

MATERIAL CHANGE OF USE DEVELOPMENT APPLICATION FOR AN ADDITIONAL WATER SUPPLY INTAKE AND ASSOCIATED INTAKE INFRASTRUCTURE EXTRACTING WATER FROM AN ANABRANCH OF THE MOSSMAN RIVER

Town Planning Report



Document status							
Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date		
А	Draft	O Caddick-King	O Caddick-King	O Caddick-King	26 April '23		
	Final	O Caddick-King	O Caddick-King	O Caddick-King	25 July 2023		

Approval for issue		
Owen Caddick-King	Our Cired	25 July 2023

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Contents

1	INTR	ODUCTION	4
2	SITE 2.1 2.2	DETAILS	5 5 6
3	PRO	POSAL	7
4	LEGI 4.1 4.2 4.3 4.4	SLATIVE REQUIREMENTS Assessment Manager Categories of Assessment Referrals Public Notification	9 9 9 10 10
5	STA 5.1 5.2 5.3	FUTORY PLANNING ASSESSMENT Yerview Overview Yerview State and Regional Assessment Benchmarks Yerview 5.2.1 State Planning Policy 5.2.2 Regional Plan 5.2.3 Development Assessment under Schedules 9 and 10 (SDAP) Local Authority Assessment Benchmarks Yerview	11 11 11 11 11 11
6	CON		12

Tables

Table 1: Summary	3
Table 2: Site Particulars	5
Table 3: Planning Context	6
Table 4: Categories of Assessment	9

Figures

Figure 1	I Site L	Location	5
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Appendices

Appendix A GHD Issue For Tender Drawings
Appendix B Completed DA Form 1 and Owners Consent
Appendix C Certificates of Title
Appendix D RPS Drawings PR152792-6b to 9b Plans of Proposed Water Intake, Potential Disturbance Footprint
Appendix E Douglas Shire Council Planning Scheme Property Reports
Appendix F Detailed Design Report prepared by GHD, dated January 2020
Appendix G Rehabilitation Management Plan
Appendix H RPS Drawing No PR152742-4 Proposed Road Closure Plan
Appendix I Department of Resources Relevant Purposed Determination, dated 3 April 2023
Appendix J State Code 16 Assessment
Appendix K Douglas Planning Scheme Code Assessment

Summary

Table 1: Summary

Details						
Site Address:	Mango Park, Mossman Gorge Road, Mossman; and 1 and 3 Manjal Dimbi Road, Mossman					
Real Property Description:	Lot 6 on SP212661 Lot 1 and 4 on RP716977					
Site Area:	30.71ha (Lot 6) 5.1ha (Lot 1) 3.63ha (Lot 1)					
Regional Plan Land Use Designation:	Regional Landscape and Rural Production Area					
Zone/Precinct:	Rural Zone					
Owner(s):	Mango Park Canefarmi Douglas shire Council -	ng Co Pty Ltd - Lot Lot 1 and 4 on RP7	6 on SP212661 716977			
Proposal						
Brief Description/ Purpose of Proposal	Material Change of Use and associated Intake I Mossman River	e for a Utility installat nfrastructure extract	tion, an Additional Water Supply Intake ting water from an Anabranch of the			
Application Details						
Aspect of Development	Preliminary appr	oval	Development permit			
Material change of use						
Building Work						
Operational Work						
Reconfiguration of a Lot						
Assessment Category	⊠ Code		□ Impact			
Public Notification	🖂 No		□ Yes:			
Superseded Planning Scheme Application			⊠ No			
Referral Agencies						
Agency	Concurrence	Advice	Pre-lodgement response			
State Assessment and Referral Agency (SARA)			🛛 Yes 🗆 No			
Pre-lodgement / Consultation						
Entity		Date	Contact Name			
SARA	🛛 Yes 🗆 No	29 March 2021	Sue Lockwood			
Other						
Applicant contact person	Owen Caddick-King Principal – Planning D: +61 7 4276 1027 E: owen.caddick-king@	rpsgroup.com.au				

1 INTRODUCTION

RPS AAP Consulting Pty Ltd has been engaged by Douglas Shire Council to seek a Material Change of Use (MCU) Development Approval for a Utility Installation, an Additional Water Supply Intake and associated Intake Infrastructure extracting water from an Anabranch of the Mossman River. The Water Supply Intake is to be located on part of Lot 6 on SP212661, land which is to be acquired by Council, and associated infrastructure, including a Low Level Pump, a High Level Pump and associated Pipeline and Access are proposed on parts of Lot 6 on SP212661, Lot 1 and 4 on RP716977 and Road Reserve with the proposed works extending from the Anabranch of the Mossman River to Mossman Gorge Road via Drumsara Road, Mossman.

The need for an Additional Water Supply Intake has been evident for a period of 7-12 years and has been the subject of a number of investigations undertaken and reporting prepared by GHD Engineering Consultants (GHD) which has considered the need for additional water supply, the alternatives available and ultimately, identified the preferred location and design for the Water Supply Intake proposal, as detailed in the GHD Issue For Tender Drawings, provided for reference in **Appendix A**.

The completed DA Form 1 and Owners Consent, in respect of Lot 6 on SP212661, is provided for reference in **Appendix B**.

Pursuant to Douglas Shire Council's Planning Scheme, the subject land is included in the Rural Zone and in accordance with the Planning Scheme's applicable Table of Assessment, the MCU development is identified as requiring Code Assessment. Therefore, as the Assessment Manager, the Council, in determining the application, can only have regard to the applicable Assessment Benchmarks contained within the Planning Scheme, in addition to the Referral Agency assessment to be undertaken by the State Assessment and Referral Agency and its Technical Agency, Department of Resources Vegetation Management Section.

This report details the nature of the proposal and provides an assessment of the proposal against the applicable Codes in the Douglas Shire Council Planning Scheme 2018 and the applicable State Development Assessment Provisions. Based on this assessment the application is recommended for approval subject to reasonable and relevant conditions.

2 SITE DETAILS

2.1 Site Particulars

The Water Supply Intake is to be located on part of Lot 6 on SP212661, land which is to be acquired by Council, and associated infrastructure, including a Low Level Pump, a High Level Pump and associated Pipeline and Access are proposed on parts of Lot 6 on SP212661, Lot 1 and 4 on RP716977 and Road Reserve with the proposed works extending from the Anabranch of the Mossman River to Mossman Gorge Road via Drumsara Road, Mossman.

The locality containing the site is characterised by remnant vegetation which has existing disturbed areas related to an Ergon Powerline corridor, formed and unformed road access and existing non-agricultural rural uses, surrounded by cleared agricultural land, primarily used for the growing of sugar cane. Drumsara Road intersects Mossman Gorge Road approximately 1km west of Mossman's existing urban area.

Table 2: Site Particulars

Site Particulars	
Site Address:	Mango Park, Mossman Gorge Road, Mossman; and 1 and 3 Manjal Dimbi Road, Mossman
Real Property Description:	Lot 6 on SP212661 Lot 1 and 4 on RP716977
Site Area:	30.71ha (Lot 6) 5.1ha (Lot 1) 3.63ha (Lot 4)
Owner(s):	Mango Park Canefarming Co Pty Ltd - Lot 6 on SP212661 Douglas shire Council - Lot 1 and 4 on RP716977

The site location and its extent are shown in **Figure 1** below and Certificate/s of title confirming site ownership details are included in **Appendix C**.



Figure 1 Site Location

Source: GHD Drawing No: 42-21142-G002 Rev B (Refer to Appendix A)

2.2 Planning Context

The planning context of the site, relevant to the code assessable development application, includes the following:

Table 3: Planning Context

Instrument	Designation			
SARA's Development Assessment Mapping System and other State Mapping				
Fish Habitat Areas	 Mossman River's main channel is mapped as a Purple – Major Waterway Anabranch where Water Supply Intake is proposed is not mapped as a Waterway 			
Native Vegetation Clearing	 The area to be disturbed by the proposed works comprise of a various Regulated Vegetation Categories including, Category B Vegetation containing endangered and of concern regional ecosystems and Category C or R Regrowth Vegetation containing endangered and of concern regional ecosystems and Category X areas. 			
	 In addition, the Category B and C vegetated areas are mapped as Essential Habitat. 			
	The areas of mapped vegetation are detailed in RPS Drawing No. PR152792- 6a-9a provided for reference in Appendix D .			
Vegetation Management Watercourse and Drainage	 Mossman River's main channel is mapped as a Stream Order 5 Watercourse 			
Features Map	 Anabranch where Water Supply Intake is proposed is not mapped as a Watercourse or Drainage Feature 			
Water Act Watercourse Identification Map	 Mossman River's main channel is mapped as a Stream Order 5 Watercourse 			
	Anabranch where Water Supply Intake is proposed is not mapped as a Watercourse or Drainage Feature or as Unmapped			
Douglas Shire Planning Scheme 2	018			

Zoning	Rural Zone
Overlays	Refer to Douglas Shire Council Planning Scheme Property Reports provided for reference in Appendix E for detail.

3 PROPOSAL

A Material Change of Use (MCU) Development Approval is sought for a Utility Installation, an Additional Water Supply Intake and associated Intake Infrastructure extracting water from an Anabranch of the Mossman River. The Water Supply Intake is to be located on part of Lot 6 on SP212661, land which is to be acquired by Council, and associated infrastructure, including a Low Level Pump, a High Level Pump and associated Pipeline and Access are proposed on parts of Lot 6 on SP212661, Lot 1 and 4 on RP716977 and Road Reserve with the proposed works extending from the Anabranch of the Mossman River to Mossman Gorge Road via Drumsara Road, Mossman, as indicated in **Figure 1** above.

The need for an Additional Water Supply Intake has been evident for a period of 7-12 years and has been the subject of a number of investigations undertaken and reporting prepared by GHD Engineering Consultants (GHD) which has considered the need for additional water supply, the alternatives available and ultimately, identified the preferred location and design for the Water Supply Intake proposal, as detailed in the GHD Issue For Tender Drawings, provided for reference in **Appendix A**.

Further detail explaining the design intent of the various components of the Water Intake infrastructure are provided for reference in the Detailed Design Report prepared by GHD, dated January 2020 and provided for reference in **Appendix F**.

The Disturbance Footprint associated with construction of the Water Intake infrastructure is detailed in RPS Drawings PR152792-6b to 9b, Plans of Proposed Water Intake, Potential Disturbance Footprint provided for reference in **Appendix D**. The Disturbance Footprint generally allows for 3 metres clearance from the toe of fill batters or a 10 metre clearance from the toe of fill batters and/or above ground infrastructure, where possible dependant on the applicable vegetation clearing provisions.

The vegetated areas that will or will potentially be cleared that are relevant to the assessment of the Development Application, include:

- 1. The Potential Disturbance Footprint that relates to the proposed water intake gallery to be located on land currently described as Lot 6 on SP212661 which is mapped as Category B Endangered Regulated Vegetation. The Potential Disturbance Footprint allows a minimum width of 3 metres from the proposed water intake gallery to the northern bank, 10 metres upstream for potential water management requirements during construction and an area adjacent to the southern bank for access and storage of material and equipment during construction and access for ongoing maintenance. The Potential Disturbance Footprint that is potentially required for construction is mapped as Category B Endangered Regulated Vegetation and comprises an area of 1,509m²; and
- 2. The Potential Disturbance Footprint that relates to the fill batter required for the construction of the water supply pipeline and access proposed on land described as Lot 4 on RP716977 which is mapped as Category B Of Concern Regulated Vegetation. The Potential Disturbance Footprint allows a minimum width of 3 metres from the toe of the fill batter and comprises an area of 281m2.

It is noted that apart from part of the Low Flow Pump infrastructure to be located beyond the top of bank of the Mossman River Anabranch, the High Level Pump infrastructure and the road access, the balance of the infrastructure will be underground. The Water Intake Gallery and connection to the Low Flow Pump infrastructure is to be 800mm below the reinstated stream bed level, the Low Flow Pump infrastructure is to be located in a trench up the stream bank to be back filled to the natural bank level and the pipeline is to be approximately 2 metres below the natural or finished ground level.

The intent during construction will be to limit the extent of disturbance and vegetation to be cleared within the Potential Disturbance Footprint to the area that is necessary and undertake the following to minimise disturbance and facilitate the rehabilitation of disturbed areas:

- The Water Intake Gallery is to be backfilled to a depth of 800mm with suitable filter material, where possible using the material extracted from the stream, to reinstate the natural stream bed level and characteristics;
- Any vegetation clearing on the stream bank is to be limited to trimming and if required, lopping of the tree to ground level where the tree stump is not removed from the ground/stream bank; and

• Areas disturbed during construction and not required for ongoing operational requirements, will be rehabilitated in accordance with the Rehabilitation Management Plan provided for reference in **Appendix G**.

In addition, it is noted that the Low Level Pump and High Level Pump infrastructure that is to be established above ground and the road access and pipeline and drainage is generally located in Category X areas. The location of the road access and pipeline and drainage generally follows the alignment of the existing access track into the subject land and the proposed infrastructure has been aligned to minimise the disturbance of vegetated areas.

While not applicable to the Code Assessable Development Application, it is noted that a Road Closure Application is currently underway for the part of the Low Level Pump infrastructure that is to be located above ground and beyond the stream bank in the unformed Road where access is to be restricted through use of a chain wire security fence. The land generally including the fenced area and adjoining the freehold land to be acquired by Council, generally as per RPS Drawing No. PR152742-4 provided for reference in **Appendix H**, is the subject of the Road Closure Application.

4 LEGISLATIVE REQUIREMENTS

4.1 Assessment Manager

In accordance with Schedule 8 of the *Planning Regulation 2017*, the assessment manager for this application is Douglas Shire Council.

4.2 Categories of Assessment

The table below summarises the categorising instruments and categories of assessment applicable to this application.

Table 4: Categories of Assessment

Aspect of development	Categorising instrument	Category of assessment		
Material Change of Use for a Utility Installation	Douglas Shire Planning Scheme 2018	Code assessment		

Other aspects of the development associated with construction and the establishment of the use but not comprising part of the Development Application and the applicable assessment, include;

- 1. The part of Lot 6 on SP212661, where the Water Supply Intake infrastructure is proposed to be located, is to be acquired by Council and consequently, the reconfiguring a lot aspect of the development is not assessable development pursuant to Schedule 10, Part 14, Division 1, Section 21 (a) of the Planning Regulation;
- 2. The water related aspects of the development are not required to comprise part of the subject Application, given that a Water Licence Application for a 2,000ML water entitlement is to be lodged with the Department of Regional Development, Manufacturing and Water, Water Resource Management Section for the water supply to be taken from the stream and no works associated with Water Supply Intake are to be undertaken until the water entitlement has been received. On that basis, the taking or interfering with water will be accepted development, pursuant to Schedule 7, Part 3, Section 5 (1) (c) of the Planning Regulation;
- 3. The proposed works are not considered to be deemed assessable Waterway Barrier Works, given that the stream bed level is to be reinstated, where possible using the material extracted from the stream, to reinstate the natural stream bed level and characteristics and the construction works to be undertaken in-stream are expected to be able to comply with the Accepted Development Requirements related to Temporary Waterway Barrier Works;
- 4. Where the proposed intake, raw water pipeline and drainage infrastructure and the proposed road access and associated construction requirements impact Regrowth Vegetation, any vegetation clearing is to be limited to the Potential Disturbance Footprint detailed on RPS Drawings PR152792-6b to 9b provided for reference in **Appendix D** and be undertaken as Exempt Clearing Work on Freehold Land as Routine Management or as Accepted Development Clearing for Infrastructure in a Dedicated Road (where not Exempt Clearing Work), pursuant to the Planning Regulation; and
- 5. The extraction of material from the stream does not require assessment of the aspects of development related to;
 - a. The removal of quarry material from a watercourse on the basis that a portion of the material is expected to be screened and returned to the watercourse and the balance of the material will be stockpiled on site as a waste material. Under such circumstances, the material extracted from the watercourse is not deemed as 'quarry material' pursuant to the Water Act; and
 - b. Environmentally Relevant Activities related to the extraction and screening of the material from the watercourse on the basis that the material to be extracted from the stream and processed does not exceed the applicable Environmentally Relevant Activity thresholds; and
- 6. The Operational Works aspects of development that the Planning Regulation identifies is not assessable development.

4.3 Referrals

A review of Schedule 10 of the *Planning Regulation 2017* indicates that referral is triggered by the proposed development, as indicated in below:

Schedule 10:

Part	Division	Table	Referral trigger (Item 1)	Referral agency
Part 3 – Clearing native vegetation	Division 4 – Referral agency assessment	Table 3 – MCU that is assessable development under a local categorising instrument	Development application for a MCU on a lot larger than 5ha that is not a variation request	The Chief Executive (SARA)

With regard to this referral trigger, it is noted that the native vegetation clearing required to facilitate the material change of use development for the water intake has been deemed a 'Relevant Purpose' pursuant to Section 22A of the Vegetation Management Act and therefore, is not Prohibited Development (refer to Relevant Purpose Determination provided for reference in **Appendix I**).

4.4 **Public Notification**

This application does not require public notification as it is subject to code assessment.

5 STATUTORY PLANNING ASSESSMENT

5.1 Overview

As the application is subject to code assessment, the assessment benchmarks, and the matters the assessment manager must have regard to, are those identified in section 45(3) of the *Planning Act 2016* and sections 26 and 27 of the *Planning Regulation 2017*.

5.2 State and Regional Assessment Benchmarks

5.2.1 State Planning Policy

The *Planning Regulation 2017* at Section 26(2)(a)(ii) requires the assessment manager to assess the application against the assessment benchmarks stated in the State Planning Policy, Part E, to the extent Part E of the State Planning Policy is not identified in the planning scheme as being appropriately integrated into the planning scheme.

In respect of this matter, it is noted that the State Planning Policy, to the extent relevant to the application, has been appropriately integrated into the planning scheme and on that basis no further assessment of the State Planning Policy is required.

5.2.2 Regional Plan

The *Planning Regulation 2017* at Section 26(2)(a)(i) requires the assessment manager to assess the application against the assessment benchmarks stated in the Regional Plan, to the extent the Regional Plan is not identified in the planning scheme as being appropriately integrated into the planning scheme.

Consistent with the State Planning Policy, it is indicated in the Planning Scheme that it appropriately advances the Far North Queensland Regional Plan 2009-2031, as it applies in the planning scheme area. Therefore, no further assessment of the Regional Plan is required.

5.2.3 Development Assessment under Schedules 9 and 10 (SDAP)

With regard to the 'Clearing native vegetation' referral (refer to Section 4.3) and the applicable State Development Assessment Provisions, State Code 16: Native Vegetation Clearing, a detailed assessment against the applicable State Code has been completed and is provided for reference in **Appendix J**.

As is evident from the assessment completed, the proposed development adequately addresses the State Code's Applicable Outcomes or Performance Outcomes.

5.3 Local Authority Assessment Benchmarks

This application is to be assessed against the Douglas Shire Planning Scheme 2018. The assessment benchmarks, Planning Scheme Codes, applicable under the Planning Scheme have been considered and the completed compliance assessment of each applicable Code is provided for reference in **Appendix K**.

It is evident from a review of the applicable Codes that the type of development, being water supply intake infrastructure that is necessary to ensure an uninterrupted water supply and its low scale of development which has been designed to address the land's constraints and its relative remote location, complies with the applicable Codes Acceptable Outcomes or where required, the Performance Outcomes. Refer to the compliance assessment of each applicable Code provided for reference in **Appendix K** for detail.

6 CONCLUSION

RPS AAP Consulting Pty Ltd has been engaged by Douglas Shire Council to seek a Material Change of Use (MCU) Development Approval for a Utility Installation, an Additional Water Supply Intake and associated Intake Infrastructure extracting water from an Anabranch of the Mossman River. The Water Supply Intake is to be located on part of Lot 6 on SP212661, land which is to be acquired by Council, and associated infrastructure, including a Low Level Pump, a High Level Pump and associated Pipeline and Access are proposed on parts of Lot 6 on SP212661, Lot 1 and 4 on RP716977 and Road Reserve with the proposed works extending from the Anabranch of the Mossman River to Mossman Gorge Road via Drumsara Road, Mossman.

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This report details the nature of the proposal and provides an assessment of the proposal against the applicable Codes in the Douglas Shire Council Planning Scheme 2018 and the applicable State Development Assessment Provisions. Based on this assessment the application is recommended for approval subject to reasonable and relevant conditions.

Appendix A

GHD Issue For Tender Drawings



DOUGLAS SHIRE COUNCIL MOSSMAN ALTERNATIVE INTAKE 42-21142





				I		
						0 50 100 150 200 250m
С	REVISED FOR CLIENT COMMENT	EDJ	GG*	TMB*	26.08.20	SCALE 1:5000 AT ORIGINAL SIZE
В	ISSUED FOR TENDER	EDJ	GG*	TMB*	14.01.20	
А	PRELIMINARY ISSUE	EDJ	GG*	TMB*	09.12.19	
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date	
Plot	Plotted by: Evan Johnson Cad File No: G:\42\21142\CADD\Drawings\42-21142-G001.dwg					



SCALE 1 : 5000





Level 8, 15 Lake Street, Cairns QLD 4870 Australia PO Box 819, Cairns QLD 4870 T 61 7 4044 2222 F 61 7 4044 2288 E cnsmail@ghd.com.au W www.ghd.com.au

DO NOT SCALE	Drawn	E.JOHNSON	Designer R.KEILY	
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	Approved (Project Director) Date			
for the purpose for which it was prepared and must not be used by any other person or for any other purpose.	Scale	AS SHOWN	This Drawing must not be used for Construction unle signed as Approved	

his Drawing must not be sed for Construction unless igned as Approved	Original Size	Drawing No:	42-21 <i>°</i>	142-G0	01	Rev: C
	Title	DRAWING	COVER SH	EET AND	DRAWING	G LIST
I	Project	MOSSMAN	ALTERNA	TIVE RAW	WATER	INTAKE
er R.KEILY	Client	DOUGLAS	SHIRE CO	UNCIL		
				ISSU	E FOR	IENDER
ELECTRICAL SERVICES)	DETAILS				
		DETAILS	- SHEET 2 OF 2			
	5	TELEMETRY (SCADA)				
	5 \					
	5	SITE LAYOUT, LEGEN	D AND NOTES.			
ACCESS ROAD		DRAINAGE SECTIONS	6			
ACCESS ROAD		PLAN & LONGITUDINA	AL SECTION - SHEET 2	OF 2		
ACCESS ROAD		PLAN & LONGITUDINA	AL SECTION - SHEET 1	OF 2		
ACCESS ROAD		CONTROL LINE SETO	UT			
ACCESS ROAD		TYPICAL SECTIONS A	ND DETAILS			
HIGH LIFT WATER MAIN	l	THRUST RESTRAINT	DETAILS			
HIGH LIFT PUMP STATIO	ON	SLAB PLANS AND DET	TAILS			
LOW LIFT PUMP STATIC	NC	SLAB PLANS AND DET	TAILS			
TYPICAL STRUCTURAL		DETAILS AND PIPE SU	JPPORTS			
STRUCTURAL NOTES		SHEET 2				

PLAN AND LONGITUDINAL SECTION SHEET 1

DIMENSIONAL DRAWING PIPEWORK SCHEDULE - SHEET 1 **PIPEWORK SCHEDULE - SHEET 2** PIPEWORK SECTIONS AND DETAILS TANK DETAILS OVERFLOW AND FLOW METER DETAILS

SITE GENERAL ARRANGEMENT

INSTRUMENTATION DIAGRAM MOSSMAN RIVER INTAKE SITE GENERAL ARRANGEMENT AND LOW LIFT PUMP STATION - PLAN JBMERGED GALLERY INTAK SECTIONS AND DETAILS SUBMERGED GALLERY INTAK LOW LIFT PUMP STATION

DRAWING LIST

PROCESS AND

COMPILATION PLAN AND NOTE:

LAND TENURE PROCUREMENT

HIGH LIFT PUMP STATION

HIGH LIFT PUMP STATION

HIGH LIFT PUMP STATION

HIGH LIFT PUMP STATION

HIGH LIFT PUMP STATION HIGH LIFT PUMP STATION

HIGH LIFT PUMP STATION

LOW LIFT RAW WATER MAIN

HIGH LIFT RAW WATER MAIN

HIGH LIFT RAW WATER MAIN

RAW WATER MAIN

STRUCTURAL NOTES

DESCRIPTION

DRAWING LIST

DRAWING No.

GENERAL

42-21142-G001

42-21142-G002

42-21142-G003

42-21142-J001

42-21142-W001

42-21142-W002

42-21142-W003

42-21142-W004

42-21142-W010

42-21142-W011

42-21142-W012

42-21142-W013

42-21142-W014

42-21142-W015

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42-21142-W023

42-21142-S001

42-21142-S002

42-21142-S003

42-21142-S005

42-21142-S010

42-21142-S020

42-21142-C001

42-21142-C002

42-21142-C003

42-21142-C004

42-21142-C005

42-21142-E001

42-21142-E002

42-21142-E003

42-21142-E004

42-21142-E005

DRAWING COVER SHEET AND

SHEET 2

PLAN AND LONGITUDINAL SECTION SHEET 1 PLAN AND LONGITUDINAL SECTION SHEET 2 DETAILS (REX INTERCONNECTION, AIR, SCOUR)

PLAN AND SECTIONS

STANDARD DRAWINGS					
DRAWING No. DESCRIPTION					
FNQROC STANDARD	DRAWINGS				
S1027	SECURITY FENCING				
S1046	EXCAVATION, BEDDING AND BACKFILLING OF CONCRETE PIPES				
S1075	CONCRETE PIPE HEADWALL 375mm TO 675mm				
S1085	CONCRETE HEADWALL WING WALLS AND APRON				
S2000	VALVE BOX INSTALLATION				
S2001	AIR VALVE (25mm GATE VALVE)				
S2010	KERB AND ROAD MARKERS				
S2011	STEEL MARKER POSTS				
S2016 WATER RETICULATION BEDDING DETAILS					
SOUTH EAST QUEENSLAND WATER STANDARD DRAWINGS					
SEQ-WAT-1206-1	TYPICAL THRUST AND ANCHOR BLOCKS FOR VALVES				

SURVEY NOTES

- CONTRACTOR TO LOCATE ALL LEVELS FROM ESTABLISHED PERMANENT SURVEY MARKS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM THE LOCATION AND DEPTH OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF
- WORKS SURVEY SUPPLIED BY RPS AUSTRALIA EAST Pty Ltd. DATE 10.10.19 5 LEVEL DATUM ۷П

0.2m

5.		AND
	ORIGIN OF LEVELS:	PM47211
		RL 42.820
6.	MERIDIAN:	MGA ZONE 55
7.	ORIGIN OF COORDINATES:	PM47211
		E:323030.152
		N:8177618.174

- CONTOUR INTIVAL:
- INDEX: 1 0m 10. DUE TO LIMITED SURVEY SOME FEATURES HAVE BEEN ASSUMED. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ACCURATELY ALL FEATURES PRIOR TO CONSTRUCTION.

GENERAL

- THE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION. ALL WORKS MUST BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT FNQROC DEVELOPMENT
- MANUAL SPECIFICATIONS. WHERE DIFFERENCES EXIST BETWEEN THE PLANS AND THE DEVELOPMENT MANUAL, THESE PLANS SHALL TAKE PRECEDENCE NO CONSTRUCTION WORKS SHALL COMMENCE UNTIL ALL APPROVALS HAVE BEEN ISSUED TO THE
- CONTRACTOR. THE CONTRACTOR IS TO ENSURE A COPY OF ALL APPROVALS ARE AVAILABLE ON SITE. THE SITE FOREMAN IS TO ENSURE ALL WORKS ARE UNDERTAKEN IN ACCORDANCE WITH THE APPROVALS.
- 4. IN ACCORDANCE WITH LEGISLATION, THE CONTRACTOR IS RESPONSIBLE FOR SAFETY OF ALL WORKERS ON SITE AND THE SAFETY OF MOTORISTS, CYCLISTS AND PEDESTRIANS TRAVERSING ADJACENT TO THE SITE.
- THE CONTRACTOR IS TO MAKE PROVISION FOR THE SAFETY OF VEHICLE TRAFFIC DURING THE
- CURRENCY OF WORKS, TO THE SATISFACTION OF THE SUPERINTENDENT. THE CONTRACTOR SHALL, TO THE SATISFACTION OF THE COUNCIL ENGINEER AND SUPERINTENDENT, PROVIDE & MAINTAIN ALL NECESSARY WARNING SIGNAGE, LIGHTING & BARRICADING TO COMPLY WITH
- THE REQUIREMENTS OF THE ROAD TRAFFIC REGULATIONS ACT. CONSTRUCTION METHODOLOGY AND TEMPORARY WORKS IS THE RESPONSIBILITY OF THE
- CONTRACTOR THE CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ALL SURPLUS MATERIAL OFF SITE UNLESS 8. OTHERWISE NOTED.
- THE USE OF EXPLOSIVES AND BLASTING IS NOT PERMITTED.
- 10. CONTRACTOR IS TO PROTECT ALL EXISTING SERVICES AND STRUCTURES CLOSE TO NEW WORKS AND SUPPORT AS REQUIRED UNLESS NOTED OTHERWISE
- 11. CONTRACTOR SHALL LIAISE WITH ALL UTILITY PROVIDERS PRIOR TO ANY CONSTRUCTION WORKS WITHIN CLOSE PROXIMITY TO NEW CONSTRICTION WORKS. 12. REFER TO THE SPECIFICATION FOR HOLD POINT WITHIN THE CONTRACT AND FOR SPECIFIC
- CONSTRUCTION METHODOLOGY. 13. THE CONTRACTOR IS REQUIRED TO WORK WITHIN A WATERCOURSE AND UNDERTAKE SIGNIFICANT CONSTRUCTION WORKS. THE CONTRACTOR SHALL LIMIT THE AMOUNT OF EXCAVATION AND CLEARING

SERVICES

WITHIN THIS AREA. REFER SPECIFICATION.

