwelling house. (b) Introduce or intensify community, commercial, industrial or any other uses. (c) Involve the manufacturing or bulk storage of hazardous (explosive or noxious) or flammable materials.	AO4 NOT APPLICABLE The proposed development is not located within the Public Safety Area for the Gold Coast Airport.	
Aviation facilities			
PO5 Development in the area, around Airservices Australia Aviation Facilities identified on Airport environs – Airservices Australia aviation facilities overlay map , does not adversely impact on the functioning of these facilities. Note: If development has the potential to adversely affect the functioning of Airservices Australia Aviation Facilities, approval is required from the Manager, Operational Requirements and Services (Airservices Australia).	AO5.1 Development that involves electrical or electromagnetic fields (e.g. arc welding) or that creates a permanent or temporary physical line of sight obstruction between transmitting and receiving devices, is not located within the VHF 500m buffer overlay for the Springbrook VHF facility (as identified on the Airport environs – Airservices Australia aviation facilities overlay map).	AO5.1 NOT APPLICABLE The proposed development is not located in the area, around Airservices Australia Aviation Facilities.	
	AO5.2 Development that involves any of the following, is not included within the VOR 1000m buffer overlay for the	AO5.2 NOT APPLICABLE The proposed development is not located in the area around Airservices Australia Aviation Facilities.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	Jacobs Well VOR facility (as identified on Airport environs – Airservices Australia aviation facilities overlay map): (a) creating a permanent or temporary physical line of sight obstruction; (b) overhead lines exceeding 5m in height; (c) metallic structures exceeding 8m in height; (d) trees and open lattice towers exceeding 10m in height; (e) wooden structures exceeding 13m in height.		
	AO5.3 Development that involves any of the following, is not located within the building restricted area for the Mt Somerville PSR and SSR facilities (as identified on the Airport environs - Airservices Australia aviation facilities overlay map). (a) creating a permanent or temporary physical line of sight obstruction; (b) overhead lines exceeding 5m in height; (c) metallic structure exceeding 8m in height.	AO5.3 NOT APPLICABLE The proposed development is not located in the area around Airservices Australia Aviation Facilities.	
	AO5.4 Development that involves any of the following, is not located within the building restricted area for the Coolangatta DVOR, DME and NDB facilities (as identified on the Airport environs - Airservices Australia aviation facilities overlay map). (a) creating a permanent or temporary	AO5.4 NOT APPLICABLE The proposed development is not located in the area around Airservices Australia Aviation Facilities.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	physical line of sight obstruction; (b) overhead lines exceeding 5m in height; (c) metallic structures exceeding 8m in height.		
Potential bird or bat strike on aircraft (on land within the Gold Coast Airport wildlife hazard buffer zones)			
PO6 Development in the bird/bat strike zones of Gold Coast Airport, as identified on Airport environs – wildlife hazard buffer zones overlay map , does not exacerbate the potential for bird or bat strike on aircraft.	AO6.1 In locations within 3km of the Gold Coast Airport, as identified on Airport environs – wildlife hazard buffer zones overlay map , where planting as part of a development could result in increased attraction of birds or bats, with the possibility of creating a hazard for aircraft operations, plant species will be selected which are not subject to heavy flowering or fruiting. Editors Note: The operator of Gold Coast Airport maintains a preferred plant species list that is available for the assistance of development proponents, if required.	AO6.1 NOT APPLICABLE The proposed development is not located within the Gold Coast Airport wildlife hazard buffer zones.	
	AO6.2 In the case of any development within an allotment located within 3km of the Gold Coast Airport, as identified on Airport environs – wildlife hazard buffer zones overlay map , with the potential to create or increase a hazard of bird or bat strike on aircraft evidence is provided to confirm that approval has been obtained from the operator of Gold Coast Airport.	AO6.2 NOT APPLICABLE The proposed development is not located within the Gold Coast Airport wildlife hazard buffer zones.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	AO6.3 The following land uses are not located within 3km of the airport runway, as identified on Airport environs – wildlife hazard buffer zones overlay map : (a) Cropping (turf farm or fruit tree farm) (b) Intensive animal industry (piggery) (c) Aquaculture (fish processing/packing plant) (d) Conservation state (e.g. wetland) (e) Major sport, recreation and entertainment facility (showground) (f) Low impact industry, Medium impact industry, high impact industry (food processing plant) (g) Food/organic waste facility: and (h) Putrescible waste facility (e.g. landfill, transfer station)	AO6.3 NOT APPLICABLE The proposed development is not located within the Gold Coast Airport wildlife hazard buffer zones.	
	AO6.4 Where the uses listed in AO6.3 are located between 3km and 13km from the airport runway, as identified on the Airport environs – wildlife hazard buffer zones overlay map, measures that prevent wildlife attraction are undertaken (e.g. covering of potential food/waste sources and other wildlife deterrence methods). Note: Where exceptional circumstances justify approval of development within 3km – 13km of the airport runway, rigorous wildlife management measures to avoid attracting wildlife should be incorporated in the development proposal.	AO6.4 NOT APPLICABLE The proposed development is not located within the Gold Coast Airport wildlife hazard buffer zones.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	AO6.5 The following land uses include appropriate measures that prevent wildlife attraction (e.g. covering of potential food/waste sources and other wildlife deterrence methods) if located within 13km of the airport runway, as identified on the Airport environs – wildlife hazard buffer zones overlay map : (a) Animal husbandry (cattle/dairy farm); (b) Intensive animal industry (poultry farm); (c) Conservation estate (all other than mentioned in AO6.3); (d) Major sport, recreation and entertainment facility (all other than mentioned in AO6.3); (e) Outdoor sport and recreation; (f) Park; (g) Non-putrescible waste facility (e.g. landfill, transfer station) (h) Sewerage/wastewater treatment facility	AO6.5 NOT APPLICABLE The proposed development is not located within the Gold Coast Airport wildlife hazard buffer zones.	

Emission of particulate matter and air turbulence (inside the outer horizontal surface 15km)

PO7 Development in the Gold Coast Airport's prescribed airspace does not compromise the operation of aircraft engines or create air turbulence or a potential visual hazard for aircraft operation around the Gold Coast Airport due to emission of smoke, steam or other particulate matter. Note: The Gold Coast Airport's 'Prescribed Airspace' is indicated	AO7.1 The development will not cause a potential hazard to the operation of aircraft through the emission of smoke, steam, dust or other particulate matter.	AO7.1 NOT APPLICABLE The proposed development is not located inside the outer horizontal surface 15km.	
	AO7.2 The development will not cause a potential hazard to the operation of aircraft through the emission of a gaseous plume at a velocity exceeding	AO7.2 NOT APPLICABLE The proposed development is not located inside the outer horizontal surface 15km.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
by the OLS and the PANS-OPS on Airport environs – Procedures for Air Navigation Services – Aircraft Operational (PANS-OPS) surfaces overlay map and Airport environs – Obstacle Limitation Surface (OLS) overlay map. Note: If development has the potential to cause a hazard to aircraft operations through the emission of particulate matter, approval of the operator of Gold Coast Airport is required.	4.3m per second.		
Transient aviation activities			
PO8 Development does not adversely impact on the Gold Coast Airport's prescribed airspace. Note: The Gold Coast Airport's 'Prescribed Airspace' is indicated by the OLS and the PANS-OPS on Airport environs – Procedures for Air Navigation Services – Aircraft Operational (PANS-OPS) surfaces overlay map and Airport environs – Obstacle Limitation Surface (OLS) overlay map.	AO8 Activities involving transient intrusions such as parachuting, hot air ballooning or hang gliding are not located within the airspace of the Gold Coast Airport.	AO8 NOT APPLICABLE This application seeks approval for Operational Works regarding landscaping and vegetation clearing. Accordingly, this application does not involve transient intrusion activities including parachuting, hot air ballooning or hang gliding.	

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

8.2.8 Flood overlay code

8.2.8.1 Application

This code applies to assessing operational work, material change of use or reconfiguration of a lot for development subject to the Flood overlay and identified in **Part 5.10 Categories of development and assessment – Overlays**

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

8.2.8.2 Purpose

- (1) The Flood overlay deals with areas of land identified in a state planning policy. It may include the following area of land identified in the local government area as:
 - (a) areas of land with flooding and inundation potential.
 - (b) overland flow paths identified locally.It applies, at a minimum, to development that:
 - (a) increases the number of people living and working in the natural hazard management area, except where the premises are occupied on a short term or intermittent basis; or
 - (b) involves institutional uses where evacuating people may be difficult; or
 - (c) involve the manufacture or storage of hazardous materials in bulk.
- (2) The purpose of the Flood overlay code is to regulate development occurring in flood affected areas to ensure development does not cause, increase or have cumulative potential to cause or increase, the risks and/or hazards associated with flooding.

- (3) The purpose of the code will be achieved through the following overall outcomes:
- (a) Avoid, if practicable, or otherwise lessen, the adverse impacts of flooding and ensure development is located, designed and managed to mitigate the risk to life and property.
 - (b) No extra burden on the city's counter-disaster response efforts during a flood emergency.
 - (c) Development constraints and development potential within a single river catchment and its sub-catchments are equitably shared.
 - (d) The costs and benefits of flood-mitigation infrastructure within a river catchment and its sub-catchments are equitably shared.
 - (e) The flood storage function of the city's flood plains is protected.
 - (f) The flood discharge capacity of the city's rivers, streams and canals is protected.
 - (g) A best-practice approach to flood-plain management is achieved and maintained.
 - (h) The effects of flooding are managed by requiring certified engineering hydraulic studies and specific design criteria for certain types of land uses.
 - (i) Provide standards for development in these areas that will ensure that the runoff from land and/or premises does not create any adverse environmental impacts.
 - (j) The effects of future climate variability are taken into account.
 - (k) Development does not occur at the expense of other environmental values.

All proposals for development are fully evaluated against the following criteria:

- Whether the development is likely to cause damage that would adversely affect land and/or premises to an extent likely to be actionable (Nerang River Catchment is to be based on Hinze Dam Stage 2 flood levels).
- Whether the cumulative impact of development is likely to cause or increase the adverse impacts of flooding.
- Whether the development is likely to cause or worsen flood hazard.
- Whether the risks associated with the development are fully known, quantifiable and capable of being dealt with to Council's satisfaction, without any uncertainties.
- Whether flood mitigation works, intended to reduce flood risk, hazard and damage, do so without adversely impacting upon other land and/or premises.
- Whether the impacts of climate change have been taken into account; and
- Whether extra burden is placed on the city's counter disaster response efforts during a flood emergency.

8.2.8.1 Specific benchmarks for assessment

Table 8.2.8-2: Flood overlay code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Flood storage			
PO1 All development activity conducted on land below the designated flood level must not detrimentally affect the flood storage capacity of the catchment and the drainage regime.	AO1 The flood storage volume on the site is maintained up to the Designated Flood Level. Note: The Designated Flood Level must be obtained from Council's Flood Search.	AO1 NOT APPLICABLE The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not seek approval for any new buildings.	
Building floor levels			
PO2 Development that is located on flood prone land shall not be inundated by floodwaters during a designated flood and allowance must be made for elements that could result in an elevated flood, including: (a) the hydraulic gradient above the main floodway (b) The impact of events such as wind and wave action on the flood surface; and (c) Uncertainty associated with the designated flood level.	AO2.1 Building floor levels of habitable rooms must be at or above the height of the combined designated flood level and minimum freeboard derived from Table 8.2.8-6 – table to acceptable outcome AO2.1	AO2.1 NOT APPLICABLE The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not seek approval for any new buildings.	
	AO2.2 Where a proposed land use does not reasonably apply to any land use listed in the Table 8.2.8-6: Table to acceptable outcome AO2.1 , the applicant is to submit: (a) the proposed minimum flood AEP for building floor levels; (b) the proposed design freeboard above the specified flood level; and (c) a flood hazard and flood risk assessment for the proposed development, assessing the effects on costs, safety, access and potential losses.	AO2.2 NOT APPLICABLE The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not seek approval for any new buildings.	
PO3	AO3.1	AO3.1 NOT APPLICABLE	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Building floor levels of garages and non-habitable rooms must be constructed at a height that reflects an acceptable flood risk for their purpose. Note: PO3 does not apply to: - extensions to existing buildings; - structures detached from a dwelling, for which the use is ancillary to that of a dwelling, provided that use is not listed in column 1 of Table 8.2.8-3: Table to performance outcome PO7.	Building floor levels of garages and non-habitable rooms, constructed at approximately the same level as, and attached to, the main dwelling, are constructed at a height above the Designated Flood Level, except where the dwelling has a suspended floor, constructed one metre or more above ground, or where the building is to be constructed within a Rural zone.	The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not seek approval for any new buildings.	
	AO3.2 Garages and car parks detached from the building are not inundated to cause more than a medium hazard, as identified within Table 8.2.8-5 Table to acceptable outcome AO11, for the designated flood.	AO3.2 NOT APPLICABLE The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not seek approval for any new buildings.	
Overland flow			
PO4 Development must not obstruct free open surface flow of stormwater through a site.	AO4 Overland flowing stormwater is allowed free open surface flow between the street and any waterway at the rear of the property, in accordance with the provisions of the <i>Building Code of Australia</i> .	AO4 COMPLIES The proposed development will not obstruct free open surface flow of stormwater, in accordance with the provisions of the Building Code of Australia. It should be noted; a Stormwater Quality Management Plan has been previously prepared by icubed consulting and approved by Council. This plan addresses stormwater management for the proposed subdivision. (Ref: 17-209-SWMP dated 30/01/2019, Council Ref: OPW/2019/160)	
Flooding risk			
PO5 Development in flood affected areas must not cause, or have the cumulative potential to cause, damage, must not increase the level of risk to life, or be to	AO5 Development does not: (a) increase the number of people calculated to be at risk from	AO5 NOT APPLICABLE The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not increase the number of people to be at risk from flooding and	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
the detriment of flood evacuation procedures.	flooding; (b) increase the number of people likely to need evacuation; (c) shorten flood warning times; (d) impact on the ability of traffic to use evacuation routes, or unreasonably increase traffic volumes on evacuation routes, or as identified within Council's Counter Disaster Plan (flooding); (e) place additional burdens on Council's resources or emergency services; (f) increase the duration of flooding, unless that increase is part of a Council approved flood mitigation strategy.	does not cause or have the cumulative potential to increase the level of risk or be detriment of flood evacuation procedures.	
Flood storage and conveyance			
PO6 Development with plans for earthworks in a floodplain on or over a water body or within a flood affected area below the Designated Flood Level must allow for the maintenance of flood storage, and flood conveyance of flood and drainage channels and overland flow paths.	AO6.1 Provide flood storage calculations that demonstrate that flood storage volume, over the site below the Designated Flood Level, is maintained or increased.	AO6.1 NOT APPLICABLE The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not seek approval for earthworks. A Bulk Earthworks Plan has been previously prepared by <i>icubed consulting</i> and approved by Council. This plan addresses earthworks for the proposed subdivision. (Ref: 17-209 dated 30/01/2019, Council Ref: OPW/2019/160)	
	AO6.2 A certified hydraulic study (and, if necessary, a hydrologic study) is prepared by a suitably qualified and experienced engineer to investigate the hydraulic characteristics of both the undeveloped and developed site and	AO6.1 NOT APPLICABLE The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not seek approval for earthworks.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	make comparisons between them. Proposed developments in, on or over a water body, or within a flood affected area, must be tested for: (a) the 50%, 20%, 10%, 5%, 2% and 1% Annual Exceedance Probability (AEP) for local flood events; (b) the 5%, 2%, and 1% AEP floods. For the Nerang River Catchment Hinze Dam stage 2 condition must be used. (as specified in Table 8.2.8-3: Table to performance outcome PO7); and (c) any resultant afflux or increase in flood velocities sufficient to cause real damage to premises. The Assessment Manager may also require the development to be assessed against rarer floods.		
Development for certain purposes			
PO7 Development is constructed at or above the Designated Flood Level, shown in Table 8.2.8-3: Table to performance outcome PO7 . Note: The designated flood level for the Nerang River is based on Hinze Dam Stage 2 condition.	AO7 No acceptable outcome provided.	AO7 NOT APPLICABLE The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not seek approval for earthworks.	
PO8 Development must consider hydrologic and hydraulic impacts of development in flood affected areas with regard to future climate change.	AO8 No acceptable outcome provided. Note: As part of a hydrologic and hydraulic impact assessment, investigation has been undertaken to determine the impacts of future climate change. The findings of the investigation may be used to modify modelling parameters and boundary	AO7 NOT APPLICABLE The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not seek approval for earthworks.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	conditions used in modelling the hydrologic and hydraulic impacts of development in flood affected areas.		
Hazard considerations for development			
PO9 Development listed in the Table 8.2.8-4: Table to acceptable outcome AO9 below must be designed and constructed to avoid causing exposure to undue flood hazard.	AO9 Development is to be designed and constructed so that users are not exposed to a greater degree of hazard than shown in Table 8.2.8-4: Table to acceptable outcome AO9 for the range of flows specified in Table 8.2.8-5: Table to acceptable outcome AO11 .	AO6.1 NOT APPLICABLE The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not seek approval for a development use listed in <i>Table 8.2.8-4: Table to acceptable outcome AO9</i> .	
Storage of hazardous chemicals (exceeding a threshold) in a flood hazard area			
PO10 Storage, handling or manufacturing areas that are identified on the Flood overlay map and contain hazardous chemicals in quantities greater than 2500L or 2500kg must be located and designed to minimise the likelihood of: - inundation by flood waters from creeks, rivers, lakes or estuaries and - the possibility of spills to flood waters	AO10.1 The base of any tank with a capacity >2500L or >2500kg is higher than the designated flood level identified in Table 8.2.8-3: Table to performance outcome PO7 (where the designated flood level is not specified a minimum flood level of 1% AEP must be applied).	AO10.1 NOT APPLICABLE The proposed application does not propose storage, handling or manufacturing areas and contain hazardous chemicals.	
	AO10.2 Bulk tanks with a capacity >2500L or >2500kg: - are anchored so they remain stable and cannot float or topple if submerged or inundated by water, and - tank openings not provided with a liquid tight seal, i.e. an atmospheric vent, are extended above the designated flood level identified in Table 8.2.8-3: Table to	AO10.2 NOT APPLICABLE The proposed application does not propose storage, handling or manufacturing areas and contain hazardous chemicals.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	performance outcome PO7 (where the designated flood level is not specified a minimum flood level of 1 in 100 must be applied).		
	AO10.3 The lowest point of any storage area for packages >2500L or >2500kg within an area identified on the Flood overlay map must be higher than the designated flood level identified in Table 8.2.8-3: Table to performance outcome PO7 (where the designated flood level is not specified a minimum flood level of 1% AEP must be applied). OR Package stores, for packages >2500L or >2500kg, are provided with impervious bund walls or racking systems higher than the designated flood level identified in Table 8.2.8-3: Table to performance outcome PO7 (where the designated flood level is not specified a minimum flood level of 1% AEP must be applied).	AO10.3 NOT APPLICABLE The proposed application does not propose storage, handling or manufacturing areas and contain hazardous chemicals.	
Access with respect to hazard			
PO11 All proposed development must demonstrate that sufficient access or egress will be available to enable evacuation during a range of floods, up to and including the designated flood.	AO11 Development, not including underground car parks, must ensure that evacuation opportunities exist in accordance with the minimum levels of exposure outlined in Table 8.2.8-5: Table to acceptable outcome AO11, where means of access or egress may be: (a) an access route that is below the level of the designated flood,	AO11 NOT APPLICABLE The proposed application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing) and accordingly does not seek approval for any new development.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	provided that route is classed as a low hazard, as defined in Table 8.2.8-5: Table to acceptable outcome AO11; or (b) an access route that is not the main access route. However, it must remain effective for the duration of a range of flood events, up to and including the designated flood; or (c) a temporary access arrangement, provided that access can be gained without significant preparation time being required. The access or egress must: (a) in the event of a designated flood: (i) not expose users to undue risk; (ii) not cause, or have the cumulative potential to cause, real damage to land and/or premises; (iii) not interrupt or materially change the surface water drainage from or onto adjoining land; (b) not create, in the event of a flood, a sudden change in flow distributions, flood level or velocity that could result in: (i) the breaking of a levee; or (ii) the establishment of blockage of a breakout; or (iii) excessive scour; or (iv) sedimentation; or (v) increased flood hazard.		
Filling, excavation and contouring			
PO12	AO12	AO12 COMPLIES	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Any change to ground level, by way of filling, excavation or contouring, must not result in damage, flood hazard or impediment to any Counter Disaster Plan, measure or create unreasonable change in the exposure to flood hazard.	Changes to ground level, by way of filling, excavating or contouring, comply with a hydraulic master plan approved by Council. OR A flood study is prepared in accordance with the requirements set out in AO6.1 and AO6.2 , is approved by Council, and it is established that the development complies with, or does not impede, any Counter Disaster Plan measure.	A Bulk Earthworks Plan has been previously prepared by <i>icubed consulting</i> and approved by Council which addresses cut and fill and slope stability. (Ref: 17-209 dated 30/01/2019, Council Ref: OPW/2019/160)	
PO13 Filling, excavation or contouring must not cause sedimentation, erosion or adverse impact on the City's drainage network.	AO13 No acceptable outcome provided. For guidance, please refer to the Healthy waters code .	AO13 COMPLIES A Bulk Earthworks Plan has been previously prepared by <i>icubed consulting</i> and approved by Council which addresses filling, excavation. (Ref: 17-209 dated 30/01/2019, Council Ref: OPW/2019/160). A Erosion and Sediment Control Plan has been prepared and submitted as part of this application which addresses erosion risks. Refer to Appendix A- Sediment and Erosion Control Plan for further details	
Landscaping			
PO14 Landscaping must not impede a natural waterway, a flood channel, flood storage or an overland flow path.	AO14 Landscaping complies with a hydraulics master plan approved by Council. OR A flood study, allowing for the landscaping, is prepared in accordance with the requirements of AO6.1 and AO6.2 , and is approved by the Assessment Manager.	AO14 COMPLIES All landscaping work will not impede natural waterway, flood channels, flood storage or an overland flow path. A Detailed Landscape Plan has been prepared by <i>icubed consulting</i> and submitted as part of this application. Refer to Appendix A- Landscape Plan for further details.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Environmental values			
PO15 Works to mitigate flood risks avoid adverse impact on other environmental values.	AO15 No acceptable outcome is provided.	PO15 COMPLIES A Bulk Earthworks Plan has been previously prepared by icubed consulting and approved by Council which addresses slope stability. (Ref: 17-209 dated 30/01/2019, Council Ref: OPW/2019/160). A Vegetation Management Plan has been prepared and submitted as part of this application which addresses the preservation of vegetation on site. Refer to Appendix C- Vegetation Management Plan for further details.	

Table 8.2.8-3: Table to performance outcome PO7

Land use	Designated flood ¹
Disaster management facilities	0.2% AEP
Hospitals	0.2% AEP
Major electrical switchyards, power stations, water treatment plants	0.2% AEP
Fire/police stations	0.5% AEP
Places of refuge	0.5% AEP
Electricity substations	0.5% AEP
Sewage treatment plants	0.5% AEP
Home for the aged, hospice	0.5% AEP
Regional fuel storage	0.5% AEP
Food storage warehouses	0.5% AEP
Hotel residential	1.0% AEP

Land use	Designated flood ¹
Education facilities	1.0% AEP
Residential buildings	1.0% AEP
Camping grounds, caravan parks and relocatable homes reclamation levels	1.0% AEP
Commercial	1.0% AEP
Light industrial/warehousing	1.0% AEP
Theme parks	Not specified, but users should not be subjected to any more than high hazard conditions in the designated flood, as specified in AO11
Clubs/non-habitable buildings associated with enjoyment of public open space	Not specified, but users should not be subjected to any more than high hazard conditions in the designated flood, as specified in AO11
Car parking below buildings	Not specified, but users should not be subjected to any more than medium hazard conditions in the designated flood, as specified in AO11
Open space	Not specified, but ancillary structures are subject to appropriate hazard conditions in the designated flood, as specified in AO11
Rural	Not specified

Notes for Table to acceptable outcome AO7:

- (1) The designated flood level is the level that is associated with the minimum flood annual exceedence probability (AEP) for different land use types. For the Nerang River catchment the flood AEP must be calculated based on the Hinze Dam stage 2 condition. Where a modelled flood AEP is not available, historic information must be used. The designated flood level for each site must be obtained from the Council's flood search database.

Table 8.2.8-4: Table to acceptable outcome AO9

Land use	Appropriate degree of hazard				
	Nil	Low	Medium	High	Extreme
Places of refuge	√				
Public open space/recreation	√	√	√	√	
Theme parks	√	√	√	√	
Clubs/non-habitable buildings associated with enjoyment of public open space	√	√	√	√	
Commercial/industrial	√	√	√		
Residential	√	√	√		
Public institutions	√	√	√	√	
Car parking below buildings/at basement	√	√	√		
Caravan parks	√	√	√		
Council offices	√	√			
Educational facility (classrooms/office building)	√				
Educational facility (sporting fields)	√	√	√		
Homes for the elderly	√	√			
Child Care Centre	√				
Hospitals	√	√			
Disaster management facility	√	√			
Police/fire stations	√	√			
Museums/libraries/archives/infrastructure plans repositories	√				
Telephone exchanges	√				

Note: √ Indicates an appropriate land use.

The above table examines the appropriateness of land use decisions from the aspect of flood hazard only. As such, it does not confer any land use rights or provide any indication that Council will reject or favourably consider various uses in particular areas. Such consideration will be dealt with appropriately, in the context of the City Plan, and based upon full consideration of all relevant issues.

Table 8.2.8-5: Table to acceptable outcome AO11

Criteria	Degree of flood hazard			
	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, where wading velocity depth product is less than 0.6.)	Wading is not an option.
Evacuation distances	<200metres	200-400metres	400-600metres	>600metres
Maximum flood depths	<0.3metres	<0.6metres	<1.2metres	>1.2metres
Maximum flood velocity	<0.4 metres per second	<0.8metres per second	<1.5metres per second	>1.5metres 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 for 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 time.	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 (flooding).