- 1. THE LOCATIONS OF ALL EXISTING SURFACE PITS, VALVE COVERS, ETC. SHOWN ON DRAWINGS HAVE BEEN REPRODUCED FROM INFORMATION FROM A NUMBER OF SOURCES. ALL EXISTING SERVICES LOCATIONS SHALL BE VERIFIED ON SITE BY THE CONTRACTOR BEFORE COMMENCING WORK. ANY EXISTING SERVICES 5. ALL ACCESS TO AND FROM THE SITE SHALL BE VIA A TEMPORARY CONSTRUCTION ENTRY/EXIT. THE SHOWN ON THE DRAWINGS ARE OFFERED AS A GUIDE ONLY AND ARE NOT GUARANTEED AS CORRECT. CONTRACTOR SHOULD CONDUCT A 'DIAL BEFORE YOU DIG' ENQUIRY BEFORE COMMENCING WORK.
- PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE THE CONTRACTOR SHALL 2 CONTACT THE RELEVANT AUTHORITIES TO ASCERTAIN THE DETAILED LOCATION AND DEPTH OF ALL SERVICES AND ARRANGE FOR THEIR RELOCATION WHERE NECESSARY.
- ALL SERVICES ARE TO BE PROTECTED DURING CONSTRUCTION. ATTENTION IS DRAWN TO MINIMUM COVER REQUIREMENTS OVER EXISTING SERVICES. IN THE CASE OF PROPOSED SERVICES, FILL TO MINIMUM REQUIRED DEPTH ABOVE THE TOP OF THE SERVICE PRIOR TO TRENCH EXCAVATION.
- 4. THE REINSTATEMENT AND COMPACTION OF PUBLIC AUTHORITY SERVICE TRENCHES SHALL BE THE CONTRACTORS' RESPONSIBILITY AND SHALL BE CARRIED OUT TO THE SATISFACTION OF THE COUNCIL ENGINEER OR APPROVED REPRESENTATIVE.
- ANY SERVICE PITS LOCATED WITHIN VEHICLE CROSSINGS REQUIRE WRITTEN CONSENT FROM THE APPLICABLE SERVICE AUTHORITY.
- 6. ALL UNDERGROUND SERVICES SHALL BE LAID PRIOR TO FINAL SEALING OF PAVEMENTS. 7. ANY PIT COVER, VALVE COVER, ETC. SHALL BE ADJUSTED TO MATCH FINISHED SURFACE LEVELS. COVERS 11. REHABILITATION AND RE-VEGETATION IS TO BE PROGRESSIVE THROUGHOUT THE PROJECT TO ENSURE THAT TO BE REORIENTED. WHERE NECESSARY
- 8. ALL SERVICE CABINETS SHALL BE LOCATED WITH A CLEARANCE OF 750mm FROM THE FACE OF THE KERB. 12. ROAD VERGE TO BE FULLY REVEGATATED IMMEDIATELY FOLLOWING TOPSOILING. NO CABINETS SHALL BE LOCATED ON OR NEAR THE BUILDING LINE.
- ALL CONDUIT TRENCHES UNDER ROAD PAVEMENT SHALL BE BACKFILLED WITH 20mm CLASS 3 FINE CRUSHED ROCK. MINIMUM COVER TO BE 100mm ABOVE TOP OF CONDUIT TO SUBGRADE LEVEL UNLESS SPECIFIED OTHERWISE
- 10. ALL ELECTRICAL CONDUITS AND PITS MUST BE INSPECTED AND PASSED BY A QUEENSLAND ELECTRICAL 15. IF EROSION AND SEDIMENT CONTROL DEVICES HAVE BEEN FOUND TO BE DEFICIENT OR FAILED IN SERVICE, DISTRIBUTION NETWORK AUDITOR.
- 11. WHERE A CONDUIT IS INSTALLED IN AN OPEN TRENCH, IDENTIFICATION TAPE CLEARLY DENOTING ALL SERVICES SHOULD BE INSTALLED 300mm BELOW THE FINAL FINISHED SURFACE LEVEL.

ROADS

- 1. NEW ROAD SHALL JOIN SMOOTHLY TO EXISTING ROADS/ACCESSES. WHERE NECESSARY, EXISTING ROADS/ACCESSES SHALL BE CUT BACK TO FORM A NEAT JOIN.
- 2. PAVEMENT DESIGN STATED HEREIN IS FOR A RANGE OF SUBGRADE CBR VALUES. THE CONTRACTOR IS TO CONFIRM THE SUBGRADE CBR BY TESTING IN ACCORDANCE WITH THE SPECIFICATION. RESULTS ARE TO BE PROVIDE TO THE SUPERINTENDENT FOR FINAL PAVEMENT SELECTION.
- 3. ALL STREET SIGNS AND TRAFFIC SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH FNQROC STD DRGS S1040 AND S1041.

LEGEND

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NEW RAW WATER MAIN - NEW FENCE NEW ELECTRICAL CONDUIT -- NEW EDGE OF TRACK — NEW AIR SPURGE PIPEWORK — ROAD - CROWN — TRACK — OPEN UNLINED DRAIN IL — SEWER PIPE U/G WATER PIPE U/G - POWER LINE A/G TELSTRA CABLE U/G — TOP OF BANK — TOE OF BANK ----- CHANGE OF GRADE - ROCK デ EDGE OF VEGETATION WATERCOURSE IL (LONG SECTION) — FENCE PROPERTY BOUNDARY POWER POLE **TELSTRA PIT** WATER METER WATER HYDRAN1 WATER VALVE SEWER VENT SEWER MANHOLE

RELEVANT AUSTRALIAN STANDARDS

SIGN

SURVEY STATION NEW AIR VALVE

BATTER MARKER

- AS 1289 METHODS OF TESTING SOILS FOR ENGINEERING PURPOSES
- AS 1646 ELASTOMERIC SEALS FOR WATERWORKS PURPOSES AS 1742.5 MANUAL UNIFORM TRAFFIC CONTROL
- AS 1744 STANDARD ALPHABETS FOR ROAD SIGNS
- AS 2280 DUCTILE IRON PIPES AND FITTINGS
- **BURIED FLEXIBLE PIPELINES**
- AS 2566 AS 2638 SLUICE VALVES FOR WATERWORKS PURPOSES
- AS 3680 POLYETHYLENE SLEEVING FOR DUCTILE IRON PIPING
- AS 4087 METALLIC FLANGES FOR WATERWORKS PURPOSES
- AS 2033 INSTALLATION OF POLYETHYLENE PIPE SYSTEMS AS 4129 FITTINGS FOR POLYETHYLENE PIPES
- AS 4130 POLYETHYLENE PIPES FOR PRESSURE APPLICATIONS

EROSION AND SEDIMENT CONTROL

- NO EARTHWORKS SHALL COMMENCE ON ANY PART OF THE SITE PRIOR TO INSTALLING APPROPRIATE ESC MEASURES DOWNSTREAM OF THE SITE AND IN ACCORDANCE WITH THE APPROVED ESC. 2. AT ALL TIMES THE CONTRACTOR SHALL MONITOR THE PREVAILING WEATHER CONDITIONS AND TAKE ALL
- NECESSARY PRECAUTIONS TO CONTROL EROSION AND DOWNSTREAM SEDIMENTATION DURING ALL STAGES OF CONSTRUCTION.
- 3. THE IMPACT ON THE ENVIRONMENT SHALL BE MINIMISED BY OBSERVING THE FOLLOWING CONSTRUCTION PRACTICES:
- AREAS DISTURBED BY CONSTRUCTION TRAFFIC AND PROCEDURES SHALL BE MINIMISED. MINIMISE TRAFFIC MOVEMENTS AND SPEEDS ON EXPOSED SURFACES.
- TOPSOIL PLACEMENT. FLOW DIVERSION SHALL BE CARRIED OUT BY EARLY INSTALLATION OF DRAINS ALONG TOPS OF BATTERS
- WITH APPROPRIATE SILTATION CONTROL DEVICES. SEDIMENT INTERCEPTION BY THE PLACEMENT OF SUITABLE RETENTION SYSTEMS ACROSS DRAINAGE
- LINES AND AT INTERCEPTION POINTS FOR BOTH THE CONSTRUCTION AND STOCKPILE AREAS. CONTRACTOR SHALL NOMINATE A PROPOSED ACCESS LOCATION ON THE ESC PLAN FOR APPROVAL BY THE SUPERINTENDENT
- STOCKPILES SHALL ONLY BE LOCATED IN AREAS NOMINATED ON THE PROJECT DRAWINGS OR APPROVED BY THE SUPERINTENDENT. ALL STOCKPILES MUST HAVE APPROPRIATE ESC MEASURES INSTALLED TO PREVENT SEDIMENT TRANSPORT. THE MAXIMUM HEIGHT OF ALL STOCKPILES MUST BE LIMITED TO 2.0m.
- 7. ALL PERMANENT AND TEMPORARY UNLINED SWALES AND DRAINS TO HAVE APPROPRIATE TEMPORARY EROSION PROTECTION.
- 8. ALL PARTIALLY CONSTRUCTED DRAINAGE STRUCTURES TO BE PROTECTED AGAINST SEDIMENT INFILTRATION DURING CONSTRUCTION.
- 9. ALL COMPLETED DRAINAGE STRUCTURES TO BE PROTECTED AGAINST SEDIMENT INFILTRATION UNTIL GRASSING IS ESTABLISHED.
- 10. ALL DISTURBED AREAS FLATTER THAN 1 ON 2 AND NOT UNDER ROAD PAVEMENT OR PATHWAY MUST BE TOPSOILED AND GRASS SEEDED. ALL DISTURBED AREAS 1 ON 2 OR STEEPER MUST BE TOPSOILED AND HYDROMULCHED.
- ALL DISTURBED AREAS ARE RE-VEGETATED AS SOON AS POSSIBLE FOLLOWING COMPLETION OF WORKS.
- 13. THE CONTRACTOR IS RESPONSIBLE FOR THE CONTROL OF DUST EMANATING FROM THE SITE AT ALL TIMES
- FOR THE DURATION OF CONSTRUCTION. 14. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE CHECKED FOR DAMAGE, CLEANED OUT AND FULLY REINSTATED AFTER EACH RAINFALL EVENT RESULTING IN RUNOFF.
- DUE TO UNFORESEEN CIRCUMSTANCES, CORRECTIVE ACTION IS TO BE UNDERTAKEN IMMEDIATELY WHICH
- MAY INCLUDE AMENDMENTS/ADDITIONS TO THE ORIGINAL APPROVED EROSION CONTROL PLANS. 16. THE INSTALLATION, REMOVAL, RELOCATION OR MODIFICATION TO EROSION AND SEDIMENT CONTROL
- DEVICES MAY BE MADE BY DOUGLAS REGIONAL COUNCIL IF DEEMED NECESSARY AND RELEVANT. 17. EROSION AND SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE UNTIL THE TREATMENT AREA IS
- SUITABLY STABILISED/VEGETATED. 18. THE CONTRACTOR SHALL UNDERTAKE A FORMAL COMPLIANCE AUDIT OF THE ESC AT SIX WEEK INTERVALS DURING THE CONSTRUCTION PERIOD OF THE PROJECT. RECORDS OF THE AUDIT SHALL BE RETAINED ON SITE. WHERE IDENTIFIED AS PART OF THE AUDIT THE ESC PLANS SHALL BE UPDATED AND PROVIDED TO THE SUPERINTENDENT.

40 60 80 100m

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В	ISSUED FOR TENDER	EDJ	GG*	TMB*	14.01.20					
А	PRELIMINARY ISSUE	EDJ	GG*	TMB*	09.12.19					
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REVEGETATION OF DISTURBED AREAS SHALL BE CARRIED OUT SOON AFTER THE COMPLETION OF



- 5. GENERAL FILL LAYERS OTHER THAN THOSE MENTIONED ABOVE SHALL BE COMPACTED IN LAYERS NO MORE THAN 200MM THICK AND TO STANDARD MINIMUM RELATIVE DRY DENSITY OF 95 %. NATURAL SOURCE MATERIAL SUITABLE AS GENERAL FILL.
- 6. CLEARING AND GRUBBING SHALL OCCUR AT COMMENCEMENT OF WORKS TO FNQROC EARTHWORKS SPECIFICATION, TOPSOIL IS TO BE STOCKPILED FOR DURATION OF WORKS. TOPSOIL TO BE SPREAD BACK OVER COMPLETED WORKS AND GRASS SEEDING TO OCCUR IN ALL DISTURBED AREAS, PER FNQROC LANDSCAPING SPECIFICATION.
- 7. NO VEGETATION SHALL BE REMOVED WITHOUT PRIOR APPROVAL OF THE SUPERINTENDENT UNLESS NOTED ON THE DRAWINGS. 8. FINISHED SURFACE LEVELS SHOWN ON PROJECT DRAWINGS ARE AFTER ALL EARTHWORKS ARE COMPLETE INCLUDING TOPSOILING. ALL AREAS ARE TO BE GRADED EVENLY BETWEEN
- FINISHED SURFACE LEVELS UNLESS NOTED OTHERWISE.

DRAINAGE

- 1. ALL REINFORCED CONCRETE PIPES SHALL BE CLASS 2 UNLESS NOTED OTHERWISE. ALTERNATIVE MATERIAL TYPES SUCH AS HDPE OR FRC MAYBE USED SUBJECT TO SUPERINTENDENTS/COUNCIL APPROVAL
- 2. EXCAVATION, BEDDING AND BACKFILL FOR CONCRETE PIPES SHALL BE CARRIED OUT IN ACCORDANCE WITH FNQROC STANDARD DRAWING S1046
- 3. ALL CAST-IN-SITU HEADWALLS SHALL BE PROVIDED IN ACCORDANCE WITH FNQROC STD DRG'S S1075 & S1085.

- ALL DUCTILE IRON PIPES SHALL BE MANUFACTURED AND CEMENT LINED IN ACCORDANCE
- ALL DICL FLANGED PIPEWORK SHALL BE FLANGE CLASS U.N.O.
- ALL FITTINGS SHALL BE DICL CLASS PN35.
- ALL FLANGES TO BE TO AS4087 AND PRESSURE RATED AS NOTED ON DRAWINGS. ALL FLANGED JOINTS TO HAVE S.S. GRADE 316 BOLTS, NUTS, WASHERS AND GASKETS TO
- 7. PROVIDE WRAPPING OF BOLTS AND CONNECTIONS IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

ABBREVIATIONS

- NOMINAL DIAMETER
- FNQROC FAR NORTH QUEENSLAND REGION OF CONTRACTOR S



Approved

Project Director)



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This document may only be used by

- WITH AS 2280 BY AN AUSTRALIAN STANDARDS ENDORSED COMPANY.

- AS4087, U.N.O.
- ALL BURIED DICL PIPE TO BE WRAPPED WITH LOOSE POLYETHYLENE SLEEVING 0.25mm THICK AND COLOURED FOR WATER SUPPLY AND TO AS 3680 U.N.O. WRAPPING AND TAPPING SHALL

- DN
- AC
- DI DICL
- RRJ - RUBBER RING JOINT
- POLYETHYLENE PE PN
- NOMINAL PRESSURE
- ASBESTOS CEMENT - DUCTILE IRON - DUCTILE IRON CEMENT LINED

- BE CARRIED OUT IN ACCORDANCE WITH THE PIPE MANUFACTURERS RECOMMENDATIONS. ALTERNATIVELY, ZINALIUM PIPEWORK MAY BE USED IN ACCORDANCE WITH AS 2280.



REFER TO LONGITUDINAL SECTIONS FOR CORRECT THRUST BLOCKS TO BE USED FOR EACH OF THE HIGH AND LOW LIFT WATER MAINS. 3. ALL THRUST BLOCKS FOR THE LOW LIFT WATER MAIN SHALL BE IN ACCORDANCE WITH SEQ STD

DRAWING SEQ-WAT-1205-1 4. ALL THRUST BLOCKS FOR THE HIGH LIFT WATER MAIN SHALL BE IN ACCORDANCE WITH DRAWINGS 42-21142-S020 AND W023. STANDARD SEQ THRUST BLOCKS ARE NOT ACCEPTABLE FOR THE HIGH LIFT WATER MAIN.

- ALL THRUST BLOCKS TO BE CAST CENTRALLY ABOUT PIPE UNLESS DETAILED OTHERWISE ON THE DESIGN DRAWINGS.
- THRUST BLOCK BEARING AREA TO BE PROVIDED AGAINST UNDISTURBED GROUND OR AS NOMINATED ON THE DESIGN DRAWINGS.
- ASSUMED MAXIMUM BEARING CAPACITY IS 50 kPa. CONTRACTOR SHALL ASSESS EACH BLOCK AND REVIEW BEARING PRESSURE AS REQUIRED. THRUST BLOCKS FOR THE LOW LIFT WATER MAIN CAN BE RESIZED IN ACCORDANCE WITH SEQ STANDARD DRAWINGS TO SUIT BEARING CAPACITY.

STAINLESS STEEL PIPEWORK NOTES 1. ALL STAINLESS STEEL PIPEWORK AND FITTINGS TO BE GRADE 316L U.N.O.

- ALL FLANGED JOINTS TO HAVE S.S. GRADE 316 BOLTS, NUTS, WASHERS AND GASKETS TO AS4087, U.N.O. SITE CUTTING AND WELDING OF STAINLESS STEEL IS PERMITTED. DO NOT FLAME CUT STAINLESS STEEL.
- KEEP STAINLESS STEEL SURFACES CLEAN AND FREE OF BLEMISHES. WELDS TO BE CLASS 1A FOR STAINLESS STEEL USING STAINLESS STEEL ELECTRODES TO AS/NZS 1554.
- WELDS TO BE PASSIVATED USING NITRIC ACID SOLUTION AND POLISHED. WASH THOROUGHLY. ISSUE FOR TENDER

gner R.KEILY	Client	DOUGLAS	SHIRE COUNCIL	
gn :k	Project	MOSSMAN	ALTERNATIVE RAW WATE	R INTAKE
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TENURE 1 SETOUT					
POINT	EASTING	NORTHING			
1	324124.769	8178720.557			
2	324136.431	8178711.124			
3	324160.942	8178741.425			
4	324178.592	8178727.148			
5	324172.427	8178763.847			
6	324160.342	8178764.534			

TENURE 2 SETOUT						
POINT	EASTING	NORTHING				
10	324172.427	8178763.847				
11	324180.376	8178766.547				
12	324201.114	8178754.473				
13	324220.566	8178570.983				
14	324205.314	8178568.011				

TENURE 3 SETO						
POINT	EASTING	NOR				
20	324203.753	8178				
21	324222.713	8178				
22	324221.028	8178				
23	324209.258	8178				
24	324201.709	8178				

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Rev: A



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	LSHH	LEVEL SWITCH HIGH HIGH
	PIT	PRESSURE INDICATING TRANSMITTER
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N Client DOUGLAS S	HIRE COUNC	
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	SETOUT POINTS					
POINT	EASTING	NORTHING	COMMENT			
1	324138.362	8178728.855	CORNER OF INTAKE GALLERY			
2	324160.956	8178756.785	CORNER OF INTAKE GALLERY			
3	324164.299	8178754.081	CORNER OF INTAKE GALLERY			
4	324141.705	8178726.150	CORNER OF INTAKE GALLERY			
5	324180.080	8178748.194	CORNER OF SLAB			
6	324182.281	8178750.915	CORNER OF SLAB			
7	324188.112	8178746.199	CORNER OF SLAB			
8	324185.911	8178743.477	CORNER OF SLAB			
9	324184.076	8178747.855	CENTRE OF ENVELOPER FLANGE			
10	324168.485	8178760.467	CENTRE OF ENVELOPER TEE			
11	324167.280	8178761.442	END OF ENVELOPER			
12	324163.449	8178754.241	INTAKE GALLERY PIPE FLANGE			
13	324162.250	8178755.206	INTAKE GALLERY PIPE FLANGE			
14	324161.057	8178756.176	INTAKE GALLERY PIPE FLANGE			
15	324141.364	8178726.941	END OF INTAKE GALLERY PIPE			
16	324140.168	8178727.908	END OF INTAKE GALLERY PIPE			
17	324138.973	8178728.875	END OF INTAKE GALLERY PIPE			
18	324183.259	8178746.845	CENTRE OF ENVELOPER FLANGE			
19	324168.491	8178758.791	END OF ENVELOPER			

В	ISSUED FOR TENDER	EDJ	GG*	TMB*	14.01.20
А	PRELIMINARY ISSUE	EDJ	GG*	TMB*	09.12.19
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NOTE:



CONTRACTOR TO VERIFY ALL INVERT LEVELS, PIPE SIZES, DIAMETERS, SURFACE LEVELS, CLEARANCES AND COVERS ARE CORRECT AND TO BE OBTAINABLE BEFORE COMMENCEMENT OF ANY WORKS. ALL UNDERGROUND SERVICES SHOWN ON THESE PLANS ARE INDICATIVE ONLY AND HAVE BEEN PLOTTED FROM THE RELEVANT AUTHORITIES RECORDS. SERVICES NOT SHOWN ON THESE PLANS MAY EXIST. IT IS

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	SETOUT POINTS							
POINT	EASTING	NORTHING	COMMENTS					
1	324172.405	8178576.678	CORNER OF SLAB					
2	324184.392	8178577.221	CORNER OF SLAB					
3	324184.977	8178564.298	CORNER OF SLAB					
4	324172.990	8178563.755	CORNER OF SLAB					
5	324168.612	8178576.507	ACCESS TRACK					
6	324169.336	8178560.453	ACCESS TRACK					
7	324170.577	8178548.631	ACCESS TRACK					
8	324176.225	8178514.509	ACCESS TRACK					
9	324177.568	8178498.378	ACCESS TRACK					
10	324173.131	8178560.619	ACCESS TRACK					
11	324174.325	8178549.259	ACCESS TRACK					
12	324178.980	8178521.137	ACCESS TRACK					
13	324188.163	8178569.169	CENTRE OF FLOW METER PIT					
14	324178.005	8178560.979	CENTRE OF FLOW METER PIT					
15	324176.424	8178559.746	CORNER OF THRUST BLOCK					
16	324176.587	8178556.150	CORNER OF THRUST BLOCK					
17	324180.183	8178556.313	CORNER OF THRUST BLOCK					
18	324184.804	8178583.131	OVERFLOW HEADWALL					

Title HIGH LIFT PUMP STATION SITE GENERAL ARRANGEMENT ot be Original Size A1 Drawing No: 42-21142-W010



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Plotted by: Evan Johnson





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Plot Date: 26 August 2020 - 8:46 AM

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FITTING SCHEDULE					
ITEM No.	DESCRIPTION	QTY			
1	DN200 - 125 DI ECCENTRIC TAPER FL-FL	3			
2	DN200 DICL PIPE FL-FL (1.953m LONG)	3			
3	DN200 DI SLUICE VALVE FL-FL	3			
4	DN200 - 300 DI TEE FL-FL-FL	3			
5	DN300 DICL PIPE FL-FL (1.080m LONG)	4			
6	DN300 DI 90° BEND FL-FL	8			
7	DN300 RUBBER BELLOWS FL-FL	4			
8	DN300 DI SLUICE VALVES FL-FL	4			
9	DN300 - 225 DI TEE FL-FL-FL	1			
10	DN225 DICL PIPE FL-FL (LENGTH TO SUIT)	2			
11	DN225 DI 90° BEND FL-FL	2			
12	DN225 DICL PIPE FL-FL C/W THRUST FLANGE (1.2m LONG)	1			
13	DN225 DI DISMANTLING JOINT FL-FL	1			
14	DN225 DI FLOW METER FL-FL	1			
15	DN225 DICL PIPE FL-SP (LENGTH TO SUIT)	1			
16	DN300 DICL PIPE FL-FL (LENGTH TO SUIT)	2			
17	DN300 DICL PIPE FL-FL C/W THRUST FLANGE (LENGTH TO SUIT)	2			
18	DN300 DI CONNECTOR FL-SO	2			
19	DN300 DICL PIPE SP-SP	3			
20	DN300 DI 90° BEND SO-SO	1			
21	DN300 DICL PIPE SO-SP (FULL LENGTH)	1			
22	DN300 DI TEE SO-SO-SO	1			

NOTE: ALL PIPEWORK NOMINATED IN SCHEDULE SHALL BE MINIMUM PN16

THIS DRAWING INCLUDES COLOURED INFORMATION. IF YOU HAVE A BLACK AND WHITE COPY YOU DO NOT HAVE ALL THE INFORMATION. THIS NOTE IS COLOURED RED.



ISSUE FOR TENDER

N	Client Project	DOUGLAS S MOSSMAN	SHIRE COUNCIL ALTERNATIVE RAW WATEF	
	Title	HIGH LIFT F PIPEWORK	PUMP STATION SCHEDULE - SHEET 1	
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 Job Manager
 Project Director
 Date

 Plot Date: 26 August 2020 - 8:47 AM Plotted by: Evan Johnson

B ISSUED FOR TENDER

A PRELIMINARY ISSUE

Cad File No: G:\42\21142\CADD\Drawings\42-21142-W013.dwg

EDJ GG* TMB* 09.12.19

OL	JGLAS	GHE
IIRE	COUNCIL	
		Level 8, 15

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		 REFER TO DRAWING No. 42-2 REFER TO DRAWING No. 42-2 REFER TO DRAWING No. 42-2 	1142-G002 1142-S001 1142-S003)02 FOR NOTES AND LEGEND. 101 TO S002 FOR STRUCTURAL NOTES. 103 FOR PIPE SUPPORTS.
		NOTE: CONTRACTOR TO VERIFY ALL IN LEVELS, CLEARANCES AND COV COMMENCEMENT OF ANY WORK PLANS ARE INDICATIVE ONLY AN AUTHORITIES RECORDS. SERVIO THE CONTRACTORS RESPONSIE UNDERGROUND SERVICES PRIO FOR ANY DAMAGE TO UNDERGR	VERT LEVE ERS ARE C S. ALL UNI ID HAVE BE CES NOT S ILITY TO L R TO CONS OUND SEF	EVELS, PIPE SIZES, DIAMETERS, SURFACE E CORRECT AND TO BE OBTAINABLE BEFORE UNDERGROUND SERVICES SHOWN ON THESE E BEEN PLOTTED FROM THE RELEVANT T SHOWN ON THESE PLANS MAY EXIST. IT IS D LOCATE ON SITE THE LOCATION OF ALL DNSTRUCTION, THE CONTRACTOR IS LIABLE SERVICES.
				ISSUE FOR TENDER
DO NOT SCALE	Drawn E.JOHNSON	Designer G.GADEMAN	Client	DOUGLAS SHIRE COUNCIL
Conditions of Los	Drafting Check	Design Check	Project MOS	MOSSMAN ALTERNATIVE RAW WATER INTAKE
This document may only be used by GHD's client (and any other person who GHD has agreed can use this document)	Approved (Project Director) Date		Title	HIGH LIFT PUMP STATION PIPEWORK SCHEDULE - SHEET 2
and must not be used by any other person or for any other purpose.	Scale AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	Original Size	Drawing No: 42-21142-W013 Rev: C

1. DRAWING TO BE READ IN CONJUNCTION WITH SPECIFICATION.

HOLD PENDING FURTHER GEOTECHNICAL INVESTIGATION

₩⁷C)

PROVIDE 90° BEND CAMLOCK

COUPLING AND SURROUND AS

PER DRAWING No. 42-21142-W023.

- THRUST BLOCK TO BE SIMILAR TO THRUST BLOCK ON DRAWING No. 42-21142-W023.

NOTE: ALL PIPEWORK AND FITTINGS NOMINATED IN THIS SCHEDULE SHALL BE MINIMUM PN35

1

48 DN25 AUTOMATIC AIR VALVE AND BALL VALVE

FITTING SCHEDULE					
ITEM No.	DESCRIPTION	QTY			
30	DN250 - 100 CONCENTRIC TAPER FL-FL	3			
31	DN250 DI 90° BEND FL-FL	3			
32	DN250 DI CHECK VALVE FL-FL	3			
33	DN250 DICL PIPE FL-FL 500mm LONG	3			
34	DN250 DI SLUICE VALVE FL-FL	3			
35	DN300 DI BLANK FLANGE	1			
36	DN300 - 250 TEE FL-FL-FL	3			
37	DN300 DICL PIPE FL-FL 1080mm LONG	2			
38	DN300 DI 90° BEND FL-FL	2			
39	DN300 DI FLOW METER	1			
40	DN300 DI THRUST TYPE DISMANTLING JOINT	1			
41	DN300 DICL PIPE FL-FL C/W THRUST FLANGE 2463mm LONG	1			
42	DN300 -150 DI TEE FL-FL-FL	1			
43	DN300 DI SLUICE VALVE FL-FL	1			
44	DN300 DI CONNECTOR FL-SO	1			
45	DN300 DICL PIPE FL-FL (LENGTH TO SUIT)	1			
46	DN150 DI SLUICE VALVE FL-FL	1			
47	DN150 DICL PIPE FL-FL C/W THRUST FLANGE 1693mm LONG	1			

						0 0.25 0.5 0.75 1.0 1.25m
						SCALE 1:25 AT ORIGINAL SIZE
В	REVISED FOR CLIENT COMMENT	EDJ	GG*	TMB*	26.08.20	
Α	ISSUED FOR TENDER	EDJ	GG*	TMB*	14.01.20	
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date	

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Cad File No: G:\42\21142\CADD\Drawings\42-21142-W014.dwg

В	REVISED FOR CLIENT COMMENT	EDJ	GG*	TMB*	26.08.20
А	ISSUED FOR TENDER	EDJ	GG*	TMB*	14.01.20
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date

0 0.2 0.4 0.6 0.8 1.0m SCALE 1:20 AT ORIGINAL SIZE

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NOTE:

FOR ANY DAMAGE TO UNDERGROUND SERVICES.

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GHD has agreed can use this document)	Date			
for the purpose for which it was prepared and must not be used by any other person or for any other purpose.	Scale	AS SHOWN	This used signe	Drawing must not for Construction u ed as Approved

	NOZZLE SCHEDULE										
ZLE	SIZE (DN)	HEIGHT (mm) FROM SUPPORTING SLAB TO NOZZLE CL	PROJECTION (mm)	DESCRIPTION							
	300	465	180	TANK INLET							
	300	465	180	TANK OUTLET							
	300	2500	180	TANK OVERFLOW							
	100	240	180	TANK SCOUR							
	600	-	-	MANHOLE							
			•								

TANK SPECIFICATIONS

MANUFACTURER	
CAPACITY	27000L
MATERIAL	POLYETHYLENE
SURFACE	SMOOTH
DIAMETER	3573mm
SIDE WALL HEIGHT	2700mm
ACTIVE VOLUME	13500L
NUMBER REQUIRED	2
MEDIUM	WATER
SPECIFIC GRAVITY	1.02
INSTALLATION	OUTSIDE
AMBIENT TEMPERATURE	40°C
DESIGN LIFE	15 YEARS
MAXIMUM FILL / EMPTY RATE	175 L/S / 175 L/S

CONTRACTOR TO VERIFY ALL INVERT LEVELS, PIPE SIZES, DIAMETERS, SURFACE LEVELS, CLEARANCES AND COVERS ARE CORRECT AND TO BE OBTAINABLE BEFORE COMMENCEMENT OF ANY WORKS. ALL UNDERGROUND SERVICES SHOWN ON THESE PLANS ARE INDICATIVE ONLY AND HAVE BEEN PLOTTED FROM THE RELEVANT AUTHORITIES RECORDS. SERVICES NOT SHOWN ON THESE PLANS MAY EXIST. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ON SITE THE LOCATION OF ALL UNDERGROUND SERVICES PRIOR TO CONSTRUCTION, THE CONTRACTOR IS LIABLE

THIS DRAWING INCLUDES COLOURED INFORMATION. IF YOU HAVE A BLACK AND WHITE COPY YOU DO NOT HAVE ALL THE INFORMATION. THIS NOTE IS COLOURED RED.

			ISSUE FO	R TENDER
N	Client	DOUGLAS	SHIRE COUNCIL	
	Project	MOSSMAN	ALTERNATIVE RAW WATE	R INTAKE
	Title	HIGH LIFT I	PUMP STATION	
		TANK DET	AILS	
ot be unless	Original Size	Drawing No:	42-21142-W015	Rev: B

Plotted by: Evan Johnson Plot Date: 26 August 2020 - 8:48 AM

		ISSUE FOR	TENDER
nt ect	DOUGLAS MOSSMAN	SHIRE COUNCIL ALTERNATIVE RAW WATER I	NTAKE
	HIGH LIFT I OVERFLOV	PUMP STATION V AND FLOW METER DETAILS	;
l Size	Drawing No:	42-21142-W016	Rev: B

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	- NEW	SUBME	-(HO)3	GALLER	Y WATER	RINTA									2		RWL		
	AND		ARGE PIF b. 42-211	2EWOR 42-W00	K. REFE 1 FOR D	r to etail: T 6													
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			NRI	TR													F	PLAN CALE 1:50	J 00
																C	ن. ب		
			45.00° HORIZ. BEND	16.25° HORIZ. BEND	-0.09 VENT. DEFLEC. -2.50° HORIZ. BEND 2.57° VEDT. DEELEC.			33° VERT. DEFLEC.	.25° HORIZ. BEND	77° VERT. DEFLEC.			X X X MDISS	adda 0.72° VERT. DEFLEC. Dot Deflec.	ب ش -1.55° VERT. DEFLEC		-1.61° VEK I. UEFL AIR VALVE	-12.38° VERT. DEFLE -12.38° VERT. DEFLE SCOUR VALVE	11.04° VERT. DEFLEC 11.04° VERT. DEFLEC DESIGN CULVERT=17.42 DESIGN CULVERT=17.42
			45.00° HORIZ. BEND	16.25° HORIZ. BEND	-2.50° HORIZ. BEND			1.33° VERT. DEFLEC.	-11.25° HORIZ. BEND	2.77° VERT. DEFLEC.			AND STATES 1.14° VERT. DEFLEC.	DATE 0.72° VERT. DEFLEC.	-1.55° VERT. DEFLEC		AIR VALVE	-12.38° VERT. DEFLE -12.38° VERT. DEFLE SCOUR VALVE	11.04° VERT. DEFLEC 11.04° VERT. DEFLEC DESIGN CULVERT=17.42 DESIGN CULVERT=17.42
			45.00° HORIZ. BEND	16.25° HORIZ. BEND	-0.09 VENT. DEFLEC. -2.50° HORIZ. BEND			1.33° VERT. DEFLEC.	-11.25° HORIZ. BEND	2.77° VERT. DEFLEC.			AND STATE DEFLEC.	ASS CONTRACTOR OF CONTRACTOR O	JA -1.55° VERT. DEFLEC		H -1.61° VEKI. UEFL AIR VALVE	12.38° VERT. DEFLE 12.38° VERT. DEFLE SCOUR VALVE	11.04° VERT. DEFLEC 11.04° VERT. DEFLEC 11.04° VERT. DEFLEC DESIGN CULVERT=17.42 DESIGN CULVERT=17.42
PIPE SIZE (mm) PIPE MATERIAL AND CLASS PIPE GRADE (%)			45.00° HORIZ. BEND 45.00° HORIZ. BEND 0.60° VFRT DFELFC	16.25° HORIZ. BEND	-0.09 VEKI. VEREC. -2.50° HORIZ. BEND -2.50° HORIZ. BEND -2.50° HORIZ. BEND		-6.00%	1.33° VERT. DEFLEC.	-11.25° HORIZ. BEND	2.77° VERT. DEFLEC.			V.24%	MASS CO 8.51%	1.55° VERT. DEFLEC		W.26 HI -1.01° VEKI. UEFL	-12.38° VERT. DEFLE V58° VERT. DEFLE SCOUR VALVE SCOUR VALVE	11.04° VERT. DEFLEC 11.04° VERT. DEFLEC 11.04° VERT. DEFLEC DESIGN CULVERT=17.42 DESIGN CULVERT=17.42 0:04%
PIPE SIZE (mm) PIPE MATERIAL AND CLASS PIPE GRADE (%) DATUM RL. 10.0	8		45.00° HORIZ. BEND	0.000 VIDT DEL CO	-0.09 VENT. DETLEC. -2.50° HORIZ. BEND -2.50° HORIZ. BEND -2.50° HORIZ. BEND		-6.00%	3 VERT. DEFLEC.	-11.25° HORIZ. BEND	2.77° VERT. DEFLEC.			2.24% Z. VERT. DEFLEC.	MASS CO 8.51%	6 AS ACT. DEFLEC		DI VEKI. UEH	8 NS- 12.38° VERT. DEFLE -12.38° VERT. DEFLE -12.38° VERT. DEFLE SCOUR VALVE	11.04° VERT. DEFLEC 11.04° VERT. DEFLEC 11.04° VERT. DEFLEC DESIGN CULVERT=17.42 0ESIGN CULVERT=17.42
PIPE SIZE (mm) PIPE MATERIAL AND CLASS PIPE GRADE (%) DATUM RL. 10.0 DEPTH TO INVERT (FROM EXISTING SURFACE)	0.998		0.898 V % 0.898 V % VERT DEFLEC	0.910 V%LC.0.0010 V%LC.0.00010 V%LC.0.0010 V%LC.0.0010	-0.03 VEKT. UETLEC. -2.50° HORIZ. BEND 0.964 V%		-6.00%	-0.223 VERT. DEFLEC.	-11.25° HORIZ. BEND	-0.372 Art. DEFLEC.		-1.163 V% -1.163 -1.163 -1.163 -1.163	-1.272 ^X.52 -1.272 ^X.52 -1.27	MASS CO 0.971 NST CONCERT. DEFLEC.	1.036 AS DEFLEC		0.410 VEK1. UEFL -1.61° VEK1. UEFL -1.61° VEK1. UEFL	1.618 AL 1.618 VSC IS 1.618 SCOUR VALVE 2.020R VALVE	11.04° VERT. DEFLEC 11.04° VERT. DEFLEC 11.04° VERT. DEFLEC DESIGN CULVERT=17.42 0.64%
PIPE SIZE (mm) PIPE MATERIAL AND CLASS PIPE GRADE (%) DATUM RL. 10.0 DEPTH TO INVERT (FROM EXISTING SURFACE) PIPE INVERT LEVEL	17.092 0.998		17.252 0.898 A.S. A.O. HORIZ. BEND -0.60° HORIZ. BEND -0.60° HORIZ. BEND -0.60° HORIZ. DEFLEC	17.235 0.910 V%	17.152 0.964 V%	16.972 0.992 A 16.972 0.992 A	-6.00%	16.162 -0.223 VERT. DEFLEC.	-11.25° HORIZ. BEND -11.25° HORIZ. BEND -0.376 -0.376 -0.376 -0.376	15.763 -0.372 / AT 2.77° VERT. DEFLEC.		16.109 -1.163 V [*]	16.507 -1.272 AST DEFLEC.	16.975 0.971 ASS C SERT. DEFLEC.	17.177 1.036 AS NERT. DEFLEC		17.457 0.410 VEK1. UEFL AIR VALVE	16.420 1.618 AG DEFLE -12.38° VERT. DEFLE -12.38° VERT. DEFLE -12.38° VERT. DEFLE SCOUR VALVE	11.04° VERT. DEFLEC 11.04° VERT. DEFLEC 11.04° VERT. DEFLEC DESIGN CULVERT=17.42 0.64%
PIPE SIZE (mm) PIPE MATERIAL AND CLASS PIPE GRADE (%) DATUM RL. 10.0 DEPTH TO INVERT (FROM EXISTING SURFACE) PIPE INVERT LEVEL DESIGN SURFACE	18.274 17.092 0.998	18.415 17.212 0.895 V%L A A 17.212 0.895 V%LET DEELEC	18.439 17.252 0.898 V ^{&C} -0.60° HORIZ. BEND	18.414 17.235 0.910 V% 0.910 V%	18.321 17.152 0.964 V%	18.190 16.972 0.992 A -2.01 VEIVIL 0.002	-6.00%	17.360 16.162 -0.223 VERT. DEFLEC.	-11.25° HORIZ. BEND -17.134 15.757 -0.326 % \$\$2926 -0.326 \$\$200118 \u03b6 \$\$17.134 \$\$200118 \u03b6 \$\$17.134 \$\$200118 \u03b6 \$\$17.134 \$\$200118 \u03b6 \$\$17.134 \$\$200118 \u03b6 \$\$17.135 \$\$\$200118 \u03b6 \$\$17.135 \$\$\$200118 \u03b6 \$\$17.135 \$\$\$200118 \u03b6 \$\$17.135 \$\$\$\$17.135 \$\$\$200118 \u03b6 \$\$17.135 \$\$\$\$\$\$17.135 \$\$\$\$\$17.135 \$\$\$\$\$\$\$\$\$\$\$\$\$\$\$17.135 \$17.135 \$	17.139 15.763 -0.372 Art. DEFLEC.	17.257 15.821 -0.690 VS Construction Const	17.533 16.109 -1.163 V [*] -1.163 V [*] -1.163 V [*] -1.163 V [*]	17.865 16.507 -1.272 A.24 DEFLEC.	18.194 16.975 0.971 V% 25 18.194 16.975 0.971 V% 25 18.194 16.975 0.971 V% 25 18.194 16.975 0.72° VERT. DEFLEC.	18.386 17.177 1.036 AS I I I I I I I I I I I I I I I I I I		18.656 17.457 0.410 VEK1. UEFL AIR VALVE	18.787 16.420 1.618 1.61	11.04° VERT. DEFLEC
PIPE SIZE (mm) PIPE MATERIAL AND CLASS PIPE GRADE (%) DATUM RL. 10.0 DEPTH TO INVERT (FROM EXISTING SURFACE) PIPE INVERT LEVEL DESIGN SURFACE EXISTING SURFACE	18.091 18.274 17.092 0.998	18.107 18.415 17.212 0.895 V ³ 2 A A	18.150 18.439 17.252 0.898 V % -0.05 V INTERIC 18.150 18.439 17.252 0.898 V % -0.60° VERT DEFLEC	18.145 18.414 17.235 0.910 VSI 0.910	18.116 18.321 17.152 0.964 V% 2.50° HORIZ. BEND	17.963 18.190 16.972 0.992 A	-6.00%	15.939 17.360 16.162 -0.223 VERT. DEFLEC.	15.431 17.134 15.757 -0.326 %89°E ⁻ crollip VALVE	15.391 17.139 15.763 -0.372 / 1. 2.77° VERT. DEFLEC.	15.131 17.257 15.821 -0.690 VS	14.945 17.533 16.109 -1.163 V [*] -1.163 V [*]	15.235 17.865 16.507 -1.272 V [*] 75 -1.272 V [*] 75-1.272 -1.272 V [*] 75-1.272 -1.272 -1.272 V [*] 75-1.272 -1.272 -1.272 V [*] 75-1.272 -1.272 -1.272 V [*] 75-1.272 -1.272 -1.272 V [*] 75-1.272 -1	17.946 18.194 16.975 0.971 V% D5 20 10 10 10 10 10 10 10 10 10 10 10 10 10	18.213 18.386 17.177 1.036 AS I S PEFLEC	18.191 18.480 17.293 0.898 No H	17.867 18.656 17.457 0.410 VEK1. UEFL 317.057 VEK1. UEFL	18.038 18.787 16.420 1.618 18.03 18.787 16.420 1.618 150 150 150 150 150 150 150 150 150 150	17.00 17.00 17.00 17.00 17.00 17.00 17.00 18.00 10

						0 0.25 0.5 0.75 1.0 1.25m
С	REVISED FOR CLIENT COMMENT	EDJ	GG*	TMB*	26.08.20	SCALE 1:25 AT ORIGINAL SIZE
В	ISSUED FOR TENDER	EDJ	GG*	TMB*	14.01.20	VERTICAL 1:100 0 1 2 3 4 5m
А	PRELIMINARY ISSUE	EDJ	GG*	TMB*	09.12.19	HORIZONTAL 1:500
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date	AT ORIGINAL SIZE U 5 10 15 20 25m

Plot Date: 26 August 2020 - 8:48 AM Plotted by: Evan Johnson

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LOW			SEIUUI	IADLE					
CHAINAGE	EASTING	NORTHING	BEARING	DEFLECTION					
CH 0.000	324187.105	8178745.405	128 58'12"						
CH 5.500	324191.381	8178741.946	128 58'12"	45 00'03''					
CH 11.000	324191.959	8178736.477	173 58'15"	16 14'59"					
CH 16.500	324190.983	8178731.064	190 13'14"	2 30'03"					
CH 22.000	324190.244	8178725.614	187 43'11"	2 29'55"					
CH 25.000	324189.971	8178722.626	185 13'16"						
CH 27.500	324189.743	8178720.137	185 13'16"	2 30'04"					
CH 33.000	324189.482	8178714.643	182 43'12"	2 29'57"					
CH 38.500	324189.461	8178709.143	180 13'15"	11 15'02"					
CH 49.500	324191.566	8178698.346	168 58'13"	2 29'59"					
CH 50.000	324191.683	8178697.86	166 28'14''						
CH 55.000	324192.852	8178692.999	166 28'14''	2 30'01"					
CH 75.000	324198.375	8178673.776	163 58'13"						
CH 77.000	324198.927	8178671.854	163 58'13"	2 30'01"					
CH 88.000	324201.501	8178661.159	166 28'14''	2 29'59"					
CH 99.000	324203.605	8178650.362	168 58'13"	2 30'01"					
CH 100.000	324203.754	8178649.374	171 28'14''						
CH 110.000	324205.237	8178639.484	171 28'14''	2 30'01"					
CH 121.000	324206.392	8178628.545	173 58'15"	2 29'59"					
CH 125.000	324206.638	8178624.553	176 28'13"						
CH 126.500	324206.731	8178623.055	176 28'13"	2 29'59"					
CH 137.500	324206.928	8178612.057	178 58'13"	1 15'02"					
CH 143.000	324206.907	8178606.557	180 13'15"	2 29'57"					
CH 148.500	324206.646	8178601.064	182 43'12"	2 30'00"					
CH 150.000	324206.51	8178599.57	185 13'12"						
CH 154.000	324206.146	8178595.586	185 13'12"	2 30'02"					
CH 159.500	324205.407	8178590.136	187 43'14"	2 29'59"					
CH 165.000	324204.431	8178584.723	190 13'14"	2 30'01"					
CH 170.500	324203.22	8178579.358	192 43'15''	2 29'57"					
CH 175.000	324202.039	8178575.016	195 13'12"						
CH 180.447	324200.609	8178569.76	195 13'12"	72 11'18"					
CH 191.753	324189.314	8178569.249	267 24'30''						

CLEARANCES BETWEEN WATER MAINS AND **UNDERGROUND SERVICES - TABLE 5.5**

			0.0	
	MINIMUM HORIZONT/			
UTILITY (EXISTING SERVICE)	NEW MA	MINIMUM VERTICAL CLEARANCE (mm)		
	≤DN200	· · · · · · · · · · · · · · · · · · ·		
WATER MAINS >DN375	600	600	300	
WATER MAINS ≤DN375	300 (REFER NOTE 2)	600	150	
GAS MAINS	300 (REFER NOTE 2)	600	150	
TELECOMMUNICATION CONDUITS AND CABLES	300 (REFER NOTE 2)	600	150	
ELECTRICITY CONDUITS AND CABLES	500	1000	225	
DRAINS	300 (REFER NOTE 2)	600	150 (REFER NOTE 3)	
SEWERS / GRAVITY	1000 (REFER NOTE 4) / 600	1000 (REFER NOTE 4) / 600	500 (REFER NOTE 3)	
SEWERS / PRESSURE AND VACUUM	600	600	300	
KERBS	150	600 (REFER NOTE 5)	150 (WHERE POSSIBLE)	

NOTES:

1. VERTICAL CLEARANCES APPLY WHEN WATER MAINS CROSS ONE ANOTHER AND OTHER UTILITY SERVICES. EXCEPT IN THE CASE OF SEWERS WHEN A VERTICAL SEPARATION SHALL ALWAYS BE MAINTAINED, EVEN WHEN THE WATER MAIN AND SEWER ARE PARALLEL. THE MAIN SHOULD ALWAYS BE LOCATED ABOVE THE SEWER TO MINIMISE THE POSSIBILITY OF BACKFLOW CONTAMINATION IN THE EVENT OF A MAIN BREAK.

2. CLEARANCES CAN BE FURTHER REDUCED TO 150mm FOR DISTANCES UP TO 2m WHEN PASSING INSTALLATIONS SUCH AS POLES, PITS AND SMALL STRUCTURES, PROVIDING THE STRUCTURE IS NOT DESTABILIZED IN THE PROCESS.

3. WATER MAINS SHOULD ALWAYS CROSS OVER SEWERS AND STORMWATER DRAINS. FOR CASES WHERE THIS IS NO ALTERNATIVE AND THE MAIN MUST CROSS UNDER THE SEWER, CONSTRUCTION SHALL BE IN ACCORDANCE WITH WSAA STANDARD DRAWING WAT-1211.

4. WHEN A SEWER IS AT THE MINIMUM VERTICAL CLEARANCE BELOW THE WATER MAIN (500mm), MAINTAIN A MINIMUM HORIZONTAL CLEARANCE OF 1000mm. THIS MINIMUM HORIZONTAL CLEARANCE CAN BE PROGRESSIVELY REDUCED TO 600mm AS THE VERTICAL CLEARANCE IS INCREASED TO 750mm.

5. CLEARANCE FOR KERBS SHALL BE MEASURED FROM THE NEAREST POINT OF THE KERB. FOR WATER MAINS ≤DN375 CLEARANCES FROM KERBS CAN BE PROGRESSIVELY REDUCED UNTIL THE MINIMUM OF 150mm IS REACHED FOR MAINS ≤DN200.

NOTES

DRAWING TO BE READ IN CONJUNCTION WITH SPECIFICATION.

- REFER TO DRAWING No. 42-21142-G002 FOR NOTES AND LEGEND. 3. REFER TO DRAWING No. 42-21142-S001 TO S002 FOR STRUCTURAL NOTES.
- THIS DRAWING INCLUDES COLOURED INFORMATION. IF YOU HAVE A BLACK AND WHITE COPY YOU DO NOT HAVE CONTRACTOR TO VERIFY ALL INVERT LEVELS, PIPE SIZES, DIAMETERS, SURFACE ALL THE INFORMATION. THIS NOTE IS COLOURED RED. LEVELS, CLEARANCES AND COVERS ARE CORRECT AND TO BE OBTAINABLE BEFORE COMMENCEMENT OF ANY WORKS. ALL UNDERGROUND SERVICES SHOWN ON THESE PLANS ARE INDICATIVE ONLY AND HAVE BEEN PLOTTED FROM THE RELEVANT DIAL BEFORE AUTHORITIES RECORDS. SERVICES NOT SHOWN ON THESE PLANS MAY EXIST. IT IS **YOU DIG** THE CONTRACTORS RESPONSIBILITY TO LOCATE ON SITE THE LOCATION OF ALL UNDERGROUND SERVICES PRIOR TO CONSTRUCTION, THE CONTRACTOR IS LIABLE www.1100.com.au **ISSUE FOR TENDER**