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

Table 8.2.8-6: Table to acceptable outcome AO2.1

Land use	Designated flood level¹ plus minimum freeboard
Disaster management facilities	0.2% AEP + 500mm freeboard
Hospitals	0.2% AEP + 500mm freeboard
Major electrical switchyards, Power stations, Water treatment plants ²	0.2% AEP + 500mm freeboard
Fire and Police stations ³	0.5% AEP + 400mm freeboard
Places of refuge	0.5% AEP + 400mm freeboard
Electricity Substations ²	0.5% AEP + 400mm freeboard
Sewage Treatment Plants ⁴	0.5% AEP + 400mm freeboard
Homes for the aged, Hospice ⁵	0.5% AEP + 400mm freeboard
Regional fuel storage	0.5% AEP + 400mm freeboard
Food storage warehouses	0.5% AEP + 400mm freeboard
Hotel residential	1.0% AEP + freeboard ⁸
Educational facilities ⁶	1.0% AEP + freeboard ⁸
Residential buildings	1.0% AEP + freeboard ⁸
Camping grounds, Caravan parks and Relocatable homes reclamation levels	1.0% AEP + freeboard ⁸
Commercial ⁷	1.0% AEP
Light industrial/Warehousing ⁷	1.0% AEP
Theme parks	Not specified, but ancillary structures are subject to medium hazard considerations at the designated flood.
Clubs/Non-habitable buildings associated with enjoyment of public open space	Not specified, but ancillary structures are subject to medium hazard considerations at the designated flood.
Car parking below buildings/at basement or detached	Not specified, but ancillary structures are subject to medium hazard considerations at the designated flood.
Open space	Not specified, but ancillary structures are subject to appropriate hazard considerations at the designated flood.
Rural	Not specified

Notes for Table to acceptable outcome AO2.1:

- (1) The designated flood level is the level that is associated with the minimum flood annual exceedence probability (AEP) for different land use types. For the Nerang River catchment the flood AEP must be calculated based on the Hinze Dam stage 2 condition. Where a modelled flood AEP is not available, historic information must be used. The designated flood level for each site must be obtained from the Council's flood search database.
- (2) Applies to switchyard components necessary for the operation of the facility during a flood emergency. This shall be determined by Powerlink.
- (3) Excludes 'shop front' facilities and those not likely to be utilised during a flood emergency.
- (4) Specifically, bunds, electrical and mechanical equipment necessary for the continued operation of a sewage treatment plant shall not be at risk of inundation during a flood emergency.
- (5) The flood immunity specified is to meet the objective of not adding to the burden of flood emergency services.
- (6) It is not necessary that all rooms within an education facility be above the 1% AEP level. However, there should be sufficient space to accommodate the whole of the school population during a flood event.
- (7) Freeboard is not specified, as it is considered that commercial risk provisions should apply. If such land is developed to a flood immunity less than 1% AEP (as may be permitted by any local planning instrument), Council may endorse rates notices accordingly.
- (8) for these uses the height of 300mm freeboard is as per the *Building Regulation 2006*.

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

8.2.11 Landslide hazard overlay code

8.2.11.1 Application

This code applies to assessing material change of use, reconfiguring a lot or operational work for development located on any lot partially or completely subject to the Landslide hazard overlay and identified within **Part 5.10 Categories of development and assessment – Overlays**.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

8.2.11.2 Purpose

- (1) The Landslide hazard overlay code deals with areas of land identified in the local government area as having landslide potential. It applies, at a minimum, to development that:
 - (a) increases the number of people living and working in the natural hazard management area, except where the premises are occupied on a short term or intermittent basis; or
 - (b) involves institutional uses where evacuating people may be difficult; or
 - (c) involves the manufacture or storage of hazardous materials in bulk.
- (2) The purpose of the Landslide hazard overlay code is to regulate development which occurs on land or part of any land containing steep slopes or unstable slopes.
- (3) The purpose of the code will be achieved through the following overall outcomes:
 - (a) The potential for erosion or landslide is minimised.

- (b) The risk of landslides damaging property or endangering persons is minimised.
- (c) Stormwater runoff and waste water disposal is effectively managed so that it does not increase landslide risk on the site or neighbouring sites.
- (d) Erosion events on slopes exceeding an average gradient of 20% are minimised.
- (e) Safe and efficient vehicular access onto steeply sloping land is provided.
- (f) Development does not occur at the expense of other environmental values.

8.2.11.2 Specific benchmarks for assessment

Table 8.2.11-2: Landslide hazard overlay code – for assessable development

Performance outcomes	Acceptable outcomes		
Site slope constraints			
PO1 Development must be certified by an RPEQ as being responsive to the constraints of steeply sloping land. Note: For guidance on how to meet this performance outcome, refer to SC6.10 City Plan policy – Geotechnical stability assessment guideline.	AO1 Development is not to be undertaken on any lot partially or completely identified on the Landslide hazard overlay map , unless certification is provided by an RPEQ, confirming that the proposed development is appropriate for the sloping nature of the site, and that the risk of landslide adversely affecting the subject lot, adjoining properties and the proposed development is at a low level.	AO1 NOT APPLICABLE This application is for Operational Works (Landscaping Private Land and Vegetation Clearing) and therefore no development is proposed within the Landslide hazard overlay map areas.	
Stormwater drainage			

Performance outcomes	Acceptable outcomes		
PO2 Development must ensure that stormwater runoff does not increase the susceptibility of the site to landslide and does not cause any detriment to the natural environment or to any other lots.	AO2.1 Stormwater drainage (including roof guttering and rainwater tank overflows) is managed to avoid an increase in on-site groundwater, ponding of water and water concentration into slopes and discharges to a lawful point of discharge.	AO2.1 NOT APPLICABLE A Stormwater Quality Management Plan has been previously prepared by <i>icubed consulting</i> and approved by Council which addresses stormwater management for the proposed development (Ref: 17-209-SWMP dated 30/01/2019, Council Ref: OPW/2019/160).	
	AO2.2 Stormwater drainage is in accordance with SC6.11 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design.	AO2.2 COMPLIES A Stormwater Quality Management Plan has been previously prepared by <i>icubed consulting</i> and approved by Council in accordance with the SC6.11 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design (Ref: 17-209-SWMP dated 30/01/2019, Council Ref: OPW/2019/160).	

Cut and fill work

Performance outcomes	Acceptable outcomes		
PO3 Cut and fill work must not adversely affect slope stability or create erosion potential.	AO3.1 Cuts and fills should be minimised. The height of cut and/or fill, whether retained or not, does not exceed: (a) 900mm adjoining a public area (e.g. roads, public open space areas); (b) 1200mm adjoining a residential site; (c) 2500mm adjoining a non-residential site. OR Cuts greater than 900mm height are separated by terraces with a minimum width of 1.2m or equal to the height of the cut, whichever is greater, that incorporates drainage provisions in accordance with Council's SC6.11 City Plan policy – Land development guidelines, Section 3 – Change to ground level standards and Section 4 – Stormwater drainage and water sensitive urban design.	AO3.1 COMPLIES A Bulk Earthworks Plan has been previously prepared by <i>icubed consulting</i> and approved by Council which addresses cut and fill and slope stability. (Ref: 17-209 dated 30/01/2019, Council Ref: OPW/2019/160). An Erosion and Sediment Control Plan has been prepared and submitted as part of this application which addresses erosion risks. Refer to Appendix A- Sediment and Erosion Control Plan for further details	
	AO3.2 No crest of any cut or toe of any fill, or any part of any retaining wall or structure, is located closer than 600mm to any boundary of the lot, unless the prior approval of both landowners and the Council, or its delegate, has been obtained.	AO3.2 COMPLIES Refer to AO3.1.	
	AO3.3 Cut and/or fill on slopes steeper than 1V:2H (26°) are retained at the time of earthworks by retaining structures or other stabilisation methods, in accordance with SC6.11 City Plan policy – Land development guidelines, Section 3 – Change to	AO3.3 COMPLIES Refer to AO3.1.	

Performance outcomes	Acceptable outcomes		
	ground level standards.		
	AO3.4 All retaining walls on lots identified on the Landslide hazard overlay map are designed and certified by an RPEQ as not adversely affecting the site's overall stability. Boulder walls must not be used as retaining walls on sites steeper than 20%.	AO3.4 COMPLIES Refer to AO3.1.	
	AO3.5 Non-retained cut and/or fill on slopes are stabilised and protected against scour and erosion by suitable measures, such as grassing, dense landscaping or other protective measures, in accordance with SC6.11 City Plan policy – Land development guidelines, Section 3 – Change to ground level standards.	AO3.5 COMPLIES Refer to AO3.1.	
Wastewater			
PO4 Wastewater disposal must not create or increase the likelihood of instability on the site or neighbouring sites.	AO4 All wastewater is disposed of via connection to sewerage reticulation. OR Where sewerage reticulation is not available on site, effluent disposal areas are located so as to not cause potential instability. Subsurface disposal of effluent is not to be used.	AO4 NOT APPLICABLE The proposed Operational Works application does not involve the discharge of wastewater. Please refer to OPW/2019/160 regarding Water and Sewer reticulation.	
Slope constraints and stability			
PO5 Development on any lot partially or completely mapped as moderate, high or very high landslide hazard, as identified on the Landslide hazard overlay map , is supported by an RPEQ certified geotechnical report, which adequately	AO5 A geotechnical stability assessment report, which is prepared and certified by an RPEQ, includes: (a) the following information: (i) boundary dimensions;	AO5 NOT APPLICABLE A Bulk Earthworks Plan has been previously prepared by <i>icubed consulting</i> and approved by Council which addresses cut and fill and slope stability. (Ref: 17-209 dated 30/01/2019, Council Ref: OPW/2019/160).	

Performance outcomes	Acceptable outcomes		
assesses and documents the site's geotechnical stability and constraints, and incorporates necessary mitigation measures so that the level of landslide risk to property and persons is low. Note: A geotechnical stability assessment report prepared in accordance with SC6.10 City Plan policy – Geotechnical stability assessment guidelines is Council's preferred method for addressing this performance outcome.	(ii) location of easements; (iii) existing and proposed services, such as sewer, stormwater, gas, electricity, telephone, and other utility services; (iv) contour lines to AHD (500mm vertical intervals); (v) street front kerb locations, crossovers, side gully pit locations, driveway locations and slope; (vi) off-street parking locations, building locations and setback dimensions; (vii) earthwork details and building pad levels; (viii) retaining wall locations, type, extent, height, and offset from boundaries; (ix) existing and proposed onsite drainage systems; (x) identification of trees to be removed or retained; (xi) fencing extent, location, height and depth; (xii) swimming pool location, level and depth; (xiii) ancillary structures, such as pergolas and sheds; (xiv) landscaping, lawn areas, paved areas, mass planting areas and trees; (xv) slope angles; (xvi) slope shape and features; (xvii) parent rock type/soil type; (xviii) engineering properties of sub-surface materials;		

Performance outcomes	Acceptable outcomes		
	(xix) concentration of surface water; (xx) concentration of ground water; (xxi) evidence of instability on the site and adjoining areas; (xxii) history of instability on the site and adjoining areas; and (xxiii) geotechnical model of the site. (b) a site-specific landslide susceptibility frequency analysis, including analysis of each proposed lot; (c) if the outcome of the landslide susceptibility frequency analysis is moderate or higher, a risk assessment in accordance with the <i>AGS Landslide Risk Management 2007 Guidelines</i>; (d) an assessment of the suitability of the site for the proposed development having regard to (a) – (c); (e) a foundation investigation report that determines the site classification for the lot/each proposed lot in accordance with <i>AS 2870-2011 Residential slabs and footings</i> and provides recommendations for foundation design; (f) identification of any areas on the lot/within proposed lots where development must not occur; (g) certification from the RPEQ confirming that the site (and for subdivisions, each proposed lot) achieves a landslide risk rating of 'low' or better and the site/lot is		

Performance outcomes	Acceptable outcomes		
	suitable for its intended use; and (h) recommendations for any necessary mitigation measures, construction measures and design changes to be implemented to ensure the stability of the site and adjoining areas is not adversely affected and to ensure long-term stability of the site.		
Access (for subdivision only)			
PO6 Development on steep slopes must ensure that safe and efficient access by vehicles and pedestrians can be achieved.	AO6 The building envelope within every lot is accessible by a legal road access, in compliance with SC6.11 City Plan policy – Land development guidelines, Section 2 – Transport network standards.	AO6 COMPLIES This application is for Operational Works (Landscaping Private Land and Vegetation Clearing) and therefore no development is proposed within the Landslide hazard overlay map areas. A Bulk Earthworks Plan has been previously prepared by <i>icubed consulting</i> and approved by Council which addresses slope stability. (Ref: 17-209 dated 30/01/2019, Council Ref: OPW/2019/160).	
Environmental values			
PO7 Works to mitigate landslide risks avoid adverse impact on other environmental values.	AO7 No acceptable outcome is provided.	A07 COMPLIES A Bulk Earthworks Plan has been previously prepared by <i>icubed consulting</i> and approved by Council which addresses slope stability. (Ref: 17-209 dated 30/01/2019, Council Ref: OPW/2019/160). A Vegetation Management Plan has been prepared and submitted as part of this application which addresses the preservation of vegetation on site. Refer to Appendix C- Vegetation Management Plan for further details.	

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.4 General development provisions code

9.4.4.1 Application

The code applies to assessing material change of use, building work, reconfiguring a lot or operational work where indicated within **Part 5 Tables of assessment**.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

9.4.4.2 Purpose

- (1) The purpose of the General development provisions code is to provide a consistent approach to city wide issues and avoid duplication of regulation throughout the City Plan.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Development is designed to maintain the expected level of amenity for the area.
 - (b) Development promotes a safe environment and reduces the potential for crime.
 - (c) Development is designed to respect the natural values of the land, including vegetation, natural topography and development on steep slopes to minimise impacts on the landscape character of the city's rural, urban and hinterland areas.
 - (d) Development does not result in unsightly retaining walls.
 - (e) Building services and storage areas are designed and located to avoid nuisance to adjoining premises and avoid an unattractive appearance when viewed from the street.
 - (f) Development does not cause adverse stormwater drainage impacts on or off the site.
 - (g) Development is connected to essential services and public utilities in accordance with infrastructure provider requirements.

- (h) Development is designed and located to ensure it does not adversely impact on Council infrastructure.

9.4.4.3 Specific benchmarks for assessment

Table 9.4.4-2: General development provisions code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use
Amenity protection			
PO1 Development mitigates any negative effects to amenity, health and safety from existing surrounding activities having regard to: (a) noise; (b) hours of operation; (c) traffic; (d) signage; (e) visual amenity; (f) wind effects; (g) privacy; (h) vibration; (i) contaminated substances; (j) hazardous chemicals; (k) odour and emissions; and (l) safety.	AO1 No acceptable outcome provided.	PO1 COMPLIES The proposed development mitigates any negative effects to amenity, health and safety from existing surrounding activities, having regard to; (a) noise; (b) hours of operation; (c) traffic; (d) signage; (e) visual amenity; (f) wind effects; (g) privacy; (h) vibration; (i) contaminated substances; (j) hazardous chemicals; (k) odour and emissions; and (l) safety. It can further be noted that the subject site is not located within close proximity to a sensitive land use or residential zone, further reducing concerns relating to amenity and noise. All construction work and hours of operation on the site will be compliant with the intent of the industrial locality of Staplyton.	
PO2 The proposed development prevents loss of amenity and threats to health and	AO2 No acceptable outcome provided.	PO2 COMPLIES The proposed development prevents loss of amenity and threats to health and safety, having regard to;	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
safety, having regard to: (a) noise; (b) hours of operation; (c) traffic; (d) signage; (e) visual amenity; (f) wind effects; (g) privacy; (h) vibration; (i) contaminating substances; (j) hazardous chemicals; (k) odour and emissions; and (l) safety.		(a) noise; (b) hours of operation; (c) traffic; (d) signage; (e) visual amenity; (f) wind effects; (g) privacy; (h) vibration; (i) contaminating substances; (j) hazardous chemicals; (k) odour and emissions; and (l) safety.	
Development along the Pacific Motorway and heavy railway line			
PO3 Development adjacent to the Pacific Motorway and heavy railway line minimises views of the storage of outdoor plant and equipment, including service areas to provide an attractive outlook for persons using the transport network.	AO3 Where the site is adjacent to the Pacific Motorway or a heavy rail line, areas used for outdoor storage, including service areas are screened from view from users of the motorway or heavy rail line by buildings, solid fencing or vegetation.	AO3 NOT APPLICABLE The subject site does not adjoin the Pacific Motorway and/or a heavy railway line.	
Landscaping			
PO4 The proposal provides landscape work that protects and enhances the character of the local area.	AO4.1 For all development except dwelling houses, dual occupancies, caretaker's accommodation and community residences a Statement of Landscape Intent prepared in accordance with SC6.12 City Plan policy – Landscape work demonstrating that the landscaping will provide amenity for site users and will protect and enhance the character of the local area.	AO4.1 COMPLIES As per the Landscape Plan prepared by <i>icubed consulting</i> within Appendix A, the proposed development provides landscaping that enhances and protects the character of the local area. The proposed landscaping is considered appropriate for the location, being within the High Impact Industry Zone that comprises of industrial sites which encompass similar levels of landscaping.	

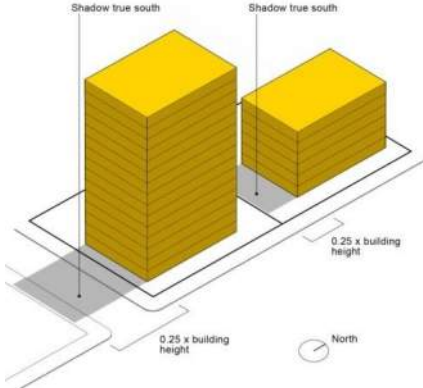
Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	AO4.2 An Open Space Management Statement is prepared in accordance with SC6.12 City Plan policy – Landscape work where landscape works are proposed to be undertaken on land that is or is intended to be, public open space.		
Building services			
PO5 All mechanical equipment is located and housed so as not to cause disturbance to residents within or adjoining the development.	AO5 For all development except dwelling houses, dual occupancies, caretaker's accommodation and community residences: The mechanical equipment, including air-conditioning plant and swimming pool pumps, is incorporated within the building. OR The mechanical equipment, including air-conditioning plant and swimming pool pumps, is housed external to the principal building and: (a) is contained within a solid structure; and (b) located no closer than 1.5m to any site boundary.	AO5 COMPLIES No mechanical equipment services are associated with the proposed Operational Works application.	
Casual surveillance and lighting			
PO6 Development facilitates casual surveillance of public areas and incorporates lighting to reduce opportunities for crime.	AO6 No acceptable outcome provided.	PO6 COMPLIES No casual surveillance and lighting are proposed as part of this Operational Works application.	

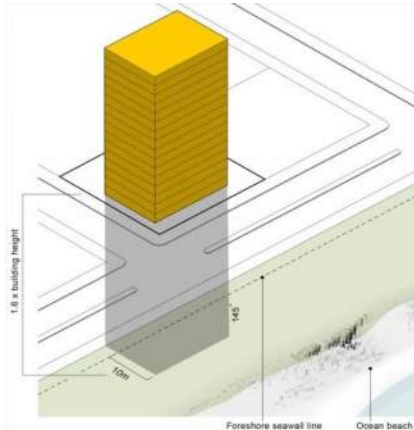
Lighting

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
PO7 Lighting associated with any development does not cause a nuisance.	AO7 Direct or reflected light emissions from the premises must be positioned and shielded to prevent light spillage outside the boundaries of the site.	AO7 COMPLIES No light spillage outside of the property boundaries will occur as part of the proposed development.	

Shadow impacts – for all development 3 or more storeys

PO8 The building is designed and located to ensure that the shadow cast by the building does not detract from a comfortable living and ground level environment and the access of adequate sunlight to private and public spaces having regard to: (a) the degree of containment of the shadow on the subject site at different times of the day on the summer and winter solstice and spring and autumn equinox; (b) the cumulative impact of the shadow and existing shadows; (c) the effect of the shadow on the ocean beach, Broadwater foreshore, or riverside or beachside public open space; (d) the location of the shadow on non-residential areas external to the site; and (e) the effect of the shadow on any other site or other building.	AO8.1 The width of the shadow cast in any direction by each level of the building, excluding balconies and lift wells, does not exceed twice the width of the shadow cast in any other direction. Figure 9.4.4-1 Illustration showing width ratio shadow outcome	AO8.1 NOT APPLICABLE The proposed development does not seek approval for a development that exceeds three (3) or more storeys.	
	AO8.2 The shadow cast by the building in a true south direction has a length 0.25 times the height of the building, as measured from ground level adjacent to the southern side of the subject building to the top of the topmost storey, and does not intrude onto any other site, or does not cast shadow onto any other building on the same site.	AO8.2 NOT APPLICABLE The proposed development does not seek approval for a development that exceeds three (3) or more storeys.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	 Figure 9.4.4-2 Illustration showing southern shadow outcome		
	AO8.3 Bermuda Point precinct The shadow cast by the building in a true south direction has a length 0.25 times the height of the building, as measured from the top of the podium adjacent to the southern side of the subject building to the top of the topmost storey, and does not intrude onto any other site, or does not cast shadow onto any other building on the same site. Note: The podium is excluded from any southern shadow calculations.	AO8.3 NOT APPLICABLE The proposed development does not seek approval for a development that exceeds three (3) or more storeys.	
	AO8.4 The shadow cast by any building does not cover any part of the ocean beach or Broadwater foreshore when the shadow has a bearing of 145° east of true north and the length of the shadow is 1.6 times the height of the building as	AO8.4 NOT APPLICABLE The proposed development does not seek approval for a development that exceeds three (3) or more storeys.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	measured from the ground level to the top of the topmost storey. Note: For the purpose of this acceptable outcome, the ocean beach is defined as that area east of a line 10m east of and parallel to the foreshore seawall line and the Broadwater foreshore is defined as that area east of the leading edge of the revetment wall.  Figure 9.4.4-3 Illustration showing ocean beach and Broadwater foreshore shadow outcome		
	AO8.5 The shadow cast by the building in the direction of true south does not intrude more than 10m into a riverside public open space reserve.	AO8.5 NOT APPLICABLE The proposed development does not seek approval for a development that exceeds three (3) or more storeys.	

Earthworks and treatment of retaining walls

PO9 Earthworks and retaining walls associated with the development do not	AO9 Retaining walls and batters comply with the requirements of SC6.11 City Plan	AO9 COMPLIES Retaining walls and batters comply with the requirements of <i>SC6.9 City Plan policy – Land development guidelines</i>.	
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Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
create a negative visual impact upon neighbouring properties or the streetscape.	policy – Land development guidelines, Section 3 – Change to ground level standards.	No additional retaining walls or batters are proposed as part of this application.	

Stormwater drainage

PO10 Development does not cause adverse stormwater drainage impacts on or off the site.	AO10 All development incorporates stormwater drainage works to comply with the requirements of SC6.11 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards.	AO10 COMPLIES All development incorporates stormwater draining works to comply with the requirements of <i>SC6.11 City Plan policy – Land development guidelines</i> . No additional stormwater drainage works are proposed as part of this application.	
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Infrastructure

PO11 All development ensures connection to public utilities to meet the needs of the development, including sewer, water, electricity and communications services.	AO11 All development is provided with services, as follows: (a) electricity supply and communication services (b) reticulated water supply, when within the mapped 'water supply service area' identified in the Local government infrastructure plan, and not located in the Conservation, Extractive industry, Major tourism (Island resorts precinct), Open space or Rural zones (c) reticulated sewer network, when within the mapped 'wastewater service area' identified in the Local government infrastructure plan, and not located in the Conservation, Extractive industry, Major tourism (Island resorts precinct), Open space, Rural or Rural residential zones.	AO11 COMPLIES (a) N/A – This application does not seek approval for Electricity supply and communication services; (b) The subject site is situated within the High Impact Industry Zone and is provided with reticulated water supply. (c) The subject site is situated within the High Impact Industry Zone and is provided with reticulated sewer network.	
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Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
PO12 Development is undertaken in accordance with the Performance Criteria specified in the <i>Queensland Development Code MP1.4 – Building over or near relevant infrastructure</i> .	AO12 Development is undertaken in accordance with the Acceptable Solutions specified in the <i>Queensland Development Code MP1.4 – Building over or near relevant infrastructure</i> .	AO12 COMPLIES The development is undertaken in accordance with the acceptable outcomes specified in QDC MP1.4.	
Site analysis			
PO13 Development is designed to: (a) complement the character and address any impacts on the amenity and environment of the local area; (b) avoid any risk to life or property arising from natural hazards; and (c) protect significant natural habitat areas, wildlife corridors, wetlands and waterway corridors.	AO13 A site analysis plan is prepared in accordance with SC6.13 City Plan policy – Site analysis .	PO13 COMPLIES The proposed development is designed to: (a) complement the character and address any impacts on the amenity and environment of the local area; (b) avoid any risks to life or property arising from natural hazards; and (c) protect significant natural habitat areas, wildlife corridors, wetlands and waterway corridors.	

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.5 Healthy waters code

9.4.5.1 Application

This code applies to assessing material change of use or reconfiguring a lot for development where indicated within **Part 5 Tables of assessment** unless either of the following circumstances apply:

- (1) No increase in impervious area is required onsite for the development.
- (2) A stormwater quality and quantity management plan previously approved by the Council has been fully implemented within the existing development layout.

Note: Where a development proposal meets either (1) and (2) above, this code is not applicable.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

9.4.5.2 Purpose

- (1) The purpose of the Healthy waters code is to protect the quality of the city's waters from the impacts of development.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Urban stormwater quality management, wastewater management, and management of waters are based on the following principles:
 - (i) Development and construction activities are conducted to achieve the water quality objectives, as specified in the *Environmental Protection (Water) Policy 2009*.
 - (ii) The ongoing management of urban stormwater quality reflect the regional climate and the site's landscape characteristics.
 - (iii) Development is undertaken in accordance with best practice environmental management.