CHAINAGE EASTING NORTHING BEARING DEFLECTION CH 0.000 324/178.180 8178521:13 17712430" CH 0.000 324/178.110 8178507:164 17712430" CH 0.000 324/182.11 8178407:164 17712430" CH 10.000 324/182.12 8178437:03 17712430" CH 10.000 324/182.12 81784326:41 164/5429" CH 10.000 324/182.12 8178389:23 1322429" CH 164.143 324/202.27 8178389:23 1322429" CH 165.000 324/202.27 8178389:23 1322429" CH 164.143 324/205.815 8178389:23 1322429" CH 200.000 324/215.861 817837.816 64/5430" CH 224.643 324/205.866 817838.725 64/5430" CH 224.643 324/205.866 8178403.72 45/2143" CH 226.000 324/30.172 817847.836 64/51430" CH 226.433 324/30.172 817847.830 65/950" CH 226.433 324/30.172 8178478	HIGH	LIFT AL	IGNMENT	SETOUT	TABLE
CH 0.000 324178:180 8178532:139 1772430" CH 25.000 324173:10 8178532:139 1772430" CH 25.000 324180:41 8178522:150 1772430" CH 100.000 324185:71 817842:150 1772430" CH 100.000 324185:72 817843:245 17712430" CH 125.000 324185:72 817843:245 1514522" CH 145.000 324195:72 817832:845 1514522" CH 145.000 324210:288 8178389:23 132042" CH 125.000 324216:55 8178389:23 132042" CH 226.000 324275:648 817837:683 772430" CH 225.000 324276:648 8178386:416 6415430" CH 225.000 324276:648 8178386:425 6615930" CH 225.000 324276:648 8178386:425 6715430" CH 225.000 324276:648 8178287:46 6519393" CH 255.000 324276:648 8178287:46 6519393" CH 325.000 3243819:2 817848:325 6715430" <th>CHAINAGE</th> <th>EASTING</th> <th>NORTHING</th> <th>BEARING</th> <th>DEFLECTION</th>	CHAINAGE	EASTING	NORTHING	BEARING	DEFLECTION
CH 25:000 324178.310 8175332.139 17724-307 CH 50:000 32418.571 8175452.160 17724-307 CH 100.000 32418.571 8177482.190 17724-307 CH 100.000 32418.571 8177482.790.3 17724-307 CH 120.043 32418.571 8177432.093 17724-307 CH 120.000 32418.572 817533.993.3 15224237 CH 161.010 32419.524 817533.992.3 15224237 CH 161.413 32423.542 817537.663 87724797 CH 208.000 324250.684 817537.663 87744707 CH 220.000 324250.684 8175337.561 81744707 CH 220.000 324250.684 8175337.355 64454307 CH 220.000 324250.688 8175433.325 64454307 CH 220.000 324250.688 8176426.31 4524307 CH 220.000 324380.102 8177440.331 4524307 CH 220.413 324250.118 8177440.332 65139307 CH 300.000 32437.029 8177443.824	CH 0.000	324178.180	8178557.113	177 24'30"	
CH 50.000 324180.441 81754571 91724307 CH 70.000 324185.701 817457.215 177124307 CH 102.0143 324185.702 817457.215 177124307 22]3001* CH 120.143 324185.702 817457.215 154[5429* C CH 150.000 324185.72 817632.226 154[5429* C CH 161.413 324202.272 8176337.266 152[2429* C CH 200.000 324215.154 817537.690 109[5429* 22[2560* CH 200.000 324215.154 817537.691 109[5429* 22[2560* CH 200.000 324215.644 817537.693 87[2430* 10] CH 200.000 324215.644 817537.693 87[2430* 10] CH 226.433 324205.664 817538.416 64[6430* 11] CH 236.433 324300.172 8176462.826 65[939* 11] CH 300.000 324371.69 817642.326 67[6430* 11] CH 300.000 324370.69 817642.826 50[939*	CH 25.000	324179.310	8178532.139	177 24'30"	
CH 75.000 32418.771 817847.215 177/2430" CH 100.000 324185.672 817847.264 154[5422" CH 120.430 324185.672 8178432.684 154[5422" CH 150.000 324195.274 8178432.684 154[5422" CH 150.000 32410.2272 8178397.245 154[5422" 22]30'0'' CH 156.010 324210.82 8178398.248 132[2422" 22]29'60'' CH 156.010 324213.544 8178376.800 109[5422" 22]29'59'' CH 286.143 324255.654 8178375.814 64[6430" 22]30'0'' CH 226.000 324256.666 81778403.72 419[2430" 119[29'60'' CH 250.001 324265.666 81778403.72 449[2430" 119[29'60'' CH 250.000 324251.666 81778403.72 449[2430" 119[29'60'' CH 250.000 324251.666 81778407 49[2430" 111[150'' CH 325.000 324351.62 8178478.826 69[393'' 111[150'' CH 350.000 324351.62 817848.926 <t< td=""><td>CH 50.000</td><td>324180.441</td><td>8178507.164</td><td>177 24'30"</td><td></td></t<>	CH 50.000	324180.441	8178507.164	177 24'30"	
CH 100.000 32418.5 (12) 8178437.033 177[2430" 22]3001" CH 125.000 32418.5 (12) 8178432.044 154[5422" CH 150.000 32418.5 (12) 8178432.044 154[5422" CH 150.000 324210.288 8178389.233 153[2422" 22]3000" CH 186.143 324210.288 817837.690 109[5422" 22]2950" CH 280.000 324231.544 817837.691 109[5422" 22]2950" CH 280.000 324255.004 817837.693 817837 119[242" 22]2950" CH 280.000 324255.004 817837.693 8178437 119[240" 21]2950" CH 280.000 324253.004 817837.593 64[6430" 11]1460" 14]25.000 324205.066 8178438.25 64[9430" 11]1460" CH 380.000 324317.179 817844.804 66[8390" 11]1150" 11]150" CH 380.000 324317.179 817844.810 46[2429" 15]146" CH 380.000 324317.189 8178485.26 67[5430"	CH 75.000	324181.571	8178482.190	177 24'30"	
Ch 120, 143 324185.672 8178432.083 1771/2430" 2213001" Ch 125,000 324185.672 8178410.284 154[6423" Ch 164,143 324202.272 817839.245 154[6423" Ch 164,143 324202.272 817839.233 132[2423" 222[3960" Ch 164,143 324218.516 8178378.630 109[5423" 222[3950" Ch 200,000 324215.564 8178375.651 64[6430" Ch 226,000 324278.666 8178375.851 64[6430" Ch 250,000 324278.666 8178387.325 64[6430" Ch 250,001 324278.666 8178403.372 459[2430" 11]1460" Ch 250,003 32438.610 8178478.726 56]3930" Ch 250,003 32438.610 8178478.826 67[6430" Ch 350,003 324381.98 8178478.826 67[6430" Ch 350,003 324381.148 8178478.83 300092" Ch 350,003 324381.148	CH 100.000	324182.702	8178457.215	177 24'30"	
CH 152.000 324185.72 817839.284 154[8429" CH 150.000 324196.274 817841.054 154[8429" CH 175.000 324210.288 8178389.823 132[2429" CH 175.000 324210.288 8178389.823 132[2429" CH 186.143 324213.515 8178337.890 109[5429" CH 200.000 324215.44 8178377.890 109[5429" CH 220.000 324256.664 8178375.861 87[2430" CH 225.000 324256.664 8178375.861 64[4530" CH 225.000 324256.664 8178375.861 64[4530" CH 225.000 324256.664 8178375.861 64[4530" CH 225.000 324256.664 8178375.861 64[4530" CH 225.000 324256.664 8178430.322 445[2430" CH 225.000 324256.664 8178430.322 445[2430" CH 225.000 324256.668 8178403.322 445[2430" CH 225.000 324256.668 8178403.322 445[2430" CH 225.000 324296.668 8178403.322 445[2430" CH 225.000 32439.692 8178428.265 64[4530" CH 325.000 32431.1719 8178411.820 56[3930" CH 335.000 32431.62 8178428.265 67[5430" CH 335.000 32431.522 8178438.255 445[2429" CH 335.143 324358.819 8178438.256 67[5430" CH 345.643 324358.819 8178438.256 45[2429" CH 335.143 324375.658 8178447.810 45[2429" CH 335.143 324375.658 8178447.810 45[2429" CH 335.143 324375.658 8178447.810 45[2429" CH 335.143 324375.148 8178478.203 030[929" CH 410.000 3243151.021 8178458.251 52[3929" CH 435.143 32440.266 8178458.351 52[3929" CH 440.000 3243151.01 8178478.299 52[3929" CH 440.000 3243151.01 8178478.299 52[3929" CH 440.000 324413.238 8178488.55 97[3930" CH 442.003 324413.238 8178488.55 97[3930" CH 442.003 324413.238 8178488.55 97[3930" CH 442.003 324413.238 81784878.83 99[9329" CH 444.443 32442.038 8178478.83 99[9329" CH 444.443 32442.03 8178487.819 99[3929" CH 445.000 324437.964 8178483.81 99[3929" CH 445.000 324437.964 8178478.83 99[3929" CH 445.000 324437.964 8178478.83 99[3929" CH 445.000 324487.788 8178477.861 99[9930" CH 455.000 324487.478 8178477.861 99[9930" CH 455.000 324487.488 8178477.671 92[3930" CH 455.000 324487.488 8178477.641 99[3929" CH 455.000 324487.485 8178477.641 99[3929" CH 455.000 324485.488 8178477.641 99[3929" CH 455.000 324485.488 8178477.641 99[3929" CH 455.000 324485.488 817847	CH 120.143	324183.612	8178437.093	177 24'30"	22 30'01"
CH 160.000 324196.274 8178410.054 154[5429" CH 145.143 324202.272 8178337.245 154[5429" 22]3000" CH 175.000 324231.544 8178378.690 109[5429" 22]2959" CH 208.143 324238.201 8178378.690 109[5429" 22]2959" CH 208.143 324238.201 8178376.891 109[5429" 22]2959" CH 228.043 324258.007 8178375.814 64[5430" 22]3000" CH 228.000 324256.007 8178375.814 64[5430" 22]3000" CH 228.000 324256.007 8178375.814 64[5430" 22]3000" CH 250.000 324256.007 8178375.814 64[5430" 22]3000" CH 250.000 324256.007 8178375.814 64[5430" 11]1450" CH 250.000 324256.007 81784378.312 45[2430" 1. CH 250.000 324257.648 8178387.325 64[5430" 19]2960" CH 250.000 324317.179 8178417.820 55[3930" 1. CH 275.000 324331.648 8178437.255 64[5430" 22]3000" CH 300.000 324317.179 8178417.820 55[3930" 1. CH 307.143 324330.568 8178437.255 64[5430" 22]3000" CH 335.000 324361.922 8178438.256 67[5430" 22]3000" CH 335.000 324361.922 8178438.256 67[5430" 22]3000" CH 335.000 324361.922 8178438.255 45]2429" 1. CH 355.000 324361.922 8178438.255 45]2429" 1. CH 355.000 324391.010 8178478.203 5030929" 1. CH 400.000 324391.010 8178478.299 52]8292" 1. CH 415.000 324437.028 817848.515 92]8929" 1. CH 416.43 32440.268 817848.51 97[3930" 1. CH 425.000 324437.384 8178478.34 30[9929" 22]3000" CH 425.000 324437.384 8178478.835 99]8920" 1. CH 445.000 324437.384 8178478.835 99]8920" 1. CH 445.000 324437.384 8178478.833 99]8720" 1. CH 445.000 324437.384 8178478.833 99]8720" 1. CH 445.000 324437.384 8178478.833 99]8720" 1. CH 445.000 324437.384 8178478.833 99]8929" 1. CH 455.000 324437.384 8178478.833 99]8720" 1. CH 455.000 324437.384 8178478.833 99]8720" 1. CH 455.000 324452.38 8178477.589 97]3930" 1. CH 455.000 324452.38 8178477.589 97]3930" 1. CH 455.000 324452.455 8178477.59 93]3930" 1. CH 455.000 324452.455 8178477.547 90]930" 2. CH 455.000 324457.456 8178477.547 90]930" 2. CH 455.000 324457.456 8178477.547 90]930" 2. CH 455.000 324587.455 8178477.547 90]930" 2. CH 455.000 324587.455 8178477.549 99]371" 1. CH 655.000 324587.455 8178477.549 99]371	CH 125.000	324185.672	8178432.694	154 54'29"	
CH 164,143 32420.272 8176389.237 133[2429" CH 175,000 32421.845 8176389.923 133[2429" CH 200,000 324231.844 817837.690 109[5429" 22[2959" CH 200,000 324233.841 817837.693 817[4230" 22[2959" CH 226,003 324256.844 817837.663 87[2430" 22[3000" CH 226,003 324256.844 8178387.355 64[5430" 19[2960" CH 225,000 324260.666 8178403.372 45[2430" 19[2960" CH 255,000 324308.062 8178403.372 45[2430" 11[1460" CH 307,000 324317.178 817842.462 67[5430" 22]3000" CH 307,000 32433.862 817842.746 56[3930" 11[1460" CH 307,000 324316.25 817847.810 45[2429" 15[1460" CH 307,000 32433.862 817847.810 45[2429" 15[1460" CH 307,000 32431.714 817847.813 30(0929" 22]3000" CH 305,143 324437.148 8	CH 150.000	324196.274	8178410.054	154 54'29"	001001001
CH 196.10.00 324210.288 8178382.408 132/2429" 22/2960" CH 186.143 324231.515 8178327.603 187/247" 22/2960" CH 208.000 324231.544 817837.663 87/2430" 22/3000" CH 226.000 324256.84 817837.663 87/2430" 22/3000" CH 225.000 324256.84 817837.5814 64/6430" 19/2960" CH 225.000 324256.864 8178387.325 64/6430" 19/2960" CH 255.000 324350.666 8178403.372 45/2430" 11/1460" CH 375.063 324439.962 8178487.325 64/6430" 11/1460" CH 307.000 324439.962 8178428.462 67/6430" 11/1460" CH 305.000 324339.692 8178438.266 6/16430" 11/1460" CH 305.000 324371.028 8178488.266 30/0429" 15/1460" CH 305.000 324371.028 8178489.266 30/0429" 15/1460" CH 305.000 324371.028 8178489.267 15/1460" CH 4375.000	CH 164.143	324202.272	8178397.245	154 54'29"	22 30'00"
CH 160, 143 324216, 515 8176382, 408 132124, 429 2212950 CH 200, 143 324231, 544 8176377, 690 109[54297 22129597 CH 226, 143 324255, 684 8178375, 563 87[24307 22130707 CH 225, 000 324278, 648 8178337, 514 64[54307 19[29607 CH 255, 103 324295, 666 8178403, 372 45[24307 19[29607 CH 255, 103 324296, 866 8178403, 372 45[24307 11[14507 CH 325, 103 324309, 172 8178417, 820 56[69307 11]17507 CH 300, 000 324371, 719 8178417, 810 45[24297 11]14507 CH 345, 643 324393, 849 8178438, 226 67[54307 22]30007 CH 345, 643 324370, 569 817847, 810 45[24297 15[14607 CH 355, 100 324370, 569 8178478, 313 30[09297 15[14607 CH 435, 143 324370, 569 8178458, 325 30[9797 22]30007 CH 440, 000 324371, 7029 8178468, 355 57[39297 <td< td=""><td>CH 175.000</td><td>324210.288</td><td>8178389.923</td><td>132 24*29**</td><td>22120/60/1</td></td<>	CH 175.000	324210.288	8178389.923	132 24*29**	22120/60/1
CH 200,000 324239.201 817837.690 109574.39 CH 208,143 324239.201 817837.693 87[24'30" 22[29'9" CH 226,443 324226.648 8178375.814 64[54'30" 19[29'60" CH 225,143 324296.868 8178387.325 64[54'30" 19[29'60" CH 275,643 324296.866 8178403.372 45[24'30" 11[14'60" CH 300,000 324317.179 8178406.651 45[24'30" 11[15'00" CH 300,000 32439.692 8178428.462 67[54'30" 11[15'00" CH 350,000 32439.692 8178428.462 67[54'30" 22[20'00" CH 355,000 32439.692 8178438.255 45[24'23" 15[14'60" CH 350,000 32439.692 8178458.26 67[54'30" 22[20'00" CH 355,143 324387.148 8178458.25 30[09'23" 22[20'00" CH 435,143 324400.266 8178468.315 52[39'23" 22[20'00" CH 422,643 324412.33 817848.169 75[09'29" 22[20'00" CH 425,	CH 186.143	324218.515	8178382.408	100154'20"	22 29 60
CH 206 (H3 32425.56 B (15)(H3) 10)(H4)3 22(15)35 CH 226 (A3) 324255.86 B (178375.814) 64[5430" 22(15)00 CH 225 (13) 324220 (58) B (178375.814) 64[5430" 19(12960") CH 255 (10) 324296.866 B (178403.372) 45[2430") 19(12960") CH 275 000 324290.589 B (178403.372) 45[2430") 11(1460") CH 300 000 324317.179 B (178417.820) 56[3930") 11(1750") CH 307.143 324339.692 B (178428.462) 67[5430") 22[30'00" CH 350.000 324317.029 B (178447.810) 45[24'29") 15[1460" CH 350.000 324397.029 B (17847.83) 30(9'23") 22[30'00" CH 400.000 324391.010 B (17847.83) 52[39'29") 22[30'00" CH 410.000 324391.010 B (178489.169) 75[0'29'2") 22[30'00" CH 425.000 324417.23 B (178489.169) 75[0'29'2") 22[30'00" CH 425.000 3244418.33 B (178489.169) 75[0'29'2	CH 200.000	324231.544	8178377.690	109 54/29	22120'50"
CH 225,000 324256.007 8178373.81 64[4530" CH 225,000 324256.684 8178387.325 64[5430" CH 255,000 324286.686 8178403.372 45[2430" CH 255,000 324286.686 8178403.372 45[2430" CH 275,000 32430.172 8178476.831 45[2430" CH 300,000 324317.179 8178417.820 56[3930" CH 300,000 324339.692 8178428.462 67[5430" CH 325,000 324339.692 8178438.266 67[5430" CH 355,000 324370.569 8178439.265 45[2429" CH 355,143 324370.569 8178478.343 30[0929" CH 435,143 324371.48 8178478.343 30[0929" CH 440,0000 324371.29 8178489.265 97[3930" CH 4411.643 324400.266 8178469.351 52[3929" CH 441 324400.266 8178480.89 97[3930" CH 4444 32447.2703 8178480.839 99[3929" CH 4475,000 324445.230 8178478.839 <	CH 206.143	324259.201	8178375 663	87124'30"	22 29 39
Ch 125000 324278.64 61/5130" CH 250.000 324278.64 8173386.16 64/5430" CH 252.143 324280.589 8178387.325 64/5430" CH 275.000 32428.666 8178406.651 45/2430" CH 275.000 32431.1717 8178417.820 56/3930" CH 300.000 32431.1717 8178417.820 56/3930" CH 307.143 324233.46 8178428.462 67/5430" CH 305.000 32438.592 8178428.462 67/5430" CH 355.000 324370.569 817847.810 45/2429" CH 355.000 324370.569 817847.810 45/2429" CH 355.000 324370.569 817847.843 30/0923" 22/2960" CH 411643 324407.666 8178468.351 52/3929" 22/3000" CH 440.000 32437.924 8178488.859 97/3930" 11/5960" CH 4450.000 324417.235 8178486.351 52/3929" 22/3000" CH 4453 324492.610 8178475.833 90/9323" 11/59760" <t< td=""><td>CH 225 000</td><td>324255.004</td><td>8178375 814</td><td>64 54'30"</td><td>22100 00</td></t<>	CH 225 000	324255.004	8178375 814	64 54'30"	22100 00
CH 252 143 324205.58 6164730" 1912960" CH 257 143 324205.866 8178037.325 6164730" 1912960" CH 279.643 324301.72 8178406.631 4512430" 11114'60" CH 300.000 324317.179 8178417.820 55613930" 11115'00" CH 307.143 324323.146 8178421.746 55613930" 11115'00" CH 355.000 324339.692 8178428.452 6715'430" 22130'00" CH 355.000 32437.029 8178439.285 45124'29" 15114'60" CH 355.100 32437.029 8178459.326 3009'23" 22129'60" CH 4164.3 324400.266 8176486.351 52139'23" 22130'00" CH 4141643 324402.668 8176486.351 52139'23" 22130'00" CH 425.000 324417.388 8178485.388 99139'29" 22130'00" CH 425.000 324427.03 8178486.859 97139'30" 1159'60" CH 475.000 324427.03 8178486.831 95197'37" 2100'00" CH 435.000 <td>CH 250 000</td> <td>324278 648</td> <td>8178386 416</td> <td>64/54'30"</td> <td></td>	CH 250 000	324278 648	8178386 416	64/54'30"	
CH 275.000 324296.866 8178403.372 445/2430" CH 279.643 324300.172 8178406.631 45/2430" 11/14'60" CH 300.000 324317.179 8178417.820 56/3930" 11/15'00" CH 300.000 324331.692 8178428.422 67/54'30" 22/3000" CH 355.000 324361.922 8178439.226 67/54'30" 22/3000" CH 355.000 324381.922 8178439.226 67/54'30" 22/3000" CH 355.000 324387.148 8178475.343 30/09'29" 22/29'60" CH 400.000 324391.010 8178478.326 52/39'29" 22/13'00" CH 412.643 324410.899 8178496.351 52/39'29" 22/13'00" CH 442.643 324410.899 8178496.351 52/39'29" 22/13'00" CH 442.643 324442.703 8178496.237 97/39'30" 1159'60" CH 442.643 324442.630 8178479.688 97/39'32" 1159'56" CH 442.643 324462.630 8178479.568 97/39'32" 1159'56" CH 4	CH 252,143	324280.589	8178387.325	64/54'30"	19 29'60''
CH 276.43 324300.172 8178406.631 45 2430" 11 1450" CH 300.000 324317.179 8178417.820 56[3930" 11 CH 307.143 32433.662 8178422.452 67[5430" 22[30'00" CH 325.000 324336.692 8178432.452 67[5430" 22[30'00" CH 345.643 324356.819 8178432.855 45[24'29" 15[14'60" CH 350.000 324391.010 8178458.926 30[09'29" 22[20'00" CH 400.000 324391.010 8178458.926 30[09'29" 22[30'00" CH 41643 324400.266 8178488.165 97[3930" 22[30'00" CH 425.000 324437.984 8178485.38 99[39'29" 22[30'00" CH 446.3 324427.03 8178486.237 97[3930" 1159'60" CH 445.000 324437.984 8178475.509 93[39'29" 22[00'03" CH 445.3143 324466.255 8178476.509 93[39'29" 2[00'03" CH 443.143 324481.633 8178477.671 92[39'30" 2[00'03"	CH 275.000	324296.866	8178403.372	45 24'30"	
CH 300.000 324317.179 8178417.820 5613930" CH 307.143 324323.146 8178421.746 5613930" 11 15'00" CH 325.000 324339.692 8178428.462 67[54'30" 22]3000" CH 345.643 324351.922 8178438.226 67[54'30" 22]3000" CH 350.000 324351.922 8178438.265 45[24'29" 15[14'60" CH 355.000 324377.029 8178458.326 30[09'29" 22]29'60" CH 400.000 324391.010 8178475.343 30[09'29" 22]30'00" CH 411.643 324400.266 8178486.351 52]39'29" 22]30'00" CH 442.643 324437.944 8178475.338 99]39'29" 21/30'0" CH 442.643 324465.235 8178480.701 99]39'29" 11/59'66" CH 430.000 324445.235 817848.144 99]39'29" 11/59'56" CH 433.143 324465.235 817847.509 93]3'29" 2100'0" CH 433.143 324465.245 817847.519 93]3'29" 2100'0'' CH 433.14	CH 279.643	324300.172	8178406.631	45 24'30"	11 14'60"
CH 307.143 324323.146 8178421.746 5613930" 11115'00" CH 325.000 324339.692 8178428.462 67154'30" 2213000" CH 345.643 324358.819 8178438.226 67154'30" 2213000" CH 350.000 324370.569 8178478.810 45124'29" 15114'60" CH 375.000 324371.029 8178478.343 30109'29" 22129'60" CH 400.000 324391.148 8178476.343 30109'29" 22129'60" CH 411.643 324437.148 8178478.328 52139'29" 22130'00" CH 422.643 324413.235 8178488.855 97139'30" 1159'60" CH 442.643 324437.944 8178478.833 99139'29" 1159'60" CH 435.000 324437.944 8178478.833 99139'29" 1159'56" CH 435.000 324462.630 8178478.833 95139'29" 2100'0" CH 435.000 324462.630 8178478.833 95139'29" 210'00' CH 435.143 324402.610 8178477.671 93139'29" 210'00'	CH 300.000	324317.179	8178417.820	56 39'30"	
CH 325.000 324339.692 8178428.462 67154'30" 22130'00" CH 345.643 324358.819 8178436.226 67154'30" 22130'00" CH 350.000 324361.922 8178438.285 45124'29" 15114'60" CH 352.143 324377.029 8178458.926 30109'29" 22129'60" CH 362.143 324387.148 8178476.343 30109'29" 22129'60" CH 400.000 324391.010 8178478.543 30109'29" 22129'60" CH 410.433 324400.266 8178485.169 75199'29" 22130'00" CH 422.603 324410.899 8178485.318 99139'29" 2130'00" CH 444.643 324462.630 8178481.144 9913'29" 2100'03" CH 447.600 324462.630 8178475.509 9313'92'9" 2100'03" CH 447.643 324461.088 8178475.509 9313'92'9" 2100'03" CH 447.643 324462.630 8178475.509 9313'92'9" 210'003" CH 447.643 324462.630 8178475.509 9313'92'9" 210'003"	CH 307.143	324323.146	8178421.746	56 39'30''	11 15'00''
CH 345.643 324368.819 8178439.285 45[2429" CH 350.000 324361.922 8178439.285 45[2429" CH 362.143 324370.569 8178447.810 45[2429" CH 375.000 324377.029 8178458.926 30(0929" CH 400.000 324391.010 8178478.433 30(0929" 22[2960" CH 410.000 324391.010 8178479.289 52[3929" 22[30700" CH 412.643 324410.289 8178488.159 75[0929" 22[30700" CH 425.000 324413.235 8178488.655 97[3930" 1159"60" CH 445.000 324413.235 817848.538 99[3929" 1159"60" CH 475.000 324452.330 8178478.968 97[3932" 100003" CH 475.000 324481.633 8178478.968 97[3932" 210000" CH 483.143 324470.686 8178479.968 97[3932" 210000" CH 490.143 324481.633 817847.811 93[3929" 210000" CH 500.000 324457.475 817847.578 90[0930"	CH 325.000	324339.692	8178428.462	67 54'30"	
CH 350.000 324361.922 8178439.285 45[2429" CH 362.143 324370.569 8178447.810 45[2429" 15[14*60" CH 375.000 324377.029 8178458.926 30[0929" 22[29*60" CH 395.143 324391.010 8178465.351 52[3929" 22[30*00" CH 411.643 324400.266 8178466.351 52[3929" 22[30*00" CH 422.643 324410.299 8178489.169 75[09*29" 22[30*00" CH 446.43 324427.03 8178465.235 97[39*30" 1[59*60" CH 450.000 324447.084 8178485.338 99[39*29" 1 CH 475.000 324465.235 817847.599 93[39*29" 2[00*03" CH 475.000 324467.686 817847.599 93[39*29" 2[00*00" CH 433.143 324497.086 817847.599 93[39*29" 2[00*00" CH 435.143 324492.610 817847.599 93[39*29" 2[30*01" CH 505.043 324492.55 817847.571 92[39*29" 2[30*01" CH 505.000	CH 345.643	324358.819	8178436.226	67 54'30"	22 30'00''
CH 362.143 324370.569 8178447.810 45[2429" 15[14'60" CH 375.000 324377.029 8178458.926 30(09'29" 22[29'60" CH 395.143 324387.148 8178475.289 52[39'29" 22[30'00" CH 400.000 324391.010 8178486.351 52[39'29" 22[30'00" CH 415.43 324400.266 8178486.351 52[39'29" 22[30'00" CH 425.000 324413.235 8178488.53 97[39'30" [159'60" CH 445.000 3244437.984 8178485.338 99[39'29" [159'58" CH 445.000 324465.235 8178486.338 99[39'29" [159'58" CH 445.33 324465.235 8178475.509 93[39'29" [200'00" CH 430.143 324450.598 8178477.671 92[39'29" [200'00" CH 430.000 324457.478 8178477.671 93[39'29" [200'00" CH 450.000 324452.455 8178477.671 90[0'30" [213'01" CH 505.000 324587.455 8178477.579 90[0'93'0" [213'01"	CH 350.000	324361.922	8178439.285	45 24'29"	
CH 375.000 324377.029 8178458.926 30(09'29" 22[29'60" CH 395.143 324387.148 8178476.343 30(09'29" 22[29'60" CH 400.000 324391.010 8178485.351 52[39'29" 22[30'00" CH 411.643 324410.296 8178485.351 52[39'29" 22[30'00" CH 425.000 324413.235 8178485.358 97[39'30" 1159'60" CH 445.000 324437.984 8178485.338 99[39'29" 1159'50" CH 475.000 324462.630 8178481.144 99[39'29" 1159'58" CH 475.000 324462.630 817847.986 97[39'32" 210'0'3" CH 475.143 324461.633 817847.9968 97[39'32" 210'0'3" CH 435.143 324490.568 817847.509 93[39'29" 210'0'0" CH 500.000 324487.478 817847.671 92[39'30" 213'0'1" CH 550.000 324597.455 817847.578 90[0'9'30" 213'0'1" CH 600.000 324597.455 817847.578 90[0'9'30" 212'9'5'"	CH 362.143	324370.569	8178447.810	45 24'29"	15 14'60''
CH 395.143 324387.148 8178476.343 30[0929" 22[2960" CH 400.000 324391.010 8178479.289 52[3929" 22[3000" CH 411.643 324400.266 8178488.159 75[0929" 22[3000" CH 422.643 324413.235 8178488.855 97[3930" 22[3000" CH 425.000 324437.984 8178485.338 99[3929" 1 CH 445.000 324437.984 8178485.338 99[3929" 1 CH 475.000 324465.230 8178479.968 97[3932" 2[0003" CH 475.000 324465.235 8178479.968 97[3932" 2[0000" CH 431.143 324465.235 8178479.968 97[3932" 2[0000" CH 431.143 324465.235 8178475.599 93[3929" 2[0000" CH 505.143 324492.610 8178475.599 93[3929" 2[3001" CH 555.000 324512.455 8178477.671 92[3930" 2[3001" CH 550.000 324562.455 8178477.599 90[0930" 2[2957" CH 600.000	CH 375.000	324377.029	8178458.926	30 09'29''	
CH 400.000 324391.010 8178479.289 52[3929" CH 411.643 324400.266 8178486.351 52[3929" 22[3000" CH 422.643 324413.235 8178488.855 97[3930" 1 CH 425.000 324432.703 8178486.237 97[3930" 1[5960" CH 445.000 324437.984 8178485.338 99[3929" 1 CH 475.000 324462.630 8178476.144 99[3929" 1 CH 477.643 324465.235 8178470.11 99[3929" 2]00'03" CH 483.143 324470.686 8178479.968 97[3932" 2]00'00" CH 496.143 324487.478 8178477.699 93[3929" 2]00'00" CH 500.000 324487.478 8178477.671 92[3920" 2]30'01" CH 505.143 324492.615 8178477.674 90[0930" 2]30'01" CH 550.000 324512.455 8178477.578 90[0930" 2]29'57" CH 600.000 324527.455 8178477.413 90[0930" 2]2'9'57" CH 650.000 324612.450	CH 395.143	324387.148	8178476.343	30 09'29''	22 29'60''
CH 411 643 324400.266 8178486.351 52]3929" 22]3000" CH 422 643 324413.235 8178488.855 97]3930" 22]3000" CH 425.000 324432.703 8178488.855 97]3930" 1[5960" CH 445.000 324437.984 8178485.338 99]3929" 1 CH 475.000 324462.630 8178475.388 99]3929" 1 CH 477.643 324465.235 8178470.01 99]3929" 2]00'03" CH 483.143 324470.686 8178479.968 97[3932" 2]00'00" CH 494.143 324487.478 8178478.883 95[3929" 2]00'00" CH 500.000 324487.478 8178477.671 92[3930" 2]30'01" CH 505.143 324492.615 8178477.671 92[3929" 0]59'58" CH 516.143 324503.598 8178477.671 92[3929" 2]30'01" CH 550.000 324512.455 8178477.578 90[0930" 2]29'57" CH 600.000 32452.455 8178477.413 90[0930" 2]29'57" CH 650.000 </td <td>CH 400.000</td> <td>324391.010</td> <td>8178479.289</td> <td>52 39'29"</td> <td></td>	CH 400.000	324391.010	8178479.289	52 39'29"	
CH 422 643 324410.899 8178489.169 75/09?9" 22/3000" CH 425.000 324413.235 8178488.855 97/3930" 115960" CH 445.000 324437.984 8178485.338 99/3929" 115956" CH 450.000 324437.984 8178480.701 99/3929" 115958" CH 475.000 324465.235 8178480.701 99/3929" 115958" CH 433.143 324470.686 8178479.968 97/3932" 210000" CH 494.143 324481.633 8178475.899 93/3929" 210000" CH 500.000 324487.478 8178476.781 93/3929" 015958" CH 516.143 324503.598 8178477.671 92/3930" 2/3001" CH 550.000 324512.455 8178477.578 90/0930" 2/2957" CH 600.000 324587.455 8178477.413 90/0930" 2/2957" CH 600.000 324587.455 8178477.413 90/0930" 2/2957" CH 615.143 324602.592 817847.588 93/36'12" 015646" CH 655.	CH 411.643	324400.266	8178486.351	52 39'29"	22 30'00''
CH 425.000 324413.235 8178488.855 97139'30" CH 444.643 324432.703 8178486.237 97139'30" 1159'60" CH 450.000 324437.984 8178485.338 99139'29" 1 CH 475.000 324462.630 8178481.144 99139'29" 1159'58" CH 477.643 324452.635 8178480.701 99139'29" 2100'03" CH 483.143 324470.686 8178478.883 9513'92'2" 2100'03" CH 494.143 324481.633 8178478.883 9513'92'2" 210'00" CH 500.000 324487.478 8178478.181 9313'92'2" 0159'58" CH 516.143 324503.598 8178477.617 92139'30" 213'0'1" CH 550.000 324512.455 8178477.578 90109'30" 212'0'5'" CH 600.000 324587.455 8178477.440 90109'30" 212'9'5" CH 600.001 324602.592 8178477.138 92139'27" 0156'46" CH 600.001 324682.456 817847.878 93136'12" 1154'58" CH 615.143 <td>CH 422.643</td> <td>324410.899</td> <td>8178489.169</td> <td>75 09'29"</td> <td>22 30'00"</td>	CH 422.643	324410.899	8178489.169	75 09'29"	22 30'00"
CH 444, 643 324432, 703 8178486, 237 97, 193 30" 119960" CH 450,000 324437, 984 8178485, 338 99139'29" 1159'58" CH 475,000 324462, 630 8178481, 144 99139'29" 1159'58" CH 477, 643 32445, 235 8178480, 701 99139'29" 2100'03" CH 483, 143 32447, 478 8178478, 883 95139'29" 2100'00" CH 500,000 324487, 478 8178478, 683 95139'29" 2100'00" CH 505,143 324492, 610 8178478, 181 93139'29" 0159'58" CH 516,143 324503,598 8178477,671 92139'30" 2130'01" CH 550,000 324512,455 8178477,647 90109'30" 2130'01" CH 550,000 324597,098 8178477,440 90109'30" 2129'57" CH 600,000 324597,098 8178477,413 90109'30" 2129'57" CH 615,143 324602,592 8178477,413 90109'30" 2129'57" CH 655,000 324612,430 8178476,538 93136'12" 1154'58" <td>CH 425.000</td> <td>324413.235</td> <td>8178488.855</td> <td>97 39'30"</td> <td>41501001</td>	CH 425.000	324413.235	8178488.855	97 39'30"	41501001
CH 450.000 324437.984 8178485.338 991929 CH 475.000 324462.630 8178481.144 99139'29" 1159'58" CH 477.643 324465.235 8178480.701 99139'29" 2100'03" CH 483.143 32447.686 8178479.968 97139'32" 2100'03" CH 494.143 324487.478 8178478.883 95139'29" 2100'00" CH 500.000 324487.478 8178478.509 93139'29" 0159'58" CH 505.143 324492.610 8178477.671 92139'30" 2130'01" CH 550.000 324512.455 8178477.647 90109'30" 2130'01" CH 550.000 32452.455 8178477.440 90109'30" 2129'57" CH 600.000 32452.455 8178477.413 90109'30" 2129'57" CH 615.143 324602.592 8178477.413 90109'30" 2129'57" CH 655.000 324612.430 8178476.538 93136'12" 1154'58" CH 650.000 32462.226 8178476.538 93136'12" 1154'58" CH 650.000	CH 444.643	324432.703	8178486.237	97 39'30"	1 59'60"
CH 473.000 324462.030 8176481.144 3313223 CH 477.643 324465.235 8178480.701 99 3922" 1 59'58" CH 483.143 324470.686 8178479.968 97 39'32" 2 00'03" CH 494.143 324481.633 8178478.883 95 39'29" 2 00'00" CH 500.000 324487.478 8178478.181 93 3'29" 0 59'58" CH 516.143 324503.598 8178477.671 92 39'30" 2 30'01" CH 550.000 324512.455 8178477.647 90 0'9'30" 2 30'01" CH 550.000 32452.455 8178477.578 90 0'9'30" 2 29'57" CH 600.000 324587.455 8178477.413 90 0'9'30" 2 29'57" CH 605.000 324612.430 8178475.538 93 36'12" 0 56'46" CH 625.000 324623.003 8178476.538 93 36'12" 1 54'58" CH 635.595 324623.003 8178476.872 93 36'12" 1 54'58" CH 635.000 324637.342 817846.263 95 31'11" 1 1 <td< td=""><td>CH 450.000</td><td>324437.984</td><td>8178485.338</td><td>99 39/29</td><td></td></td<>	CH 450.000	324437.984	8178485.338	99 39/29	
CH 477.6.73 32440.233 617.0460.701 3316225 110003 CH 483.143 324470.686 8178479.968 97[3932" 2[00003" CH 494.143 324481.633 8178478.883 95[3929" 2[00003" CH 500.000 324487.478 8178478.509 93[3929" 0[5958" CH 505.143 324492.610 8178477.671 92[3930" 2[3001" CH 525.000 324512.455 8178477.671 90[0930" 2 CH 550.000 32452.455 8178477.578 90[0930" 2 CH 600.000 324587.455 8178477.404 90[0930" 2 CH 609.643 324597.098 8178477.158 92[3927" 0[5646" CH 605.000 324612.430 8178475.872 93[3612" 1 CH 615.143 324602.592 8178472.082 95[3111" 2 CH 655.000 324687.110 8178466.538 93[3612" 1 1 CH 650.000 324687.110 8178464.868 95[3111" 2 CH 650.000 324	CH 473.000	324402.030	8178480 701	99 39'29	1159'58''
CH 403. H2 324470.303 6174473.303 6176473.303 6176473.303 CH 494.143 324481.633 8178478.883 95]39'29" 2[00'00" CH 500.000 324487.478 8178478.699 93]39'29" 0[59'58" CH 505.143 324492.610 8178477.671 92]39'30" 2[30'01" CH 525.000 324512.455 8178477.647 90[09'30" 2 CH 550.000 324537.455 8178477.578 90[09'30" 2 CH 600.000 324587.455 8178477.410 90[09'30" 2 CH 609.643 324597.098 8178477.413 90[09'30" 2 CH 609.643 324602.592 8178477.158 92[39'27" 0]56'46" CH 625.000 324612.430 8178476.538 93]36'12" 1[54'58" CH 635.595 324623.003 8178474.487 95[31'11" 1 CH 650.000 324637.342 8178474.487 95[31'11" 1 CH 675.000 324662.226 8178476.538 95[31'11" 1 CH 750.000 <t< td=""><td>CH 483 143</td><td>324403.233</td><td>8178479 968</td><td>97 39'32"</td><td>2100'03"</td></t<>	CH 483 143	324403.233	8178479 968	97 39'32"	2100'03"
CH 101 H10 CH 101 H10 CH 101 H10 CH 101 H10 CH 500.000 324487.478 8178478.509 93]39'29" 0 59'58" CH 505.143 324492.610 8178478.181 93]39'29" 0 59'58" CH 516.143 324503.598 8178477.671 92]39'30" 2 30'01" CH 525.000 324512.455 8178477.647 90[09'30" 2 CH 550.000 324562.455 8178477.578 90[09'30" 2 CH 600.000 324587.455 8178477.413 90[09'30" 2 CH 609.643 324597.098 8178477.158 92]39'27" 0]56'46" CH 625.000 324612.430 8178476.538 93]36'12" 1 54'58" CH 635.595 324623.003 8178474.487 95[31'11" 2 CH 650.000 324637.342 8178472.082 95[31'11" 2 CH 675.000 324687.110 8178467.273 95[31'11" 2 CH 750.000 324781.646 8178460.59 95[31'11" 2 CH 750.000 324836.414 81	CH 494 143	324481 633	8178478 883	95 39'29"	2 00'00''
CH 505.143 324492.610 8178478.181 93[39'29" 0[59'58" CH 505.143 324503.598 8178477.671 92[39'30" 2[30'01" CH 516.143 324503.598 8178477.647 90[09'30" 2[30'01" CH 550.000 324512.455 8178477.647 90[09'30" 2[30'01" CH 550.000 324537.455 8178477.509 90[09'30" 2[29'57" CH 600.000 324587.455 8178477.413 90[09'30" 2[29'57" CH 609.643 324597.098 8178477.413 90[09'30" 2[29'57" CH 615.143 324602.592 8178477.538 92[39'27" 0[56'46" CH 625.000 324612.430 8178476.538 93[36'12" 1[54'58" CH 650.000 324637.342 8178476.872 93[3'111" 2 CH 650.000 324627.102 8178472.082 95[31'11" 2 CH 725.000 324711.994 8178467.273 95[31'11" 2 CH 750.000 324761.762 8178462.463 95[31'11" 2 CH 750.000	CH 500.000	324487.478	8178478.509	93 39'29"	
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CH 525.000 324512.455 8178477.647 90[09'30" CH 550.000 324537.455 8178477.578 90[09'30" CH 575.000 324562.455 8178477.509 90[09'30" CH 600.000 324587.455 8178477.440 90[09'30" CH 609.643 324597.098 8178477.133 90[09'30" 2 29'57" CH 615.143 324602.592 8178477.158 92[39'27" 0 56'46" CH 625.000 324612.430 8178476.538 93 36'12" 1 54'58" CH 635.595 324623.003 8178472.082 95 31'11" 1 54'58" CH 675.000 324687.110 8178469.678 95 31'11" 1 54'58" CH 700.000 324761.762 8178462.273 95 31'11" 1 54'58" CH 750.000 324761.762 8178462.463 95 31'11" 1 54'58" CH 750.000 324761.762 8178462.463 95 31'11" 1 54'58" CH 750.000 324786.646 8178462.463 95 31'11" 1 54'58" CH 750.000 32486.1270 8178457.654 9	CH 516.143	324503.598	8178477.671	92 39'30''	2 30'01"
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SCALE H 1:1000, V 1:100

						0 10 20 30 40 50m
С	REVISED FOR CLIENT COMMENT	EDJ	GG*	TMB*	26.08.20	SCALE 1:1000 AT ORIGINAL SIZE
В	ISSUED FOR TENDER	EDJ	GG*	TMB*	14.01.20) VERTICAL 1:100 0 1 2 3 4 5m
А	PRELIMINARY ISSUE	EDJ	GG*	TMB*	09.12.19	HORIZONTAL 1:1000
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date	AT ORIGINAL SIZE 0 10 20 30 40 50m

Plot Date: 26 August 2020 - 8:48 AM Plotted by: Evan Johnson

Cad File No: G:\42\21142\CADD\Drawings\42-21142-W021.dwg

	INUATON DRGNO.4	10, 14, 143 C 15	24.35:000 38-35:000	85 ¹⁰ 743	CH 350.	5° BEND																NC CON LEVE COM PLAN AUTH THE UNDE FOR)TE: IRACTOF LS, CLEA MENCEM IS ARE IN IORITIES CONTRAI ERGROUI ANY DAM	R TO VE ARANCE IENT OF IDICATI' RECOF CTORS ND SER IAGE T(RIFY S AN VE O RESI VICE D UN
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	SCALE 1:1000	EXELECTRICAL OL=19.82 000'5		000.000 000.00 DNBE DNB	DESIGN SU EX. SURFA	IRFACE CE	-22.50° HORIZ. BEND AIR VALVE	-0.66° VERT. DEFLEC.	-22.50° HORIZ. BEND	1.09° VERT. DEFLEC.	 0.10° VERT. DEFLEC. -22.50° HORIZ. BEND 	-0 60° VERT DEFLEC	-22.50° HORIZ. BEND		U.A VERI. DEFLEC.	→ 0.01° VERT. DEFLEC19.50° HORIZ. BEND					11.25° HORIZ. BEND	0.73° VERT. DEFLEC.		DESIGN CULVERT=16.79 DESIGN CULVERT=16.79	-0.27° VEKT. UEFLEC. -22.50° HORIZ. BEND
					ALL MASS	CONCRET	E THRU	ST BLOC	KS IN AC	CCOR	DANC	CE WITH	DRAW	VING	No. 42-2	1142-	 S020					-			
.40%		<		0.20%		>	DN300	0 DICL PI	N35 RRJ -2.51%	-0.60%	%I	0.42%	-1.63	%	-0.25%	~	-0.24%	><	-0.24%		1.48%		-0.21%		
			2.459	2.375	2.443	2.357	2.393	2.356	2.362	2.377	2.418	2.370	2.369	2.398	2.372	2.425	2.363	2.328	2.226	2.219	2.349	2.500		2.387	2.394
16.630	16.730	16.738	16.785	16.835	16.886	16.914	16.767	16.616	16.318	16.306	16.257	16.188	16.182	15.995	15.961	15.956	15.902	15.890	15.842	15.825	15.731	15.707		15.663	15.634
19.075	19.170	19.178	19.264	19.260		19.275		18.976	18.691	18.691	18.757	18.608	18.601		18.427	18.427	18.409	18.418	18.477	18.216	18.083			18.117	18.057
			19.244	19.210	19.328	19.272	19.160	18.972	18.680	18.684	18.675	18.558	18.551	18.393	18.334	18.381	18.265	18.219	18.068	18.044	18.080	18.207		18.050	18.028
^{80.} 02 SECT	000 ^{.57}	77.000	100.000	125.000	150.000	164.143	175.000	186.143	198.000	200.000	208.143	224.643	225.000	236.500	250.000	252.143	275.000	279.643	300.000	307.143	313.500	325.000		345.643	350.000

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DO NOT SCALE	Drawn L. MESAJON	Designer R. KEILY	Client	DOUGLAS	SHIRE COUNCI	-	
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Y ALL INVERT LEVELS, PIPE SIZES, DIAMETERS, SURFACE AND COVERS ARE CORRECT AND TO BE OBTAINABLE BEFORE Y WORKS. ALL UNDERGROUND SERVICES SHOWN ON THESE ONLY AND HAVE BEEN PLOTTED FROM THE RELEVANT S. SERVICES NOT SHOWN ON THESE PLANS MAY EXIST. IT IS SPONSIBILITY TO LOCATE ON SITE THE LOCATION OF ALL ES PRIOR TO CONSTRUCTION, THE CONTRACTOR IS LIABLE NDERGROUND SERVICES.

THIS DRAWING INCLUDES COLOURED INFORMATION. IF YOU HAVE A BLACK AND WHITE COPY YOU DO NOT HAVE ALL THE INFORMATION. THIS NOTE IS COLOURED RED.

EAD IN CONJUNCTION WITH SPECIFICATION. NG No. 42-21142-G002 FOR NOTES AND LEGEND. NG No. 42-21142-S001 TO S002 FOR STRUCTURAL NOTES.

ISSUE FOR TENE)ER
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Plot Date: 26 August 2020 - 8:49 AM

Plotted by: Evan Johnson

CH 525.000 CH 525.000 CH 550.000	CH 572.000 AIR VALVE CH 575.000	CH 600.000 CH 609.643 CH 615.143	CH 625.000 CH 635.595 CH 650.000 CH 675.000	CH 700.000 CH 725.000 CH 725.000 CH 725.000 CH 720.000 CH 720.000	CH 775.000 CH 800.000 CH 825.000	CH 850.000 CH 875.000 CH 875.000 CH 875.000 CH 875.000 CH 890.000 CH 875.000 CH 875.000	
	EFLEC.	LOT 5 RP716977	LOT RP7137 PLAN SCALE 1:1000	5 36 LOT 4 RP713736	LOT 3 RP713736	TRACTOR TO MINIMISE AVATION BEHIND EXISTING TER MAIN BEND. USE SICH SHORING IF REQUIRED.	
ASSUME 90 VERTICAL DESIGN SU EX. SURFAC	U U U U U U U U U U U U U U	-0.17° VERT. DEFLEC. -0.28° VERT. DEFLEC.	I 0.02° VERT. DEFLEC. • 0.23° VERT. DEFLEC. 0.23° VERT. DEFLEC.	-0.11° VERT. DEFLEC.	0.21° VERT. DEFLEC.	3.69° HORIZ. BEND -2.07° VERT. DEFLEC. -2.07° VERT. DEFLEC. SCOUR VALVE EX SEWER OL=15.99 14.25° HORIZ. BEND 2.45° VERT. DEFLEC. EX MATER POTABLE OL=15.83 EX WATER POTABLE OL=15.83	
1.03%	-0.35	ALL MASS CONCRETE	E THRUST BLOCKS IN ACCORDANCE WITH DRAV DN300 DICL PN35 RRJ	VING No. 42-21142-S020 -0.62% -0.82%	-0.45%		
1.600	1.348	1.346 1.284 1.271 1.271	1.259 1.277 1.277 1.347 1.305 1.305	1.252 1.252 1.252 1.281 1.287	1.293 1.274 1.264 1.327 1.320	1.258 1.324 1.324 2.132 2.132 1.324 1.325 1.326 1.327 1.328 1.328 1.328 1.328 1.328 1.328 1.328 1.328 1.328 1.328 1.328 1.328 1.328 <t< td=""><td></td></t<>	
17.729	17.955	17.857 17.823 17.788 17.788 17.677	17.557 17.400 17.400 17.307 17.191 17.191	16.827	16.487 16.377 16.325 16.325 16.212 16.099	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
19.328	19.303	19.203 19.107 19.059 18.946	18.816 18.677 18.654 18.496 18.496 18.467	18.131 18.108 18.108 17.979	17.780 17.652 17.539 17.539 17.419	17.255 17.215 17.030 17.030 17.030 16.893 16.853 16.853	
550.000	572.000	600.000 609.643 615.143 525.000	635.595 650.000 658.452 675.000 578.452 578.452	733.452 750.000 750.000	775.000 880.000 825.000 350.000	872.380 875.000 900.000 914.655 931.029 931.029	
~	<u> </u>						
DOU SHIRE C	GLAS	Level 8, 15 Lake Street, 0 PO Box 819, Cairns QLD T 61 7 4044 2222 F 61 7	Cairns QLD 4870 Australia D 4870 7 4044 2288	DO NOT SCALEDrawConditions of Use.DraftThis document may only be used byAppGHD's client (and any other person whoAppGHD has agreed can use this document)Datefor the purpose for which it was preparedDateand must not be used by care otherDate	wn L. MESAJON Designer R. KEILY fting Design cck Design check proved pject Director) e This Drawing must not be	Client DOUGLAS SHIRE COUNCIL Project MOSSMAN ALTERNATIVE RAW WATER INTAK Title HIGH LIFT RAW WATER MAIN PLAN AND LONGITUDINAL SECTION SHEET 2 Original Size	E

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А	PRELIMI	NARY ISSUE		EDJ	GG*	TMB*	09.12.19
No	Revision	Note: * indicates signat	ures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
Plot	Date: 26 Aug	gust 2020 - 8:49 AM	Plotted by: Evan Johnson	Ca	d File No:	G:\42\2114	2\CADD\Dra

SCALE 1:20 AT ORIGINAL SIZE

Plotted by: Evan Johnson

Job Project anager Director Date Cad File No: G:\42\21142\CADD\Drawings\42-21142-W023.dwg

FITTING SCHEDULE									
ITEM NO.	DESCRIPTION	QTY							
1	DN300 DI CONNECTOR FL-SO	1							
2	DN300 DICL PIPE 1.2m LONG C/W THRUST FLANGE FL-FL	1							
3	DN300 DI SLUICE VALVE FL-FL	1							
4	DN450 - 300 DI TEE FL-FL-FL	1							
5	DN450 DI SLUICE VALVE FL-FL	1							
6	DN450 DICL PIPE 1.2m LONG C/W THRUST FLANGE FL-FL	1							
7	DN450 DI CONNECTOR FL-SP	1							
8	DN450 GIBAULT	2							
9	DN450-150 DI TEE FL-FL-FL	1							
10	DN150 DI SLUICE VALVE FL-FL	1							
11	DN150 DICL PIPE FL-FL 1m LONG	1							
12	DN150 DI 90° BEND FL-FL	1							
13	DN150 DICL PIPE FL-FL 600mm LONG	1							
14	DN150 STAINLESS STEEL GRADE 316 BLANK FLANGE TAPPED FOR CONNECTION OF NEW DN100 MALE CAMLOCK COUPLING C/W DUST CAP.	1							
15	DN450 DICL PIPE FL-SP LENGTH TO SUIT	1							
16	DN300 DI NON RETURN VALVE FL-FL	1							

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GENERAL

- READ THESE NOTES IN CONJUNCTION WITH OTHER ENGINEERING DRAWINGS. PROJECT NOTES AND G1. SPECIFICATIONS, AND WITH SUCH OTHER WRITTEN INSTRUCTIONS ISSUED. IN CASE OF DISCREPANCY. PRECEDENCE IS GIVEN TO DRAWINGS, THEN NOTES, THEN SPECIFICATION.
- CARRY OUT WORK IN A SAFE MANNER IN ACCORDANCE WITH APPLICABLE LEGISLATION. STATUTORY G2. REGULATIONS, BY-LAWS OR RULES. CONTRACTOR IS RESPONSIBLE FOR OCCUPATIONAL HEALTH AND SAFETY OF SITE PERSONNEL AND GENERAL PUBLIC IN ACCORDANCE WITH WORK HEALTH AND SAFETY ACT 2010, LEGISLATIVE REQUIREMENTS, ASSOCIATED REGULATIONS AND CODES OF PRACTICE, INDUSTRIAL AGREEMENTS AND ACCEPTED INDUSTRY PRACTICE.
- REFER DISCREPANCIES TO SUPERINTENDENT BEFORE PROCEEDING WITH WORK. G3.
- SUBMIT DETAILS OF CHANGES TO SCOPE, WORK METHODS OR MATERIALS etc FOR APPROVAL BEFORE G4. PROCEEDING. APPROVAL DOES NOT AUTHORISE A VARIATION TO THE CONTRACT.
- CHECK STRUCTURAL DRAWINGS AGAINST OTHER ENGINEERING DRAWINGS FOR REQUIREMENTS FOR G5. PENETRATIONS, CONDUITS, DUCTS, PIPES, etc.
- NOMINATION OF PROPRIETARY ITEMS DOES NOT INDICATE EXCLUSIVE PREFERENCE, BUT INDICATES REQUIRED G6. PROPERTIES OF ITEM. SIMILAR ALTERNATIVES HAVING REQUIRED PROPERTIES MAY BE OFFERED FOR APPROVAL. APPROVAL DOES NOT AUTHORISE A VARIATION TO THE CONTRACT. INSTALL PROPRIETARY ITEMS IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND RECOMMENDATIONS.
- G7. OBTAIN NECESSARY PERMITS AND APPROVALS FROM RELEVANT AUTHORITIES BEFORE COMMENCING WORK ON SITE. NOTIFY RELEVANT SERVICE AUTHORITIES BEFORE COMMENCING WORK ON SITE.
- GIVE TWO WORKING DAYS' (48 HOURS) NOTICE SO THAT INSPECTION MAY BE MADE OF CRITICAL STAGES OF G8. WORK.
- G9. INSPECTIONS UNDERTAKEN BY SUPERINTENDENT OR OTHERS DO NOT RELIEVE CONTRACTOR OF RESPONSIBILITY FOR COMPLIANCE WITH DRAWINGS AND SPECIFICATIONS. HAVE SURVEY AND SETTING OUT UNDERTAKEN BY A REGISTERED SURVEYOR. G10.
- G11. VERIFY ON SITE SETTING OUT DIMENSIONS AND EXISTING MEMBER SIZES SHOWN ON DRAWINGS BEFORE SHOP DRAWINGS, CONSTRUCTION AND FABRICATION IS COMMENCED.
- USE STANDARD BOLT PATTERNS etc. THROUGHOUT THE WORKS TO AVOID CONFUSION OR AMBIGUITY. G12.
- DISPOSE OF SURPLUS MATERIAL OFF SITE IN ACCORDANCE WITH LOCAL AUTHORITY WASTE REGULATIONS.. G13. IMPLEMENT SOIL AND WATER MANAGEMENT PROCEDURES TO AVOID EROSION, CONTAMINATION AND G14. SEDIMENTATION OF SITE, SURROUNDING AREAS AND DRAINAGE SYSTEMS.
- WORKMANSHIP AND MATERIALS TO COMPLY WITH REQUIREMENTS OF AUSTRALIAN STANDARDS. BUILDING G15. CODE OF AUSTRALIA (BCA) AND BY-LAWS AND ORDINANCES OF RELEVANT BUILDING AUTHORITIES. ALL STANDARDS REFERRED TO ARE THOSE CURRENT (AS AMENDED) AT COMMENCEMENT OF CONTRACT.
- OBTAIN REQUIREMENTS FOR ADJOINING ELEMENTS TO BE FIXED TO OR SUPPORTED ON WORK AND PROVIDE G16. FOR REQUIRED FIXINGS. PROVIDE FOR TEMPORARY SUPPORT OF ADJOINING ELEMENTS DURING CONSTRUCTION. DRAWINGS DO NOT SHOW DETAILS OF ALL FIXTURES, INSERTS, SLEEVES, RECESSES OR OPENINGS etc REQUIRED.
- G17. MAKE GOOD ANY DAMAGE TO EXISTING ELEMENTS AT COMPLETION OF WORKS.
- G18. WHERE NEW WORK ABUTS EXISTING, PROVIDE SMOOTH TRANSITION FREE OF ABRUPT CHANGES. G19. HAVE TESTING PERFORMED BY AN INDEPENDENT NATA (NATIONAL ASSOCIATION OF TESTING AUTHORITIES) ACCREDITED AUTHORITY, AND PROVIDE TEST REPORTS TO SUPERINTENDENT.
- SUPPLY RELEVANT NOTES, DRAWINGS AND SPECIFICATIONS etc TO SUB-CONTRACTORS. G20.
- G21. BUILD, FABRICATE AND PROCURE ONLY FROM DRAWINGS 'ISSUED FOR CONSTRUCTION'.
- G22. SEPARATE METALS FROM INCOMPATIBLE MATERIALS (eg GALVANISED AND UNGALVANISED STEEL, TREATED S7 TIMBER AND STEEL etc) BY CONCEALED LAYERS OF SUITABLE INERT MATERIALS OF SUITABLE THICKNESSES. USE PLASTIC SLEEVES AND WAHSERS FOR BOLTS, etc.
- G23. KEEP ON SITE A COMPLETE SET OF CONTRACT DOCUMENTS (INCLUDING DRAWINGS AND SPECIFICATIONS) AND SITE INSTRUCTIONS.

TEMPORARY WORKS

G25.

- THESE DRAWINGS DO NOT DETAIL TEMPORARY WORKS. CONSTRUCTION METHODS AND TEMPORARY WORKS G24. ARE RESPONSIBILITY OF THE CONTRACTOR.
- DESIGN ASSUMPTIONS STRUCTURAL WORK HAS BEEN DESIGNED FOR FOLLOWING LOADS: - BUILDING DESIGN WORKING LIFE 50 years - BUILDING IMPORTANCE LEVEL - WIND LOADS TO AS/NZS1170.2: ~ REGION S10. ~ AVERAGE RECURRENCE INTERVAL, R 500 years ~ ULTIMATE REGIONAL WIND SPEED V_R (3 sec GUST) 69.4 m/s ~ SERVICEABILITY REGIONAL WIND SPEED V₂₅ (3 sec) 47 m/s ~ DIRECTIONAL MULTIPLIER 1.0 ~ TERRAIN CATEGORY ~ TERRAIN/HEIGHT MULTIPLIER (Mz,cat) 0.91 ~ SHIELDING MULTIPLIER (Ms) 1.0 ~ TOPOGRAPHIC MULTIPLIER (Mt) 1.0 - THRUST LOADS: 11.25° = 36.7 kN 22.5° = 73 kN TEST PRESSURE = 2000 kPa - PIPELINE PRESSURES: WORKING PRESSURE = 980 - 1300 kPa

REFER TO GEOTECHNICAL INVESTIGATION REPORT No. 77794.02.R.001.REV0 DRUMSARA, PROPOSED BOREFIELD PREPARED BY DOUGLAS PARTNERS DATED NOVEMBER 2019 NOTIFY SUPERINTENDENT IF CONDITIONS ENCOUNTERED DIFFER FROM THOSE DESCRIBED IN THE REPORT AND SEEK DIRECTIONS

DELIVERABLES

PREPARE WORKSHOP DRAWINGS, CALCULATIONS etc FOR PREFABRICATED COMPONENTS, INCLUDING G26. STRUCTURAL STEELWORK, LIGHTWEIGHT STEELWORK, PRECAST CONCRETE, PRESTRESSING, FABRICATED TIMBER FRAMES etc AND SUBMIT ELECTRONIC PDF'S OR THREE PAPER COPIES OF EACH FOR SUPERINTENDENT'S REVIEW OF GENERAL COMPLIANCE WITH DESIGN CONCEPT. DO NOT COMMENCE FABRICATION UNTIL SHOP DRAWINGS AND CALCULATIONS HAVE BEEN REVIEWED. ALLOW 14 DAYS FOR SUPERINTENDENT'S REVIEW. SUPERINTENDENT'S REVIEW OF SHOP DRAWINGS AND CALCULATIONS IS OF GENERAL CONFORMANCE WITH DESIGN CONCEPT AND GENERAL COMPLIANCE WITH CONTRACT DOCUMENTS ONLY. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING QUANTITIES AND DIMENSIONS. SELECTING FABRICATION PROCEDURES AND CONSTRUCTION TECHNIQUES, AND PERFORMING WORK IN A SAFE MANNER. CORRECTIONS OR COMMENTS MADE ON SHOP DRAWINGS AND CALCULATIONS DO NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR COMPLIANCE WITH REQUIREMENTS OF CONTRACT DRAWINGS AND SPECIFICATION.

FOUNDATIONS AND FOOTINGS

FOUNDATIONS

- F1. SITE IS ASSUMED AS CLASS P TO AS2870. CONFIRM ON SITE PRIOR TO CONSTRUCTION.
- F2. REMOVE TOP SOIL CONTAINING GRASS ROOTS OR OTHER ORGANIC MATTER, RUBBLE AND / OR DEBRIS AND
- OTHER UNSUITABLE MATERIAL BELOW FOUNDATIONS. "ROLLED FILL" IS: SAND FILL UP TO 600 mm DEEP COMPACTED IN LAYERS < 300 mm THICK, OR NON-SAND FILL F3.
- UP TO 300 mm DEEP COMPACTED IN LAYERS < 150 mm THICK (CLAY FILL TO BE MOIST DURING COMPACTION). F4. BACKFILL OVER EXCAVATION WITH GRADE N7 BLINDING CONCRETE.
- F5. KEEP EXCAVATIONS FREE OF WATER. PROVIDE ADEQUATE DRAINAGE TO ENSURE FORMATION IS NOT AFFECTED BY MOISTURE. PREVENT FOUNDATION DRYING OUT DUE TO EXPOSURE. PLACE BLINDING, FOOTINGS, PILES AND BACKFILL AS SOON AS PRACTICABLE AFTER EXCAVATION.

- F6. ENSURE EXCAVATIONS ARE STABLE AND PROTECT S EFFECTS OF GROUND WORKS. PROVIDE TEMPORARY SUITABLY QUALIFIED STRUCTURAL ENGINEER TO ALL F7.
- DO NOT UNDERMINE EXISTING FOOTINGS. FOR SITES CLASSIFIED M OR GREATER REACTIVITY F8. TRENCHES WITH HAND COMPACTED CLAY OR BLIN AGAINST CLEAN, DRY, UNDISTURBED NATURAL MATE WITHIN 1500 mm OF BUILDING. PROVIDE FLEXIBLE J EXTERIOR OF BUILDING.
- F9. FOLLOWING CONSTRUCTION FOUNDATION MAINTER **TECHNOLOGY FILE 18 "FOUNDATION MAINTENANCE**
- SLABS AND FOOTINGS F10. FOOTINGS HAVE BEEN DESIGNED FOR A SAFE WOR NATURAL GROUND.
- F11. CONSTRUCT FOOTINGS FOUNDED IN SPECIFIED M REMOVE SOFTENED OR LOOSE MATERIAL AND MA ENSURE FORMATION IS CLEAN AND LEVEL.
- LOCATE FOOTINGS CENTRALLY UNDER WALLS AND F12. F13. PROVIDE 0.2 mm HIGH IMPACT RESISTANT VIRGIN F ON 50 mm SAND BLINDING WHERE SHOWN ON DRAW TAPE AT PENETRATIONS, etc TO ENSURE A C MANUFACTURER'S RECOMMENDATIONS AND AS287 PLASTIC PLATE UNDER REINFORCEMENT SUPPORTS
- TOP OF CONCRETE SLAB TO BE AT LEAST 100 mm ABC F14. BUILDING TO BE SLOPED SO THAT WATER WILL DRAIN WHERE ACHIEVED BY FILLING, FILL TO BE LESS PERM

STEEL

S3

S4.

S5.

S6.

S8.

- S1. WORKMANSHIP AND MATERIALS TO COMPLY WITH AS PROVIDE STEEL IN ACCORDANCE WITH: S2.
- AS1163 GRADE C350 FOR RECTANGULAR AND SQU - AS1163 GRADE C250 OR C350 FOR CIRCULAR HOLL
- AS/NZS3678 FOR PLATES AND FLOOR PLATE,
- AS/NZS3679 PART 2, GRADE 300 FOR WELDED BEA - AS/NZS3679 PART 1 GRADE 300 OR BHP GRADE PARALLEL FLANGE CHANNELS, ANGLES, FLATS, B - AS1397 GRADE G450 FOR PURLINS AND GIRTS.
- OTHERWISE TO COMPLY WITH AS/NZS3678 OR AS/ MARK STEEL GRADES ON STRUCTURAL MEMBERS
- COMPATIBLE WITH AND VISIBLE THROUGH PAINT SYS PROVIDE 3 mm CAP PLATES SEAL WELDED TO HOLLO
- CARRY OUT ERECTION OF STEELWORK IN ACCORD BUILDING STEELWORK.
- PROVIDE STEEL MEMBERS MADE FROM WHOLE LEN LENGTHS UP OF SECTIONS JOINED BY COMPLETE PEN WHERE REQUIRED. WHERE PROPOSED, SHOW CONCENTRIC AT CONNECTIONS (GRAVITY- OR GAUC PARTS TO AVOID FORCE AND/OR RESTRAINT DURING DRILL HOLES FULL SIZE OR REAM TO FULL SIZE AFT SUB-PUNCHED HOLES TO BE AT LEAST 3 mm UND
- PERMITTED. BOLT HOLE SIZE TO BE: BOLT DIAMETER PLUS 2 mm FOR STEEL TO STEEL
- BOLT DIAMETER PLUS 4 mm FOR STEEL TO CONC BOLT DIAMETER PLUS 6 mm FOR HOLDING DOWN WELDING
 - DEVELOP WELD PROCEDURES TO SUIT JOINT DETAIL WELD PROCEDURES AND CONSUMABLES TO AS/NZS PROCEDURE AND CONSUMABLES BY TESTING TO AS ON WELDING PROCEDURE QUALIFICATION RECORD WELDING TO BE UNDERTAKEN BY SUITABLY QUAI QUALIFIED WELDING SUPERVISOR.
 - CARRY OUT WELDING TO AS/NZS1554: ALL INTERFAC 6 mm CONTINUOUS FILLET WELDS ALL ROUND, BOTH WELDS TO BE SHOP WELDED UNO.
 - WELDS TO BE CATEGORY SP.
 - BUTT WELDS TO BE FULL (COMPLETE) PENETRATI
 - ELECTRODES TO BE LOW CARBON WITH TENS
- AS/NZS1554, eg CLASSIFICATION B-E49XX. S11. EXTENT OF WELD INSPECTION/TESTING TO BE:
- VISUAL SCANNING: 100% OF WELDS VISUAL EXAMINATION: 100% OF BUTT WELDS IN TE
- RADIOGRAPHIC OR ULTRASONIC: 10% OF BUTT WE
- S12. REPAIR FAULTY WELDS REVEALED BY WELD INSPECT
- S13. WELDS TO BE INSPECTED BY INDEPENDENT NATA A PROVIDE WELDING INSPECTOR'S REPORT TO SUPER
- S14. WELDING SYMBOLS ARE TO AS1101.3. "CFW" INDICA STRENGTH BUTT WELD WHICH IS EQUIVALENT TO CH WELD.

BOLTS

S18.

- S15. M16 AND LARGER BOLTS TO BE HIGH STRENGTH STR SHALL BE COMMERCIAL BOLTS, 4.6/S PROCEDURE UN
- S16. FOR BOLTS MANUFACTURED OUTSIDE AUSTRALI LABORATORY COMPLIANCE CERTIFICATE BASED ON APPROPRIATE TESTING AND VERIFICATION USE BOLTS WITH THREADS IN COMPLIANCE WITH AS1275. BOLTS OF STRENGTH GRADE 4.6 TO BE COMMERCIAL S17 GRADE BOLTS TO AS1111 AND 1112. BOLTS OF STRENGTH GRADE 8.8 TO BE HIGH STRENGTH STRUCTURAL BOLTS, NUTS AND WASHERS TO AS/NZS1252. MECHANICAL PROPERTIES OF BOLTS, NUTS, SCREWS AND STUDS TO COMPLY WITH AS /NZS4291.2. WASHERS TO COMPLY WITH AS1237. TIGHTENING PROCEDURES TO COMPLY
 - WITH AS4100: - S SNUG TIGHT.
 - TB BEARING MODE JOINT, BOLTS FULLY TENSIONED. - TF FRICTION MODE JOINT, BOLTS FULL TENSIONED. (CONTACT SURFACES OF FRICTION CONNECTIONS
 - TO BE UNCOATED AND FREE OF MILL SCALE.) BOLT TYPE AND TIGHTENING PROCEDURE ARE DESIGNATED: NUMBER, SIZE STRENGTH GRADE/TIGHTENING
- PROCEDURES. eg. 4-M24 8.8/TB = 4 OFF 24 DIAMETER METRIC HIGH STRENGTH STRUCTURAL BOLTS FULLY TENSIONED IN BEARING MODE.
- USE BOLT LENGTHS SO THAT PROJECTION BEYOND NUT IS AT LEAST TWO THREADS, AND NOT MORE THAN 10 S19. mm.
- SLOTTED HOLES TO BE 2.5 x BOLT DIAMETER LONG UNO. BOLTS TO BE SET CENTRAL IN SLOT UNO. USE 8 mm S20. PLATE WASHERS UNDER BOLT HEAD AND NUT TO COMPLETELY COVER HOLE.

CONNECTIONS

S21. PROVIDE RADIUSED CORNERS ON EXPOSED CLEATS TO REDUCE RISK OF IMPALEMENT AND LACERATIONS. CROP INTERNAL CORNERS OF CLEATS AND STIFFENERS, etc TO FACILITATE DRAINAGE. PROVIDE DRAINAGE S22. HOLES TO PREVENT WATER PONDING ON STRUCTURAL ELEMENTS DURING CONSTRUCTION. SHOW PROPOSED HOLES ON SHOP DRAWINGS.