- (iv) Development avoids adverse impacts on the City of Gold Coast's waters or, where this is not feasible, adverse impacts are minimised.
- (b) Water resource catchments are protected from contamination by chemicals.
- (c) The drainage capacity of the Woongoolba Flood Mitigation Scheme Area for rainfall events up to 1 in 10 year 72 hours is maintained (contained within the Scheme drains within a 4 day period) and this capacity is not be eroded due to cumulative impact of development.

9.4.5.3 Specific benchmarks for assessment

Table 9.4.5-2: Healthy waters code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Stormwater quality			
PO1 Development appropriately manages stormwater quality to: (a) protect natural ecosystems; (b) integrate stormwater treatment into the urban landscape; (c) protect water quality; (d) reduce runoff and peak flows; and (e) meet the water quality objectives and environmental values for Queensland waters. Note: Water quality objectives and environmental values for Queensland waters are contained within <i>Schedule 1 of the Environmental Protection (Water) Policy 2009</i> . Water quality objectives are locally specific and vary between and within river catchments.	AO1.1 Where development is: (a) for a dwelling house, dual occupancy or multiple dwelling on a lot less than 5000m²; or (b) light industry or business activity on a lot less than 2500m², it complies with the 'Deemed to comply' requirements detailed in the Stormwater quality management guidelines in SC6.11 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards.	AO1.1 NOT APPLICABLE (a) The application seeks approval for Operational Works- Landscaping on Private Land and Vegetation Clearing and therefore no dwelling house, dual occupancy, or multiple dwelling is proposed. (b) The application seeks approval for Operational Works- Landscaping on Private Land and Vegetation Clearing and accordingly no light industry or business activity is proposed as part of this development application.	
	AO1.2 Where development is: (a) for a dwelling house, dual occupancy or multiple dwelling on a lot equal to or more than 5000m² but less than 1.25 ha; or (b) light industry or business activity on a lot equal to or more than 2500m² but less than 1.25 ha; (c) it complies with the 'Deemed to comply' requirements detailed in	AO1.2 NOT APPLICABLE The proposed application is for Operational Works regarding Landscaping on Private Land and Vegetation Clearing on a 25.182 hectare site included in the High Impact Industry Zone.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	the Stormwater quality management guidelines in SC6.11 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards.		
	AO1.3 Where development is not listed in AO1 a Stormwater Quality Management Plan is prepared by a suitably-qualified person in accordance with the Stormwater quality management guidelines in SC6.11 City Plan policy – Land development guidelines, Section 8 – Engineering drawings, documents and reports.	AO1.3 NOT APPLICABLE A Stormwater Quality Management Plan has been previously prepared by <i>icubed consulting</i> and approved by Council in accordance with the Stormwater quality management guidelines in SC6.11 City Plan policy , which addresses stormwater management for the proposed subdivision. (Ref: 17-209-SWMP dated 30/01/2019, Council Ref: OPW/2019/160)	
Stormwater quantity			
PO2 Stormwater quantity management outcomes demonstrate no adverse impact on stormwater flooding or the drainage of properties external to the subject site.	AO2 A stormwater quantity management plan is prepared by a suitably qualified person and demonstrates: (a) achievable stormwater quantity control measures for discharge during both the construction and operational phases of development designed in accordance with the <i>Queensland Urban Drainage Manual (QUDM)</i> unless subject to specific requirements of SC6.11 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards; (b) on-site detention systems that are designed to restrict peak outflows for Q2, Q5, Q10, Q20 Q50 and	AO2 NOT APPLICABLE Refer to AO1.3 response.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	Q100 to pre-development conditions.		
Woongoolba Flood Mitigation Scheme Catchment Area			
PO3 In the Woongoolba Flood Mitigation Scheme Catchment Area, shown on the Water catchments and dual reticulation overlay map , peak outflow and its timing for Q2, Q5 and Q10 for rainfall events up to 72 hours does not change as a result of development.	AO3 No acceptable outcome provided.	AO3 NOT APPLICABLE The subject site is located in the Woongoolba Flood Mitigation Scheme Catchment Area and a Stormwater Management Plan was prepared by <i>icubed consulting</i> and approved by Council which demonstrated appropriate stormwater management for the proposed subdivision. (Ref: 17-209-SWMP dated 30/01/2019, Council Ref: OPW/2019/160)	
Protection of natural flows (discharge)			
PO4 Construction and operational activities avoid or minimise adverse impacts of altered stormwater quality and quantity.	AO4 Development achieves the Frequent Flow Management and Waterway Stability Management design objectives as stated within <i>Chapter 2 – Section 2.4.2 of the Urban Stormwater Quality Planning Guidelines 2010</i> . Note: A site Stormwater Quality and Quantity Management Report prepared by a suitably qualified person is Council's preferred method required to be submitted to Council to address this Acceptable outcome. The intent in the above guidelines (<i>Urban Stormwater Quality Planning Guidelines 2010</i>) can be achieved by adopting Water Sensitive Urban Design (WSUD) concepts within the development.	AO4 NOT APPLICABLE A Stormwater Quality Management Plan has been previously prepared by <i>icubed consulting</i> and approved by Council, which demonstrates stormwater management for the proposed subdivision. (Ref: 17-209-SWMP dated 30/01/2019, Council Ref: OPW/2019/160)	
Wastewater management			
PO5 Development does not discharge wastewater to receiving waters or areas	AO5 Where the development involves the discharge of wastewater, a Wastewater	AO5 NOT APPLICABLE The proposed Operational Works application does not involve the discharge of wastewater. Please refer to	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
external to the site unless demonstrated to be the best-practice environmental management for that site and takes into consideration: (a) the applicable water quality objectives for the receiving waters; and (b) the potential adverse impact on ecosystem health of receiving waters.	Management Plan (WWMP) is prepared, demonstrating compliance with the performance outcome, by a suitably qualified person and submitted to the Council, detailing all of the following: (a) wastewater type; (b) climatic conditions; (c) water quality objectives; (d) best-practice environmental management; (e) waste management hierarchy; and (f) the WWMP provides for the management of wastewater in accordance with a wastewater management hierarchy that: (i) avoids wastewater discharge to waterways; or (ii) if wastewater discharge to the environment cannot practicably be avoided wastewater discharge to waterways is minimised through re-use, recycling, recovery and treatment for disposal to sewer, surface water and groundwater.	OPW/2019/160 regarding Water and Sewer reticulation.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Erosion and sediment control (ESC)			
PO6 Development does not cause erosion or allow sediments to leave the site.	AO6 An Erosion hazard assessment completed in accordance with the criteria in Table 9.4.5-3 is undertaken to establish the level of risk for soil erosion and sediment pollution to the environment. Where the Erosion hazard assessment has a risk score less than or equal to 10: A deemed to comply report is prepared by a suitably qualified person for Council approval, including conceptual location and design drawings of each treatment measure in plan and section views, in accordance with the <i>Best Practice Erosion and Sediment Control: International Erosion Control Association, (IECA) 2008, Australasia Chapter 2008</i> . Where the Erosion hazard assessment has a risk score greater than 10: A conceptual erosion and sediment control plan (ESCP) is prepared by a suitably qualified person for Council approval in accordance with the <i>Best Practice Erosion and Sediment Control: International Erosion Control Association, (IECA) 2008, Australasia Chapter 2008</i> .	AO6 COMPLIES The erosion hazard assessment has a risk score of less than 10. An erosion and sediment control plan has been previously prepared by a suitably qualified person for Council's approval in accordance with the: Best Practice Erosion and Sediment Control International Erosion Control Association (IECA) 2008. (Ref: 17-209-ESCP dated 05/02/2019, Council Ref: OPW/2019/160). In accordance with Condition 10 (Vegetation Clearing) of the Reconfiguring a Lot approval (Council Ref: ROL 201800026), an Erosion and Sediment Control Plan has been prepared and submitted as part of this application. Refer to Appendix A - Sediment and Erosion Control Plan for further details.	

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.6 Landscape work code

9.4.6.1 Application

This code applies to assessing Operational work – landscape work where indicated within **Part 5 Tables of assessment**.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

9.4.6.2 Purpose

- (1) The purpose of the Landscape Work code is to ensure high-quality landscape works that are consistent with the local landscape character and contribute to the overall image of the city.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Landscape work enhances the visual and built form attributes of the development.
 - (b) The identified landscape character, including areas of high scenic amenity of the locality is retained, reflected and enhanced by development.
 - (c) Landscape work does not include any known pest species.
 - (d) Vegetation to be retained is protected during construction.
 - (e) Landscape work promotes safe and high quality places.
 - (f) Landscape work is designed to promote conservation of natural resources and energy and water efficiency outcomes.
 - (g) Landscape work is consistent with all relevant Australian/New Zealand Standards.
 - (h) Landscape work is designed to complement the built form and provide enjoyable urban environments.

- (i) Landscape work is supported by efficient ongoing maintenance programmes.
- (j) Landscape works contributes to an attractive and shaded city.

9.4.6.3 Specific benchmarks for assessment

Table 9.4.6-1: Landscape work code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Landscape design			
PO1 All landscape work complements and enhances new and existing development and landscape values by: (a) responding to the opportunities and constraints of the site; (b) creating a sense of place and character; (c) providing long-term visual amenity; (d) reinforcing and enhancing the local landscape character; (e) ensuring it is suited to the environmental, climatic, soil and aspect conditions of the area; (f) having regard for ongoing efficient maintenance outcomes; and (g) contributing to a safe and inclusive environment through design. Note: A Detailed landscape plan, prepared in accordance with SC6.12 City Plan policy – Landscape work, is required to demonstrate compliance with this provision. Note: Where a Statement of landscape intent has been endorsed through an earlier approval, the Detailed landscape plan should be in	AO1 No acceptable outcome provided.	AO1 COMPLIES All landscaping work complements and enhances new and existing development and landscape values. A Detailed Landscape Plan has been prepared by <i>icubed consulting</i> and submitted as part of this application. Refer to Appendix A- Landscape Plan for further details.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
accordance with that approval.			
Selection of plant species			
PO2 Species selection must be those which respect the landscape character of the site and surrounds, the city image and which are best suited to the use, function, environmental, climatic, soil and aspect conditions.	AO2 Landscape work utilises plant species that meet the Guidelines for plant selection and planting, contained in accordance with SC6.12 City Plan policy – Landscape work.	AO2 COMPLIES As seen in the Landscaping Plan attached in Appendix A, the proposed development provides for plant species in accordance with <i>SC6.12 City Plan policy- Landscape work</i> to reflect the landscape character of the site and the surrounds.	
PO3 Landscape work does not include any recognised pest species.	AO3 Landscape Work does not include any undesirable plants as identified in SC6.12 City Plan policy – Landscape work.	AO3 COMPLIES As seen in the Landscape Plan attached in Appendix A, the landscaping work does not include any undesirable pest species in accordance with <i>SC6.12 City Plan policy – Landscape work.</i>	
Retaining vegetation			
PO4 Best management practices must be utilised for all pre and post works treatment and all operational works associated with any tree or vegetation to be retained and protected, relocated or propagated.	AO4 Trees identified in a landscape intent or development approval for retention are protected in accordance with the Guidelines for retaining and protection of existing vegetation within the SC6.12 City Plan policy – Landscape work.	AO4 COMPLIES No trees within the subject site are identified in a landscape interior or development approval for retention.	
Safety			
PO5 Landscaping contributes to a safe environment by: (a) providing clear sightlines; (b) minimising concealment spots; and (c) providing good visibility to entrance and exit points.	AO5 No acceptable outcome provided. Note: Refer to SC6.12 City Plan policy – Landscape work and SC6.11 City Plan policy – Land development guidelines, Section 5 – Public open space standards for guidance.	AO5 COMPLIES The proposed landscaping contributes to a safe environment by: (a) providing clear sightlines; (b) minimising concealment spots; and (c) providing good visibility to entrance and exit points.	
Mounding			
PO6 Mounding is sensitively designed as an	AO6 Mounding is designed in accordance	AO6 COMPLIES Any mounding is designed in accordance with SC6.12	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
integral part of the site works by being appropriate to their function, enhancing aesthetic appeal, and having regard for maintenance issues including future costs.	with SC6.12 City Plan policy – Landscape work.	City Plan policy- Landscape work.	
Batters			
PO7 Batters must: (a) be sensitively designed as an integral part of the development works, with the design being appropriate to their function and location; (b) be stabilised through sufficient landscape works to control soil erosion; and (c) enhance visual amenity.	AO7 Batters are designed in accordance with SC6.12 City Plan policy – Landscape work.	AO7 COMPLIES No batters are proposed as part of the landscape works. Refer to the Landscape Plan attached in Appendix A.	
Irrigation			
PO8 All planting must aim to be maintained without the use of potable water from the City's water reticulation system for irrigation purposes.	AO8 No acceptable outcome provided. Note: Refer to SC6.12 City Plan policy – Landscape work for guidance.	AO8 COMPLIES All planting must aim to be maintained without the use of potable water from the City's water reticulation system for irrigation purposes. Refer to Appendix A for further details.	
Hard surfacing			
PO9 All hard surfacing in open space areas and areas external to buildings must be designed to provide for safety, be functionally appropriate, enhance visual amenity, and have regard for ongoing maintenance requirements.	AO9 Hard surfacing is designed in accordance with SC6.12 City Plan policy – Landscape work.	AO9 COMPLIES No hard surfacing is proposed as part of the landscaping works.	
Public open space areas			
PO10 Landscape works in public open space	AO10 No acceptable outcome provided.	AO10 NOT APPLICABLE No public open space areas are proposed as part of	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
areas (including open space dedicated as an open space contribution) must be designed to be appropriate to their function and location by: (a) utilising suitable land for its intended purpose; (b) incorporating, complementing and enhancing existing vegetation and ecological systems; (c) enhancing the visual amenity of local area and contributing to the amenity of the region; (d) providing an inclusive and sustainable community resource; and (e) reinforcing and enhancing hydraulic or drainage regimes on the site and within the adjacent surrounding areas.	Note: Refer to SC6.12 City Plan policy – Landscape work and SC6.11 City Plan policy – Land development guidelines, Section 5 – Public open space standards for guidance.	this application.	
PO11 Landscape works in public open space areas (including open space dedicated as an open space contribution) are appropriately managed during the construction and subsequent maintenance phases.	AO11 An Open Space Management Plan prepared in accordance with SC6.12 City Plan policy – Landscape work is submitted where the site includes one or more of the following: (a) threatened flora or habitat for threatened fauna under the <i>Nature Conservation Act 1992</i>; (b) assessable vegetation; (c) includes retention of matters of environmental significance; (d) includes extensive areas of replanting and large rehabilitation areas; (e) includes wetlands, waterways and other drainage corridors; (f) requires storage of materials on-	AO11 NOT APPLICABLE No public open space areas are proposed as part of this application, therefore an Open Space Management Plan is not required.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	site during construction; (g) forms part of a wider open space system; (h) may be subject to sediment deposition or erosion; (i) includes fauna habitats that require protection or expansion, including habitat features; (j) includes areas of land subject to the Bushfire hazard overlay map; (k) incorporates significant public facilities or spaces likely to attract high visitation and use; or (l) incorporates treatment to the banks of wetlands, waterways or edges of other water bodies and other drainage corridors. Note: Where an Open Space Management Statement has been endorsed through an earlier approval, the Open Space Management Plan should be in accordance with that approval.		
PO12 Landscape work is designed and constructed to achieve a reasonable and practicable response to all public risk – duty of care issues.	AO12 The design and construction of Landscape work in public open space areas is consistent with all relevant Australian standards or other international landscape standards where a standard is not available in Australia or New Zealand for the specific work item or practice.	AO12 NOT APPLICABLE No landscaping works is proposed within a public open space area.	
Road reserves			
PO13 Landscape works undertaken in road reserve areas must be designed to provide:	AO13 No acceptable outcome provided. Note: Refer to SC6.12 City Plan policy – Landscape work for guidance.	PO13 NOT APPLICABLE No landscape works are proposed within a road reserve area. Refer to 16-297 – L01 B – Landscape plan and 16-297 – L02 B – Landscaping Details (Appendix A).	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
(a) a contribution to the greenscape of the city; (b) for safe movement of vehicular traffic and pedestrians including visibility and lighting; (c) appropriate species selection and sizes; (d) adequate growing medium for planting above and below ground; (e) water infiltration and subsoil drainage; (f) aesthetically pleasing streetscapes; (g) shade; (h) innovation in civic areas, such as engineered root volume solutions, permeable paving, aeration and deep watering systems; and (i) for functional operation of underground and above ground service infrastructure.			
Car parking			
PO14 Landscape works associated with car park areas are to: (a) provide a contribution to the greenscape of the city; (b) be sited appropriately; (c) provide adequate growing medium for planting above and below ground; (d) utilise appropriate species, hardsurfacing and associated hardscape with relation to the function, use and character of the locality;	AO14 No acceptable outcome provided. Note: Refer to SC6.12 City Plan policy – Landscape work for guidance.	PO14 NOT APPLICABLE No car park areas are established or proposed as part of this Operational Works application.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
(e) reduce the visual impact of the carpark from surrounding areas; and (f) provide shade and screening where appropriate.			
Landscape buffer			
PO15 Landscaped buffers: (a) are sensitively designed as an integral part of the site; (b) incorporate retained native vegetation; (c) are appropriate to their function; (d) are of a sufficient width; (e) enhance visual amenity; and (f) have appropriate maintenance regimes.	AO15 No acceptable outcome provided. Note: Refer to SC6.12 City Plan policy – Landscape work for guidance.	AO15 COMPLIES All landscaping buffers have been designed in accordance with the appropriate provisions within the Planning Scheme. Refer to Appendix A for further details.	

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.14 Vegetation management code

9.4.14.1 Application

This code applies to assessing material change of use, reconfiguring a lot or operational work for development where indicated within **Part 5 Tables of assessment**.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

The requirements for accepted development in Part A of this code provide guidance on what is considered acceptable damage to assessable vegetation before it becomes assessable development. Each required outcome in Part A will apply to a particular circumstance. The table below outlines the applicable provision relating to the type of damage.

Damage type	Provision(s)
Vegetation close to property boundaries	RO1 – RO2
Vegetation close to buildings	RO3
Vegetation close to pool fencing	RO4
Pest species vegetation	RO5
Threatening vegetation	RO6
Damage to vegetation for fire safety	RO7
Damage on agricultural land	RO8
Vegetation maintenance	RO9

Damage type	Provision(s)
All damage not described in the required outcomes	PO1
Note: The required outcomes in Part A of this code will not apply to vegetation that is identified under a vegetation protection order or planted as an approved landscape plan or condition of approval.	
Note: For general guidance on pruning and managing the growth of vegetation refer to <i>AS4373–2007 Pruning of amenity trees</i> .	
Note: Vegetation clearing must not result in harm to native wildlife. Where native wildlife is present it is recommended that a licensed wildlife spotter/catcher be employed to oversee works.	

9.4.14.2 Purpose

- (1) The purpose of the Vegetation management code is to provide for the protection and management of assessable vegetation.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Vegetation of environmental, historical, cultural, visual and character significance is retained.
 - (b) Vegetation is retained to provide habitats for threatened flora and fauna, prevent erosion and ensure slope stabilisation.
 - (c) Damage to assessable vegetation is only undertaken if it directly obstructs approved development or is a threat to persons or property.
 - (d) Vegetation management plans are prepared for development which has the potential to cause damage to vegetation.
 - (e) Any potential damage caused to vegetation by development is extensively investigated and mitigated.

9.4.14.3 Specific benchmarks for assessment

Table 9.4.14-2: Vegetation management code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Vegetation management plan			
PO1 Damage to assessable vegetation does not occur where the vegetation: (a) provides habitats for threatened flora and fauna; (b) is of historical, cultural or visual significance; (c) provides erosion prevention and slope stabilisation; (d) is necessary to maintain the	AO1 A Vegetation Management Plan, prepared by a suitably qualified person, is submitted as part of an Operational Work (Vegetation Clearing) application to show compliance with the Performance outcome. This plan includes, but is not limited to: (a) the location of the existing or approved dwellings, building or structures;	AO1 COMPLIES Damage to assessable vegetation will not occur as part of this application. It can be noted that the following vegetation does not exist over the subject site; (a) habitats for threatened flora and fauna; and (b) historical, cultural or visual significance; (c) It can be noted that an Erosion and Sediment Control Plan has been prepared by <i>icubed consulting</i> as part of this application. Please refer to Appendix A for further details.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
character of the local area; or (e) assists in the conservation of the city's biodiversity. Note: A Vegetation Management Plan, prepared in accordance with SC6.8 City Plan policy – Environmental management plans is the Council's preferred method of addressing this performance outcome.	(b) the location of waterways, ridge tops and steep slopes (greater than 25%) on and adjacent to the site; (c) the location of the assessable vegetation to which the damage is proposed, and reasonable particulars of its vegetation type, including species, height and girth and whether it is: • habitat for threatened flora and fauna; • of historical, cultural, character or visual significance; • essential for erosion prevention and slope stabilisation, including within waterway buffers; • significant to the conservation of the city's biodiversity; • vegetation that contributes to waterway and wetland health. (d) a statement of the reasons for the damage and any relevant factors associated with the purpose of the proposed damage; (e) particulars of how vegetation to be retained will be protected during works in accordance with <i>AS4970–2009 Protection of trees</i> on development sites; (f) particulars of how the vegetation is to be damaged and, if relevant, how the damaged material is to be removed or disposed of; (g) a plan indicating the location, size and species of replacement vegetation to compensate for the	(d) Not Applicable – This application seeks approval for Operational Works (Landscaping on Private Land and Vegetation Clearing). (e) The proposed development assists in the conservation of the city's biodiversity.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	loss of damaged vegetation; and (h) a staging plan for clearing greater than 4ha of vegetation. Note: To remove a single tree on residential premises only a basic Vegetation Management Plan is required to be submitted to Council. The Vegetation Management Plan can be prepared by the property owner and may only require limited details about the above elements. Guidance on the content of a Vegetation Management Plan can be found in SC6.8 City Plan policy – Environmental management plans.		



Vegetation Management Plan prepared by *i³ consulting pty ltd* (Appendix C);

1.0 DESCRIPTION OF WORKS

The detention basin will be constructed in accordance with the supplied drawings (17-209-C103-01-B). A permanent sediment pond will be created at the end of Christensen Road and will be designed for high velocity flows (scour protection). The water will enter the wetland through an inlet pipe and go through a series of pools, marshes and macrophyte zones before leaving the wetland into Sandy Creek.

2.0 SIGNIFICANCE OF VEGETATION

- Vegetation is mapped as non-remnant vegetation
- The area was cleared in 2009 when the combined bioretention/detention basin was created. The vegetation on the banks was re-cleared in or around 2011-2012. Regrowth is evident from 2014 onwards on aerial photography (Google Earth)
- The vegetation now comprises wattles *Acacia* species regrowth with weeping bottlebrush *Melaleuca viminalis*, brush box *Lophostemon confertus*, lemon-scented gum *Corymbia citriodora* and smooth-barked apple *Angophora leiocarpa* (Plate 1). The ground cover is sparse with occasional mat rush *Lomandra* spp and exotic grasses.
- The detention basin itself contains a wetland community comprising predominantly the exotic water primrose *Ludwigia peploides* with native species including bulrush *Typha orientalis*, water chestnut *Eleocharis dulcis*, woolly frogmouth *Philydrium lanuginosum* and other sedges and rushes. Some areas have been invaded by the exotic groundsel bush *Baccharis halimifolia*, blue billy goat weed *Ageratum houstonianum*, whiskey grass *Andropogon virginicus* and vasey grass *Paspalum unvillei*. Occasional standing trees include broad-leaved paperbark *Melaleuca quinquenervia* and cheese tree *Glochidion ferdinandi* (Plate 2).
- No threatened flora or fauna are known from the site
- The vegetation is not essential for erosion potential on steep slopes, however there is extensive existing erosion on the banks (Plate 3).

2.1 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE (MNES) VALUES

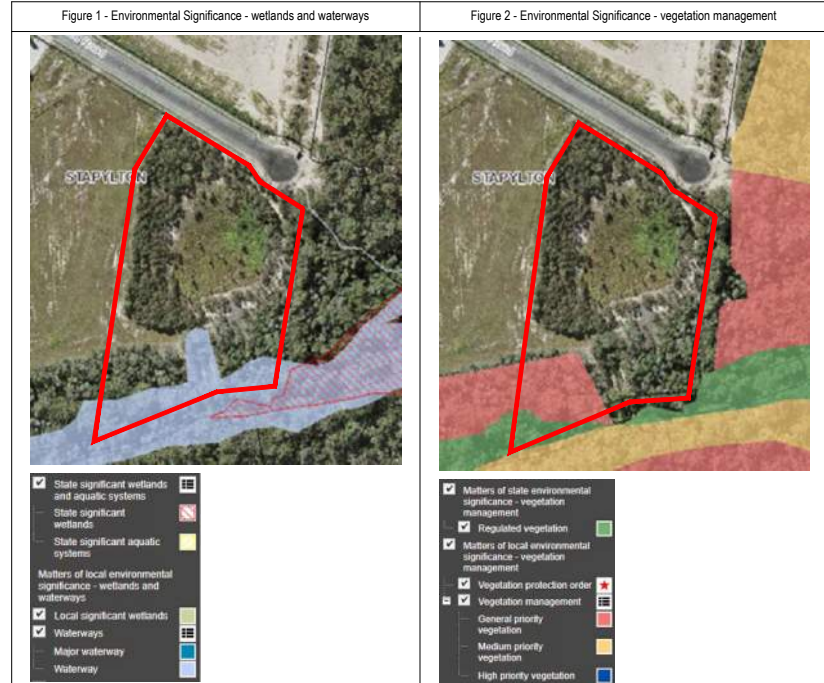
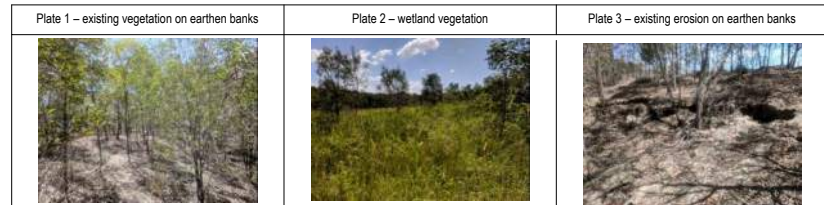
- The site lies within the catchment of the Moreton Bay Ramsar wetlands listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- The site does not provide habitat for any species listed as threatened under the EPBC Act.