В	ISSUED FOR TENDER	EDJ	GG*	TMB*	14.01.20
Α	PRELIMINARY ISSUE	EDJ	GG*	TMB*	09.12.19
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date

Plot Date: 26 August 2020 - 8:40 AM

SURROUNDING PROPERTY AND SERVICES FROM ADVERSE			C6.	QUALITY OF CONCRETE E	LEMENTS TO BE A	AS FOLLOWS:		
L DEEP EXCAVATIONS WHERE REQUIRED.	S23	PLATES AND HOLDING DOWN BOLTS HOLDING DOWN BOLTS TO BE GRADE 4.6 LINO SUPPLY HOLDING DOWN BOLTS WITH TWO CLASS 5 HEXAGONAL		STRUCTURAL ELEMENT	BLINDING	SLAB ON GROUND	THRUST	BLOCKS
	323.	HEAD NUTS AND EXTRA LARGE HARDENED OR 4 mm PLATE WASHER. HOT DIP GALVANIZE HOLDING DOWN		EXPOSURE CLASSIFICATION	B1	B1	B1	
Y; WHERE SERVICES PASS UNDER FOOTINGS BACKFILL		BOLTS, NUTS AND WASHERS TO AS1214. TIE HOLDING DOWN BOLT GROUPS RIGIDLY TOGETHER PRIOR TO		STRENGTH GRADE (MPa)	N7	N32	N32	
RIAL. BACKFILL TRENCHES WITH HAND COMPACTED CLAY		CORRECT BOLT LOCATIONS, AND SET OUT USING A 3 mm MILD STEEL TEMPLATE SUPPLIED BY STEELWORK		MAX. AGGREGATE SIZE (mm): -	20	20	
OINTS IN STORMWATER AND WASTEWATER SERVICES AT		FABRICATOR. PROVIDE 4 N12 LIGATURES TO FIX HOLDING DOWN BOLT CAGE SECURELY TO SLAB/FOOTING	C7.	SUPPLEMENTARY CEMEN	TITIOUS MATERIA	LS INCLUDE SILICA F	UME, FLY A	SH, AND GRO
NANCE TO BE IN ACCORDANCE WITH CSIRO BUILDING	S24	REINFORCEMENT. GROUT BASE PLATES, HOLDING-DOWN BOLTS, REBATES etc. BEFORE LOADING COLUMNS OR ERECTING WALLS	C8.	SLUMP TO BE AS REQU	JIRED FOR PLAC	EMENT (ea PUMPING	G. etc). COM	IPACTION AN
AND FOOTING PERFORMANCE: A HOMEOWNER'S GUIDE".	024.	USE APPROVED HIGH-STRENGTH (40MPa AT 7 DAYS) NON-SHRINK PRE-MIXED RAMMED GROUT. GROUT	001	SUPERPLASTICISERS AND	HIGH RANGE WA	TER REDUCERS TO AS	61478 TO ACH	HEVE ADEQUA
		THICKNESS 15 mm MINIMUM, 40 mm MAXIMUM UNO. CHAMFER GROUT EDGES AT 45 DEGREES UNO.	C9.	ADMIXTURES TO COMPLY	WITH AS1478. A			
RKING BEARING PRESSURE OF 100 kPa IN UNDISTURBED	525	USE BOLTS SCREWS NUTS AND WASHERS HOT DIP GALVANIZED BY MANUFACTURER TO AS1214 TAP		CONCRETE ADDITIVES SH	ALL NOT ENHAN	CE CORROSION OF R	REINFORCEM	IENT, NOR BE
ATERIALS (AS ABOVE, OR IN GEOTECHNICAL REPORT).	020.	GALVANIZED NUTS 0.4 mm OVERSIZE TO SUIT GALVANIZED THREADS TO AS1214 AND OIL FOR PROTECTION.		CONCRETE OR STEEL DU		LIFE OF STRUCTURE	DO NOT U	JSE CHEMICA
ATERIAL THAT DOES NOT ACHIEVE THESE PRESSURES.		INSTALL WASHERS UNDER BOLT HEAD OR NUT, WHICHEVER PART IS ROTATED. USE HARDENED OR PLATE	C10		IORIDE MAXIM	IM ACID SOLUBLE CH	I ORIDE ION	CONTENT OF
		WASHERS AS REQUIRED UNDER NON-ROTATING PART.	010.	LESS THAN 0.15% BY MAS	S OF CEMENTITIC	US MATERIAL. DO NO	T USE STROI	NGLY IONIZED
OLYETHYLENE FILM DAMP PROOF MEMBRANE TO AS2870	S26.	AFTER COMPLETION OF FABRICATION, PREPARATION FOR SURFACE TREATMENT TO BE: ROUND OFF ROUGH	C11.	DO NOT ADD WATER TO C	ONCRETE AFTER	TRUCK HAS LEFT BAT	CHING PLAN	Т.
VINGS. LAP 200 mm AND SEAL DAMP PROOF MEMBRANES,		VISIBLE PORES PITS AND CRATERS. VISIBLE SLIVERS. ROLL-OVERS. LAMINATIONS. ROLLED-IN EXTRANEOUS	C12.	MIX CONCRETE TO ENSUR	RE UNIFORM DIST	RIBUTION OF CONSTIT	UENTS.	
70. PREVENT PUNCTURING OR DAMAGE BY PLACING A		MATTER, GROOVES (RADIUS OF GOUGES TO BE LESS THAN 4 mm), INDENTATIONS, ROLL MARKS, BURRS,	C13	TEST SLUMP OF FACH BA			PLACING C	ONCRETE FRO
).		ARISES, CRACKS, etc. PREPARE WELDS, EDGES AND OTHER AREAS WITH SURFACE IMPERFECTIONS TO ISO 8501-3 PREPARATION GRADE P3	010.	SLUMP MEASURED TO BE	NO GREATER TH	AN TARGET SLUMP WI	THIN TOLER	ANCES GIVEN
OVE ADJACENT GROUND LEVELS. GROUND SURROUNDING	S27.	SURFACE PREPARATION: REMOVE OIL, GREASE AND OTHER CONTAMINANTS TO AS1627.1. ABRASIVE BLAST		5.2.3.				
MEABLE THAN UNDERLYING MATERIAL.		CLEAN TO AS1627.4 CLASS SA 21/2 WITH SURFACE PROFILE 40 TO 70 MICRONS OR AS SPECIFIED BY COATINGS	C14.	MANUFACTURER TO CA	R DISSEMINATIO	ON OF CONCRETE F	FODUCTION	RETE FOR C
		AND SURFACE PROFILE TO AS3894.5. FOR SMALL AREAS WHERE ABRASIVE BLAST CLEANED SURFACE TO AS1627.9		REQUIREMENTS OF AS137	['] 9.			
		OBTAIN APPROVAL FROM SUPERVISOR TO USE POWER TOOL CLEANING TO AS1627.2 CLASS ST 3/PST 3 AS	FORM	NORK				
S4100, AS/NZS4600, AS/NZS1554		PROFILE. REMOVE DUST BY BRUSHING OR VACUUM CLEANING.	C15.	FALSEWORK LIES WITH C	SIGN, CERTIFICA ONTRACTOR.	TION, CONSTRUCTION	I AND PERF	ORMANCE OF
JARE HOLLOW SECTIONS,	S28.	APPLY PROTECTIVE COATINGS AS SOON AS PRACTICABLE AFTER PREPARATION, WITHIN FOUR HOURS AND	C16.	DO NOT STRIP FORMWOR	K PRIOR TO 36 HO	URS AFTER PLACEME	NT.	
LOW SECTIONS, AS NOTED ON DRAWINGS		BEFORE FLASH RUST OR RUST BLOOM APPEARS. APPLICATION OF PROTECTIVE COATINGS TO COMPLY WITH	C17.	DO NOT STRIP FORMWOR	RK UNTIL CONCRI	ETE IS HARDENED SU	FFICIENTLY	TO WITHSTAN
MS AND WELDED COLUMNS,	S29.	UNLESS NOTED OTHERWISE ON DRAWINGS OR IN SPECIFICATION. SURFACE TREATMENT OF STEEL WORK FOR	C18		DAMAGE.			
300 PLUS FOR UNIVERSAL BEAMS, UNIVERSAL COLUMNS,		ATMOSPHERIC CORROSION PROTECTION TO BE INORGANIC ZINC SILICATE. APPLY PROTECTIVE COATINGS AS	010.	OF BOLTS LEFT IN CONCE	RETE MUST NOT I	NTRUDE INTO COVER	CONCRETE.	FLUSH FILL I
ARS AND RODS,		PER SYSTEM/SYSTEMS IZS2 (75µM) OF AS/NZS2312 TABLE 6.3 IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. REPORT QA RECORDS IN A FORMAT SIMILAR TO AS3894 PARTS 10 TO 14. NON-SPECIFIED		MIXED NON-SHRINK CEMI	ENTITIOUS REPAI	R MORTAR MATCHING	G CONCRETE	SURFACE CO
/NZS3679 GRADE 250 UNO.		COLOURS WILL BE SELECTED BY SUPERINTENDENT.	PLACII	NG OF CONCRETE	QUATE BOND.			
IN NON-CRITICAL AREAS. USE IDENTIFICATION MARKS	S30.	COATING REPAIRS: REINSTATE COATING TO DAMAGED AREAS TO PROTECTIVE COATINGS SPECIFICATION.	C19.	CONSTRUCTION TOLERAN	ICES TO BE TO AS	3610.		
DW SECTIONS UNO.		SPLATTER, RESIDUAL FLUX etc BY CHIPPING, GRINDING OR ABRASIVE BLAST CLEANING, GRIND FLUSH ROUGH	C20.	REMOVE FREE WATER, D	UST AND DEBRI	S, STAINS etc FROM F	ORMS, EXC	AVATIONS etc
DANCE WITH AS3828 GUIDELINES FOR THE ERECTION OF		WELD BEADS. PREPARE SURFACE FOR PAINTING AS PER COATING SPECIFICATION. REMOVE RUST, LOOSE AND	C21	ELAPSED TIME BETWEEN		AND DISCHARGE OF	CONCRETE	AT SITE MUS
		ALL WELDS. EDGES AND ROUGH SURFACES USING A BRUSH. REINSTATE COATING AS PER PROTECTIVE	021.	POSSIBLE, AND COMPLY V	VITH THE FOLLOW	/ING.	OUNDIVELLE	-
NETRATION FULL STRENGTH BUTT WELDS GROUND FLUSH		COATINGS SPECIFICATION.		CONCRETE TEMPERA	TURE AT	MAXIMUM ELAPSED	TIME	
IOINTS ON SHOP DRAWINGS. ENSURE MEMBERS ARE	S31.	PROTECTIVE COATINGS ARE TO BE SHOP APPLIED AND CURED IN WORKSHOP IN ACCORDANCE WITH			E (°C)	(HOURS)		
GE-LINES TO INTERSECT) UNO. ACCORATELY PRE-FORM G JOINING.		PROTECTIVE COATINGS ARE TO BE SMOOTH, UNIFORM AND WITHOUT RUNS, BEADS, PINHOLES, SURFACE		10 - 24		2.00		
TER SUB-DRILLING OR SUB-PUNCHING. SUB-DRILLED OR		CRAZING OR OTHER IMPERFECTIONS.		27 - 30		1.00		
JERSIZE. OXY OR FLAME CUTTING OF HOLES IS NOT	S32.	PROTECT COATINGS FROM DAMAGE AND DETERIORATION DURING HANDLING, TRANSPORT, STORAGE AND ERECTION, REPAIR DAMAGE TO PROTECTIVE COATINGS TO REINSTATE INTEGRITY OF NOMINATED COATING		30 - 32		0.75		
CONNECTIONS.		IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS AND SPECIFICATION. EDGES OF PATCH	C22.	USE PLACEMENT METHO	DS THAT WILL MI	NIMISE PLASTIC SETT	LEMENT ANI	D SHRINKAGE
BOLTS.		REPAIRS TO BE FEATHERED.		VERTICAL FREE FALL BY U	JSE OF CHUTES,	etc. KEEP CHUTES VE	RTICAL, FUL	L AND IMMER
	S33.	SUBMIT NAMES AND CONTACT DETAILS OF PROPOSED FABRICATION AND INSTALLATION SUBCONTRACTORS.		IN A PLASTIC STATE. PRO	PERLY COMPACT	CONCRETE USING ME	CHANICAL V	BRATORS (AN
ILS AND SHOW ON SHOP DRAWINGS. USE PREQUALIFIED	S34.	SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS; REFER GENERAL-DELIVERABLES NOTES. SHOP		IF REQUIRED) TO REMO	VE AIR BUBBLES	AND GIVE MAXIMUM		ON WITHOUT
S/NZS1554.1 CLAUSE 4.3 OR DEVELOP QUALIFICATION OF WELD		DRAWINGS AND DESIGN CALCULATIONS TO SHOW: ARRANGEMENT OF MEMBERS, MARKING PLAN, MEMBER		FORMWORK OR REINFOR	CEMENT. DO NOT	USE VIBRATORS TO M	IOVE CONCF	RETE ALONG F
AND MAKE RECORD AVAILABLE FOR INSPECTION.		APPLICABLE), RELEVANT DETAILS OF EACH ASSEMBLY, COMPONENT AND CONNECTION, DIMENSIONS OF	C23.	OBTAIN SUPERINTENDEN	T'S WRITTEN AP	PROVAL OF PLACEM	ENT METHO	DS FOR CON
LIFIED EXPERIENCED WELDER UNDER SUPERVISION OF		ITEMS, LOADING PARAMETERS AND BRACING LENGTHS ASSUMED IN DESIGN, DESIGN STRESSES, STRENGTH	C 24	GREATER THAN 1500 mm I	HEIGHT.			
CES BETWEEN STEEL SECTIONS TO BE CONNECTED WITH		NOGGINGS etc, LIFTING POINTS, METHOD OF FIXING AND BRACING, DESIGN DEFLECTION, METHOD OF	624.	"OUTDOOR" AIR TEMPER	ATURE IS AIR TE	MPERATURE AT TIME	OF MIXING,	OR PREDICT
I SIDES UNO.		FABRICATION, SIZE AND SPECIFICATION OF CLEATS, BOLTS, SCREWS, WELDS, WELD CATEGORIES AND		TEMPERATURE DURING N	EXT 48 HOURS.			
		PREPARATION METHODS AND PROTECTIVE COATING SYSTEM, VENT/DRAIN HOLES FOR HOT DIP GALVANISING,		OF FORMWORK AND REIN	O LOWER THE FR	EEZING POINT OF CON	ICRETE. DO	NOT ALLOW F
ON UNO. SUE STRENGTH OF fum=490 MP2 PRE-APPROVED TO		PROPOSED JOINTS IN MEMBERS, TEMPORARY MEMBERS, BRACES AND FIXINGS, LOCATION OF FALL ARREST		TO ENTER MIXER. DO NO	Γ USE HIGH ALUM	INA CEMENT.		
		GIRTS, LOCATION OF AND PREPARATION FOR SITE WELDS AND BRACING, METHOD OF HANDLING, TEMPORARY						
		WORKS, ASSEMBLY, TRANSPORT AND ERECTION (INCLUDING TEMPORARY BRACING IF REQUIRED),						
ENSION MEMBERS AND 50% OF OTHER WELDS	\$35	PRECAMBER, etc. PROVIDE DOCUMENTARY EVIDENCE (INCLUDING TEST RESULTS) OF COMPLIANCE WITH RELEVANT	C25.	KEEP FORMS. MATERIAL	S. EQUIPMENT I	I CONTACT WITH CO	NCRETE FR	EE OF FROS
ELDS IN TENSION MEMBERS AND 5% OF OTHER WELDS	000.	AUSTRALIAN STANDARDS ISSUED BY MANUFACTURER FOR ALL STEELWORK AND EACH BATCH OF FASTENERS		CONCRETE MATERIALS	OTHER THAN C	EMENT) TO MINIMUN	1 TEMPERAT	TURE NECES
TION/TESTING AND REPEAT THE EXAMINATION.		USED. EVIDENCE MUST PROVIDE CLEAR VERIFICATION THAT PRODUCT MEETS RELEVANT AUSTRALIAN		WHEN PLACED IN MIXER.	D CONCRETE IS	WITHIN LIMITS SPECIF	IED. MAXIM	UM WATER TE
RINTENDENT.		ADDRESSES OF MANUFACTURER, SUPPLIER AND TESTING AUTHORITY; TEST CERTIFICATE NUMBER AND DATE			TEMPERATURE	OF CONCRETE		
TES CONTINUOUS FILLET WELD. "FSBW" INDICATES FULL		WITH PAGE NUMBER ON EACH PAGE; PRODUCT TESTING SPECIFICATION AND GRADE OF STEEL; PRODUCT		TEMPERATURE	MINIMUM	MAXIMUM		
PBW. "CPBW" INDICATES COMPLETE PENETRATION BUTT		UNIQUE IDENTIFIER TO WHICH CERTIFICATE APPLIES; HEAT NUMBER (FROM CASTING); MECHANICAL		> 5°C	10°C	32°C		
		PROPERTIES FROM TENSILE TEST (ALL VALUES CITED IN AS/NZS STANDARD); WHETHER EACH MEASURED		< 5°C	18°C	32°C		
RUCTURAL BOLTS, 8.8/S PROCEDURE AND M12 SIZE BOLTS		ANALYSIS UNDERTAKEN; CUSTOMER PURCHASE ORDER TO MATCH BATCH NUMBER; ANY OTHER SYSTEM						
		REFERENCE NUMBERS AND SIGNATURE OF AUTHENTICITY.						

CONCRETE

CONCRETE MIX

- C1. WORKMANSHIP AND MATERIALS TO COMPLY WITH AS3600, AS2870, AS3610, AS1379, AS1478, AS3582, AND AS3972. FOR LIQUID RETAINING STRUCTURES ALSO COMPLY WITH AS3735.
- C2. WET CONCRETE TO BE UNIFORM, HOMOGENEOUS, COHESIVE AND ABLE TO WORK READILY INTO CORNERS AND AROUND REINFORCEMENT COMPLETELY FILLING FORMWORK WITHOUT SEGREGATION, EXCESS FREE WATER ON SURFACE, LOSS OF MATERIAL OR CONTAMINATION.
 - CONCRETE TO HAVE GOOD DIMENSIONAL STABILITY AND ABLE TO RESIST PLASTIC SETTLEMENT CRACKING, THERMAL CRACKING AND SHRINKAGE CRACKING.
- FINISHED CONCRETE TO BE A DURABLE, DENSE, HOMOGENEOUS MASS COMPLETELY FILLING FORMWORK, C3. EMBEDDING REINFORCEMENT AND TENDONS, AND FREE OF STONE POCKETS, OF UNIFORM COLOUR AND TEXTURE, WITH LOW PERMEABILITY AND ADEQUATE BUT NOT EXCESSIVE STRENGTH FOR GRADE. C4.
- REVIEW LOCATION OF EMBEDDED ITEMS TO MINIMIZE POSSIBLE ZONES OF POOR COMPACTION THAT MAY COMPROMISE STRUCTURAL INTEGRITY. EXTERNALLY EXPOSED CONCRETE TO BE CLASSIFICATION B1 UNO. C5.

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ND FINISHING. USE ATE WORKABILITY. CONCRETE BELOW ECOMMENDATIONS. DETRIMENTAL TO L ADMIXTURES OR

CONCRETE TO BE SALTS.

OM THAT DELIVERY IN AS1379 CLAUSE

ENT INFORMATION. COMPLIANCE WITH

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BEFORE PLACING NG CONCRETE. F BE AS SHORT AS

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TS SHOWN BELOW. ED OR LIKELY AIR AIN TEMPERATURE TS, CHEMICALS OR **ROZEN MATERIALS**

AND ICE. HEAT SARY TO ENSURE EMPERATURE: 60°C

ISSUE FOR TENDER

N	Client	DOUGLAS	SHIRE COUNCIL	
	Project	MOSSMAN	ALTERNATIVE RAW WATER	R INTAKE
	Title	STRUCTUR	AL NOTES	
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t be unless	Original Size	Drawing No:	42-21142-S001	Rev: B

Plotted by: Evan Johnson

R7. C26. IN HOT WEATHER PREVENT PREMATURE STIFFENING OF FRESH CONCRETE; REDUCE WATER ABSORPTION AND EVAPORATION LOSSES. MIX, TRANSPORT, PLACE AND COMPACT CONCRETE AS QUICKLY AS POSSIBLE DURING PLACEMENT TEMPERATURE OF CONCRETE MUST NOT EXCEED TEMPERATURES BELOW: CONCRETE ELEMENT TEMPERATURE LIMIT UNREINFORCED CONCRETE IN SECTIONS ≥ 1 METRE EACH 27°C DIMENSION, R8 CONCRETE $f_{C}^{c} \ge 40$ MPa IN SECTIONS ≥ 500 mm THICKNESS 27°C CONCRETE IN FOOTINGS, BEAMS, COLUMNS, WALLS AND 32°C SLABS $f_C \leq 32$ MPa ELSEWHERE 32°C DO NOT MIX CONCRETE WHEN SURROUNDING OUTDOOR SHADE TEMPERATURE \geq 38°C. MAINTAIN R10. TEMPERATURE OF FORMWORK AND REINFORCEMENT AT \leq 32°C BEFORE AND DURING PLACING. MAINTAIN SPECIFIED TEMPERATURE OF PLACED CONCRETE BY - COOL CONCRETE USING LIQUID NITROGEN INJECTION BEFORE PLACING, OR COVER CONTAINER IN WHICH CONCRETE IS TRANSPORTED TO FORMS, OR R12. SPRAY COARSE AGGREGATE USING COLD WATER, OR USE CHILLED MIXING WATER. PROTECT FRESH CONCRETE FROM PREMATURE DRYING - PARTICULARLY IN HOT, WINDY OR DRY (LOW C27. HUMIDITY) CONDITIONS, EXCESSIVELY HOT OR COLD TEMPERATURES, RAIN, etc. PROVIDE WIND BREAKS. MAINTAIN CONCRETE AT A REASONABLY CONSTANT TEMPERATURE WITH MINIMUM MOISTURE LOSS FOR CURING PERIOD. COMMENCE CURING OF CONCRETE TO AS3600 AS SOON AS POSSIBLE AFTER PLACING AND FINISHING OR C28. STRIPPING, AND WITHIN ONE HOUR. ENSURE EXPOSED SURFACES ARE NOT STAINED. ACCEPTABLE METHODS OF CURING INCLUDE: RETENTION OF FORMWORK PONDING OR CONTINUOUS SPRINKLING WITH WATER (MOIST CURING) - AN IMPERMEABLE MEMBRANE (USE WHITE OR LIGHT COLOURED PLASTIC IN HOT CONDITIONS). SEAL AROUND EDGES - AN ABSORPTIVE COVER KEPT CONTINUOUSLY WET AND COVERED BY IMPERMEABLE MEMBRANE - STEAM CURING - AN APPROVED CURING COMPOUND. PROVIDE: EFFICIENCY INDEX CERTIFIED TEST RESULTS FOR WATER RETENTION TO AS3799 APPENDIX B EVIDENCE THAT AN ACCEPTABLE FINAL SURFACE COLOUR WILL BE OBTAINED EVIDENCE OF COMPATIBILITY WITH CONCRETE AND APPLIED FINISHES (IF ANY) METHODS OF OBTAINING REQUIRED ADHESION FOR TOPPINGS, RENDER etc. UNIFORM CONTINUOUS FLEXIBLE COATING WITHOUT VISIBLE BREAKS OR PINHOLES, WHICH REMAINS UNBROKEN FOR AT LEAST THE CURING PERIOD AFTER APPLICATION. DO NOT USE WAX-BASED OR CHLORINATED RUBBER-BASED CURING COMPOUNDS ON SURFACES FORMING C29. SUBSTRATES TO APPLIED FINISHES, CONCRETE TOPPINGS AND CEMENT BASED RENDER. C30. CURE CONTINUOUSLY UNTIL NUMBER OF DAYS DURING WHICH AIR TEMPERATURE IS ABOVE 10°C TOTALS: - 3 DAYS FOR EXPOSURES CLASSIFICATION A1 AND A2 - 7 DAYS FOR EXPOSURE CLASSIFICATION B1, B2 AND C. PREVENT RAPID DRYING OUT AT END OF CURING PERIOD. FINISH CONCRETE SURFACES TO AS3610 AND AS SHOWN BELOW: C32. - FORMED SURFACES: - EXPOSED SURFACES 3C OR HIDDEN SURFACES FINISHES AS LAID: R22. - EXPOSED SURFACES STEEL TROWEL UNO - HIDDEN SURFACES WOOD FLOAT PROVIDE EXPOSED EDGES AND RE-ENTRANT CORNERS WITH 45 DEGREES x 25 mm CHAMFERS OR FILLETS UNO C33. C34. DO NOT MAKE HOLES, PENETRATIONS, RECESSES, CHASES, NOR EMBED PIPES (OTHER THAN THOSE SHOWN ON STRUCTURAL DRAWINGS) WITHOUT APPROVAL OF SUPERINTENDENT. DO NOT PLACE CONDUITS, PIPES etc WITHIN COVER CONCRETE. LOCATE CONDUITS, PIPES etc ONLY IN MIDDLE THIRD OF SLAB OR BEAM DEPTH AND BETWEEN REINFORCEMENT LAYERS, AND SPACED AT 3 x DIAMETER CENTRES MINIMUM. DO NOT CUT REINFORCEMENT AT PENETRATIONS WITHOUT APPROVAL JOINTS C35. FORM CONSTRUCTION JOINTS AND USE ONLY WHERE SHOWN OR WHERE APPROVED BY SUPERINTENDENT CONSTRUCTION JOINTS IN SLABS TO BE VERTICAL, STRAIGHT AND TRUE. IF CONSTRUCTION JOINTS PROPOSED OTHER THAN WHERE SHOWN, PROVIDE PROPOSED LOCATIONS FOR C36. SUPERINTENDENT'S APPROVAL PRIOR TO CONSTRUCTION. DO NOT INSTALL SEALANTS IF EXPECTED MAXIMUM DAILY TEMPERATURE EXCEEDS 30 DEGREES C. ENSURE R24. PROVIDE MINIMUM MESH LAPS TO CROSS WIRES OF REINFORCING MESH, SO THAT TWO OUTERMOST WIRES C37. RECESSES ARE CLEAN AND DRY PRIOR TO INSTALLING FILLERS OR SEALANTS, AND PREPARE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. TOLERANCE ON SEALANT WIDTHS +5 -0 mm. REINFORCEMENT COVER COVER IS CLEAR DISTANCE BETWEEN ANY REINFORCEMENT (INCLUDING LIGATURES, TIE WIRE etc) AND C38. OUTSIDE SURFACE OF STRUCTURAL CONCRETE. C39. COVER MUST NOT BE LESS THAN SPECIFIED. PROVIDE MINIMUM CLEAR COVER TO REINFORCEMENT AS SHOWN BELOW, EXCEPT WHERE SPECIFIED OTHERWISE: LOCATION COVER (mm) FOOTINGS, UNDERSIDE SLABS ON GROUND 50 **TOP OF SLAB - INTERIOR** 40 DELIVERABLES C40. SUBMIT NAMES AND CONTACT DETAILS OF PROPOSED CONCRETE SUBCONTRACTORS.

C41. PROVIDE RECORD OF SLUMP TESTING TO SUPERINTENDENT. REFER CONCRETE TESTING NOTES.

C42. FORWARD CONCRETE PRODUCTION ASSESSMENT INFORMATION TO SUPERINTENDENT AS PER AS1379 CLAUSE 6.4 WHEN PRODUCTION ASSESSMENT IS UNDERTAKEN. REFER CONCRETE TESTING NOTES.

REINFORCEMENT

SYMBOLS ON DRAWINGS FOR GRADE AND TYPE OF REINFORCEMENT ARE AS FOLLOWS: R1.

- R: STRUCTURAL GRADE 250 PLAIN ROUND BAR TO AS/NZS4671
- HOT ROLLED GRADE 500 DEFORMED (RIBBED) BAR DUCTILITY CLASS N TO AS/NZS4671 - N: HOT ROLLED GRADE 500 DEFORMED BAR DUCTILITY CLASS L TO AS/NZS4671 - L:
- SL: HARD DRAWN WIRE GRADE 500 SQUARE MESH DUCTILITY CLASS L TO AS/NZS4671
- RL: HARD DRAWN WIRE GRADE 500 RECTANGULAR MESH DUCTILITY CLASS L TO AS/NZS4671 - TM: HARD DRAWN STEEL GRADE 500 TRENCH MESH DUCTILITY CLASS L TO AS/NZS4671
- W: GRADE 500 STEEL REINFORCING WIRE TO AS/NZS4671
- PROVIDE ACRS (AUSTRALIAN CERTIFICATION AUTHORITY FOR REINFORCING STEEL LTD) CERTIFICATION OF R2. COMPLIANCE WITH AS/NZS4671 FOR ALL REINFORCEMENT. PROVIDE CERTIFICATION OF COMPLIANCE WITH AS1311 FOR ALL PRESTRESSING TENDONS.

R3. PROVIDE DOCUMENTATION TO SHOW THAT REINFORCEMENT SUPPLIER AND MILL COMPLIES WITH AS/NZS4671. REINFORCEMENT MUST HAVE UNIQUE MARKS TO IDENTIFY SUPPLIER. R4.

- R5. USE MESH SUPPLIED IN FLAT SHEETS UNLESS APPROVED OTHERWISE.
- R6. REINFORCEMENT TO BE CLEAN, FREE OF LOOSE MILL SCALE, RUST, OIL, GREASE, MUD OR OTHER MATERIAL THAT MIGHT REDUCE BOND BETWEEN REINFORCEMENT AND CONCRETE.

DESIGNATION OF REINFORCEMENT BARS IS AS SHOWN: eg. 17 N20 - 350 EF

- 17: DENOTES No OF BARS AND TYPE IN GROUP
- N: DENOTES BAR GRADE AND DUCTILITY CLASS - 20: DENOTES NOMINAL BAR DIAMETER IN mm
- 350: DENOTES SPACING IN mm
- EF: DENOTES LOCATION FOLLOWING ABBREVIATIONS APPLY TO LOCATION OF REINFORCEMENT: FF: FAR FACE EW: EACH WAY EF: EACH FACE B: BOTTOM T: TOP NF: NEAR FACE
- PROVIDE STANDARD COGS AND HOOKS TO AS3600. TERMINATE ENDS OF COLUMN AND BEAM LIGATURES IN A R9. HOOK OF AT LEAST 135 DEGREES. PROVIDE FIRST LIGATURE WITHIN 50 mm OF FACE OF SUPPORT.
- CONSTRUCTION JOINTS UNO.
- PROVIDE N12 DIAGONAL TRIMMER BARS BY 1000 mm LONG AT EACH LAYER OF REINFORCEMENT AT RE-R11 ENTRANT CORNERS, OPENINGS, SERVICE PENETRATIONS etc UNO.
- REINFORCEMENT OUT AT EQUAL CENTRES IF SPACING IS NOT NOMINATED.
- CAP STARTER BARS AND OTHER REINFORCEMENT TO REDUCE RISK OF IMPALEMENT AND LACERATIONS. R13. R14. ENSURE ALL LAID REINFORCING BARS ARE RESTRAINED BEFORE STOPPING WORK TO PREVENT BARS ROLLING
- UNDERFOOT. SECURE REINFORCEMENT IN POSITION AGAINST DISPLACEMENT AND MAINTAIN SPECIFIED CLEAR CONCRETE R15. 800 mm MAXIMUM CENTRES EACH WAY UNO. PROVIDE ADEQUATE SUPPORT TO PREVENT DISPLACEMENT OF
- REINFORCEMENT BY WORKMEN OR EQUIPMENT DURING CONCRETE PLACEMENT. SECURELY TIE REINFORCEMENT WITH WIRE TIES. TURN ENDS OF TIE WIRES INTO CONCRETE, CLEAR OF R16. COVER ZONE.
- R17. STIRRUPS AT 1000 MAXIMUM CENTRES.
- R18. FOR EXTERNAL OR CORROSIVE APPLICATIONS USE HOP DIP GALVANIZED TIE WIRES SUPPORT REINFORCEMENT ON PROPRIETARY CONCRETE, METAL OR PLASTIC SUPPORTS ADEQUATE TO R19. WITHSTAND CONSTRUCTION AND TRAFFIC LOADS AND MAINTAIN DURABILITY OF FINISHED CONCRETE STRUCTURE. FOR CONCRETE SURFACES WITH B2 EXPOSURE CLASSIFICATION OR GREATER, ONLY USE
- PROPRIETARY HIGH STRENGTH FIBRE REINFORCED CEMENT SPACER BLOCKS OR SUPPORTS. R20. DO NOT PLACE OR MOVE REINFORCEMENT DURING OR AFTER CONCRETE PLACEMENT. LAPPED SPLICE LENGTHS FOR HORIZONTAL BARS WITH MORE THAN 300 mm CONCRETE CAST BELOW THE BAR R21.
 - AND SPACED AT \geq 150 mm CENTRES TO COMPLY WITH THE FOLLOWING UNO: COVER f'c N12 N16 N20 N24 N28 N32 770 1150 1570 ≥ 25 ≥20 630 980 1350 1740 - \geq 30 ≥25 510 770 110 \geq 40 ≥32 460 630 890 ≥ 50 ≥ **4**0
 - DO NOT INTERPOLATE INTERMEDIATE VALUES OF SPLI LAPPED SPLICE LENGTHS FOR BARS IN COLUMNS REFE EPOXY COATED BARS, BARS IN LIGHTWEIGHT CONC LONGER SPLICE LENGTHS. REFER TO AS3600 OR SUPE

LAPPED SPLICE LENGTHS FOR VERTICAL BARS (AND H mm CONCRETE CAST BELOW THE BAR) SPACED AT ≥ 150 mm CENTRES N20 N24 N28 N32

COVER	ľC	N12	N16	N20
≥ 25	\geq 20	590	890	1210
≥ 30	≥25	490	750	1040
\geq 40	≥32	390	600	840
≥ 50	≥40	350	480	690

NOT APPLICABLE FOR BARS IN COLUMNS. DO NOT INTERPOLATE INTERMEDIATE VALUES OF SPLI LAPPED SPLICE LENGTHS FOR BARS IN COLUMNS REP EPOXY COATED BARS, BARS IN LIGHTWEIGHT CON LONGER SPLICE LENGTHS. REFER TO AS3600 OR SUPERINTENDENT. R23. LAY MESH REINFORCEMENT SO THAT MINIMUM COVER IS TO MAIN WIRES UNO.

OF ONE SHEET OVERLAP TWO OUTERMOST WIRES OF ADJACENT SHEET BY AT LEAST 25 mm, THUS: SIDE LAP

MESH TYPE	END LAP					
RECTANGULAR MESHES	225					
SQUARE MESHES SL102 TO SL42	225					
SL81	125					
TRENCH MESH	500					

USE LAP LENGTHS BASED ON LARGEST WIRE SPACING. DO NOT LAP MORE THAN THREE SHEETS AT ANY ONE POINT

SPLICE TRENCH MESH BY A LAP OF 750 mm MINIMUM UNO. AT T- AND L-INTERSECTIONS. CONTINUE TRENCH R25. MESH FULL WIDTH OF INTERSECTION. AT L-INTERSECTIONS PROVIDE AN N12 L BAR TO LAP 750 mm WITH OUTSIDE BARS UNO.

DO NOT WELD REINFORCEMENT UNLESS SHOWN ON DRAWINGS OR OTHERWISE APPROVED BY R26. SUPERINTENDENT. WHERE ALLOWED, WELDING OF REINFORCEMENT (INCLUDING TACK-WELDING FOR FIXING PURPOSES) TO COMPLY WITH AS3600 AND AS/NZS1554.3. DO NOT WELD REINFORCEMENT WITHIN 75 mm OF A SECTION THAT HAS BEEN BENT (100 mm FOR N28 AND N32 BARS, 125 mm FOR N36 BARS). EXTENT OF WELD INSPECTION/TESTING TO BE:

- VISUAL SCANNING 100% OF WELDS VISUAL EXAMINATION 50% OF WELDS
- RADIOGRAPHIC OR ULTRASONIC
- R27. DO NOT BEND OR STRAIN REINFORCEMENT IN A WAY THAT MAY CAUSE DAMAGE. BEND DIAMETERS TO BE TO
- NOT COOL HEATED BARS BY QUENCHING. R28. DO NOT CUT, BEND NOR HEAT REINFORCEMENT ON SITE WITHOUT SUPERINTENDENTS PRIOR WRITTEN
- APPROVAL.
- R29. INDICATOR PAINTS AND/OR CRAYONS TO ENSURE REINFORCEMENT TEMPERATURE DOES NOT EXCEED MANUFACTURERS RECOMMENDED LIMITS.
- PERCUSSION ROTARY DRILL HOLES FOR GROUTED BARS AND THREADED RODS (NOTE: CORED HOLES MUST R30. BE ROUGHENED). HOLE DIAMETER AND INSTALLATION TO BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. EMBEDMENT LENGTHS AS PER DRAWINGS.
- ENSURE HOLES FOR GROUTED BARS AND THREADED RODS ARE DRY AND CLEANED THOROUGHLY BEFORE R31. INSTALLING ANCHORS. WIRE BRUSH HOLES AND BLOW OUT WITH COMPRESSED AIR TO REMOVE DUST. FILL HOLE WITH ADHESIVE USING A CAULKING GUN FROM BOTTOM OF HOLE OUTWARDS. DISCARD ADHESIVE FROM FIRST TRIGGER PULL. PROVIDE BARS/THREADED RODS WITH CHAMFERED (CHISELLED) ENDS. BARS TO BE DEGREASED, AND FLAKY RUST REMOVED. ROTATE WHILE INSERTING TO ENSURE FULLY COATED AND PUSH

RECOMMENDATIONS.

ISSUED FOR TENDER EDJ | GG* | TMB* |14.01.20| EDJ | GG* | TMB* |09.12.19 A | PRELIMINARY ISSUE Proiect Job Drawn Manager Director No Revision Note: * indicates signatures on original issue of drawing or last revision of drawing Date

Plot Date: 26 August 2020 - 8:41 AM

Plotted by: Evan Johnson

Cad File No: G:\42\21142\CADD\Drawings\42-21142-S002.dwg

SCALE	Drawn R.KEILY	Designer G.GADEMAN	Client	DOUGLAS S	SHIRE COUNCIL		
	Drafting Check Design Check		Project	MOSSMAN	ALTERNATIVE RAW WATER IN	RAW WATER INTAKE	
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hich it was prepared d by any other er purpose.	Scale AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	Original Size	Drawing No:	42-21142-S002	Rev: B	

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Conditions of Lise	Drafting Check	Design Check	Project	MOSSMAN ALTERNATIVE RAW WATER INTAKE
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and must not be used by any other person or for any other	Scale AS SHOWN	This Drawing must not be used for Construction unless	Original Size	Drawing No: 42-21142-S002 Rev: B

FULLY INTO HOLE. PROTECT FROM DISTURBANCE DURING CURING. FOLLOW MANUFACTURER'S

ENSURE HOT BENDING OF REINFORCEMENT COMPLIES WITH AS3600 CLAUSE 17.2.3.1. USE TEMPERATURE

AS3600. BARS TO BE BENT COLD UNO. GRADE 250 BARS MAY BE BENT AT TEMPERATURES UP TO 850°C. DO

5% OF FILLET WELDS AND 100% OF BUTT WELDS.

840	1110	1400	1710							
690	920	1180	1450							
ICE LENGTHS. FER TO AS3600 OR SUPERINTENDENT.										
ICRETE	AND SLIP	FORMED (CONCRETE	WILL	REQUIRE					

125

225

125

N/A

1340

	17 40						
00	1440	1810	2220				
0	1200	1530	1890				
CE LE ER TC CRET ERINT	ENGTHS.) AS3600 OF E AND SLIF ENDENT.	R SUPERINT P FORMED	endent. Concrete	WILL REQUIRE			
ORIZONTAL BARS WITH LESS THAN 300 mm CONCRETE TO COMPLY WITH THE FOLLOWING UNO:							

-

FOR BEAMS, TIE STIRRUPS TO BARS IN EACH CORNER OF EACH STIRRUP. FIX OTHER LONGITUDINAL BARS TO

COVER TO REINFORCEMENT (INCLUDING FITMENTS) BY APPROVED CHAIRS, SPACERS, LIGATURES OR TIES AT

REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY IN TRUE PROJECTION. SET

PROVIDE ONE CONTINUOUS BAR PARALLEL TO (WITHIN 75 mm OF) CONCRETE EDGES, INCLUDING

TT: TOP TOP (LAID LAST) C OR CP: CENTRALLY PLACED

BB: BOTTOM BOTTOM (LAID FIRST)

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NOT TO SCALE

					DO N	NOT SCALE	Drawn R.KEILY	Designer G.GADEMAN
					DOUGLAS GHD	fllse	Drafting Check	Design Check
					SHIRE COUNCIL GHD's client	ent may only be used by (and any other person who	Approved (Project Director)	
А	ISSUED FOR TENDER EDJ	GG*	TMB*	14.01.20	Level 8, 15 Lake Street, Cairns QLD 4870 AustraliaGHD has agrPO Box 819, Cairns QLD 4870for the purpoT 61 7 4044 2222F 61 7 4044 2288	reed can use this document) ose for which it was prepared	Date	This Drawing must not be
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing Drawn	Job Managei	Project r Director	Date	E cnsmail@ghd.com.au W www.ghd.com.au person or for	r any other purpose.	Scale AS SHOWN	used for Construction unless signed as Approved

Plot Date: 26 August 2020 - 8:43 AM

Plotted by: Evan Johnson

PROVIDE 10mm NEOPRENE -BETWEEN PIPE AND PIPE

5mm CFW —

5mm CFW 🦳

STRAP/EA.

Cad File No: G:\42\21142\CADD\Drawings\42-21142-S003.dwg

NOTE:

CONTRACTOR TO VERIFY ALL INVERT LEVELS, PIPE SIZES, DIAMETERS, SURFACE LEVELS, CLEARANCES AND COVERS ARE CORRECT AND TO BE OBTAINABLE BEFORE COMMENCEMENT OF ANY WORKS. ALL UNDERGROUND SERVICES SHOWN ON THESE PLANS ARE INDICATIVE ONLY AND HAVE BEEN PLOTTED FROM THE RELEVANT AUTHORITIES RECORDS. SERVICES NOT SHOWN ON THESE PLANS MAY EXIST. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ON SITE THE LOCATION OF ALL UNDERGROUND SERVICES PRIOR TO CONSTRUCTION, THE CONTRACTOR IS LIABLE FOR ANY DAMAGE TO UNDERGROUND SERVICES.



						0 250 500 750 1000 1250mm		
						SCALE 1.23 AT ORIGINAL SIZE		
В	REVISED FOR CLIENT COMMENT	EDJ	GG*	TMB*	26.08.20			
A	ISSUED FOR TENDER	EDJ	GG*	TMB*	17.01.20			
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date			
Plot	Plot Date: 26 August 2020 - 8:43 AM Plotted by: Evan Johnson Cad File No: G:\42\21142\CADD\Drawings\42-21142-S005.dwg							

NOTE:

SECTION

SCALE 1 : 25

S005

and the second second		DO NOT SCALE	Drawn R.KEILY	Designer G.GADEMAN	Client
DOUGLAS	GHD	Conditions of Liso	Drafting Check	Design Check	Project
SHIRE COUNCILLevel 8, 15 Lake Street, Cairns QLD 4870 Australia PO Box 819, Cairns QLD 4870 T 61 7 4044 2222 F 61 7 4044 2288 E cnsmail@ghd.com.au W www.ghd.com.au	Level 8, 15 Lake Street, Cairns QLD 4870 Australia	This document may only be used by GHD's client (and any other person who GHD has agreed can use this document)	Approved (Project Director) Date		Title
	T 61 7 4044 2222 F 61 7 4044 2288 E cnsmail@ghd.com.au W www.ghd.com.au	for the purpose for which it was prepared and must not be used by any other person or for any other purpose.	Scale AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	Original Size

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THIS DRAWING INCLUDES COLOURED INFORMATION. IF YOU HAVE A BLACK AND WHITE COPY YOU DO NOT HAVE ALL THE INFORMATION. THIS NOTE IS COLOURED RED.



NOTES 1. DRAWING TO BE READ IN CONJUNCTION WITH SPECIFICATION. REFER TO DRAWING No. 42-21142-G002 FOR NOTES AND LEGEND.
 REFER TO DRAWING No. 42-21142-S001 TO S002 FOR STRUCTURAL NOTES. **ISSUE FOR TENDER** Client DOUGLAS SHIRE COUNCIL Project MOSSMAN ALTERNATIVE RAW WATER INTAKE LOW LIFT PUMP STATION **SLAB PLANS AND DETAILS** A1 Drawing No: 42-21142-S005

Rev	:	В
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ET2



						0 500 1000 1500 2000 2500mm
						SCALE 1:50 AT ORIGINAL SIZE
						0 200 400 600 800 1000mm
Α	ISSUED FOR TENDER	EDJ	GG*	TMB*	17.01.20	
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date	SCALE 1:20 AT ORIGINAL SIZE
Plot	Date: 26 August 2020 - 8:43 AM Plotted by: Evan Johnson	Ca	d File No:	G:\42\21142	2\CADD\Dra	wings\42-21142-S010.dwg







<u>ENTS</u>	ELEMENT	DESCRIPTION
	ROOF	COLORBOND CUSTOM ORB
	PITCH	5° MINIMUM
	WALLS	NONE
	BRACING BAYS	BUILDING DESIGNER TO ADVISE IF REQUIRED
	HEIGHT	3m MIN CLEARANCE
	COLUMN HOLD DOWN	BUILDING DESIGNER TO ADVISE AND MODIFY FOOTING TO SUIT
	COLOUR	MIST GREEN
	GUTTER	YES
	BARGE CAPPING / FLASHING	YES
	FASCIA FIT GUTTER	YES

|--|

	Client	DC
	Project	M
	Title	HI
		SL
be	Original Size	_

DOUGLAS SHIRE COUNCIL IOSSMAN ALTERNATIVE RAW WATER INTAKE IIGH LIFT PUMP STATION LAB PLANS AND DETAILS Drawing No: 42-21142-S010





NOTE:

REMOVED. INITIAL EXCAVATION TO ONLY BE 2m DEPENDENT ON MATERIAL ADEQUATE IT CAN REMAIN AS UNDISTURBED SOIL. REPLACE UNSUITABLE MATERIAL WITH CLAY FREE ENGINEERING FILL TYPE MATERIAL WHICH IS INCLUDES BINDING. REPLACEMENT MATERIAL IS TO BE PLACED IN LAYERS





		DO NOT SCALE	Drawn R.KEILY Designer G.GADEMAN		Client	DOUGLAS SHIRE COUNCIL
OUGLAS	GHD	Conditions of Lise	Drafting Check	Design Check	Project	MOSSMAN ALTERNATIVE RAW WA
IRE COUNCIL	Level 8, 15 Lake Street, Cairns QLD 4870 Australia	This document may only be used by GHD's client (and any other person who GHD has agreed can use this document)	Approved (Project Director) Date		Title	HIGH LIFT RAW WATER MAIN THRUST RESTRAINT DETAILS
	T 61 7 4044 2222 F 61 7 4044 2288 E cnsmail@ghd.com.au W www.ghd.com.au	for the purpose for which it was prepared and must not be used by any other person or for any other purpose.	Scale AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	Original Siz	Drawing No: 42-21142-S020

CONTRACTOR TO VERIFY ALL INVERT LEVELS, PIPE SIZES, DIAMETERS, SURFACE LEVELS, CLEARANCES AND COVERS ARE CORRECT AND TO BE OBTAINABLE BEFORE COMMENCEMENT OF ANY WORKS. ALL UNDERGROUND SERVICES SHOWN ON THESE PLANS ARE INDICATIVE ONLY AND HAVE BEEN PLOTTED FROM THE RELEVANT AUTHORITIES RECORDS. SERVICES NOT SHOWN ON THESE PLANS MAY EXIST. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE ON SITE THE LOCATION OF ALL UNDERGROUND SERVICES PRIOR TO CONSTRUCTION, THE CONTRACTOR IS LIABLE FOR ANY DAMAGE TO UNDERGROUND SERVICES.







	NOTE: CONTRACTOR TO VERIFY LEVELS, CLEARANCES AN COMMENCEMENT OF ANY PLANS ARE INDICATIVE OF AUTHORITIES RECORDS.	ALL INVERT LEVELS, PIPE SIZES, I D COVERS ARE CORRECT AND TC WORKS. ALL UNDERGROUND SEF NLY AND HAVE BEEN PLOTTED FR SERVICES NOT SHOWN ON THESE	DIAMETERS, SURFACE BE OBTAINABLE BEFORE VICES SHOWN ON THESE OM THE RELEVANT PLANS MAY EXIST. IT IS
	THE CONTRACTORS RESE UNDERGROUND SERVICE FOR ANY DAMAGE TO UNI	PONSIBILITY TO LOCATE ON SITE T S PRIOR TO CONSTRUCTION, THE DERGROUND SERVICES.	HE LOCATION OF ALL CONTRACTOR IS LIABLE
VARIES REVEGETATION		THIS DRAWING INCLUDES COLO YOU HAVE A BLACK AND WHITE ALL THE INFORMATION. THIS NO	OURED INFORMATION. IF COPY YOU DO NOT HAVE DTE IS COLOURED RED.
	WHERE H = < 0.5 SLOPE H = > 0.5 SLOPE	1 on 6 1 on 2	DIAL BEFORE YOU DIG www.1100.com.au
OSED NEW DN300 RISING MAIN DETAILS REFER DRAWINGS 142-W020 TO W023			
	VARIES REVEGETATION		
2.5%			
D IN CONJUNCTION WITH SPECIFIC/ No. 42-21142-G002 FOR NOTES AND D ON THE FOLLOWING CRITERIA AN NTAL ROAD GEOMETRY HAS BEEN D TABLE DRAINS ARE FORMED ADJ TO NEAREST POINT OF DISCHARGI BETWEEN CH 900 AND CH1105 ASS AND SEAL WIDTH ASSUMES ONE-V TING SPEED = 50KM/H NCRETE PAVEMENT HAS BEEN PRO FO REDUCE THE RISK OF SCOURING (E BEEN DESIGNED WITHOUT SURV CONFIRMED ON SITE PRIOR TO COI ESE DRAWINGS, CONTRACTOR IS T	ATION. LEGEND. ID ASSUMPTIONS: MAINTAINED AT DOUGLAS SH ACENT ROAD EDGE DUE TO I E AWAY FROM ROAD UMES INFREQUENT USE BY L /AY ACCESS (OPPOSING VEH VIDED BASED ON SITE INVES & DURING MINOR OVERLAND EY. WHERE LIMITED SURVEY NSTRUCTION. SHOULD ON-S O NOTIFY THE CONTRACT AL	IIRE COUNCIL'S REQUEST REGRADING, CONTRACTOR IS TO IGHT UTILITY VEHICLES (EG. MAIN ICLES REQUIRED TO GIVE WAY WI TIGATION UNDERTAKEN BY OTHEI FLOW EVENTS INFORMATION IS PROVIDED ALL D ITE CONDITIONS DIFFER FROM TH DMINISTRATOR AND SEEK DIRECTI	ENSURE FREE TENANCE HEN PASSING) RS, AND HAS DETAILS ARE OSE ON PRIOR TO
IAGE CULVERTS HAVE BEEN PROVI BEEN UNDERTAKEN AND LOCATION	DED FOLLOWING CLIENT DIR S/SIZES ARE AS DIRECTED B'	ECTION. NO HYDRAULIC ANALYSIS Y DOUGLAS SHIRE COUNCIL	OR FLOOD
IEN SURFACING			
AMC0 EAL PMB (S 14mm / D PMB (S 7mm A	@ 1.1L/m ² 325E) @ 1.4 L/m ² AGGREGATE @ 120m 325E) @ 1.1 L/m ² GGREGATE @ 225m ²	²/m³ /m³	
FINAL SEAL RATES, CUTTE AGENT CONTENT TO BE C CONTRACT ADMINISTRATE ARE FOR ESTIMATING PUI	R AND ADHESION ONFIRMED BY THE OR. RATES SPECIFIE RPOSES ONLY.	D	
		ISSUE FC	R TENDER
Client DOUGLA Project MOSSMA Title ACCESS TYPICAI to be unless Original Size A1 Drawing	AS SHIRE COU AN ALTERNA BROAD - SECTIONS A No: 42-21 1	INCIL TIVE RAW WATE ND DETAILS	R INTAKE



SURVEY STATION AND PSM MARKS										
STATION NO.	EASTING	NORTHING	RL.	COMMENTS						
STN9000	324892.105	8178450.000	17.016	SCREW IN MANHOLE						
STN9001	324418.611	8178479.921	19.655	PIN						
STN9012	324157.250	8178429.349	20.021	PIN						
STN9011	324226.759	8178504.665	19.477	PIN						
STN9003	324200.158	8178580.353	19.028	PIN						
STN9004	324188.459	8178743.508	18.165	SCREW IN CONCRETE						

UNDERGROUND SERVICES PRIOR TO CONSTRUCTION, THE CONTRACTOR IS LIABLE FOR ANY DAMAGE TO UNDERGROUND SERVICES.

			CONTRO	DL LINE SETOL	JT - MC01								CONTRO	OL LINE SETO	JT - MC01			
PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE		PT	CHAINAGE	EASTING	NORTHING	HEIGHT	BEARING	RAD/SPIRAL	A.LENGTH	DEFL.ANGLE
IP 1	0.000	324890.326	8178426.602		322°09'48.98"					СТ	637.246	324294.798	8178396.661	18.326	224°50'32.97"			
TC	0.916	324889.764	8178427.325		322°09'48.98"					тс	650.742	324285.281	8178387.092	18.469	224°50'32.97"			
IP 2	6.620	324886.167	8178431.957			R = -20.000	11.409	32°41'07.57"		IP 9	700.114	324237.352	8178338.899	18.831		R = 56.000	98.745	101°01'45.66"
СТ	12.325	324880.638	8178433.912		289°28'41.41"					СТ	749.487	324199.218	8178395.162	19.367	325°52'18.63"			
тс	31.059	324862.977	8178440.159	17.386	289°28'41.41"					тс	758.309	324194.269	8178402.465	19.408	325°52'18.63"			
IP 3	64.125	324831.619	8178451.250	17.563		R = -250.000	66.133	15°09'23.55"	1	IP 10	781.999	324180.575	8178422.669	19.494		R = 80.000	47.380	33°55'59.90"
СТ	97.192	324798.453	8178453.756	17.759	274°19'17.86"					СТ	805.689	324180.492	8178447.077	19.376	359°48'18.53"			
тс	325.242	324571.051	8178470.941	19.342	274°19'17.86"					тс	859.924	324180.308	8178501.312	19.105	359°48'18.53"			
IP 4	337.515	324558.813	8178471.866	19.436		R = -750.000	24.545	1°52'30.36"	1	IP 11	883.155	324180.228	8178524.793	18.989		R = 130.000	46.462	20°28'38.47"
СТ	349.787	324546.550	8178472.390	19.468	272°26'47.50"					СТ	906.386	324188.368	8178546.819	19.120	20°16'57.00"			
тс	400.414	324495.969	8178474.551	19.248	272°26'47.50"					тс	927.016	324195.519	8178566.169	19.550	20°16'57.00"			
IP 5	422.756	324473.617	8178475.506	19.277		R = 350.000	44.684	7°18'53.38"	1	IP 12	952.966	324204.636	8178590.839	18.918		R = -130.000	51.900	22°52'27.47"
СТ	445.098	324451.569	8178479.299	19.335	279°45'40.88"					СТ	978.916	324203.446	8178617.112	18.070	357°24'29.53"			
тс	478.553	324418.598	8178484.971	19.943	279°45'40.88"					TC	984.176	324203.209	8178622.367	18.266	357°24'29.53"			
IP 6	496.887	324397.884	8178488.535	19.191		R = -30.000	36.669	70°01'54.81"	1	IP 13	1008.778	324202.091	8178647.046	19.108		R = -220.000	49.203	12°48'51.32"
СТ	515.221	324387.461	8178470.283	18.303	209°43'46.08"					СТ	1033.379	324195.528	8178670.863	18.401	344°35'38.21"			
тс	534.463	324377.919	8178453.573	18.045	209°43'46.08"					тс	1060.157	324188.415	8178696.679	17.056	344°35'38.21"			
IP 7	559.259	324365.081	8178431.093	18.181		R = 70.000	49.592	40°35'29.07"	I	IP 14	1081.807	324182.519	8178718.076	17.815		R = 80.000	43.300	31°00'41.10"
СТ	584.055	324340.705	8178422.375	18.468	250°19'15.15"					СТ	1103.457	324188.489	8178739.452	18.105	15°36'19.31"			
ТС	597.225	324328.305	8178417.940	18.291	250°19'15.15"				I	IP 15	1117.569	324192.285	8178753.044		15°36'19.31"			
IP 8	617.235	324309.146	8178411.088	18.348		R = -90.000	40.021	25°28'42.18"										

						0 10 20 30 40 50m
						SCALE 1:1000 AT ORIGINAL SIZE
А	ISSUED FOR TENDER	JM	GG*	TMB*	14.01.20	
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date	

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Plotted by: Evan Johnson

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for the and m person	for the purpose for which it was prepared and must not be used by any other person or for any other purpose.	Scale	AS SHOWN	This Drawing must no used for Construction signed as Approved
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Date

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AS SHOWN used for Construction unless signed as Approved

SETOUT POINTS - TURN AROUND AREA							
POINT	EASTING	NORTHING	ELEVATION				
1	324196.860	8178751.766	18.536				
2	324190.118	8178753.649	18.361				
3	324187.741	8178745.137	18.316				
4	324186.031	8178741.992	18.279				
5	324182.472	8178739.675	18.193				
6	324178.396	8178739.459	18.090				
7	324173.819	8178741.232	17.990				
8	324171.810	8178736.661	17.927				
9	324176.077	8178734.782	18.036				
10	324180.459	8178731.524	18.146				
11	324183.207	8178726.806	18.156				
12	324183.886	8178721.881	17.994				
13	324189.103	8178723.994	18.233				
14	324187.614	8178714.356	17.642				

NOTE:

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- CONTROL LINE MC01 O/S -7.65 IL 16.75 4B 2/900 RCP (14/2.44) (CLASS 2, RUBBER RING) (15.89 OUTSIDE OF WALLS) CH 1019.7 SKEW ANGLE 52° SKEW NUMBER 142 (17.08 OVERALL LENGTH) WINGWALL (W1 4.2, W2 1.6) FNQROC STANDARD DRAWINGS - S1085, S1046 PIPE SUPPORT TYPE HS2 EXTERNAL DIA. 1029mm, PIPE THICK. 57mm, HEADWALL HT. 230mm 5m² OF 300mm NOMINAL DUMPED ROCK TO INLET 10m² OF 300mm NOMINAL DUMPED ROCK TO OUTLET GRADE OUTLET TO DAYLIGHT TO ENSURE POSITIVE DRAINAGE - CONTROL LINE MC01 O/S -4.87 _____0.5% min. _____ IL 16.08 450 RCP (1/1.22 4/2.44) (CLASS 2, RUBBER RING) (10.98 OVERALL LENGTH) CH 975.71 FNQROC STANDARD DRAWINGS - S1075, S1046 4A PIPE SUPPORT TYPE HS2 EXTERNAL DIA. 534mm, PIPE THICK. 42mm, HEADWALL HT. 230mm 5m² OF 300mm NOMINAL DUMPED ROCK TO INLET 10m² OF 300mm NOMINAL DUMPED ROCK TO OUTLET - CONTROL LINE MC01 O/S -10.36 0.5% min. IL 17.07 GRADE OUTLET TO DAYLIGHT TO ENSURE POSITIVE DRAINAGE 2/450 RCP (22/2.4) (CLASS 2, RUBBER RING) (26.38 OUTSIDE OF WALLS) CH 564 FNQROC STANDARD DRAWINGS - S1075, S1046 3A PIPE SUPPORT TYPE HS2 EXTERNAL DIA. 534mm, PIPE THICK. 42mm, HEADWALL HT. 230mm 5m² OF 300mm NOMINAL DUMPED ROCK TO INLET AND OUTLET 0 1 2 3 4 5m

						SCALE 1:100 AT ORIGINAL SIZE	
В	ROCK PROTECTION ADDED	EDJ	GG*	TMB*	31.08.20		
Α	ISSUED FOR TENDER	JM	GG*	TMB*	14.01.20		
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date		
Plot	Plot Date: 31 August 2020 10:35 AM Plotted by: Even Johnson Cad File No: C:\/2\\21142\CADD\Drawings\/2.211/2.C005 dwg						

Plot Date: 31 August 2020 - 10:35 AM Plotted by: Evan Johnson

NOTES

4.

- DRAWING TO BE READ IN CONJUNCTION WITH SPECIFICATION.
- REFER TO DRAWING No. 42-21142-G002 FOR NOTES AND LEGEND. REFER TO DRAWING No. 42-21142-S001 TO S002 FOR STRUCTURAL NOTES.
- INCLUDE APRONS AND CUT-OFF WALLS AT ALL INLETS AND OUTLETS







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DOUGLHS	GHD	Conditions of Use	Check	Check				
SHIRE COUNCIL		This document may only be used by GHD's client (and any other person who GHD has agreed can use this document)	Approved (Project Director)		Title	ACCESS ROAD		
	Level 8, 15 Lake Street, Cairns QLD 4870 Australia		Date			DRAINAGE SECTIONS		
	T 61 7 4044 2222 F 61 7 4044 2288 E cnsmail@ghd.com.au W www.ghd.com.au	and must not be used by any other person or for any other purpose.	Scale AS SHOWN	This Drawing must not be used for Construction unless signed as Approved	Original Siz	1 Drawing No: 42-21142-C005 Rev: E		

ISSUE FOR TENDER





NOTES

- 1. DO NOT SCALE DRAWINGS, DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- 2. ALL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE CONTRACT DOCUMENTATION.
- 3. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH AS/NZS3000, LOCAL AUTHORITY AND SUPPLY AUTHORITY REQUIREMENTS
- 4. THE CONTRACTOR SHALL VERIFY, IN RELATION TO THE WORKS, THE LOCATIONS OF ALL UNDERGROUND AND ABOVE GROUND SERVICES ON SITE. IN THE EVENT OF UNFORESEEN CONFLICTS ON SITE, DESIGN ADVICE SHALL BE SOUGHT BEFORE ANY CHANGES TO THE DOCUMENTED ARRANGEMENTS ARE UNDERTAKEN.
- 5. ALL EQUIPMENT SHOWN IS/SHALL BE NEW UNLESS NOTED OTHERWISE.
- 6. FAULT AND DISCRIMINATION LEVELS SHOWN ARE BASED ON TERASAKI TEMBREAK 2 AND DIN-T CIRCUIT BREAKERS. SUBMIT CALCULATIONS AND DETAILS OF ALTERNATE SELECTIONS FOR APPROVAL.
- 7. CONDUIT & CABLE SIZES SHOWN ARE MINIMUM SIZES. FINAL SIZES SHALL BE DETERMINED TO SUIT WIRING METHODS AND DERATING FACTORS.
- 8. FINAL LOCATION OF ELECTRICAL AND COMMUNICATIONS CABLE PITS AND DISTRIBUTION BOXES SHALL BE COORDINATED WITH LANDSCAPE, KERBING, AND PAVEMENT LAYOUTS. PITS SHALL BE LOCATED ENTIRELY WITHIN PAVEMENT OR GARDEN AREAS AND SHALL NOT INTERRUPT PAVEMENT AND/OR KERBS.
- 9. ALL SOLID STATE (LED) LAMPS SHALL BE OF MATCHING COLOUR APPEARANCE: "COOL WHITE" CCT 4000K, Ra > 80 UNLESS NOTED OTHERWISE. EFFICACY, AS-INSTALLED AND INCLUDING DRIVER LOSSES, SHALL BE NOT LESS THAN 80lm/W INITIAL. AS-INSTALLED MAINTAINED LAMP FLUX AT 50000 HOURS SHALL BE NOT LESS THAN 85% OF INITIAL (L85 = 50000).
- 10. FOOTING DESIGNS SHOWN ARE INDICATIVE ONLY, THE CONTRACTOR SHALL VISIT THE SITE AND ENSURE THAT THE POLE AND FOOTING DESIGN AND INSTALLATION IS UNDERTAKEN TO SUIT THE SITE CONDITIONS AND TO ACHIEVE THE DESIGN REQUIREMENTS.
- 11. ALL LUMINAIRES SHALL BE AIMED INITIALLY AS DOCUMENTED. ALLOW TO RE-AIM ALL LUMINAIRES TO THE SATISFACTION OF THE SUPERINTENDANT. RE-AIMING WORK SHALL BE UNDERTAKEN OUTSIDE NORMAL HOURS (i.e. AFTER DARK).