2.2 MATTERS OF STATE ENVIRONMENTAL SIGNIFICANCE (MSES) VALUES

- Vegetation to the north-east of the site is mapped as remnant least concern regional ecosystems (RE) and vegetation containing essential habitat for koala *Phascolarctos cinereus* under the *Vegetation Management Act 1999* (VM Act).
- Sandy Creek has remnant vegetation containing of concern and least concern REs. The vegetation is mapped as essential habitat for koala and wallum froglet *Crinia tinnula* under the VM Act
- Sandy Creek downstream of the site is mapped as a MSES high ecological significance wetland under the *Environmental Protection Act 1994* (EP Act).

2.3 MATTERS OF LOCAL ENVIRONMENTAL SIGNIFICANCE (MLES) VALUES MAPPED UNDER THE GOLD COAST CITY PLAN 2016

- Non-remnant vegetation between the site and Sandy Creek is included within a conservation buffer zone.
- Sandy Creek is mapped as a waterway and includes an intrusion to the southern portion of the site (basin outlet) (Figure 1).
- Areas of Sandy Creek within the MSES wetland, but not covered by the waterway mapping are mapped as a local significant wetland.
- Vegetation to the east of the site is mapped as habitat for local significant species.
- Non-remnant vegetation within Sandy Creek and to the east of the site is mapped as general priority vegetation (Figure 2).



3.0 REASONS OF DAMAGE AND THE PURPOSE OF PROPOSED DAMAGE

- The areas to be cleared are shown in the drawing (17-209-V200). In order to reconstruct the bio-retention basin and repair adjacent earthen banks, the majority of vegetation within the site will be cleared.
- The clearing is required to allow the installation of the various structures and wetland zones within the detention basin.
- The proposed wetland will provide stormwater management treatment and ensure treated water is released into Sandy Creek

4.0 VEGETATION MANAGEMENT

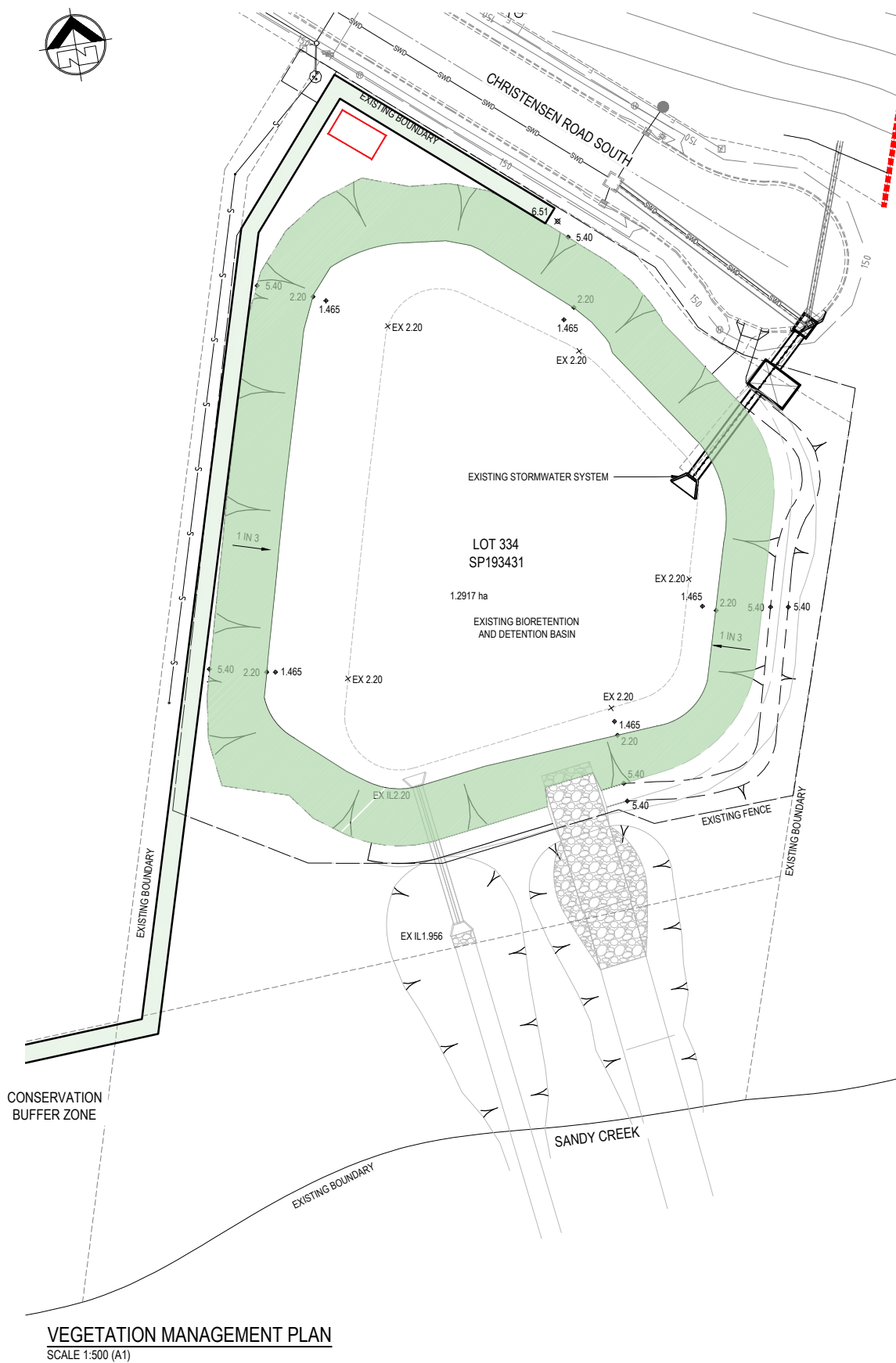
4.1 PRE-CLEARING PHASE

- A pre-start meeting will be held between the Site Supervisor, clearing contractor, Council and the project arborist (if required)
- The pre-start meeting shall include a discussion of proposed vegetation management activities, including areas of vegetation to be cleared and to be retained and discussion of significant ecological values within Sandy Creek and to the east of the site.
- Vegetation to be retained will be clearly identified on approved drawings and onsite and adjacent to the site. No vegetation is to be retained within the site, however, vegetation protection measures shall be in place to protect vegetation outside of the site boundaries to the east and south. For practicality, no vegetation clearing will occur to the east of the existing raised track to protect adjacent vegetation.
- Onsite demarcation of vegetation shall include use of visible barriers or fencing. Fencing and other protective measures shall remain throughout the duration of vegetation clearing
- Site access shall be from Christensen Road.
- No access is permitted into the conservation buffer zone, Sandy Creek or properties to the east of the site for vehicles, people or machinery.
- No refuelling or oil/fuel changes shall occur within the site. Refuelling and oil changes shall occur within designated areas only.

Consulting Engineer:			
 i ³ consulting pty Ltd engineering consultants innovation, ingenuity, inspiration L2 39 Sherwood Rd Toowoong, Qld 4066 www.icubed.com.au ABN 89 106 675 156 p 07 3870 8888 PO Box 878 Toowoong, Qld 4066 mail@icubed.com.au ACN 106 675 156			
B	FOR TENDER	03.06.2019	K.J.L.
A	FOR CLIENT REVIEW	16.04.2019	K.J.L.
REV	DESCRIPTION	DATE	BY

LEGEND

- PROPOSED LOT BOUNDARY
- EXISTING PROPERTY BOUNDARY
- VEGETATION TO BE CLEARED
- VEGETATION TO BE RETAINED
- AREA OF BANKS TO BE REHABILITATED (BANKS STEEPER THAN 25%)



4.2 CLEARING PHASE

- The areas to be cleared will be identified on approved drawings and onsite
- The vegetation will be removed by bulldozer or other suitable machinery.
- The clearing shall commence on the western or northern side and progress in a south-easterly direction.
- Cleared vegetation shall be mulched immediately onsite
- Mulch generated onsite shall be reused for rehabilitation purposes.
- No vegetative waste shall be burnt
- Areas of weed infestation shall be cleared and disposed of separately, if possible, preferably to a waste facility that accepts weed material. Weed material includes water primrose and exotic grasses.
- No mulch containing substantial quantities of weed material shall be reused on site
- Once vegetation has been cleared and mulch stockpiled, the topsoil shall be scraped and stockpiled separately.

4.2.1 MANAGEMENT OF RETAINED TREES

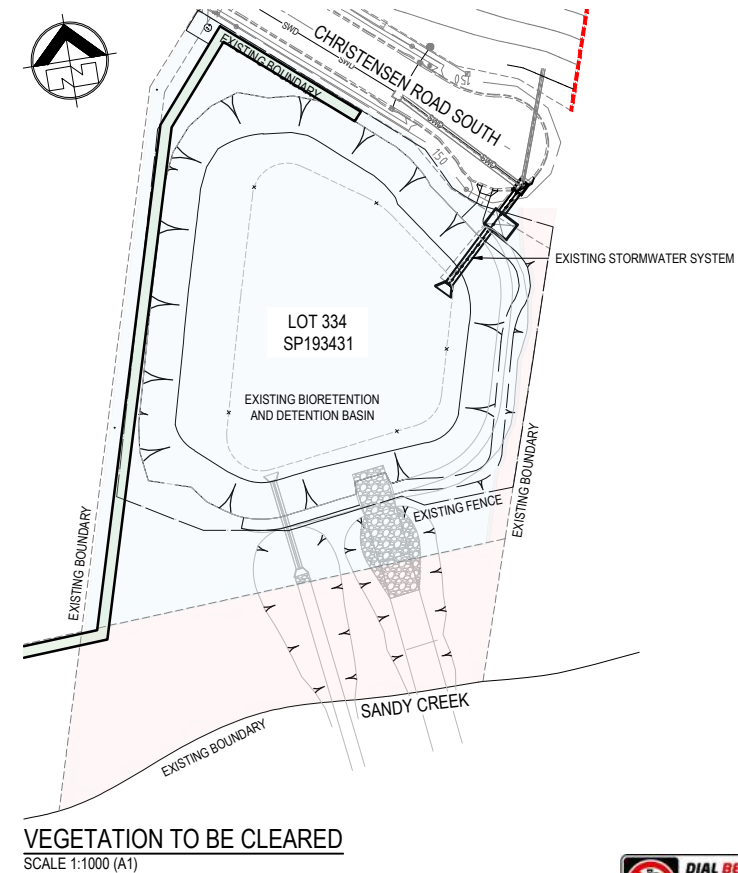
- Tree are defined as greater than 3 m in height and of a long-lived species and does not refer to all tree species (i.e. *Acacia* species) within the site.
- No trees are proposed to be retained on the site north-west of the existing track. Tree protection measures shall be in place for adjacent trees. Trees shall be protected in accordance with AS4970 *Protection of trees on development sites*
- If encroachment close to the eastern and southern boundaries is required, adjacent trees shall be identified according to:
 - species
 - diameter at breast height (DBH, measured 1.4 m from the ground)
 - height
 - Tree protection zones (TPZs (calculated as DBHx12)) shall be identified for retained trees
 - canopy spread
 - The structural root zone (SRZ) shall only be considered if major encroachment into TPZ is proposed
- The following activities shall be excluded from the TPZ (relevant to the proposed activities on the site), in accordance with AS4970, and areas of retained vegetation:
 - machine excavation including trenching
 - excavation for silt fencing
 - excavating holes for tubestock
 - storage
 - preparation of chemicals, including preparation of cement products
 - parking of vehicles and machinery
 - refuelling
 - dumping of waste
 - wash down and cleaning of equipment
 - placement of fill
 - lighting of fires
 - soil level changes
 - temporary or permanent installation of utilities and signs
 - physical damage to the tree.
- Any deviations from the AS4970 shall be completed in discussion with and in the presence of an AQF Level 5 qualified and experienced arborist.
- Protective fencing, webbing or other means on protection in accordance with AS4687 *Temporary fencing and hoardings*, shall be used to protect trees to be retained

4.3 ROLES AND RESPONSIBILITIES

- Site Supervisor - responsible for demarcation of vegetation areas and ensuring that the VMP measures are implemented on site
- Project Arborist - responsible for assessment and management of trees to be retained during construction
- Clearing contractor - responsible for adhering to the VMP and the measures contained therein

4.4 MONITORING AND COMPLIANCE

- Vegetation clearing shall be monitored regularly by the Site Supervisor to ensure compliance with this plan and all applicable conditions of approval
- Non-compliances and incidents related to vegetation management shall be recorded and communicated to Council. Information provided shall include:
 - incident type
 - incident date and time
 - details of incident, including a map if relevant
 - proposed mitigation response.



GCCC REF: OPW/2019/160



FOR TENDER

Drawn	Date	Chkd	Date
K.J.L.	05.04.19	D.F.	05.04.19
Design	Date	Apprd	Date
D.F.	05.04.19		
Scale	A1	Certif	Date
AS SHOWN			
Project No.	Dwg. No.	Rev.	
17-209	V200	B	

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Pre-Clearing Report prepared by *i³ consulting pty ltd* (Appendix D);

3 July 2019

**MS Projects Pty Ltd
PO Box 1163
Coorparoo DC Qld 4151**

ATTENTION: Michael Scammel

**RE: Pre-clear fauna habitat inspection
Construction of bioretention basin
84-160 Christensen Road South, Stapylton, Qld**

icubed consulting
innovation ingenuity inspiration
ABN 89 106 675 156

Dear Sir,

i3 consulting Pty Ltd (icubed) was engaged by Burnside Developments Pty Ltd and Yellowstone Investments Pty Ltd to complete a pre-clear inspection of a proposed bioretention basin located on a proposed industrial development site at 84-160 Christensen Road South, Stapylton. The proposed development has been previously approved by the Council of the City of Gold Coast and Condition 10(iv) of the approval requires a letter from a licenced fauna spotter-catcher (FSC) and Fauna Management Plan to be prepared.

I, Dave Fleming (Principal Ecologist, icubed), hold a Rehabilitation Permit (WA0014287) under the Nature Conservation (Administration) Regulation 2017. I completed a pre-clear inspection on 12th March 2019. The site visit was completed to confirm the presence of:

- vegetation to be removed during site works
- fauna habitat features including, but not limited to, habitat trees, scats, scratches, log-piles, termitaria, burrows, hollows, stags, fruit and seed falls, fallen logs, ground diggings, rocky outcrops, nests and breeding sites
- habitat for threatened species.

The site contains mapped non-remnant vegetation that provides minimal habitat for fauna species. No significant habitat trees, hollows or other features are present. The site does not contain any ecologically significant areas (as per Appendix 4 of Policy 8: Guidelines for Ecological Assessments) and does not contain any habitat for koala *Phascolarctos cinereus*. No threatened species are likely to regularly utilise the site. No fauna species were detected during the pre-clear inspection.

The existing detention basin contains native wetland plants with occasional infestations of exotic grasses. The basin provides limited values for aquatic fauna.

A Fauna Management Plan has been prepared for the site (Plan ref. 17-209-V300-B).

Should you require any further information, please do not hesitate to contact the undersigned at this office on (07) 3870 8888.

Yours faithfully



**Dave Fleming
Principal Ecologist**

1.0 INTRODUCTION

- This Fauna Management Plan meets the requirements of Condition 27 of the Amended Decision Notice (ROL201800026) for 84-160 Christensen Road South, Stapylton
- This Fauna Management Plan has been prepared by Dave Fleming, Principal Ecologist, icubed consulting and has been prepared in accordance with Schedule 6.8.6 of the City Plan Version 6 (2018)

2.0 FAUNA HABITAT VALUES

2.1 METHODS

A desktop assessment was completed followed by a site visit. The desktop assessment interrogated the following databases:

- Protected matters search tool (PMST) for matters of national environmental significance (MNES) under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) within 1 km radius of the site.
- Wildlife online (Department of Environment and Science [DES]) for species listed as threatened under the Nature Conservation Act 1992 (NC Act) within 1 km.
- vegetation management regional ecosystem (RE), essential habitat and koala habitat mapping layers from the Queensland Globe
- Environmental significance - priority species overlay under the Gold Coast City Plan.

The site visit was completed by Dave Fleming, Principal Ecologist, icubed consulting, on Tuesday 12 March 2019. The site visit was completed to confirm the presence of:

- vegetation to be removed and to be retained during site works
- fauna habitat features including, but not limited to, habitat trees, scats, scratches, log-piles, termitarium, burrows, hollows, stags, fruit and seed falls, fallen logs, ground diggings, rocky outcrops, nests and breeding sites.

2.2 RESULTS

- The PMST report is provided in Appendix 1. A total of 36 listed threatened species and 16 migratory species are potential occurrences based on modelled habitat. No species are likely occurrences within the site.
- 14 records were returned in the Wildlife online search (Appendix 2), including:

- tusked frog *Adelotus brevis*, listed as vulnerable under NC Act
- koala *Phascogalea cinerea*, listed as vulnerable under NC Act and EPBC Act
- grey-headed flying-fox *Pteropus poliocephalus*, listed as vulnerable under EPBC Act
- the following species are listed as special least concern fauna:

- short-beaked echidna *Tachyglossus aculeatus*
- eastern osprey *Pandion cristatus*
- white-throated needletail *Hirundapus caudacutus*
- gull-billed tern *Gelochelidon nilotica*
- spectacled monarch *Symposiachrus trivirgatus*
- black-faced monarch *Monarcha melanopsis*
- rufous fantail *Rhipidura rufifrons*
- wood sandpiper *Tringa glareola*
- sharp-tailed sandpiper *Calidris acuminata*
- marsh sandpiper *Tringa stagnatilis*
- glossy ibis *Plegadis falcinellus*

- Koalas have been recorded from Halfway Creek, within 1.25 km south of the site (BioMaps, DES 2019).
- The Gold Coast Flora and Fauna database shows koala (listed vulnerable under EPBC Act and NC Act), wallum froglet *Crinia tinnula* (listed vulnerable NC Act), wallum sedgefrog *Litoria longibarbata* (listed vulnerable under EPBC Act and NC Act) records from Sandy Creek, west of the Pacific Highway and approximately 1.5 km from the site (GCCC Flora and Fauna Database)

- The site contains mapped non-remnant vegetation that provides minimal habitat for fauna species. No significant habitat trees or features are present.

- The site does not contain any ecologically significant areas (as per Appendix 4 of Policy 8: Guidelines for Ecological Assessments)

- The site does not contain any habitat for koala and is mapped as low value rehabilitation under the SEQ koala habitat mapping (GHD 2009). The site is not included in a koala assessable development area (KADA) or priority koala assessable development area (PKADA).

- No other threatened species are likely to regularly utilise the site.

- The detention basin contains native wetland plants with occasional infestations of exotic grasses. The basin provides limited values for aquatic fauna.

- Significant ecological values are mapped within Sandy Creek and the mapped remnant vegetation to the east of the site. (Figure 1)



3.0 FAUNA MANAGEMENT

3.1 IMPACTS TO FAUNA

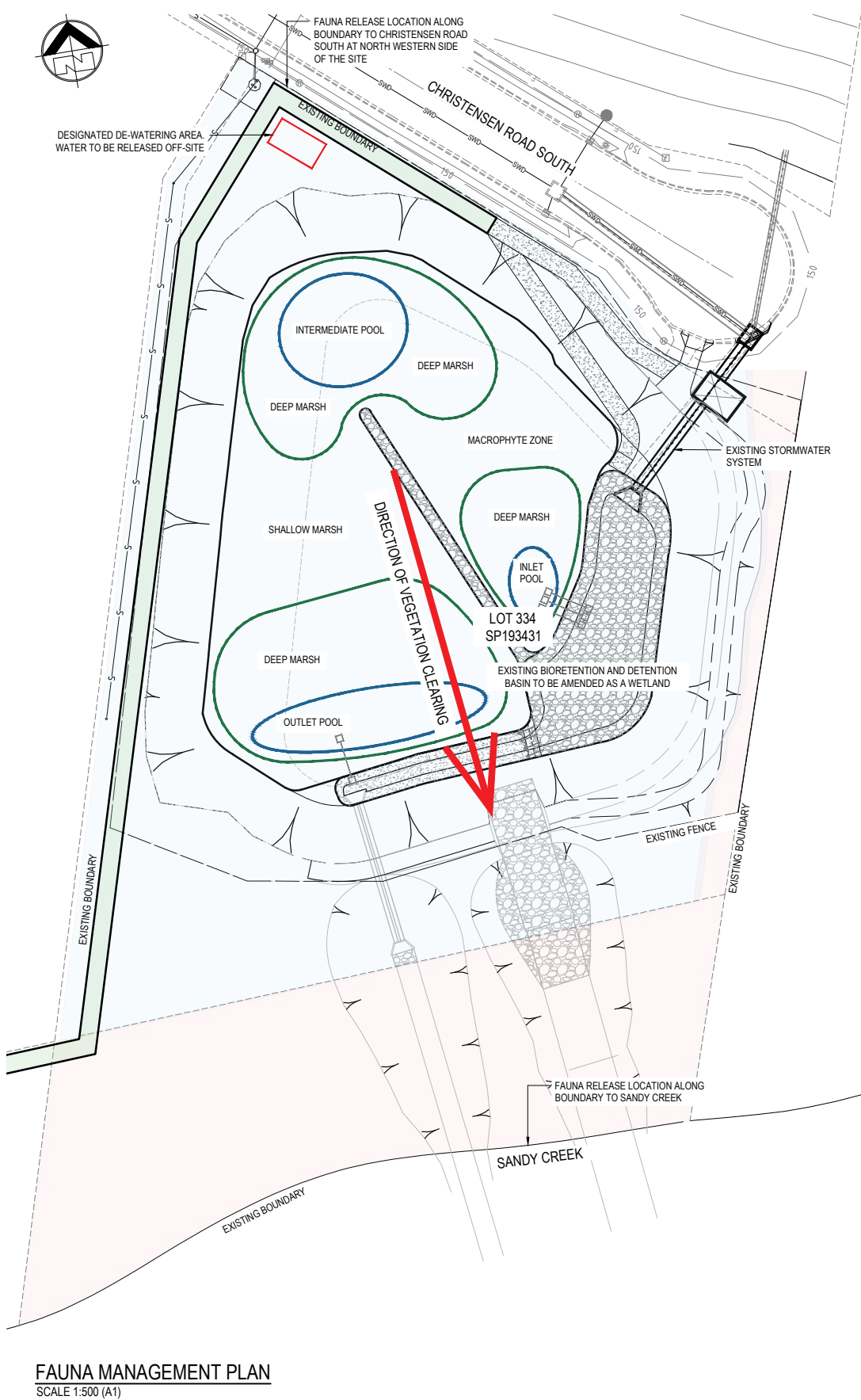
- Impacts to fauna from clearing activities will be restricted to removal of regrowth vegetation
- Fauna injury or death may occur from vegetation clearing activities

3.2 FAUNA PROTECTION

- All activities to be undertaken within the site must have regard to the protection and management of fauna.
- The aim of the FMP is to protect and manage fauna and their welfare during vegetation clearing

3.3 PRE-CLEARING PHASE

- A licenced and experienced fauna spotter-catcher (FSC) shall be engaged by the Project Manager.
- A pre-clearance survey shall be completed by the FSC within two weeks prior to vegetation clearing.
- The FSC shall prepare a pre-clear report following the survey and provide to Council no less than one week prior to the pre-start meeting.
- The FSC shall attend the pre-start meeting
- The pre-clearance survey shall identify and mark any breeding places potentially impacted by site works. Any habitat features potential containing fauna shall be recorded and appended to this FMP and demarcated on the site.
- Areas of vegetation to be retained / removed shall be demarcated in accordance with the Vegetation Management Plan (icubed consulting 2019)
- Should dewatering of the detention basin be required, a FSC who has experience and is licenced to remove aquatic fauna under the NC Act and/or Fisheries Act 1994 shall be present. The aquatic FSC shall attempt to remove any aquatic species present within the basin prior to final dewatering.
- Captured aquatic species shall be translocated into pools within Sandy Creek.



FAUNA MANAGEMENT PLAN
SCALE 1:500 (A1)

3.4 CLEARING PHASE

- The FSC shall be present for all vegetation clearing and/or dewatering activities
- The FSC and clearing equipment operator must establish a system of communication to manage safe interaction during clearing. This may involve use of two way radios or other method of communication.
- The FSC shall operate in accordance with the requirements of their Rehabilitation Permit issued by the DES and Animal Ethics authorisation from the Department of Agriculture and Fisheries. If the FSC does not possess a guide to FSC activities, they shall operate in accordance with the 'Code of Practice for the Welfare of Wild Animals affected by Land-clearing and other Habitat Impacts and Wildlife Spotter/catchers' (Hanger & Notridge, 2008).
- Should clearing be completed over more than one day, the FSC shall perform a pre-clear check of the vegetation to be cleared that day
- Clearing activities proposed adjacent to retained vegetation shall have due regard for potential impact on adjacent fauna breeding places
- Due to the homogenous nature of the regrowth vegetation present, the clearing does not require staging.
- There shall be one FSC per piece of clearing equipment. If additional clearing equipment is to be used, then additional FSCs shall be present, unless the equipment is being used in close proximity to each other and the FSC can adequately service each clearing front
- The FSC shall be present for any proposed interaction with stockpiled material if the material has been stockpiled for more than 24 hours.
- FSCs shall attempt to direct any fauna within the site to leave of their own accord. Should fauna be at risk of injury, the FSC may attempt to capture the fauna.
- Captured fauna during clearing activities shall be translocated into the conservation buffer zone to the south of the site, or adjacent vegetation along Sandy Creek, on within the Christensen Road reserve.
- If fauna are suspected to be injured, the FSC shall attempt to capture the fauna and make an assessment about whether to:
 - release the fauna within the translocation area if uninjured
 - transport the fauna to a veterinary surgeon for assessment, treatment and rehabilitation or humane termination. The fauna may then be taken to a registered wildlife carer for rehabilitation and eventual release
 - euthanise the fauna in the field according to the Australian and New Zealand Council for the Care of Animals in Research and Teaching guide 'Euthanasia of Animals Used for Scientific Purposes' (2001, currently under revision).
- No clearing activities shall be performed on the site while the FSC is not present
- Fauna injuries, deaths and incidents involving fauna shall be reported to Council immediately by the FSC or Site Supervisor
- Fauna should be transported in accordance with the holding times and carriers in Hanger & Notridge (2008).

3.5 POST-CLEARING PHASE

- A post-clear report shall be prepared by the FSC and provided to Council.

4.0 ROLES AND RESPONSIBILITIES

- FSC - responsible for fauna management and welfare during clearing activities
- Clearing operator - responsible for following all reasonable directions from the FSC in order to ensure the safe welfare of fauna
- Site Supervisor - responsible for ensuring that the Fauna Management Plan measures are complied with.
- Project Manager - responsible for organising the FSC pre-clear survey and to be present during clearing
- All other site personnel - responsible following all reasonable instructions from the FSC.

5.0 KEY CONTACTS

- FSC - to be advised
- Veterinary Surgery - Greenroosa Vets, 69 City Rd, Beenleigh QLD 4207, Ph: (07) 3287 2470
- Wildlife Gold Coast, Ph: (07) 5527 2444
- DES wildlife incidents, licensing and permits, Ph: 1300 130 372
- RSPCA Queensland, for reporting sick, injured or orphaned wildlife, Ph: 1300 ANIMAL (264 625)
- Site Supervisor - To be advised
- Council contact - To be advised

APPENDIX 1 - PMST RESULTS

Attached external to this drawing.

APPENDIX 2 - WILDLIFE ONLINE RESULTS

Attached external to this drawing.



GCCC REF: OPW/2019/160



B	FOR TENDER	03.06.2019	K.J.L.
A	FOR CLIENT REVIEW	15.04.2019	K.J.L.
REV	DESCRIPTION	DATE	BY

Consulting Engineer:



i³ consulting pty Ltd
engineering consultants
innovation, ingenuity, inspiration
L2 39 Sherwood Rd Toowoong, Qld 4066
www.icubed.com.au
ABN 89 106 675 156
p 07 3870 8888
PO Box 878 Toowoong, Qld 4066
mail@icubed.com.au
ACN 106 675 156

LEGEND

- PROPOSED LOT BOUNDARY
- EXISTING PROPERTY BOUNDARY
- VEGETATION TO BE CLEARED
- VEGETATION TO BE RETAINED

Engineers Certification:

Travis Smith MIE Aust. CPEng.
RPEQ 16400

Signature:

Date:/...../.....

Project
**PROPOSED SUBDIVISION AT
86-160 CHRISTENSEN ROAD
SOUTH, STAPYLTON**
for
**BURNSIDE DEVELOPMENTS P/L &
YELLOWSTONE INVESTMENTS P/L**

Title
**FAUNA MANAGEMENT
PLAN**

Status
FOR TENDER

Drawn	Date	Chkd	Date
K.J.L.	05.04.19	D.F.	05.04.19
Design	Date	Apprd	Date
D.F.	05.04.19		
Scale	A1	Certif	Date
AS SHOWN			
Project No.	Dwg. No.	Rev.	
17-209	V300	B	

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**Approved Bushfire Management Plan prepared by *Land and Environment Consultants*
(Appendix E);**

7 November 2017

Land and Environment Consultants
13 Pedwell Place Birkdale QLD 4159
P: 0466 714 833
E: info@landeconsultants.com.au
ABN: 35 209 590 760

King and Co Property Consultants
C/- Ben Battist
Director
iPlan Town Planning
ben.battist@i-plan.com.au

Subject: Bushfire assessment for proposed development at 81-161 Christensen Road, Stapylton, Queensland

1 Introduction

Land and Environment Consultants (LEC) was engaged to perform a bushfire hazard assessment for the proposed development (subdivision of industrial land in two stages) at 81-161 Christensen Road, Stapylton (the site), properly described as 344/SP193431.

The stage plans for the proposed development are attached at Appendix 1. The proposed development will seek to remove the stormwater easement on the east boundary of the stage 2 site as it is no longer required for stormwater management.

The site triggers the Gold Coast City Plan 2016 *Bushfire hazard overlay* (Bushfire hazard overlay) map for medium potential bushfire hazard and potential impact buffer. Therefore, under the Gold Coast City Plan 2016 *Bushfire hazard overlay code* (Bushfire hazard overlay code), a bushfire hazard assessment and bushfire management plan are required for the proposed development to ensure the risk of bushfire hazard associated with the site are identified and mitigated to a tolerable level.

Stage 1 is on the south side of Christensen Road. It consists of a balance lot and stormwater detention basin and is not affected by the Bushfire hazard overlay map. Therefore, the bushfire assessment focused on stage 2, which is on the north side of Christensen Road and is affected by the Bushfire hazard overlay map.

This report was prepared in accordance with relevant requirements of the Gold Coast City Plan 2016 Policy *Bushfire management plans* (Bushfire planning scheme policy). It documents the bushfire hazard assessment for the site and identifies *National Construction Code* requirements and mitigation measures which are required to demonstrate compliance with relevant development criteria in the Bushfire hazard overlay code and to mitigate the potential impacts of bushfire on life, property and the environment.

The bushfire assessment was performed by Robert Janssen who is a suitably qualified and experienced bushfire management consultant. He is the managing principal of LEC and has over 20 years of experience in bushfire planning and operations. He has prepared bushfire management plans for residential, commercial and industrial property developments, utilities, government facilities and conservation estates. Robert has university qualifications as an environmental scientist and 10 years of experience as a nationally accredited fire-fighter with the national parks and wildlife service in New South Wales and Queensland.

2 Site assessment

A site assessment was performed on 29 August 2017 and focused on land within 100 m of the north and east boundary of the stage 2 site which is mapped as medium potential bushfire hazard and potential bushfire impact buffer area. The stage 2 site assessment area is shown on Figure 1.



Figure 1: Stage 2 site assessment area (image Google Earth September 2017)

Land adjacent the east boundary of the stage 2 site is shown on Photograph 1 and is downslope 2-3 degrees. The site assessment generally agreed with version 10 regional ecosystem (RE) mapping which indicates the vegetation is RE 12.11.24 *Eucalyptus carnea*, *E. tindaliae*, *Corymbia intermedia* +/- *E. siderophloia* or *E. crebra* woodland. RE 12.11.24 is consistent with vegetation hazard class (VHC) 10.2 *Spotted gum dominated woodlands* which has a potential forest fuel load of 18 tonnes (t)/hectare (ha). Numerous vehicle access tracks were observed in the assessment area. Charring was observed on most trees in this area and indicates the area has been subject to a fire recently.

Land adjacent the north boundary of the stage 2 site is shown on Photograph 2 and is downslope 1-4 degrees. It has the same type of vegetation as the east boundary, although the vegetation occurs in a narrow corridor towards the north-west corner of the site. A vehicle access track runs along the boundary in this area and is on the adjacent property. Charring was not evident on *Melaleuca* trees in this area which suggests it has been a long time since the area was last subject to a fire.

The stage 1 and 2 sites are cleared of vegetation except for regrowth in the stormwater detention basin. Nevertheless, the regrowth in the stormwater detention basin will be removed as additional stormwater works are required for the stage 2 site.



Photograph 1: View east



Photograph 2: View north

3 Bushfire hazard assessment

Land in the assessment area was assessed against the exclusion criteria for low threat vegetation and non-vegetated areas in the *Australian Standard for the Construction of Buildings in Bushfire Prone Areas* (AS 3959-2009) which are:

- a) Vegetation of any type that is more than 100 m from the site.
- b) Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified.
- c) Multiple areas of vegetation less than 0.25 ha in area and not within 100 m of other areas of vegetation being classified.
- d) Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified.
- e) Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.
- f) Low threat vegetation, including grassland managed in a minimal fuel condition, maintained lawns, golf courses, maintained public reserves and parklands, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and windbreaks.

Note: Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bushfire attack (recognizable as short-cropped grass for example, to a nominal height of 100 mm).

Land adjacent the south and west boundaries of the stage 2 site is cleared of vegetation and/or is developed with roads, buildings and hardstand areas. These areas meet AS 3959-2009 exclusion criteria e) for non-vegetated areas and f) for low threat vegetation.

Land adjacent the north and east boundaries of the stage 2 site consists of *Spotted gum dominated woodlands* and does not meet any of the exclusion criteria for low threat vegetation or non-vegetated areas in AS 3959-2009 and is a bushfire hazard.

The potential bushfire hazard of land adjacent the north and east boundaries of the stage 2 site was further assessed using the Queensland Fire and Emergency Service *Potential Bushfire Intensity Calculator* (version November 2014) with the results presented in Table 1. A forest fire danger index (FFDI) value of 53 was used in the calculations and was taken from the Commonwealth Scientific and Industrial Research Organisation severe fire weather map for Queensland which was accessed on the Queensland Fire and Emergency Services redi-portal.

Table 1: Potential bushfire hazard on east elevation

Elevation	Vegetation hazard class	Slope (°)	Potential bushfire intensity (kW/m)	Potential bushfire hazard rating
North	10.2	3	13,095	Medium
East	10.2	4	14,031	Medium

The site assessment confirmed that land to the north and east of the stage 2 site is a medium potential bushfire hazard. Land within 100 m of a medium potential bushfire hazard area could be subject to significant bushfire attack from the medium bushfire hazard area. This 100 m wide area is referred to as a potential impact buffer and its location within the stage 2 site is shown on Figure 1.

Given that the stage 2 site is affected by potential impact buffer, the proposed development within the stage 2 site is subject to demonstrating compliance with relevant development outcomes in Part B of the Bushfire hazard overlay code.

4 Building design and lot layout

Under the Queensland Building Regulation 2006, lots affected by potential impact buffer are defined as 'bushfire prone areas'. The construction requirements for *National Construction Code* (NCC) building classes 2-9 in a bushfire prone area are defined in the NCC (volume 1). Pursuant to clause GF 5.1 of the NCC, setbacks required to achieve bushfire attack levels (BAL) and BAL construction requirements specified in AS 3959-2009 are only applicable to NCC class 2 or 3 buildings (residential buildings and apartments) and NCC class 10a buildings or decks associated with a NCC class 2 or 3 buildings.

The proposed development is for an industrial purpose and future buildings are likely to be NCC class 7b (warehouses) or class 8 (factories). Therefore, regarding compliance with the NCC (volume 1), bushfire requirements under AS 3959-2009, including setbacks and BAL construction requirements, should not be applicable to the assessment of any building application the proposed development will be subject to.

Nevertheless, buildings will need to comply with the fire resistance requirements of Section C of the NCC (volume 1) and provisions relating to the safe evacuation of occupants in the event of a fire, or other emergency, eg evacuation distances, exits, paths of travel, etc.

The proponent must seek the advice of a building certifier in relation to this matter.

5 Recommendations

This chapter provides recommendations which are required to demonstrate compliance with relevant development outcomes in Part B of the Bushfire hazard overlay code. Assessment against Part B of the Bushfire hazard overlay code is provided at Appendix 2.

5.1 Land use

Industrial uses involving the manufacture or storage of hazardous material in bulk will be excluded from the potential impact buffer shown on Figure 1, which affects lots 14, 16 and 17 and part of lots 13 and 15.

5.2 Building design and lot layout

Advice is will be sought from a building certifier to confirm the fire resistance and evacuation requirements of buildings.

Fencing and retaining walls will be constructed with non-combustible materials. Landscaping will be designed so that plantings do not exacerbate bushfire hazard.

5.3 Vehicle access

The road design will provide access for fire-fighting and other emergency vehicles, and will meet the relevant design criteria in Gold Coast City Plan 2016 Policy *Land development guidelines*.

5.4 Water

The proposed development will be connected to reticulated water in accordance with the design criteria in Gold Coast City Plan 2016 Policy *Land development guidelines*.

Fire-fighter water supply and fire hydrants will be provided in accordance with the Queensland Fire and Emergency Services guideline, *Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots 20156*

5.5 Advice to new owners

A copy of this report will be provided to new owners of the lots.

6 Conclusion

This report provides a site-based bushfire hazard assessment and management plan for the proposed development and is in general accordance with the Bushfire management plan policy.

It was concluded that the site is affected by potential impact buffer area and is subject to complying with relevant outcomes in Part B of the Bushfire hazard overlay code which is demonstrated at Appendix 2.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'R. Janssen'.

Robert Janssen
Principal consultant
Land and Environment Consultants
0466 714 833
rjanssen@landeconsultants.com.au

Disclaimer

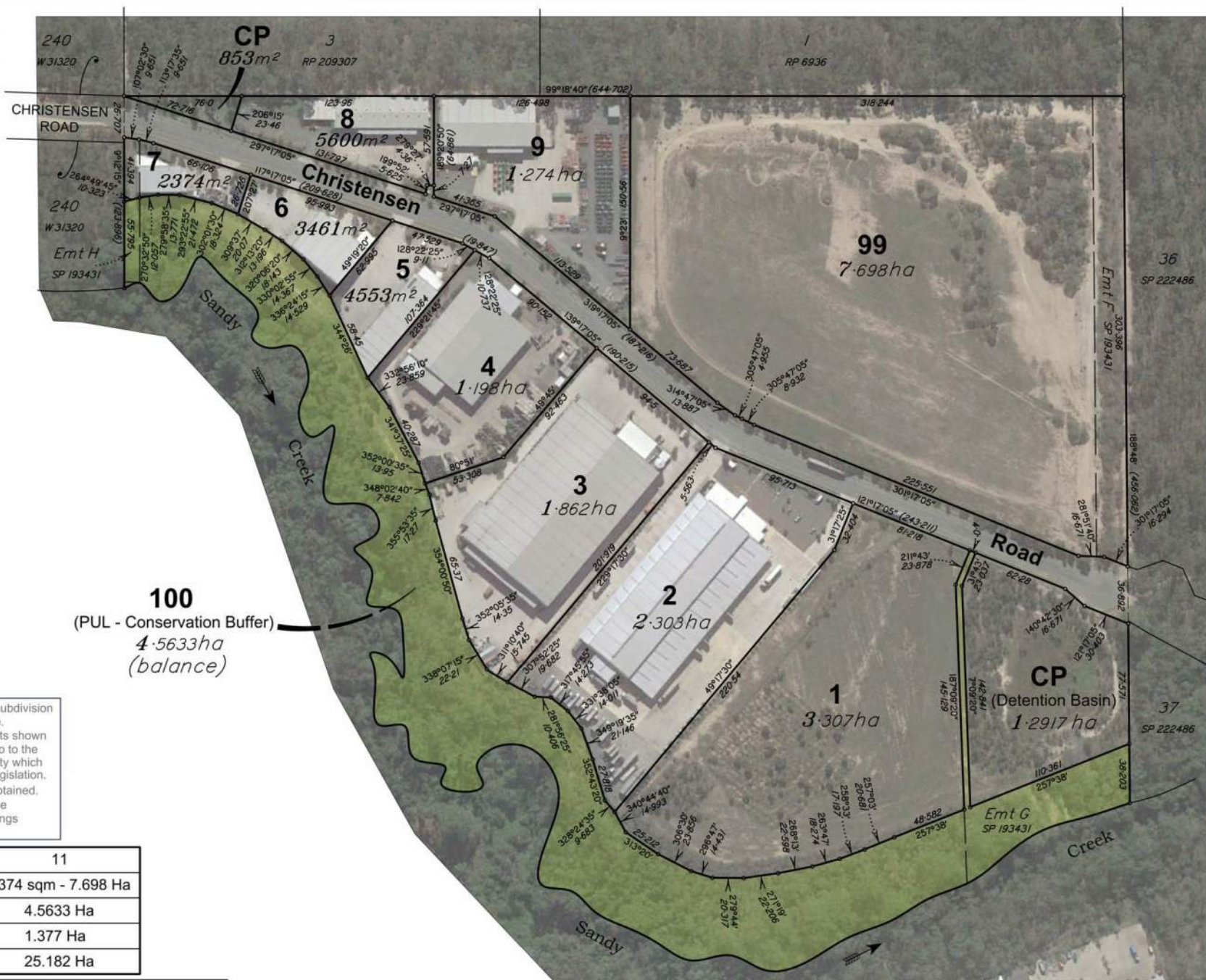
Notwithstanding the precautions adopted in this report, it should always be remembered that bushfires burn under a range of conditions. An element of risk, no matter how small always remains, there can be no guarantee, because of the variable nature of bushfires, that any one building will withstand bushfire attack on every occasion.

It should be noted that upon lodgement of a development application, council and/or the fire service may recommend additional requirements.

Although every care has been taken in the preparation of this report, Land and Environment Consultants accept no responsibility resulting from the use of the information in this report.

Appendix 1: Stage 1 and 2 site plans

Stage One



Denotes conservation buffer zone.

! This plan has been prepared as a proposed subdivision and should not be used for any other purpose. The dimensions, areas and total number of lots shown hereon are subject to field survey and are also to the requirements of council and any other authority which may have requirements under any relevant legislation. Certificate of Title for this site has not been obtained. Therefore, no reliance should be placed on the information on this plan for any financial dealings involving the land.

Number of new lots (including park)	11
Lot sizes	2374 sqm - 7.698 Ha
PUL - Conservation Buffer area	4.5633 Ha
Total Area of Common Property	1.377 Ha
Total Site Area	25.182 Ha

**Proposed Lots 1-9,99,100 and Common Property
Cancelling Lot 334 on SP 193431**

REVISIONS	
	C
	B
	A

ASSOCIATED CONSULTANTS:

SURVEYOR
DRAWN PDR

DATE 15/08/2017
CHECKED AJ5

LEVEL DATUM:
N/A

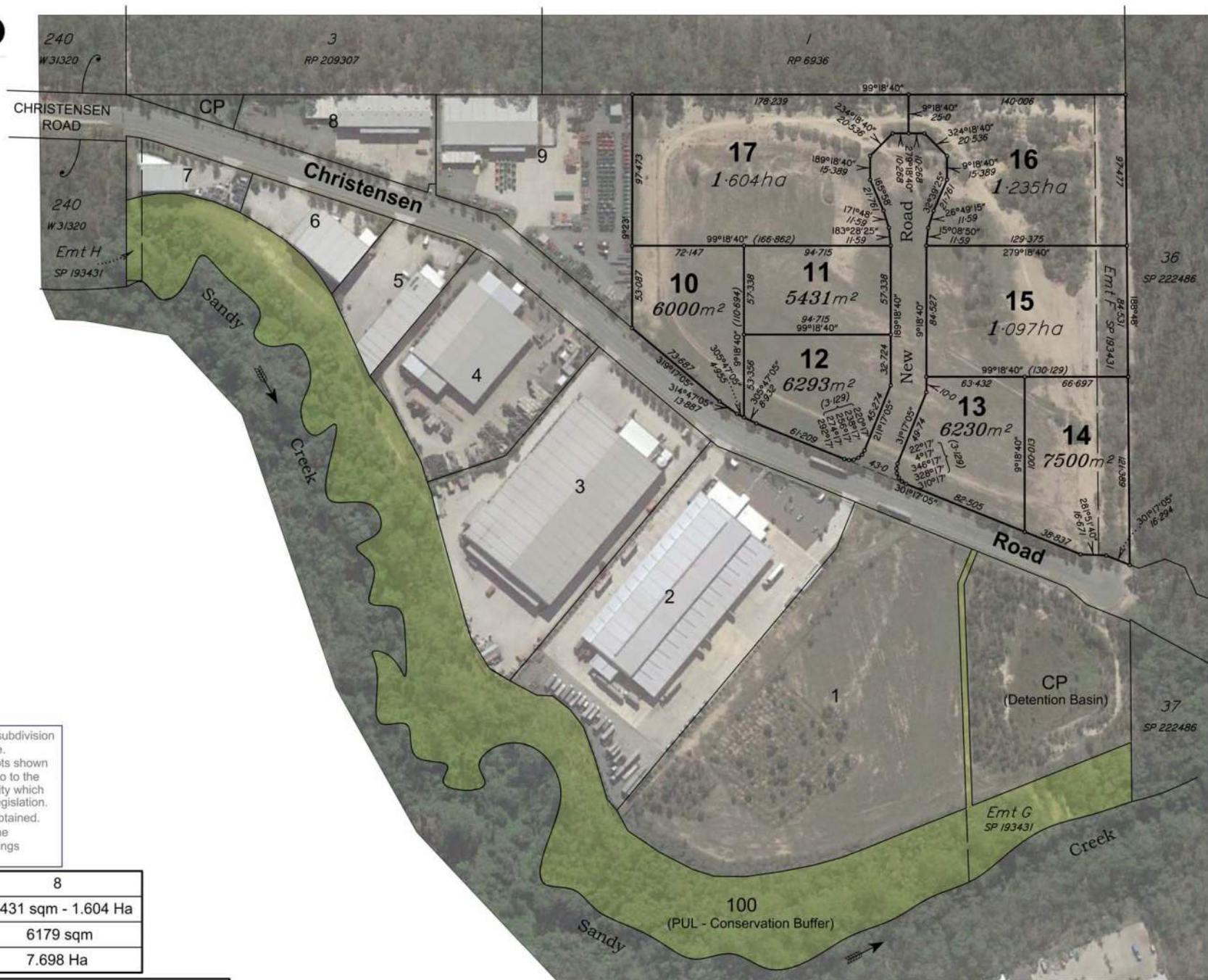
CLIENT: King and Co
Property Consultants

SITE:
81-161 Christensen Road, Stapylton

SCALE 1:2500 (A3)
PLAN REF: S0204-P4

Scale 1:2500 - Lengths are in Metres.
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380

Stage Two



Denotes conservation buffer zone.

! This plan has been prepared as a proposed subdivision and should not be used for any other purpose. The dimensions, areas and total number of lots shown hereon are subject to field survey and are also to the requirements of council and any other authority which may have requirements under any relevant legislation. Certificate of Title for this site has not been obtained. Therefore, no reliance should be placed on the information on this plan for any financial dealings involving the land.

Number of new lots	8
Lot sizes	5431 sqm - 1.604 Ha
Area of New Road	6179 sqm
Total Site Area	7.698 Ha

**Proposed Lots 10-17
Cancelling Lot 99**

Scale 1:2500 - Lengths are in Metres.
0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380

REVISIONS		ASSOCIATED CONSULTANTS:		SURVEYOR	DATE	LEVEL DATUM:	CLIENT:	SITE:	SCALE
				PDR	15/08/2017	N/A	King and Co Property Consultants	81-161 Christensen Road, Stapylton	1:2500 (A3)
					CHECKED				PLAN REF: S0204-P5

Appendix 2: Bushfire hazard overlay code assessment

PART B – ASSESSABLE DEVELOPMENT BENCHMARKS

Table 8.2.3-2: Bushfire hazard overlay code – for assessable development

Performance outcomes	Acceptable outcomes	Compliance
<i>Bushfire hazard</i>		
PO1 In a bushfire hazard area, the fire mitigation methods used at the site are adequate for the bushfire hazard of the individual site, having regard to: (a) vegetation type (b) slope; (c) aspect; (d) bushfire history; (e) conservation values of the site; (f) ecological restoration, including forest succession; (g) ongoing maintenance; (h) climate change; and (i) on site and off-site¹ fire hazard implications Note¹: This includes potential hazard from land up to 10kms away from the site. For example, how might large tracts of forest away from the site impact on the bushland that surrounds the site.	A01 A written assessment by a suitably qualified and experienced bushfire management consultant confirms that the site is not in a bushfire hazard area. OR The development complies with an approved Bushfire management plan prepared in accordance with SC6.3 City Plan policy – Bushfire management plans. OR The development complies with an approved Bushfire management plan as referenced within the approved reconfiguration of a lot. Note: Prior to: (a) plan sealing for a Reconfiguration of a lot; or (b) the issue of a Building work; or (c) the commencement of use where building work is not proposed. Whichever comes first, the applicant must submit to Council, certification from an appropriately qualified and experienced person that the development has been completed in accordance with, and complies with the approved Bushfire management plan and that all risk treatments and functioning in accordance with the approved plan.	✓ The proposed development will comply with the recommendations in this report which was prepared in accordance with SC6.3 City Plan policy – Bushfire management plans.
<i>Land use</i>		
PO2 In a bushfire hazard area, development: (a) does not result in high concentration of people living, working or congregating in a bushfire hazard area; (b) does not result in the bulk manufacture or storage of hazardous materials; and (c) 'essential' community infrastructure is able to function effectively during and immediately after a bushfire event.	A02 The following land uses are not located in a bushfire hazard area: (a) Aged care facility; (b) Child care centre; (c) Community care centre; (d) Community use; (e) Development involving the manufacture or storage of hazardous material in bulk; (f) Education establishment; (g) Hospital; (h) Residential care facility; (i) Retirement facility; (j) Rooming accommodation;	✓ Industrial uses involving the manufacture or storage of hazardous material in bulk will be excluded from the potential impact buffer shown on Figure 1, which affects lots 14, 16 and 17 and part of lots 13 and 15.

Performance outcomes	Acceptable outcomes	Compliance
	(k) Sport and recreation uses; (l) Tourist attraction; (m) Tourist park; and (n) Utility installation (waste management facilities) AND In a bushfire hazard area permitted essential community infrastructure is designed to function effectively during and immediately after bushfire events, as demonstrated in a Bushfire management plan.	
Development design and lot layout		
PO3 In a bushfire hazard area, developments, including lot layout are designed to avoid bushfire hazard and provide safe sites for people, property and buildings. Notes – The development should be located: (a) away from the most likely direction of a fire front; and (b) so that element of the development least susceptible to fire are sited closest to the bushfire hazard	A03 Development, Lots and/or building envelopes are not located within bushfire hazard areas. OR The development is located in accordance with the approved Bushfire management plans as referenced within the approved reconfiguration of a lot. OR The development is designed to adequately demonstrate that the risk to life and property is minimized to achieve acceptable levels and ensure ongoing site management.	✓ The proposed development is for an industrial purpose and future buildings are likely to be <i>National Construction Code</i> (NCC) class 7b (warehouses) or class 8 (factories) which are not subject to the bushfire requirements under the <i>Australian Standard for the Construction of Buildings in Bushfire Prone Areas</i> (AS 3959-2009), including setbacks and BAL construction requirements. Nevertheless, buildings will need to comply with the fire resistance requirements of Section C of the NCC (volume 1) and provisions relating to the safe evacuation of occupants in the event of a fire, or other emergency, eg evacuation distances, exits, paths of travel, etc.
	A03.2 The development design incorporates bushfire radiation zone/s that: (a) use existing or natural fire breaks & minimize the need to clear native vegetation; (b) do not impact matters of environmental significance (c) are located entirely within the boundaries of the private property of the development site; and (d) incorporates landscaping species that are less likely to exacerbate a bushfire event.	N/A Bushfire radiation zones are not applicable to the proposed development (as stated above). Landscaping will be designed so that plantings do not exacerbate bushfire hazard.

Performance outcomes	Acceptable outcomes	Compliance
PO4 In a bushfire hazard area, when designing for bushfire hazard migration the lot layout must avoid impacts on matters of environmental significance.	AO4 Development design, Lot size and layout avoids impact on matters of environmental significance and minimizes impacts such as fragmentation, habitat loss and edge effects for any matters of environmental significance.	✓ The stage 1 and 2 sites are cleared of natural habitat and vegetation.
PO5 Development uses fencing that: (a) does not contribute to the spread of bushfire; (b) facilitates the safe movement of fauna; and (c) provides access for fire-fighting purposes.	AO5 Fences are constructed: (a) using non-combustible or fire retardant materials within 20m of any building used for accommodation; (b) that do not impede the safe movement of fauna (where applicable); and (c) has gates that can be freely accessed for fire-fighting purposes (if applicable).	✓ New fencing and retaining walls will be constructed with non-combustible materials.
Vehicular access		
PO6 In a bushfire hazard area, vehicular access (including internal roads) is designed to mitigate against bushfire hazard by ensuring adequate access for: (a) fire-fighting and other emergency vehicles, and (b) the evacuation of residents and emergency personnel, during a bushfire event.	A06.1 The development design incorporates a perimeter road that: (a) is located between the boundary of the lots and/or buildings and the adjacent natural area and/or bushfire hazard area; (b) has a minimum cleared width of 20m; (c) has a constructed minimum road width of 6m; (d) has a maximum gradient of 12.5% (e) is constructed to an all-weather standard; and (f) is constructed to ensure all culverts and bridges have a minimum load bearing of 15 tones (if applicable)	✓ The road design will provide access for fire-fighting and other emergency vehicles, and will meet the relevant design criteria in SC6.9 City Plan policy – Land development guidelines . Vehicle access to the proposed development will be via an existing road (Christensen Road).
	A06.2 The road design is capable of providing access for fire fighting and other emergency vehicles, in accordance with SC6.9 City Plan policy – Land development guidelines .	✓ As stated above

Performance outcomes	Acceptable outcomes	Compliance
	A06.3 The road design does not include dead end roads	✓ Lots will be accessed from a cul-de-sac which is about 250 m long. The cul-de-sac will be sufficient size to manoeuvre a B-double truck and will provide sufficient access for fire-fighter and other emergency vehicles.
Clearing		
PO7 In bushfire hazard area, the development and/or lot layout designed to minimize vegetation clearing and provide landscaping to minimize fire hazard.	A07 The Bushfire management plan details the required extent of vegetation clearing and landscaping and where required modify development design and/or lot layout to minimize clearing of vegetation	✓ The stage 1 and 2 sites are cleared of natural habitat and vegetation. Landscaping will be designed so that plantings do not exacerbate bushfire hazard.
Open space management plans		
PO8 For areas to be dedicated to Council as open space, management strategies to mitigate bushfire risk must be identified.	A08 The Bushfire management plan contains a separate section detailing management strategies for area to be dedicated to Council that can be included within the Open space management plan.	N/A The proposed development does not include area to be dedicated to Council as open space.
Fire trials		
PO9 In a bushfire hazard area, fire trails must be provided to: (a) enable access for fire fighters, residents and equipment; (b) contribute to (where required) bushfire radiation zone(s); (c) mitigate against bushfire hazard; and (d) allow access for hazard reduction management programs. Note – fire trails should be located, contracted and maintained with due regard for landscaping and ecological values and should not result in soil disturbance or erosion	A09.1 Fire trails are located on public land (including public open space areas) to facilitate access for fire brigades. OR Fire trails located on private property are located as close as possible to the property boundaries and the adjoining bushfire hazard area, and an access easement is granted in favour of City of Gold Coast and Queensland Fire and Emergency Services.	N/A A vehicle access track runs along the north boundary of the stage 2 site in the adjacent property. Fire trails are not required within the stage 2 site to contribute to bushfire radiation zones or for hazard reduction management programs within the site and are not proposed.
	A00.2 The fire trail as: (a) a minimum cleared width of 6m; (b) a minimum of 4.8m vertical clearance; (c) a cross fall of no greater than 10 degrees;	N/A As stated above

Performance outcomes	Acceptable outcomes	Compliance
	(d) a minimum formed width of 4m; (e) a maximum gradient of 12.5%, with adequate drainage to prevent soil erosion and minimize ongoing trail maintenance; and culverts and/or bridges with a minimum load bearing of 8 tonnes (if applicable).	
	A09.3 Vehicular links are provided along the fire trail either to existing fire trails or roads, and these links are designed having regard to the topography of the site, fire fighter safety and the need to regularly access water supplies. Note- where possible, these links should be intervals of approximately 200 m.	N/A As stated above
	A09.4 The fire trail has vehicular access at each end, and links either to existing fire trails or public roads.	N/A As stated above
	A09.5 The fire trail provides turning areas for fire-fighting appliances. The turning bay can be either: (a) a turning circle (b) a 'T' shaped turning bay; or (c) a 'Y' shaped turning bay.	N/A As stated above
	A09.6 The fire trail provides areas for vehicles to pass or turn at intervals of not more than 200m and with a maximum grade of 5% (1 in 20).	N/A As stated above
Areas with water reticulation		
PO10 In a bushfire hazard area, the development maintains the safety of people and property by ensuring that the water supply is reliable and has sufficient flow and pressure requirements for fire fighting purposes at all times	AO10.1 The development is proposed in a bushfire hazard area, and reticulated water is supplied in accordance with SC6.9 City Plan policy – Land development guidelines.	✓ Fire-fighter water supply and fire hydrants will be supplied in accordance with the Queensland Fire and Emergency Services 2015 guideline <i>Fire Hydrant and Vehicle Access Guidelines for Residential, Commercial and Industrial Lots.</i>
	AO10.2 Development involving new or existing buildings with a gross floor area of greater than 50m ² , each lot has a reliable reticulated water	✓ As stated above

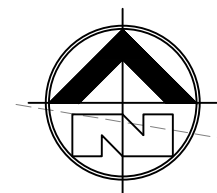
Performance outcomes	Acceptable outcomes	Compliance
	supply that has sufficient flow and pressure characteristics for fire fighting purposes at all times. It must have a minimum pressure and flow of 10 litres a second at 200 kPa.	
Areas with no water reticulation (private water supply)		
PO11 In a bushfire hazard area, the development maintains the safety of people and property by ensuring that an adequate water supply for fire-fighting purposes is provided.	AO11.1 For development with a combined GFA less than 500m ² where one or more buildings are proposed, dedicated fire fighting water storage is provided to protect each individual building. Each dedicated fire fighting water storage must have a volume of water not less than 10,000 litres for each building, be provided within 10m of each building and be: (a) a separate tank that is either below ground level or of non-flammable construction; or (b) a reserve section in the bottom part of the main water supply tank that is either below ground level or of non-flammable construction. Note- dedicated firefighting water storage is in addition to water supply for household use and does not include swimming pools, creeks and dams.	N/A The proposed development will be connected to reticulated water.
	AO11.2 For development that proposes one or more buildings with a combined GFA greater than 500m ² there is no acceptable outcome provided.	N/A The proposed development will be connected to reticulated water.
PO12	AO12 The outlet pipe is 50mm in diameter, fitted with a 50mm male camlock (standard rural fire brigade fitting) and an isolating valve.	N/A The proposed development will be connected to reticulated water.
PO13	AO13.1 The water supply outlet is located at least 9m from any potential fire hazards, such as venting gas bottles and combustible structures.	N/A The proposed development will be connected to reticulated water.

Performance outcomes	Acceptable outcomes	Compliance
	AO13.2 A safe and accessible hard stand area capable of accommodating a fire fighting vehicle is provided not more than 3m from the water supply outlet.	N/A The proposed development will be connected to reticulated water.
PO14 Development in a bushfire hazard area must provide adequate fire-fighting water storage. This infrastructure must be provided on public land so as to be readily accessible to fire brigades for hazard reduction and fire fighting purposes.	AO14.1 Where public water supplies (e.g. fire hydrants or public water storage) do not exist, water supply tanks are provided for fire-fighting purposes on public land within the development. The water tanks must: (a) Be installed on land dedicated to Council; (b) Hold a volume of at least 22,500 litres per every 20 dwellings; (c) Be of concrete construction; and (d) Have an outlet pipe of 50mm in diameter, fitted with a 50mm male camlock (standard rural fire brigade fitting) and an isolating valve.	N/A The proposed development will be connected to reticulated water.
	AO14.2 Development on public land provides a safe and accessible hardstand area capable of accommodating a fire-fighting vehicle not more than 3m from the water supply outlet.	N/A The proposed development will be connected to reticulated water.
Storage of Hazardous Materials		
PO15 Development does not cause: (a) an unacceptable risk to people, property and the environment due to the impact of bushfire on hazardous chemicals; (b) excess danger or difficulty to emergency services for emergency response or evacuation.	AO15 Development involving the storage, handling or manufacture of hazardous chemicals is not located within a Bushfire hazard area.	✓ Industrial uses involving the manufacture or storage of hazardous material in bulk will be excluded from the potential impact buffer shown on Figure 1, which affects lots 14, 16 and 17 and part of lots 13 and 15.
Advice to new residents		
PO16 In a bushfire hazard area, new residents/occupants of a	AO16 A copy of the Bushfire management plan, complete with	✓ A copy of this report will be provided to new owners.

Performance outcomes	Acceptable outcomes	Compliance
development in a bushfire hazard area are informed about: (a) the potential bushfire hazard on their site; (b) their responsibility for fire management; (c) the measures required for ongoing fire hazard mitigation; and (d) emergency procedures during a bushfire or on bad fire weather days. Note- Further information on bushfire preparation can be found at www.ruralfire.qld.gov.au	the Queensland Fire and Emergency Services cover sheet and any other addendums is provided to each resident/occupant for their information. Note - the QFES cover sheet is attached to the approved Bushfire management plan and a notification will be placed on the property's rates notice.	



Erosion and Sediment Control Plans prepared by *i³ consulting pty ltd* (Appendix F); and



EROSION & SEDIMENT CONTROL PLAN

SCALE 1:1000 (A1)

EROSION AND SEDIMENTATION CONTROL NOTES

1. CONTRACTOR TO NOMINATE SITE REPRESENTATIVE TO BE RESPONSIBLE FOR THE IMPLEMENTATION AND UP KEEP OF THE SILTATION AND EROSION MANAGEMENT CONTROL PLAN.
2. CONSTRUCTION OF ALL SEDIMENT MANAGEMENT DEVICES SHALL BE COMPLETED AND EFFECTIVE PRIOR TO:
 - STRIPPING OF TOPSOIL AND GRASS
 - BULK EARTHWORKS
 - SERVICE INSTALLATION
3. WHERE THE CONTRACTOR IS REQUIRED TO SLASH EXISTING VEGETATION, THE SLASHED HEIGHT SHALL BE AT LEAST 75mm, SO THAT THE STUBS CAN ASSIST IN PREVENTING EROSION.
4. ENSURE NO RUN OFF OR SEDIMENT DISCHARGES TO STREET OR ADJOINING PROPERTIES.
5. SHOULD THE SUPERINTENDENT, OR COUNCIL'S DESIGNATED REPRESENTATIVE, REQUEST THE CONTRACTOR TO IMPLEMENT AN EROSION AND SEDIMENT CONTROL MEASURE, THE CONTRACTOR SHALL IMPLEMENT IT WITHIN 24 HOURS.
6. BOTH TEMPORARY AND PERMANENT SEDIMENT MANAGEMENT DEVICES SHALL BE MAINTAINED. AT A SUITABLE LEVEL/CONDITION THROUGHOUT CONSTRUCTION.
7. SEDIMENT FENCES ARE TO BE CLEANED OUT WHEN CAPACITY IS REDUCED BY 30%.
8. IF EROSION AND SEDIMENT CONTROL DEVICES HAVE BEEN FOUND TO BE DEFICIENT OR FAILED IN SERVICE. DUE TO UNFORESEEN CIRCUMSTANCES, CORRECTIVE ACTION IS TO BE UNDERTAKEN IMMEDIATELY WHICH MAY INCLUDE AMENDMENTS/ADDITIONS TO THE ORIGINAL APPROVED EROSION CONTROL PLANS. SUCH ADDITIONS OR AMENDMENTS ARE TO BE APPROVED BY RELEVANT LICENSING AND COMPLIANCE OFFICER.
9. THE CONTRACTOR SHALL PROVIDE ONE VEHICLE ACCESS POINT TO SERVE THE SITE. ITS LOCATION, AND THE ASSOCIATED EROSION AND SEDIMENT CONTROL MEASURES, SHALL BE AS AGREED WITH COUNCIL'S DESIGNATED REPRESENTATIVE. THE PURPOSE OF THE ACCESS POINT AND CONTROL MEASURES IS TO MINIMIZE THE AMOUNT OF SEDIMENT TAKEN OFF SITE BY VEHICLE TYRES.
10. THE CONTRACTOR SHALL PROVIDE INLET PROTECTION TO ANY EXISTING GULLIES DIRECTLY DOWNSTREAM OF THE SITE OF WORKS.
11. THE CONTRACTOR SHALL TURF ALL DISTURBED AREAS OF VERGES, PRIOR TO ON MAINTENANCE INSPECTION.
12. ALL REMAINING BATTERS AND DISTURBED AREAS SHALL BE GRASS SEEDED WITHIN 7 DAYS OF FINAL TRIMMING AND ESTABLISHMENT OF 70 PERCENT GROUND COVER WITHIN 30 CALENDAR DAYS.

LEGEND

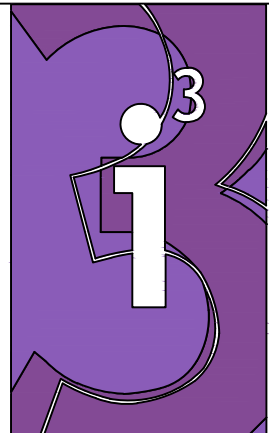
- - - - - EXISTING CONTOURS
- - - - - BULK EARTHWORKS CONTOURS
- SEDIMENT FENCE
- () GULLY PIT INLET PROTECTION
- FIELD INLET PROTECTION
- ▢ ENTRY / EXIT SHAKE DOWN DEVICE
- - - - - STORMWATER CUT OFF / DIVERSION DRAIN
- ▨ TEMPORARY SEDIMENT BASIN - REFER DRG 17-209-C101-2 FOR DETAILS
- ○ SAND BAG WEIR

WARNING

NO GUARANTEE IS GIVEN THAT SERVICES SHOWN ARE COMPLETE AND CORRECT. CONTRACTOR SHALL VERIFY EXACT POSITION OF SERVICES ON SITE BY HAND DIGGING OR OTHER NON DESTRUCTIVE MEANS PRIOR TO CONSTRUCTION AND SHALL MAINTAIN AND PROTECT THE SAME FOR THE DURATION OF THE CONTRACT.

REV	DESCRIPTION	DATE	BY
D	FOR TENDER	03.06.2019	K.J.L.
C	COUNCIL RFI RESPONSE	26.03.2019	K.J.L.
B	FOR COUNCIL APPROVAL	30.01.2019	K.J.L.
A	PRELIMINARY	07.12.2018	K.J.L.

Consulting Engineer:



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www.icubed.com.au mail@icubed.com.au
ABN 89 106 675 156 ACN 106 675 156
p 07 3870 8888

Engineers Certification:

Travis Smith MIE Aust. CPEng.
RPEQ 16400

Signature: *T. Smith*

Date: 13 / 08 / 2019

Project
PROPOSED SUBDIVISION AT
86-160 CHRISTENSEN ROAD
SOUTH, STAPYLTON
for
BURNSIDE DEVELOPMENTS P/L &
YELLOWSTONE INVESTMENTS P/L

Title
EROSION & SEDIMENT CONTROL
PLAN

GCCC REF: OPW/2019/160

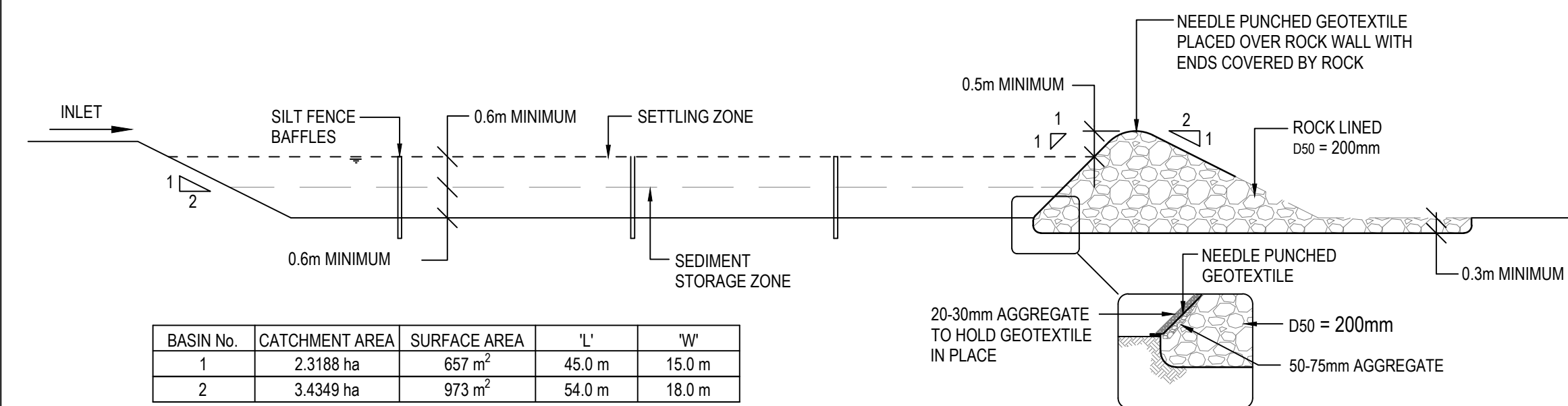
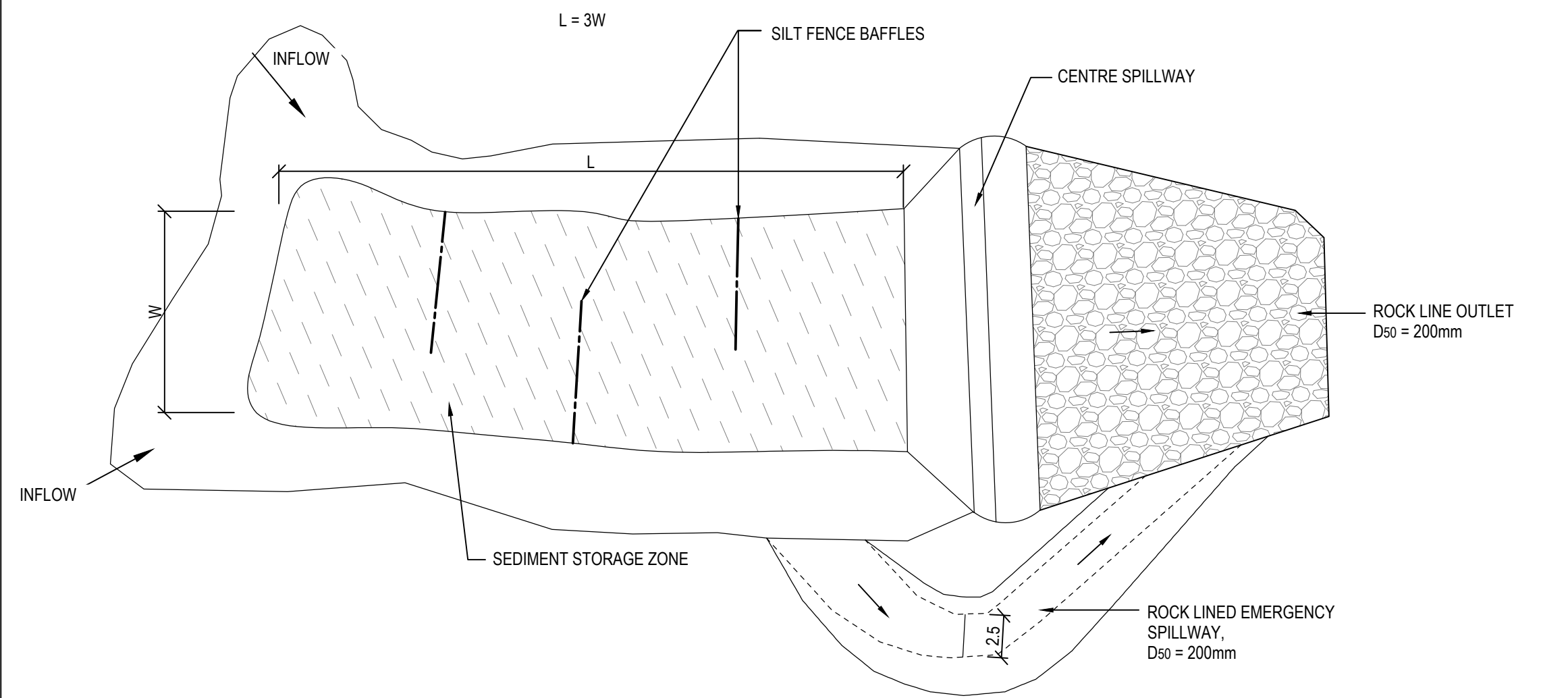


Status
FOR TENDER

Drawn	Date	Chkd	Date
K.J.L.	07.12.18	T.J.S.	07.12.18
Design	Date	Apprd	Date
T.J.S.	07.12.18		
Scale	A1	Certif	Date
AS SHOWN			

Project No.	Dwg. No.	Rev.
17-209	C101-01	D

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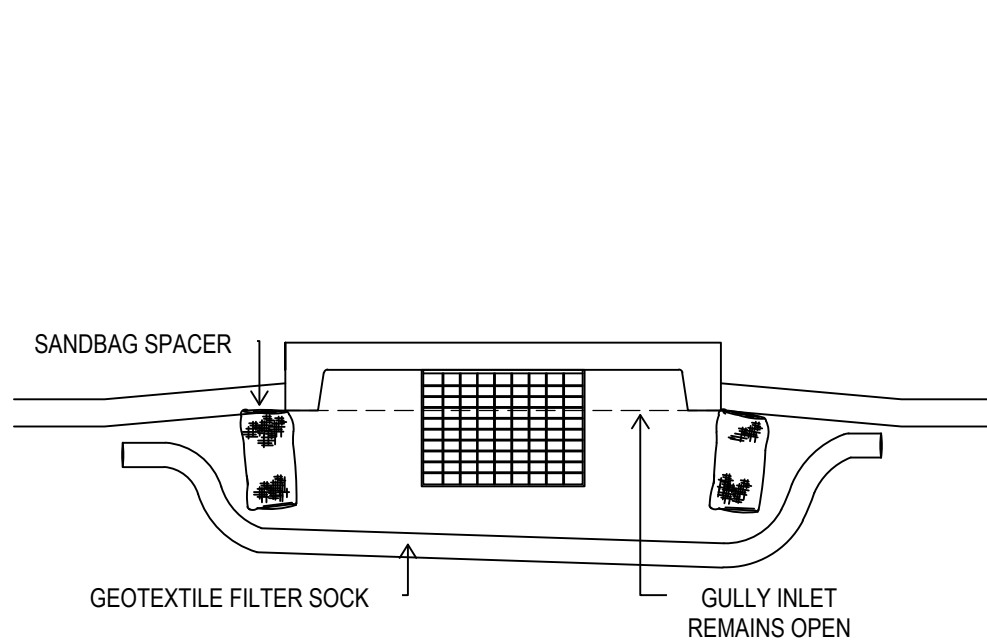


BASIN No.	CATCHMENT AREA	SURFACE AREA	L'	W'
1	2.3188 ha	657 m ²	45.0 m	15.0 m
2	3.4349 ha	973 m ²	54.0 m	18.0 m

BASIN SURFACE AREA = 3400*(0.25 Q_i) (m²)

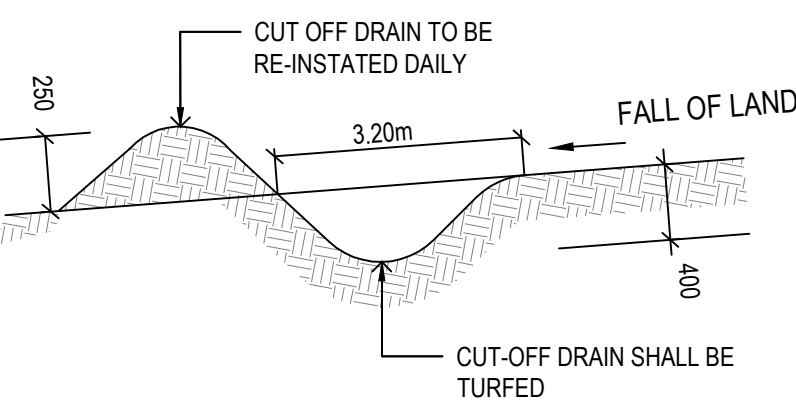
TYPE C SEDIMENT BASIN DETAILS

NTS



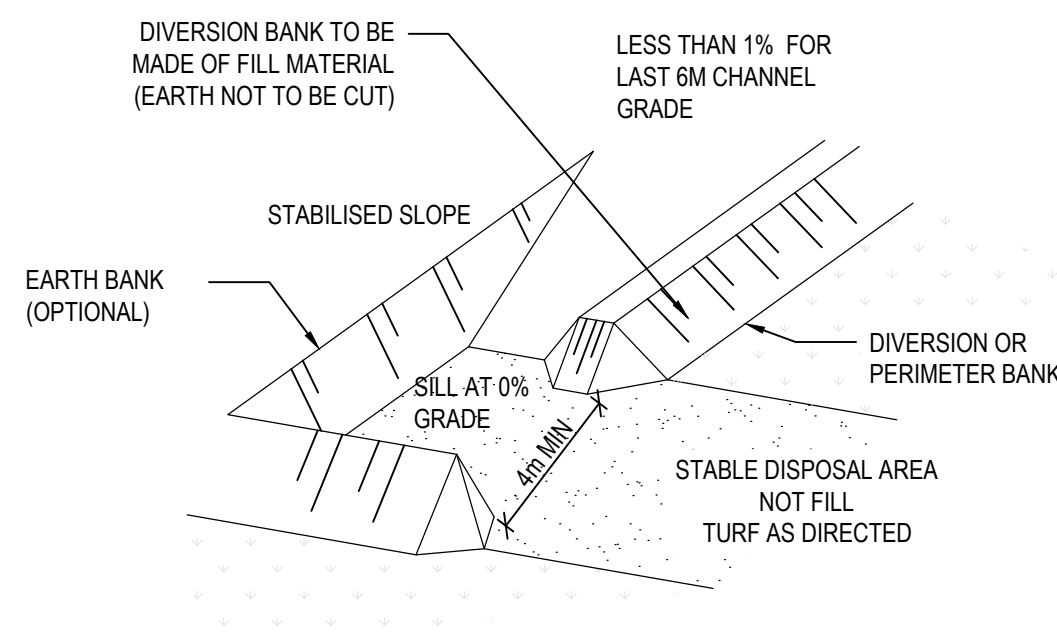
GULLY PIT SEDIMENT CONTROL

NTS



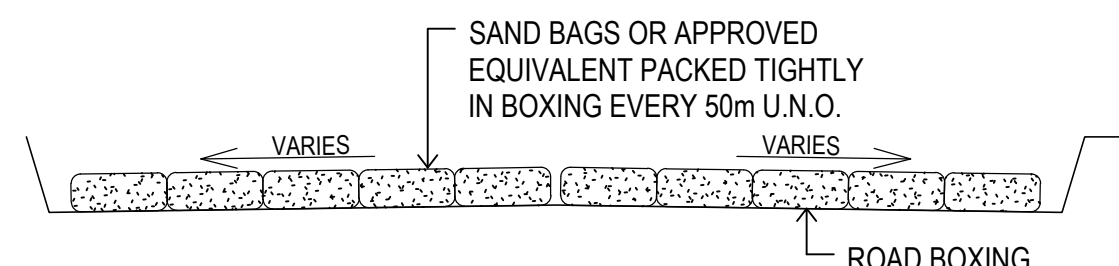
CUT OFF DRAIN / DIVERSION BERM

NTS



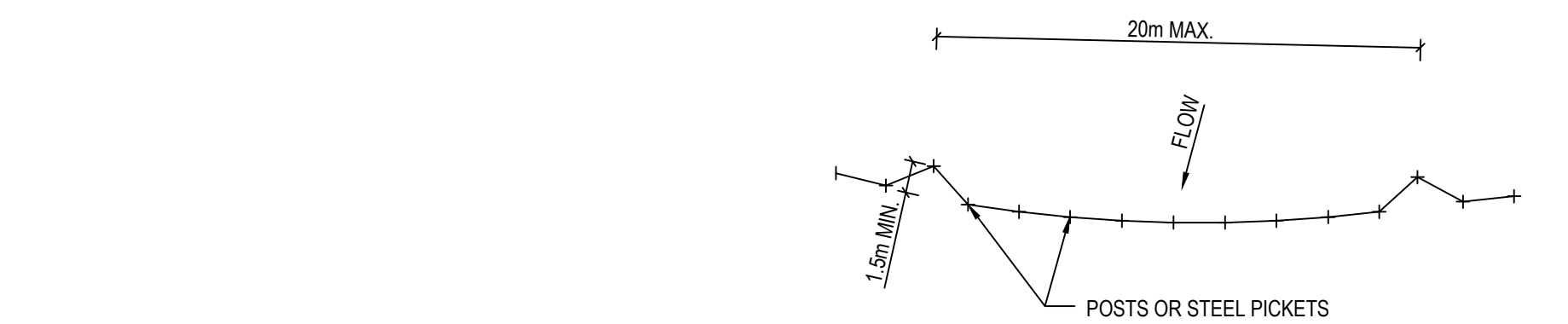
LEVEL SPREADERS

NTS

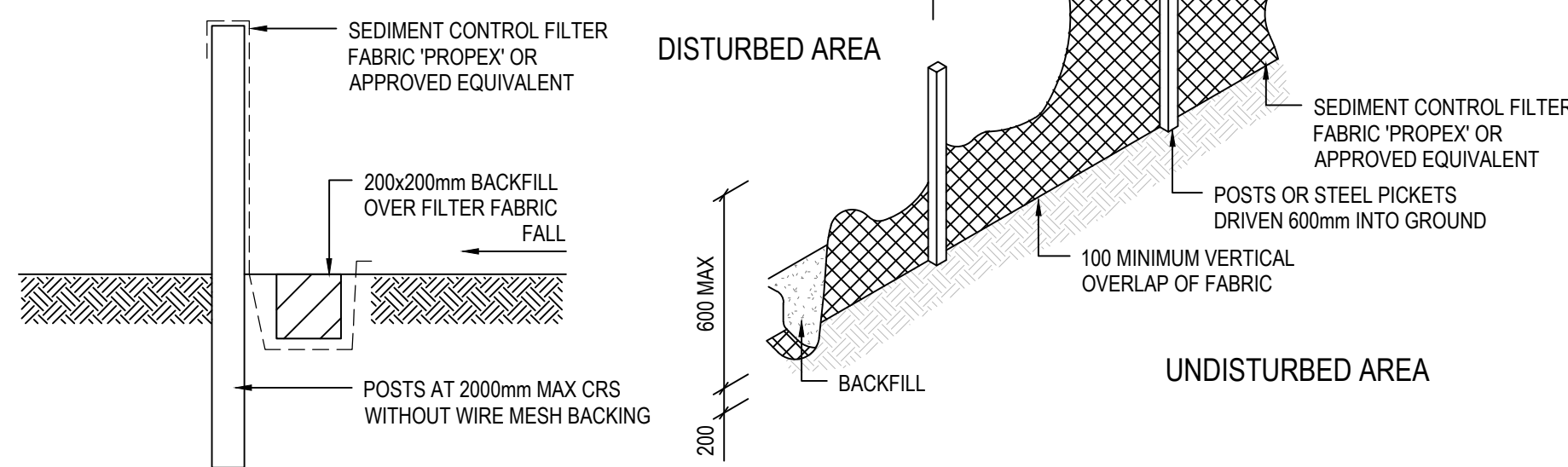


TYPICAL SANDBAG WEIR

NTS



SILT FENCE PLAN

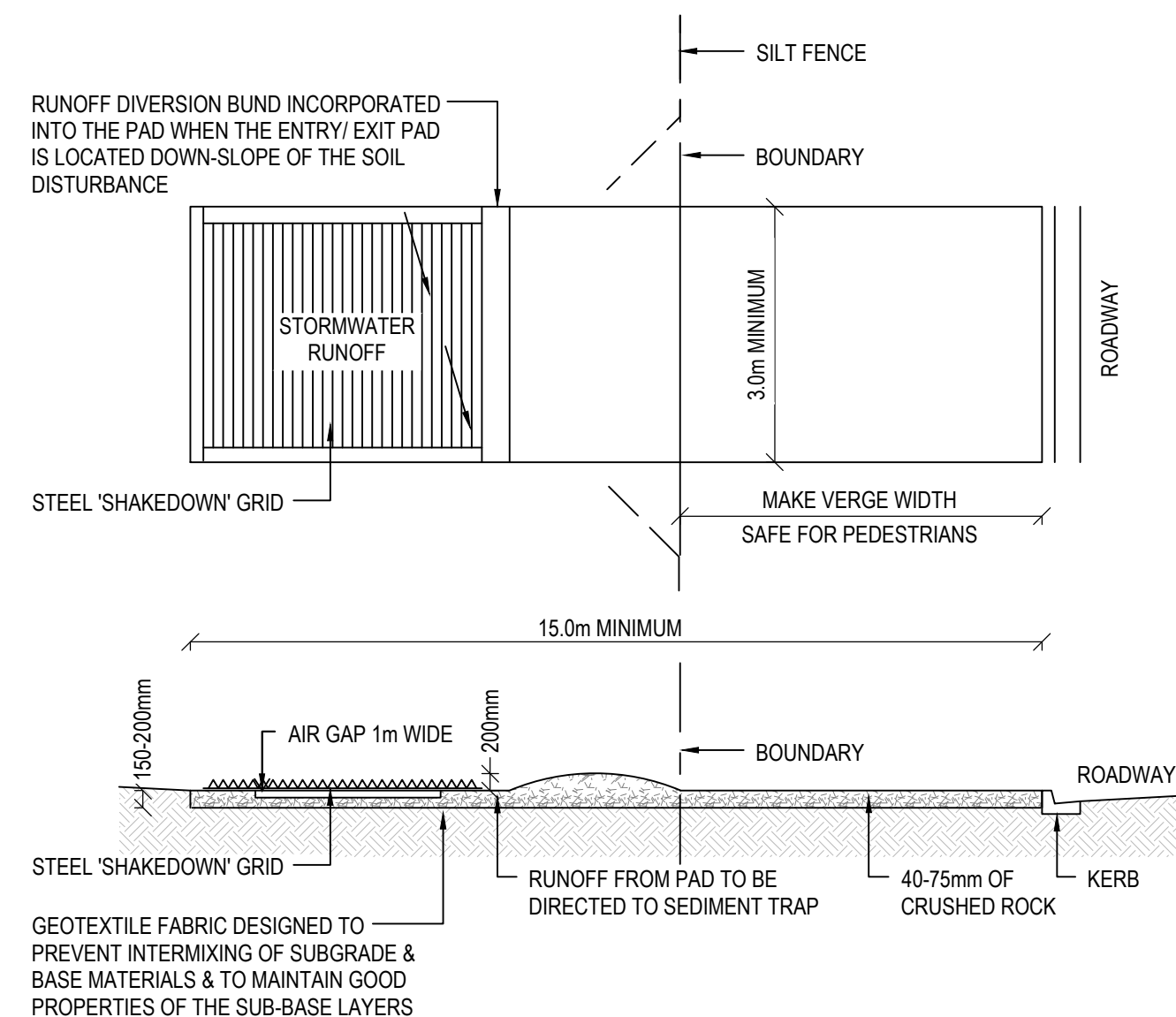


SILT FENCE SECTION

SILT FENCE PERSPECTIVE

SILT FENCE DETAIL

NTS



SHAKEDOWN DETAIL

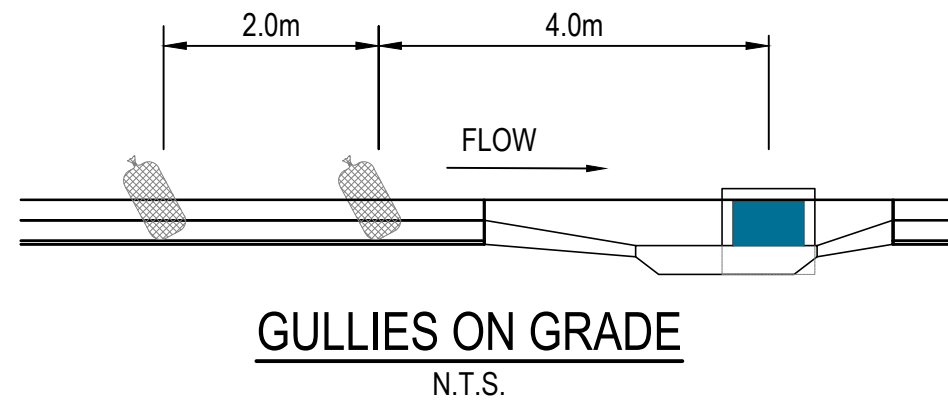
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OPERATION & MAINTENANCE NOTES

ALL ESC MEASURES MUST BE INSPECTED:
- AT LEAST DAILY (WHEN WORK IS OCCURRING ON SITE) OR WEEKLY (WHEN WORK IS NOT OCCURRING ON SITE);
- WITHIN 24 HOURS OF EXPECTED RAIN; AND
- WITHIN 18 HOURS OF A RAINFALL EVENT (ie AN EVENT OF SUFFICIENT INTENSITY AND DURATION TO MOBILISE SEDIMENT ON SITE).

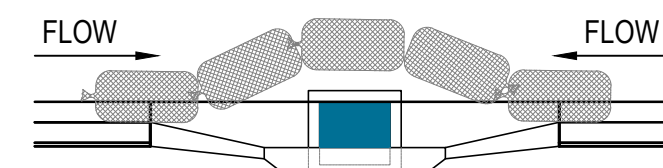
ESC MEASURE	MAINTENANCE TRIGGER	TIMEFRAME FOR COMPLETION OF MAINTENANCE
SEDIMENT BASINS	WHEN SETTLED SEDIMENT EXCEEDS THE VOLUME OF THE SEDIMENT STORAGE ZONE (SEE COUNCIL'S SEDIMENT BASIN DESIGN GUIDELINES).	WITHIN 7 DAYS OF THE INSPECTION.
OTHER ESC MEASURES	THE CAPACITY OF ESC MEASURES FALLS BELOW 30%.	BY THE END OF THE DAY

PRIOR TO LONG PERIOD OF SHUT DOWN ALL ESC MEASURES TO BE INSPECTED AND CLEANED. SEDIMENT BASIN CAPACITY TO BE CHECKED AND SIZE INCREASED IF REQUIRED FOR SHUT DOWN PERIOD.



GULLIES ON GRADE

N.T.S.



SAG GULLIES

N.T.S.

SANDBAGS AT GULLIES

NTS

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p 07 3870 8888

REV	DESCRIPTION	DATE	BY
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A	PRELIMINARY	07.12.2018	K.J.L.

Engineers Certification:

Travis Smith MIE Aust. CPEng.
RPEQ 16400

Signature: *T. Smith*

Date: 13 / 08 / 2019

Project
PROPOSED SUBDIVISION AT
86-160 CHRISTENSEN ROAD
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Title
EROSION & SEDIMENT CONTROL
DETAILS AND NOTES

GCCC REF: OPW/2019/160



Status
FOR TENDER

Drawn	Date	Chkd	Date
K.J.L.	07.12.18	T.J.S.	07.12.18
Design	Date	Apprd	Date
T.J.S.	07.12.18		
Scale	A1	Certif	Date
AS SHOWN			
Project No.	Dwg. No.	Rev.	
17-209	C101-02	D	

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Rehabilitation Management Plan prepared by *i3 consulting pty ltd* (Appendix G).

1.0 PROJECT DESCRIPTION

MS Projects Pty Ltd is developing the properties at 84-160 Christensen Road South, Stapylton within the City of Gold Coast, for an industrial subdivision. A public open space has been approved along Sandy Creek to provide a buffer to adjacent industrial developments. Rehabilitation is required with proposed public open space as well as a detention basin based in the south-eastern corner. The detention basin was previously constructed to detain stormwater runoff; however, this asset requires re-design and rehabilitation to provide effective stormwater management and treatment services.

- This Rehabilitation Management Plan (RMP) has been developed to guide the rehabilitation effort of the disturbed areas of public open space and the re-design construction works of the detention basin and surrounding batter. This RMP should be read in conjunction with the following documents:
- Vegetation Management Plan (i3 consulting Pty Ltd, 2019)
 - Conceptual Open Space Management Statement (OSMS) Schematic (Gassman Development Perspectives, 14/11/2014)
 - Amended Decision Notice for reconfiguring a lot (ROL) application (ROL201800026) dated 2/11/2018.

2.0 AIM AND OBJECTIVES

- The detention basin will be constructed in accordance with the supplied drawings (17-209-C103-01-B). A permanent wetland system with a rock-lined inlet sediment pond will be created at the end of Christensen Road South and will be designed for high velocity flows (scour protection). The water will enter the wetland through an inlet pipe and go through a series of pools, marshes and macrophyte zones before discharging into Sandy Creek.
- The public open space will be managed for conservation purposes and will be dedicated to Council
- The aim of the RMP is to guide the revegetation of the proposed wetland and public open space areas to complement the existing ecosystem values of Sandy Creek.
- The site conditions have been irreversibly changed through historical clearing along portions of Sandy Creek and creation of a detention basin. Therefore, the objectives for the site will be to:
 - fabricate an aquatic ecological system to function as a stormwater treatment basin
 - fabricate a surrounding terrestrial ecosystem that will complement adjacent areas (Sandy Creek and public open space)
 - the public open space will be managed to provide access to the rear of industrial lots and provide a buffer to Sandy Creek.
- The performance of the rehabilitation management plan will be assessed during the establishment and on maintenance periods with an aim to dedicate the site to the Council of the City of Gold Coast. Performance objectives are provided in Table 1.

Table 1: Performance requirements for the Rehabilitation Management Plan

Performance Indicator	Completion of establishment period	Completion of on maintenance period
Plant survival	>80% survival rate of planted tubestock within each vegetation layer required density of ≥ 1 plant per m ² achieved	>80% survival rate of planted tubestock required density of ≥ 1 plant per m ² achieved
Plant survival - supplementary plantings	Additional 3 month establishment period required for supplementary plantings.	>80% survival rate of supplementary planted tubestock
Environmental weeds	Environmental weeds cover <10%	Environmental weeds cover <20%
Restricted or prohibited weeds	All restricted and prohibited weeds treated and removed.	All restricted and prohibited weeds removed.
Rubbish	All rubbish removed	No large pieces of rubbish present (eg. car bodies, garden waste)
Mulching	Mulch layer present throughout MZ1 and no bare soil present	Mulch layer remains around planted tubestock
Erosion and sedimentation	Batters do not show active erosion occurring. Planted ground covers supplemented with matting where required.	Batters stabilised by ground covers present

3.0 SITE DESCRIPTION

- The detention basin area was cleared in 2009 when the initial detention basin was created. The vegetation on the banks was re-cleared in or around 2011-2012. Regrowth is evident from 2014 onwards on aerial photography (Google Earth).
- Some areas adjacent to Sandy Creek have been previously cleared while areas immediately adjacent to the creek comprise intact vegetation mapped as remnant regional ecosystem (RE):
 - 12.3.11 - Queensland blue gum *Eucalyptus tereticornis* +/- grey ironbark *E. siderophloia*, pink bloodwood *Corymbia intermedia* open forest on alluvial plains usually near coast
 - 12.3.6 - broad-leaved paperbark *Melaleuca quinquenervia* +/- Queensland blue gum, swamp box *Lophostemon suaveolens*, pink bloodwood open forest on coastal alluvial plains
 - 12.11.5/12.11.24 - lemon-scented gum *Corymbia citriodora* subsp. *variegata* woodland to open forest +/- grey ironbark / narrow-leaved ironbark *Eucalyptus crebra*, white mahogany *E. carnea*, while stringybark *E. acmenoides*, small-fruited grey gum *E. propinqua* on metamorphics +/- interbedded volcanics & white mahogany, Tindale's stringybark *Eucalyptus tindalae*, pink bloodwood +/- grey ironbark or narrow-leaved ironbark woodland on metamorphics +/- interbedded volcanics.
- The existing cleared areas along Sandy Creek have been invaded by exotic grasses. Rubbish, including car bodies and tyres, have been dumped within the open space area.
- Regrowth within the detention basin is comprised of wattles *Acacia* species regrowth with weeping bottlebrush *Melaleuca viminalis*, brush box *Lophostemon confertus*, lemon-scented gum *Corymbia citriodora* subsp. *variegata* and smooth-barked apple *Angophora leiocarpa* (Plate 1). The ground cover is sparse with occasional mat rush *Lomandra* spp and exotic grasses.
- The detention basin itself currently contains a wetland community comprising predominantly water primrose *Ludwigia peploides* with other species including bulrush *Typha orientalis*, water chestnut *Eleocharis dulcis*, woolly frogmouth *Philydrum lanuginosum* and other sedges and rushes. Some areas have been invaded by the exotic groundsel bush *Baccharis halimifolia*, blue billy goat weed *Ageratum houstonianum*, whiskey grass *Andropogon virginicus* and vasey grass *Paspalum urvillei*. Occasional standing trees include broad-leaved paperbark *Melaleuca quinquenervia* and cheese tree *Glochidion ferdinandi*.
- Weed species present include camphor laurel *Cinnamomum camphora*, whiskey grass, groundsel and vasey grass.

3.1 ECOLOGICAL VALUES

- Ecological values of areas surrounding the site include:
 1. Vegetation to the north-east of the site (outside the RMP boundaries) is mapped as remnant least concern RE vegetation containing essential habitat for koala under the *Vegetation Management Act 1999* (VM Act).
 2. Sandy Creek is mapped as remnant vegetation containing of concern and least concern REs under the VM Act. The vegetation is mapped as essential habitat for koala and wallum froglet
 3. Sandy Creek downstream of the site is mapped as a high ecological significance (HES) wetland under the *Environmental Protection Act 1994*
 4. Vegetation along Sandy Creek and to the east of the site is mapped as koala habitat areas (GHD 2009)
- Matters of local environmental significance (MLES) values under the Gold Coast City Plan 2016
 1. Sandy Creek mapped as a waterway and includes an intrusion to the southern portion of the existing proposed wetland (basin outlet)(Figure 1).
 2. Areas of Sandy Creek within the HES wetland, but not covered by the waterway mapping are mapped as a local significant wetland.
 3. Vegetation to the east of the detention basin (outside of the RMP boundaries) is mapped as habitat for local significant species.
 4. Non-remnant vegetation within Sandy Creek and to the east of the detention basin is mapped as general priority vegetation (Figure 2).

4.0 MANAGEMENT ZONES

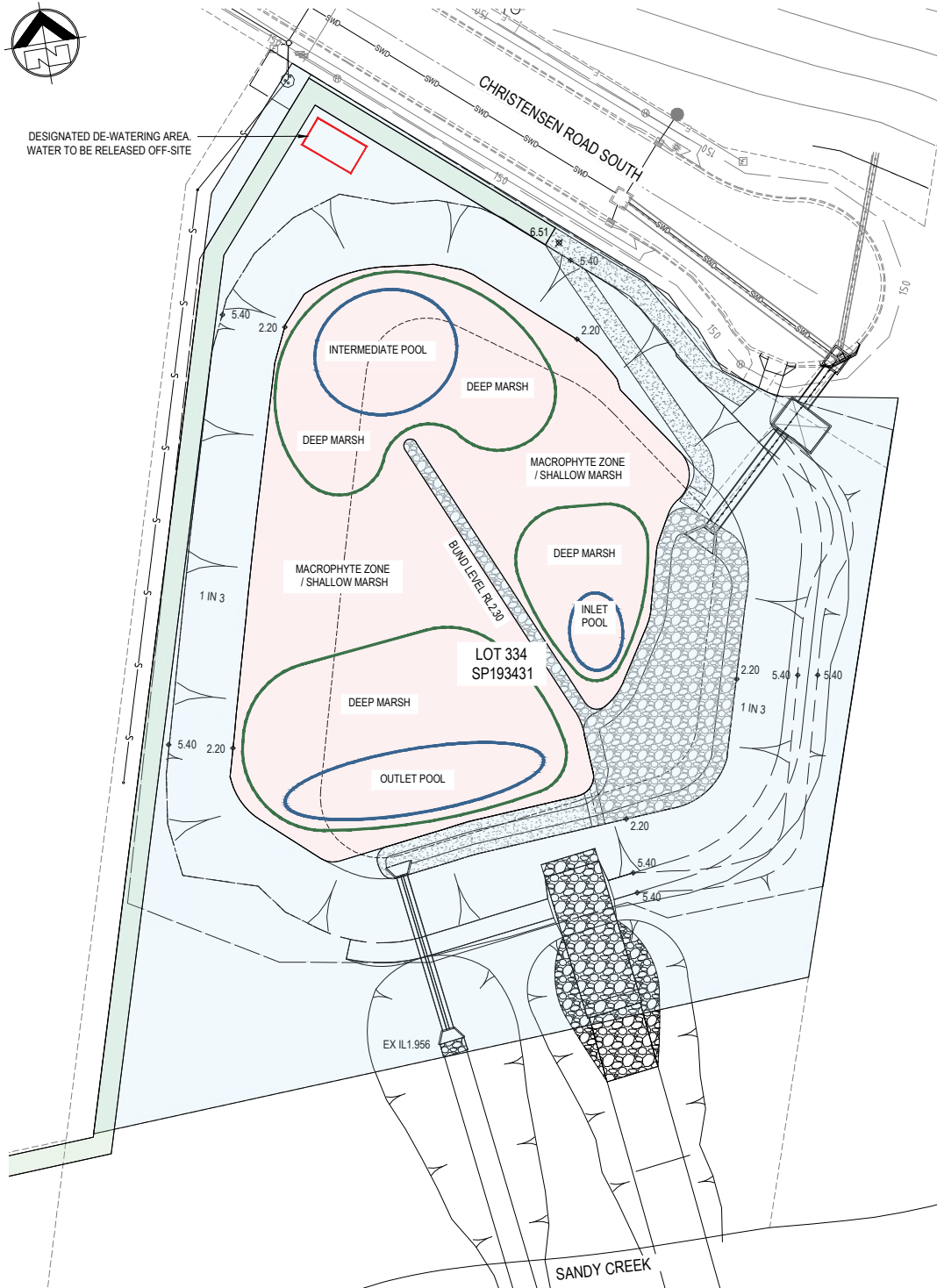
- Management zones within the site have been defined based primarily on their ecological function.
- Several management zones have been identified including:
 1. Detention basin
 - a) Pool zone - permanently inundated areas that comprise an inlet pool, intermediate pool and outlet pool.
 - b) Macrophyte zone - shallow heavily vegetated area to remove fine particulates and update soluble pollutants
 - c) Deep marsh zone - heavily vegetated area connecting the pool and shallow marsh zones
 2. Regional ecosystem (RE) zones - re-establish a similar ecological community to surrounding bushland areas and managed for conservation purposes
 3. Maintenance tracks - maintaining access for vehicles along public open space
 4. Balance public open space areas - managed for natural regeneration and conservation purposes.

4.1 MANAGEMENT ZONE 1 (MGZ1) - SEE PLANS V100 AND V101

- Management zone 1 (MGZ1) is proposed to be re-engineered for a bio-retention basin and aims to treat stormwater prior to discharge to Sandy Creek.
- The total area is 0.4483 ha.
- The zone is currently mapped as non-remnant vegetation and a constructed wetland system will be fabricated to achieve the stormwater treatment objectives required for stormwater discharge.

4.1.1 PLANTING SCHEDULE

- The planting schedule in Table 2 provides an indicative list of species to be completed within MGZ1. Substitute species may be used as recommended by the revegetation contractor. This list has been developed from the *Wetland Technical Design Guidelines* (Water by Design, 2017) and species occurring within the site.



REHABILITATION MANAGEMENT PLAN - MGZ1 AND MGZ2
SCALE 1:500 (A1)

Table 2: Proposed planting densities for MGZ1

Detention basin zone	Common name	Specific name	Planting density (quantity/m ²)
Pool	robust water milfoil curled pondweed ribbonweed	<i>Myriophyllum papillosum</i> <i>Potamogeton crispus</i> <i>Vallisneria spiralis</i>	1
Macrophyte zone / shallow marsh	#woolly frogmouth sedge star club-rush	<i>Philydrum lanuginosum</i> <i>Carex fascicularis</i> <i>Schoenoplectus mucronatus</i>	4-6
Deep marsh	jointed twigrush marsh club-rush shore club-rush	<i>Baumea articulata</i> <i>Bolboschoenus fluviatilis</i> <i>Schoenoplectus littoralis</i>	6-8

present within the existing wetland area.

4.1.2 WEED MANAGEMENT

- Aquatic weed seed may be introduced into the bio-retention basin through introduction from the upstream catchment, flooding of Sandy Creek and introduction from waterfowl.
- Aquatic weeds that germinate within the bio-retention basin should be manually removed or sprayed with a herbicide that is rated for aquatic weed control.

4.2 MANAGEMENT ZONE 2 (MGZ2) - SEE PLAN V100

- Management zone (MGZ2) will aim to establish a similar ecological community type that previously existed on the detention basin, using the pre-clear RE mapping and adjacent areas as a reference site.
- The total area is 1.3695 ha.
- The site is currently mapped as non-remnant vegetation, however inspection of the pre-clear RE mapping (Queensland Herbarium 2018) showed that the site previously contained:
 1. RE 12.11.5 (85%) and is described as lemon-scented gum open forest to woodland, usually including grey ironbark / narrow-leaved ironbark (sub coastal ranges), small-fruited grey gum, white mahogany or white stringybark. Other species that may be present and abundant locally include pink bloodwood, brown bloodwood *Corymbia trachyphloia* subsp. *trachyphloia*, Queensland blue gum, tallwood *Eucalyptus microcorys*, *E. portuensis*, Helidon ironbark *E. helidonica*, grey gum *E. major*, *E. longirostrata*, *E. blutrinata*, gum-topped box *E. moluccana* and spotted gum *Angophora leiocarpa*. Brush box *Lophostemon confertus* often present in gullies and as a sub-canopy or understorey tree. Mixed understorey of grasses, shrubs and ferns. Occurs on hills and ranges of Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics. (BVG1M: 10b)
 2. 12.11.24 (previously 12.11.5a) (15%) and is described as white mahogany *Eucalyptus carnea*, Tindale's stringybark, pink bloodwood woodland +/- narrow-leaved ironbark or grey ironbark, red mahogany *Eucalyptus resinifera*, grey gum, Helidon ironbark, smudgee apple *Angophora woodsiana*, brown bloodwood *C. trachyphloia*, tallwood, lemon-scented gum, large-fruited spotted gum *C. henryi*. Occurs on Palaeozoic and older moderately to strongly deformed and metamorphosed sediments and interbedded volcanics usually at altitudes <300 metres. (BVG1M: 9g).
- RE 12.11.5 / 12.11.24 are naturally diverse communities and the Queensland Herbarium notes that between 10-12 canopy species can be found in 0.1 ha plots. However, to enable a reasonable number of tubestock to be planted for each species, only the dominant canopy species across both REs was used (Appendix 1) and based on the adjacent reference site. Due to the close proximity of remnant vegetation to the site, other species will be naturally introduced over time.
- Planting areas within the balance of the public open space area identified in the Conceptual OSMS Schematic (Gassman Development Perspectives 2014). These planting areas are identified as pre-clearing RE 12.11.5/12.11.24 and therefore will require a similar planting palette to restore these communities.
- Weed management will occur on an as needed basis in order to achieve the performance objectives in Table 1. This will involve initial treatment and removal of all weed material combined with followup treatments for regrowth or new infestations.

4.3 Management Zone 3 (MGZ3) - SEE PLAN V101

- Management Zone 3 (MGZ3) aims to maintain an accessible vehicular track (3 m in width) to allow for maintenance activities within the public open space areas.
- The total area is 0.3 ha.
- Management activities will include track maintenance and weed control.

4.4 Management Zone 4 (MGZ4) - SEE PLAN V101

- Management Zone 4 (MGZ4) aims to maintain conservation values within the balance open space area through natural regeneration of native species from the soil seedbank and weed control
- Where weed control results in a plant density of less than 1 plant per m², additional planting is required to be completed to achieve a 1 plant per 1m² density.
- All rubbish items will be removed from the zone, including large items such as car bodies
- Weed management will occur on an as needed basis in order to achieve the performance objectives in Table 1. This will involve initial treatment and removal of all weed material combined with followup treatments for regrowth or new infestations.

4.4.1 PLANTING SCHEDULE

- Proposed species mix has been developed from the RE description database for each component RE. To gain an appreciation of the shrub and ground cover species present, the RE technical descriptions (only RE 12.11.24 available) and BioCondition benchmarks (only RE 12.11.5 available) were reviewed. Due to the small size of the site, the dominant species in each stratum (canopy, shrubs, ground) was chosen.

Canopy	Sub-canopy	Shrub	Ground cover
- lemon-scented gum <i>Corymbia citriodora</i> subsp. <i>variegata</i> - grey ironbark <i>Eucalyptus siderophloia</i> - narrow-leaved ironbark <i>Eucalyptus crebra</i> - Queensland blue gum <i>Eucalyptus tereticornis</i> - Tindale's stringybark <i>Eucalyptus tindalae</i>	- brush box <i>Lophostemon confertus</i> - red ash <i>Alphitonia excelsa</i> - early black wattle <i>Acacia leiocalyx</i> - small-leaved paperbark <i>Melaleuca sieberi</i> - coastal she-oak <i>Allocasuarina littoralis</i> - black wattle <i>Acacia disparima</i>	- dogwood <i>Jacksonia scoparia</i> - poison peach <i>Trema tomentosa</i> - sago flower <i>Ozothamnus diosmifolius</i> - hopbush <i>Dodonaea triquetra</i> - grey bush-pea <i>Pultenaea spinosa</i> - twiggly myrtle <i>Sannaninia</i> (<i>Babingtonia similis</i>)	- kangaroo grass <i>Themeda triandra</i> - barbed wire grass <i>Cymbopogon refractus</i> - blady grass <i>Imperata cylindrica</i> - poverty grass <i>Eremochloa bimalculata</i>

- Planting densities should be as per Table 3, however substitutions may be acceptable depending upon the revegetation contractor and local nursery supply. The management zone area is approximately 1.3695 ha and the planting density has been calculated to ensure at least 1 plant per m².
- Tubestock
 - 1. Tubestock should be sourced from local nursery suppliers and preferably from local provenance.
 - 2. Tubestock should be healthy and containing signs of active growth. Tubestock must be rejected if plants display any signs of disease (eg. yellowing of leaves, root bound) or contain weed growth. Tubestock should be at least 20 cm tall for trees and shrubs and must be sun-hardened.
- Timing
 - 1. Planting should ideally be completed during the active growing season to ensure that plants become established quickly and to minimise the amount of supplementary watering required. The months of January to March provide the highest likelihood for rainfall at the site.
 - 2. The plantings will have an establishment period of 12 months, followed by an on maintenance period of 12 months. Any supplementary plants (eg. where plantings have failed to reach the required density of 1 plant per m² density), there will be an additional 3 month on maintenance period.

Table 3: Proposed planting densities for MGZ2

Common name Species name	Proposed planting density (no. per m ²)	Proposed no. of plants	Including 10% loss factor	Including 20% loss factor
lemon-scented gum <i>Corymbia citriodora</i>	1 plant per 36m2	75	83	90
narrow-leaved ironbark <i>Eucalyptus crebra</i>		75	83	90
Tindale's stringybark <i>Eucalyptus tindalae</i>		75	83	90
black wattle <i>Acacia disparima</i>		750	825	900
early black wattle <i>Acacia leiocalyx</i>	1 plant per 6 m2	750	825	900
red ash <i>Alphitonia excelsa</i>		750	825	900
dogwood <i>Jacksonia scoparia</i>		550	605	660
sago flower <i>Ozothamnus diosmifolius</i>		550	605	660
hopbush <i>Dodonaea triquetra</i>	1 plant per 6 m2	550	605	660
grey bush-pea <i>Pultenaea spinosa</i>		550	605	660
kangaroo grass <i>Themeda triandra</i>		4550	5005	5460
barbed wire grass <i>Cymbopogon refractus</i>		4550	5005	5460
TOTAL	at least 1 plant per 1 m2	13775	15153	16530

GCCC REF: OPW/2019/160



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D	REVISED NOTE	20.08.2019	N.G.
C	FOR TENDER	03.06.2019	K.J.L.
B	FOR APPROVAL	08.05.2019	K.J.L.
A	FOR CLIENT REVIEW	16.04.2019	K.J.L.
REV	DESCRIPTION	DATE	BY

LEGEND

- PROPOSED LOT BOUNDARY
- EXISTING PROPERTY BOUNDARY
- MANAGEMENT ZONE 1 (MGZ1) - AREA = 0.4483ha
- MANAGEMENT ZONE 2 (MGZ2) - AREA = 1.369ha (DEPENDING ON EXTENT OF DISTURBANCE)
- MANAGEMENT ZONE 3 (MGZ3) - AREA = 0.3ha
- MANAGEMENT ZONE 4 (MGZ4)

Engineers Certification:

Travis Smith MIE Aust. CPEng.
RPEQ 16400

Signature:

Date:/...../.....

Project

PROPOSED SUBDIVISION AT 86-160 CHRISTENSEN ROAD SOUTH, STAPYLTON

for **BURNSIDE DEVELOPMENTS P/L & YELLOWSTONE INVESTMENTS P/L**

Title

REHABILITATION MANAGEMENT PLAN - SHEET 1

Status

FOR TENDER

Drawn	Date	Chkd	Date
K.J.L.	05.04.19	D.F.	05.04.19
Design	Date	Apprd	Date
D.F.	05.04.19		
Scale	A1	Certif	Date
AS SHOWN			
Project No.	Dwg. No.	Rev.	
17-209	V100	D	

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5.0 REHABILITATION PROGRAM

5.1 SITE PREPARATION

1. The site will be cleared to enable construction of the bio-retention basin and associated works.
2. All vegetation will be cleared and disposed of in accordance with the Vegetation Management Plan.
3. The site will be graded and shaped in accordance with the design drawings.
4. The stockpiled topsoil should be spread evenly over the site. A layer of mulch should then be spread over the topsoil within MGZ1 only
5. Rubbish will be removed from MGZ4.

5.2 TUBESTOCK PLANTING

1. Within MGZ2, mulch should be scraped back and suitable tubestock holes dug with machinery or by hand.
2. A small amount (10g) of slow release fertilizer should be added upslope of the hole and 4 cm below the soil and mulch layers. Tubestock holes should be deep enough so that the root mass sits just below the soil surface. Once planted, the mulch can be respread around the tubestock
3. Tree guards should be used for tree and shrub species to protect from herbivory. Several tree guards designs are available and should be recommended by the revegetation contractor.
4. Each tubestock should be watered immediately with between 5-10 L of water. Followup watering will be completed during the establishment and on maintenance periods.
5. The establishment phase shall be for 12 months from the completion of rehabilitation plantings

5.3 ESTABLISHMENT PHASE

1. The establishment phase shall be for 12 months from the completion of the rehabilitation program.
2. Supplementary plantings to replace unsuccessful plantings shall require an additional establishment phase of three months to ensure plant establishment.

5.3.1 WEED MANAGEMENT

1. The intent of weed management within the MGZ2 area is to establish a native vegetation community that naturally suppresses invasive weeds by creating conditions that are unsuitable for weed germination and growth (eg. position in full sun, disturbed soils)
2. The intent of weed management within MGZ4 is to treat and remove infestations and to treat regrowth and re-infestations on an as needed basis.
3. The layer of mulch within MGZ2 will act to suppress weed seed present within the soil seed bank. However, weed seed may be brought on the site from adjacent areas (windblown seed), by flooding of Sandy Creek or movement of fauna onto the site.
4. During the establishment and on maintenance phases, spot spraying or hand pulling of germinating weeds shall be completed during regular monitoring events. This will ensure that weed material does not become unmanageable.
5. Appropriate weed treatment methods are provided in Table 4.
6. All weed material should be collected and placed in a bag for disposal at a waste management facility. Weed propagative material shall not be disposed of within the site.

5.3.2 SUPPLEMENTARY WATERING

1. Watering shall be required to supplement natural rainfall.
2. Generally, watering shall be required in accordance with the following schedule:
 - a. daily for the first week
 - b. twice per week to week 6
 - c. weekly watering to week 12
3. Watering shall be delivered from a water truck or pumped from Sandy Creek, should the necessary permits be acquired.

5.4 MAINTENANCE PHASE

1. The maintenance phase shall be for 12 months from the completion of the establishment phase.
2. The revegetation contractor shall provide a compliance certificate at the completion of the maintenance phase
3. The off maintenance phase shall be achieved by compliance with the performance requirements in Table 1 and confirmation by Council.
4. Supplementary watering shall be provided on an as needed basis to ensure the performance objectives are met with respect to plant retention.
5. Weed management shall be provided as per the establishment phase.

6.0 ROLES AND RESPONSIBILITIES

1. This RMP will be kept onsite during the rehabilitation program.
2. All site contractors involved in the rehabilitation program or accessing the site during rehabilitation activities shall complete a site induction which includes relevant aspects of the RMP
3. Project Manager - responsible for engaging a suitably qualified and experienced revegetation contractor to undertake the rehabilitation program
4. Site Supervisor - responsible for demarcation of rehabilitation areas and ensuring that the RMP measures are implemented on site
5. Revegetation contractor - responsible for rehabilitating the site in accordance with this RMP and noting amendments or deviations where necessary
6. All other contractors and visitors - responsible for observing rehabilitation areas and not impacting on rehabilitation activities.

7.0 MONITORING

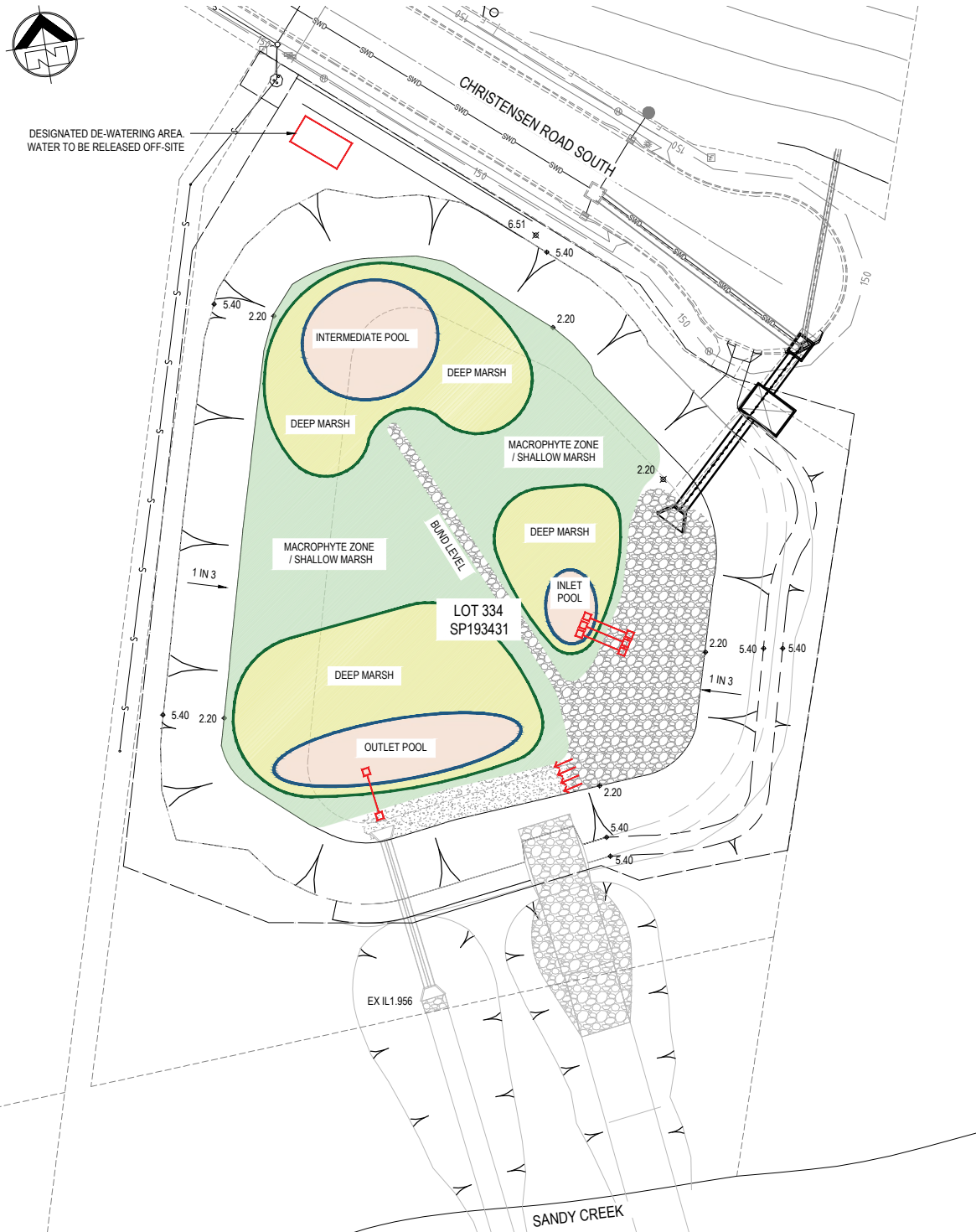
1. A monitoring program shall be implemented to track the progress of the rehabilitation program
2. The aim of the monitoring program is to track the establishment of tubestock and weed presence/coverage.
3. Permanent photo monitoring points shall be established: 1 point within MGZ1 and 5 points within MGZ2 (1 within the detention basin batters, 1 within the small planting areas and 2 within the larger planting area). The photo monitoring points shall be chosen prior to the rehabilitation program commencing

Table 4: Example weed treatment methods

Life form	Example species from surrounding area	Treatment method
Woody plants (trees, shrubs)	lantana	Manual removal of seedling by hand pulling or chipping if adjacent to native plants Chipping out underground growing buds (groundsel bush) Spot spray
	Lantana camara	
	camphor laurel	
	Cinnamomum camphora	
	groundsel bush	
Grasses	Baccharis halimifolia	Manual removal of tussock by hand pulling. If seed heads present, place in plastic bag first to prevent shaking seed loose. Spot spray
	green panic	
	Megathyrsus maximus	
	whiskey grass	
	Andropogon virginicus	
Herbs	vasey grass	Manual removal of plant by hand pulling Spot spray
	Paspalum urvillei	
	blue billygoat weed	
Vines	Ageratum houstonianum	Scrape and paint stem Hand pull if able to remove the tuber as well
	passionfruit vine	
Aquatic	Passiflora spp.	Hand gun of 2,4-D acid at 50 ml / 500 L water
	blue water lily	
	Nymphaea caerulea	

8.0 REFERENCES

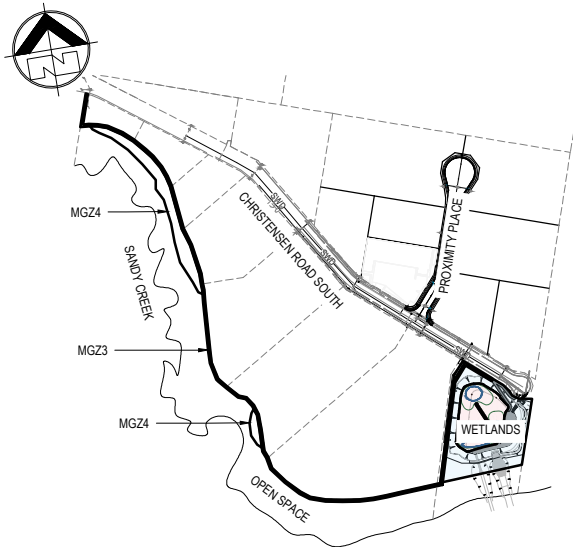
Water by Design (2017). Draft Wetland Technical Design Guidelines (Version 1). Healthy Land and Water Ltd, Brisbane
Gassman Development Perspectives (2014). Conceptual OSMS Schematic, drawing 1396 E OSMP 01)



REHABILITATION MANAGEMENT PLAN - MGZ1 DETAILED
SCALE 1:500 (A1)

APPENDIX 1 COMPARISON OF SPECIES WITHIN RE 12.11.5 AND 12.11.24

Species	Stratum	RE 12.11.5	12.11.24	Species	Stratum	RE 12.11.5	12.11.24
Corymbia citriodora subsp. variegata	T1	D	Y	Leptospermum polygalifolium	T2/S1		Y
C. henryi	T1		Y	Melaleuca saligna	T2		Y
Eucalyptus siderophloia	T1	D	Y	Alphitonia excelsa	T2	D	Y
E. propinqua	T1	D		Acacia maidenii	T2	D	Y
E. acmenoides	T1	D		Jacksonia scoparia	S1		Y
E. carnea	T1	D	D	Babingtonia similis	S1		Y
Corymbia intermedia	T1	Y	D	Dodonaea triquetra	S1		Y
C. trachyphloia subsp. trachyphloia	T1	Y	Y	Euroschinus falcatus var. angustifolius	S1		Y
Eucalyptus tereticornis	T1	Y		Hodgkinsonia ovatiflora	S1		Y
E. microcorys	T1	Y	Y	Ozothamnus diosmifolius	S1		Y
E. portuensis	T1	Y		Polyscias elegans	S1		Y
E. helidonica	T1	Y	Y	Psychotria loniceroides	S1		Y
E. major	T1	Y	Y	Pultenaea spinosa	S1		Y
E. longirostrata	T1	Y		Solanum stelligerum	S1		Y
E. biturbinata	T1	Y		Trema tomentosa	S1		Y
E. moluccana	T1	Y		Trochocarpa laurina	S1		Y
E. tindalae	T1		D	Themeda triandra	G		D
Eucalyptus resinifera	T1		Y	Imperata cylindrica	G		D
Angophora leiocarpa	T1	Y	Y	Cymbopogon refractus	G		D
Angophora woodsiana	T1		Y	Eremochloa bimaculata	G		D
Lophostemon confertus	T2	Y	D	Cheilanthes sieberi subsp. sieberi	G	D	
Allocasuarina torulosa / Allocasuarina littoralis	T2	D	D	Crotalaria montana	G	D	
Acacia dispartima	T2	D	D	Glycine clandestina	G	D	
Acacia leiocalyx	T2	D		Lobelia purpurascens	G	D	
Acacia concurrens	T2		Y	Key: D = dominant Y = present			
Acacia fimbriata	T2/S1		Y				
Jagera pseudorhus	T2		Y				



REHABILITATION MANAGEMENT PLAN - MGZ3 AND MGZ4
SCALE 1:5 (A1)

B	FOR TENDER	03.06.2019	K.J.L.
A	FOR CLIENT REVIEW	16.04.2019	K.J.L.
REV	DESCRIPTION	DATE	BY

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LEGEND

- PROPOSED LOT BOUNDARY
- EXISTING PROPERTY BOUNDARY
- MANAGEMENT ZONE 1 (MGZ1) - POOL
- MANAGEMENT ZONE 1 (MGZ1) - MACROPHYTE / SHALLOW MARSH
- MANAGEMENT ZONE 1 (MGZ1) -DEEP MARSH

Engineers Certification:

Travis Smith MIE Aust. CPEng.
RPEQ 16400

Signature:

Date:/...../.....

Project
**PROPOSED SUBDIVISION AT
86-160 CHRISTENSEN ROAD
SOUTH, STAPYLTON**
for
**BURNSIDE DEVELOPMENTS P/L &
YELLOWSTONE INVESTMENTS P/L**

Title
**REHABILITATION MANAGEMENT
PLAN - SHEET 2**

GCCC REF: OPW/2019/160



Status

FOR TENDER

Drawn	Date	Chkd	Date
K.J.L.	05.04.19	D.F.	05.04.19
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D.F.	05.04.19		
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AS SHOWN			
Project No.	Dwg. No.	Rev.	
17-209	V101	B	

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