LEGEND OF SYMBOLS

Original Size

A1 Drawing	g No:	42-21142-E001	Rev: A
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		L JERVICEJ T I EGEND AND NOTES	
Project MOSS	LAS S MAN A	LTERNATIVE RAW WATER INT	AKE
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		ISSUE FOR TE	NDER
		CONDUITS. MINIMUM NUMBER AND SIZE AS SHOWN	
	1x@10	- ROUTE OF UNDERGROUND ELECTRICAL HDuPVC (ORANGE)	
ĺ	Q	E1: 600x450x750 DEEP. E2: 900x600x750 DEEP.	
/	E1	STEEL COVER. MINIMUM INTERNAL DIMENSIONS AS FOLLOWS AND AS NOTED.)
		ELECTRICAL CABLING PIT WITH MEDIUM DUTY (CLASS C TO AS399	6)
• (–) – –	*	ASYMMETRIC BEAM FLOODLIGHT, GERARD RODIO 1887 OR APPROVED EQUAL, MOUNT AND AIM AS NOTED	
	•		
	Ø	INDICATOR LAMP (COLOUR AS SHOWN)	
D		PICKUP DELAY RELAY COIL	
X	D	DROPOUT DELAY RELAY COIL	
R1		RELAY/CONTACTOR COIL	
	•0	CONTACTOR MAKE CONTACT	
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Ľ	- ^ +t°	THERMAL SENSOR (THERMISTER)	
م ر -		THERMAL SWITCH (MICROTHERM)	
- •	720	LIMIT SWITCH BREAK CONTACT	
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مر-		PUSHBUTTON MAKE CONTACT	
3-	SRF	TRANSIENT PROTECTION (SURGE FILTER)	
		TRANSIENT PROTECTION (SURGE DIVERTER)	
	-	HRC FUSE	
0.0	······································	LOAD BREAK ISOLATOR	
	۵مر x	COMBINED CIRCUIT BREAKER/RCD (RCBO)	
<u>م</u> x		CIRCUIT BREAKER	



В	ISSUED FOR TENDER	EDJ	GG*	TMB*	14.01.20
А	PRELIMINARY ISSUE	JWR	GG*	TMB*	09.12.19
No	Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date
Plot Date: 26 August 2020 - 8:37 AM Plotted by: Evan Johnson			d File No:	G:\42\2114	2\CADD\Dra

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FOR GENERAL NOTES AND LEGEND OF SYMBOLS, REFER TO DRAWING 42-21142-E001

NOT TO SCALE

Scale

and must not be used by any other

person or for any other purpose.

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DOUGLAS SHIRE COUNCIL Client **MOSSMAN ALTERNATIVE RAW WATER INTAKE** Project ELECTRICAL SERVICES Title **SCHEMATICS** Original Size This Drawing must not be Drawing No: 42-21142-E002 A1 used for Construction unless signed as Approved



COMMON CONTROL AND INDICATION

ISSUE FOR TENDER



					DO NOT SCALE	Dra	wn JWR	Designer JWR
					DOUGLAS GHD Conditions of Use.	Draf [*] Che	fting ck	Design Check
В	ISSUED FOR TENDER	EDJ	GG* T	MB* 14.01.20	SHIRE COUNCIL This document may only be used to GHD's client (and any other person Level 8, 15 Lake Street, Cairns QLD 4870 Australia GHD has agreed can use this docu BO Box 810 Coirns OL D 4870 GHD has agreed can use this docu	who (Pro nent) Date	roved ject Director) e	
A No	PRELIMINARY ISSUE Revision Note: * indicates signatures on original issue of drawing or last revision of drawing	JWR Drawn	GG* I Job Pr Manager Dir	viB* 09.12.19 oject ector Date	PO Box 819, Calms QLD 4670for the purpose for which it was preT 61 7 4044 2222F 61 7 4044 2288and must not be used by any otherE cnsmail@ghd.com.auW www.ghd.com.auperson or for any other purpose.	Scal	le NOT TO SCALE	This Drawing must no used for Construction signed as Approved

Plot Date: 26 August 2020 - 8:38 AM Plotted by: Evan Johnson

Cad File No: G:\42\21142\CADD\Drawings\42-21142-E003.dwg



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Α	PRELIMINARY ISSUE	EDJ	GG*	TMB*	09.12.19
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Plot Date: 26 August 2020 - 8:38 AM Plotted by: Evan Johnson

Cad File No: G:\42\21142\CADD\Drawings\42-21142-E004.dwg

I/O SLOT 12 (SPARE)	I/O SLOT 13 (SPARE)	I/O SLOT 14 (SPARE)

NOTE:	

DO NOT SCALE Drawn JWR Designer JWR E DOUGLAS SHIRE COUNCIL Drafting Check Design Check Conditions of Use. This document may only be used by GHD's client (and any other person who GHD has agreed can use this document) for the purpose for which it was prepared Level 8, 15 Lake Street, Cairns QLD 4870 Australia PO Box 819, Cairns QLD 4870 This Drawing must not be used for Construction unl signed as Approved T 61 7 4044 2222 F 61 7 4044 2288 and must not be used by any other Scale NOT TO SCALE E cnsmail@ghd.com.au W www.ghd.com.au person or for any other purpose.

FOR GENERAL NOTES AND LEGEND OF SYMBOLS, REFER TO DRAWING 42-21142-E001 ISSUE FOR TENDER

	Client	DOUGLAS	SHIRE COUNCIL	
	Project	MOSSMAN	ALTERNATIVE RAW WATER	INTAKE
	Title	ELECTRICA	L SERVICES	
		TELEMETR	Y (SCADA) - SHEET 2 OF 2	
: be unless	Original Size	Drawing No:	42-21142-E004	Rev: B



Plot Date: 26 August 2020 - 8:38 AM

Plotted by: Evan Johnson

Cad File No: G:\42\21142\CADD\Drawings\42-21142-E005.dwg

Appendix B

Completed DA Form 1 and Owners Consent

DA Form 1 – Development application details

Approved form (version 1.3 effective 28 September 2020) made under section 282 of the Planning Act 2016.

This form **must** be used to make a development application **involving code assessment or impact assessment**, except when applying for development involving only building work.

For a development application involving **building work only**, use DA Form 2 – Building work details.

For a development application involving building work associated with any other type of assessable development (i.e. material change of use, operational work or reconfiguring a lot), use this form (*DA Form 1*) and parts 4 to 6 of *DA Form 2 – Building work details*.

Unless stated otherwise, all parts of this form **must** be completed in full and all required supporting information **must** accompany the development application.

One or more additional pages may be attached as a schedule to this development application if there is insufficient space on the form to include all the necessary information.

This form and any other form relevant to the development application must be used to make a development application relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994*, and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*. For the purpose of assessing a development application relating to strategic port land and Brisbane core port land, any reference to a planning scheme is taken to mean a land use plan for the strategic port land, Brisbane port land use plan for Brisbane core port land, or a land use plan for airport land.

Note: All terms used in this form have the meaning given under the Planning Act 2016, the Planning Regulation 2017, or the Development Assessment Rules (DA Rules).

PART 1 – APPLICANT DETAILS

1) Applicant details	
Applicant name(s) (individual or company full name)	Douglas Shire Council
Contact name (only applicable for companies)	c/- RPS AAP Consulting Pty Ltd, Owen Caddick-King
Postal address (P.O. Box or street address)	PO Box 1949
Suburb	Cairns
State	Queensland
Postcode	4870
Country	Australia
Contact number	+61 7 4276 1027
Email address (non-mandatory)	Owen.caddick-king@rpsgroup.com.au
Mobile number (non-mandatory)	
Fax number (non-mandatory)	
Applicant's reference number(s) (if applicable)	AU006055 / PR152792

2) Owner's consent

2.1) Is written consent of the owner required for this development application?

Yes – the written consent of the owner(s) is attached to this development application

 \square No – proceed to 3)



PART 2 – LOCATION DETAILS

3) Location of the premises (complete 3.1) or 3.2), and 3.3) as applicable) Note: Provide details below and attach a site plan for any or all premises part of the development application. For further information, see <u>DA</u> Forms Guide: Relevant plans.								
3.1) Street address and lot on plan								
🛛 Str	eet address /	AND lo	t on plan (all lots must be listed	d), Or			
Str	eet address <i>I</i> er but adjoining	AND lo or adjace	t on plan f e <i>nt to land e</i> .	or an adjoining o .g. jetty, pontoon. All	or adjacent property of the lots must be listed).	ne premises (appropriate for development in		
	Unit No.	Stree	t No. S	treet Name and	Туре	Suburb		
			N	lango Park, Mos	sman Gorge Road	Mossman		
a)	Postcode	Lot N	o. P	lan Type and Nu	ımber (e.g. RP, SP)	Local Government Area(s)		
	4873	6 SP2		P212661		Douglas Shire Council		
	Unit No.	Stree	t No. S	treet Name and	Туре	Suburb		
L)		3	N	lanjal Dimbi Roa	d	Mossman		
(0	Postcode	Lot N	o. P	lan Type and Nu	ımber (e.g. RP, SP)	Local Government Area(s)		
	4873	1 RP7		RP716977		Douglas Shire Council		
	Unit No.	Stree	et No. S	Street Name and	d Type	Suburb		
c)		1	N	lanjal Dimbi Roa	d	Mossman		
	Postcode	Lot N	lo. P	lan Type and N	Number (e.g. RP, SP)	Local Government Area(s)		
	4873 4 RP716977 Douglas Shire Council							
3.2) C e. Note: P	oordinates of g. channel dredg lace each set of	f premis ging in M coordina	SES (approp oreton Bay) ates in a sepa	priate for developmer arate row.	nt in remote areas, over part o	f a lot or in water not adjoining or adjacent to land		
		51011130	Latitude(Datum	Local Government Area(s) (if applicable)		
Longit	Longitude(s) Datum Local Government Area(s) (if applicable) WGS84 GDA94 Other: Other:							
Co	ordinates of p	oremise	es by east	ing and northing				
Eastin	g(s)	North	ning(s)	Zone Ref.	Datum	Local Government Area(s) (if applicable)		
□ 54 □ WGS84 □ 55 □ GDA94 □ 56 □ Other: □								
3.3) A	dditional pren	nises						
Additional premises are relevant to this development application and the details of these premises have been attached in a schedule to this development application								
⊠ Not required								
4) Identify any of the following that apply to the premises and provide any relevant details								
In or adjacent to a water body or watercourse or in or above an aquiler								
On attrategic part land under the Transport Infrastructure Act 1004								
On strategic port land under the Transport Infrastructure Act 1994								

Name of port authority for the lot:

🗌 In a tidal area				
Name of local government for the tidal area (if applicable):				
Name of port authority for tidal area (if applicable):				
On airport land under the Airport Assets (Restructuring and Disposal) Act 2008				
Name of airport:				
Listed on the Environmental Management Register (EMR) under the Environmental Protection Act 1994				
EMR site identification:				
Listed on the Contaminated Land Register (CLR) under the Environmental Protection Act 1994				
CLR site identification:				

5) Are there any existing easements over the premises?
Note: Easement uses vary throughout Queensland and are to be identified correctly and accurately. For further information on easements and how they may affect the proposed development, see <u>DA Forms Guide.</u>
Yes – All easement locations, types and dimensions are included in plans submitted with this development application
No

PART 3 – DEVELOPMENT DETAILS

Section 1 – Aspects of development

6.1) Provide details about the first development aspect								
a) What is the type of development? (tick only one box)								
Material change of use Reconfiguring a lot Operational work Building work	k							
b) What is the approval type? (tick only one box)								
Development permit Preliminary approval Preliminary approval that includes a variation approva								
c) What is the level of assessment?								
Code assessment Impact assessment (requires public notification)								
d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration lots):	n of 1 lot into 3							
Utility installation – An Additional Water Supply Intake and associated Intake Infrastructure extracting was Anabranch of the Mossman River	ter from an							
e) Relevant plans Note : Relevant plans are required to be submitted for all aspects of this development application. For further information, see <u>DA F</u> <u>Relevant plans</u> .	-orms guide:							
\boxtimes Relevant plans of the proposed development are attached to the development application								
6.2) Provide details about the second development aspect								
a) What is the type of development? (tick only one box)								
Material change of use Reconfiguring a lot Deprational work Building work	ĸ							
b) What is the approval type? (tick only one box)								
Development permit Preliminary approval Preliminary approval that includes a varia	tion approval							
c) What is the level of assessment?								
Code assessment Impact assessment (requires public notification)								
d) Provide a brief description of the proposal (e.g. 6 unit apartment building defined as multi-unit dwelling, reconfiguration of 1 lot into 3 lots):								
e) Relevant plans								

Note: Relevant plans are required to be submitted for all aspects of this development application. For further information, see <u>DA Forms Guide</u>: <u>Relevant plans</u>.

Relevant plans of the proposed development are attached to the development application

6.3) Additional aspects of development

 Additional aspects of development are relevant to this development application and the details for these aspects that would be required under Part 3 Section 1 of this form have been attached to this development application
 Not required

Section 2 – Further development details

7) Does the proposed development application involve any of the following?					
Material change of use	\boxtimes Yes – complete division 1 if assessable against a local planning instrument				
Reconfiguring a lot Yes – complete division 2					
Operational work	Yes – complete division 3				
Building work					

Division 1 – Material change of use

Note: This division is only required to be completed if any part of the development application involves a material change of use assessable against a local planning instrument.

8.1) Describe the proposed material change of use							
Provide a general description of the proposed use	Provide the planning scheme definition (include each definition in a new row)	Number of dwelling units (if applicable)	Gross floor area (m²)				
			(if applicable)				
Additional Water Supply Intake and associated Intake Infrastructure from Mossman River Anabranch	Utility installation						
8.2) Does the proposed use involve the use of existing buildings on the premises?							
Yes							
🖾 No							

Division 2 – Reconfiguring a lot

Note: This division is only required to be completed if any part of the development application involves reconfiguring a lot.

9.1) What is the total number of existing lots making up the premises?				
Three				
9.2) What is the nature of the lot reconfiguration? (tick all applicable boxes)				
Subdivision (complete 10))				
Boundary realignment (complete 12))	Creating or changing an easement giving access to a lot from a constructed road <i>(complete 13))</i>			

10) Subdivision					
10.1) For this development, how many lots are being created and what is the intended use of those lots:					
Intended use of lots created Residential Commercial Industrial Other, please specify:					
Number of lots created					
10.2) Will the subdivision be staged?					
Yes – provide additional details below					
🗌 No					

How many stages will the works include?	
What stage(s) will this development application apply to?	

11) Dividing land into parts by agreement – how many parts are being created and what is the intended use of the parts?					
Intended use of parts created	Residential	Commercial	Industrial	Other, please specify:	
Number of parts created					

12) Boundary realignment						
12.1) What are the current and proposed areas for each lot comprising the premises?						
Current lot Proposed lot						
Lot on plan description	Area (m²)	Lot on plan description	Area (m²)			
12.2) What is the reason for the boundary realignment?						

13) What are the dimensions and nature of any existing easements being changed and/or any proposed easement? (attach schedule if there are more than two easements)						
Existing or proposed?Width (m)Length (m)Purpose of the easement? (e.g. pedestrian access)Identify the land/lot(s) benefitted by the easem						

Division 3 – Operational work

Note: This division is only required to be completed if any part of the development application involves operational work.

14.1) What is the nature of the oper	rational work?		
Road work	Stormwater	Water infrastructure	
Drainage work	Earthworks	Sewage infrastructure	
Landscaping	🗌 Signage	Clearing vegetation	
Other – please specify:			
14.2) Is the operational work neces	sary to facilitate the creation of r	ew lots? (e.g. subdivision)	
Yes – specify number of new lot	s:		
No			
14.3) What is the monetary value o	f the proposed operational work?	(include GST, materials and labour)	
\$			

PART 4 – ASSESSMENT MANAGER DETAILS

15) Identify the assessment manager(s) who will be assessing this development application

Douglas Shire Council

16) Has the local government agreed to apply a superseded planning scheme for this development application?

Yes – a copy of the decision notice is attached to this development application

The local government is taken to have agreed to the superseded planning scheme request – relevant documents attached
 No

PART 5 - REFERRAL DETAILS

Note. A development application will require referal if prescribed by the Planning Regulator 2017. No, there are no referral requirements relevant to any development aspects identified in this development application – proceed to Part 6 Matters requiring referral to the Chief Executive of the Planning Act 2016: Clearing native vegetation Contaminated land (unexploted ordnance) Environmentally relevant activities (ERA) (only if the ERA has not been devolved to a local government) Fisheries - aquaculture Fisheries - declared fish habitat area Fisheries - declared fish habitat area Fisheries - declared fish habitat area Fisheries - waterway barrier works Hazardous chemical facilities Heritage places - Queensland heritage place (on or near a Queensland heritage place) Infrastructure-related referrals - state transport infrastructure Infrastructure-related referrals - state transport corridor and future State transport corridor Infrastructure-related referrals - state transport corridor or future State transport corridor Infrastructure-related referrals - state controlled transport tunnels and future state transport corridor Infrastructure-related referrals - state transport corridor or future State transport corridor Ports - Brisbane core port land - enear a State transport corridor or future State transport corridor Port	17) Does this development application include any aspects that have any referral requirements?
No, there are no referral requirements relevant to any development aspects identified in this development application – proceed to Part 6 Matters requiring referral to the Chief Executive of the Planning Act 2016: Clearing native vegetation Contaminated land (unexploted andnace) Environmentally relevant activities (ERA) (only if the ERA has not been devolved to a local government) Fisheries – aquaculture Fisheries – aquaculture Fisheries – adeclard fish habitat area Fisheries – marine plants Heritage places – Queensland heritage place (on or near a Queensland heritage place) Infrastructure-related referrals – state transport infrastructure Infrastructure-related referrals – State transport corridor and future State transport corridor Infrastructure-related referrals – State-controlled transport future State transport corridor Infrastructure-related referrals – near a state-controlled road intersection Koala habitat in SEQ region – key resource areas Ports – Brisbane core port land – environmentally relevant activity (ERA) Ports – Brisbane core port land – tidal works or work in a coastal management district Ports – Brisbane core port land – tidal works or work in a coastal management district Ports – Brisbane core port land – tidal works or work in a coastal management district Ports – Brisbane core port land – tidal works or work in a coastal man	Note: A development application will require referral if prescribed by the Planning Regulation 2017.
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Water-related development – taking or interfering with water Water-related development – removing guarry material (from a watercourse or lake)	🗌 Urban design
Water-related development – removing quarry material (from a watercourse or lake)	Water-related development – taking or interfering with water
	Water-related development – removing quarry material (from a watercourse or lake)
Water-related development – referable dams	Water-related development – referable dams
Water-related development –levees (category 3 levees only)	Water-related development –levees (category 3 levees only)

Wetland protection area
Matters requiring referral to the local government:
Airport land
Environmentally relevant activities (ERA) (only if the ERA has been devolved to local government)
Heritage places – Local heritage places
Matters requiring referral to the Chief Executive of the distribution entity or transmission entity:
Infrastructure-related referrals – Electricity infrastructure
Matters requiring referral to:
 The Chief Executive of the holder of the licence, if not an individual
The holder of the licence, if the holder of the licence is an individual
Infrastructure-related referrals – Oil and gas infrastructure
Matters requiring referral to the Brisbane City Council:
Ports – Brisbane core port land
Matters requiring referral to the Minister responsible for administering the <i>Transport Infrastructure Act</i> 1994:
Matters requiring referral to the Minister responsible for administering the <i>Transport Infrastructure Act</i> 1994 : Ports – Brisbane core port land (where inconsistent with the Brisbane port LUP for transport reasons) Ports – Strategic port land
Matters requiring referral to the Minister responsible for administering the <i>Transport Infrastructure Act</i> 1994 : Ports – Brisbane core port land (where inconsistent with the Brisbane port LUP for transport reasons) Ports – Strategic port land Matters requiring referral to the relevant port operator , if applicant is not port operator:
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Matters requiring referral to the Minister responsible for administering the Transport Infrastructure Act 1994: Ports – Brisbane core port land (where inconsistent with the Brisbane port LUP for transport reasons) Ports – Strategic port land Matters requiring referral to the relevant port operator, if applicant is not port operator: Ports – Land within Port of Brisbane's port limits (below high-water mark) Matters requiring referral to the Chief Executive of the relevant port authority: Ports – Land within limits of another port (below high-water mark) Matters requiring referral to the Gold Coast Waterways Authority: Tidal works or work in a coastal management district (in Gold Coast waters) Matters requiring referral to the Queensland Fire and Emergency Service:
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☐ Yes – referral response(s) received and listed below are attached to this development application ⊠ No

Referral requirement	Referral agency	Date of referral response
Identify and describe any changes made to the proposed or referral response and this development application, or incl <i>(if applicable).</i>	development application that wa ude details in a schedule to this	s the subject of the development application

PART 6 – INFORMATION REQUEST

19) Information request under Part 3 of the DA Rules

I agree to receive an information request if determined necessary for this development application

I do not agree to accept an information request for this development application

Note: By not agreeing to accept an information request I, the applicant, acknowledge:

 that this development application will be assessed and decided based on the information provided when making this development application and the assessment manager and any referral agencies relevant to the development application are not obligated under the DA Rules to accept any additional information provided by the applicant for the development application unless agreed to by the relevant parties

• Part 3 of the DA Rules will still apply if the application is an application listed under section 11.3 of the DA Rules.

Further advice about information requests is contained in the <u>DA Forms Guide</u>.

PART 7 – FURTHER DETAILS

20) Are there any associated dev	elopment applications or c	urrent approvals? (e.g. a	preliminary approval)
☐ Yes – provide details below o	r include details in a sched	ule to this development	application
List of approval/development application references	Reference number	Date	Assessment manager
Approval Development application			
Approval Development application			

21) Has the portable long service leave levy been paid? (only applicable to development applications involving building work or operational work)

Yes – a copy of the receipted QLeave form is attached to this development application

No – I, the applicant will provide evidence that the portable long service leave levy has been paid before the assessment manager decides the development application. I acknowledge that the assessment manager may give a development approval only if I provide evidence that the portable long service leave levy has been paid
 Not applicable (*e.g. building and construction work is less than \$150,000 excluding GST*)

Amount paid	Date paid (dd/mm/yy)	QLeave levy number (A, B or E)
\$		

22) Is this development application in response to a show cause notice or required as a result of an enforcement notice?

Yes – show cause or enforcement notice is attached

🛛 No

23) Further legislative requirements

Environmentally relevant activities

23.1) Is this development application also taken to be an application for an environmental authority for an **Environmentally Relevant Activity (ERA)** under section 115 of the *Environmental Protection Act* 1994?

Yes – the required attachment (form ESR/2015/1791) for an application for an environmental authority accompanies this development application, and details are provided in the table below
 No

Note: Application for an environmental authority can be found by searching "ESR/2015/1791" as a search term at <u>www.qld.gov.au</u>. An ERA requires an environmental authority to operate. See <u>www.business.qld.gov.au</u> for further information.

Proposed ERA number:

Proposed ERA name:

Multiple ERAs are applicable to this development application and the details have been attached in a schedule to this development application.

Proposed ERA threshold:

Hazardous chemical facilities

23.2) Is this development application for a hazardous chemical facility?

Yes – Form 69: Notification of a facility exceeding 10% of schedule 15 threshold is attached to this development application

🛛 No

Note: See www.business.qld.gov.au for further information about hazardous chemical notifications.

Clearing native vegetation
23.3) Does this development application involve clearing native vegetation that requires written confirmation that the chief executive of the <i>Vegetation Management Act 1999</i> is satisfied the clearing is for a relevant purpose under section 22A of the <i>Vegetation Management Act 1999</i> ?
Yes – this development application includes written confirmation from the chief executive of the Vegetation Management Act 1999 (s22A determination)
 No Note: 1. Where a development application for operational work or material change of use requires a s22A determination and this is not included, the development application is prohibited development. 2. See <u>https://www.qld.gov.au/environment/land/vegetation/applying</u> for further information on how to obtain a s22A determination.
Environmental offsets
23.4) Is this development application taken to be a prescribed activity that may have a significant residual impact on a prescribed environmental matter under the <i>Environmental Offsets Act 2014</i> ?
 Yes – I acknowledge that an environmental offset must be provided for any prescribed activity assessed as having a significant residual impact on a prescribed environmental matter No
Note : The environmental offset section of the Queensland Government's website can be accessed at <u>www.qld.gov.au</u> for further information on environmental offsets.
Koala habitat in SEQ Region
23.5) Does this development application involve a material change of use, reconfiguring a lot or operational work which is assessable development under Schedule 10, Part 10 of the Planning Regulation 2017?
 Yes – the development application involves premises in the koala habitat area in the koala priority area Yes – the development application involves premises in the koala habitat area outside the koala priority area No
Note : If a koala habitat area determination has been obtained for this premises and is current over the land, it should be provided as part of this development application. See koala habitat area guidance materials at <u>www.des.qld.gov.au</u> for further information.
Water resources
23.6) Does this development application involve taking or interfering with underground water through an artesian or subartesian bore, taking or interfering with water in a watercourse, lake or spring, or taking overland flow water under the <i>Water Act 2000</i> ?
Yes – the relevant template is completed and attached to this development application and I acknowledge that a relevant authorisation or licence under the <i>Water Act 2000</i> may be required prior to commencing development
No Note: Contact the Department of Natural Resources. Mines and Energy at www.dnrme.gld.gov.au for further information.
DA templates are available from <u>https://planning.dsdmip.qld.gov.au/</u> . If the development application involves:
 Taking or interfering with underground water through an artesian or subartesian bore: complete DA Form 1 Template 1 Taking or interfering with water in a watercourse, lake or spring: complete DA Form1 Template 2 Taking overland flow water: complete DA Form 1 Template 3.
<u>Waterway barrier works</u> 23 7) Does this application involve waterway barrier works?
 ☐ Yes – the relevant template is completed and attached to this development application ☑ No.
DA templates are available from <u>https://planning.dsdmip.qld.gov.au/</u> . For a development application involving waterway barrier works, complete DA Form 1 Template 4.
Marine activities
23.8) Does this development application involve aquaculture, works within a declared fish habitat area or removal, disturbance or destruction of marine plants?
Yes – an associated <i>resource</i> allocation authority is attached to this development application, if required under the <i>Fisheries Act 1994</i>
No Note: See guidance materials at <u>www.daf.qld.gov.au</u> for further information.

Page 9 DA Form 1 – Development application details Version 1.3— 28 September 2020

Quarry materials from a wat	ercourse or lake		
23.9) Does this development under the <i>Water Act 2000?</i>	application involve the remo	val of quarry materials from	h a watercourse or lake
☐ Yes – I acknowledge that a ⊠ No	a quarry material allocation n	otice must be obtained prior	to commencing development
Note : Contact the Department of Nat information.	ural Resources, Mines and Energy a	at <u>www.dnrme.qld.gov.au</u> and <u>www.</u>	<u>business.qld.gov.au</u> for further
Quarry materials from land	under tidal waters		
23.10) Does this development under the <i>Coastal Protection</i> a	t application involve the rem and Management Act 1995?	oval of quarry materials fro	m land under tidal water
☐ Yes – I acknowledge that a ⊠ No	a quarry material allocation n	otice must be obtained prior	to commencing development
Note: Contact the Department of Env	vironment and Science at <u>www.des.</u>	<u>qld.gov.au</u> for further information.	
Referable dams			
23.11) Does this development section 343 of the <i>Water Supp</i>	t application involve a refera oly (Safety and Reliability) Ad	ble dam required to be failure of 2008 (the Water Supply Ac	e impact assessed under t)?
Yes – the 'Notice Acceptin Supply Act is attached to the No	g a Failure Impact Assessme his development application	ent' from the chief executive a	administering the Water
Note: See guidance materials at www	<u>v.dnrme.qld.gov.au</u> for further inform	nation.	
Tidal work or development	within a coastal manageme	ent district	
23.12) Does this development	t application involve tidal wo	rk or development in a coa	stal management district?
 Yes – the following is inclu Evidence the propositive proposition involves proposition involves proposition A certificate of title 	ded with this development a al meets the code for assess escribed tidal work)	pplication: sable development that is pre	scribed tidal work (only required
Note: See guidance materials at www	w des ald gov au for further informat	ion	
Queensland and local herita	age places		
23.13) Does this development heritage register or on a place	t application propose develop be entered in a local governn	oment on or adjoining a place nent's Local Heritage Regist	entered in the Queensland ter?
\Box Yes – details of the heritag	je place are provided in the t	able below	
Note: See guidance materials at www	<u>w.des.qld.gov.au</u> for information req	uirements regarding development of	Queensland heritage places.
Name of the heritage place:		Place ID:	
Brothels			
23.14) Does this development	t application involve a mater	ial change of use for a brot	hel?
Yes – this development ap application for a brothel un No.	plication demonstrates how ider Schedule 3 of the <i>Prosti</i>	the proposal meets the code tution Regulation 2014	for a development
Decision under section 62 c	of the Transport Infrastruct	ure Act 1994	
23.15) Does this developmen	t application involve new or o	changed access to a state-co	ntrolled road?
 ☐ Yes – this application will be <i>Infrastructure Act 1994</i> (sur- satisfied) ☑ No 	be taken to be an application bject to the conditions in sec	for a decision under section tion 75 of the <i>Transport Infra</i>	62 of the <i>Transport</i> structure Act 1994 being

Walkable neighbourhoods assessment benchmarks under Schedule 12A of the Planning Regulation

23.16) Does this development application involve reconfiguring a lot into 2 or more lots in certain residential zones (except rural residential zones), where at least one road is created or extended?

Schedule 12A is applicable to the development application and the assessment benchmarks contained in schedule 12A have been considered

🛛 No

Note: See guidance materials at <u>www.planning.dsdmip.qld.gov.au</u> for further information.

PART 8 – CHECKLIST AND APPLICANT DECLARATION

24) Development application checklist	
I have identified the assessment manager in question 15 and all relevant referral requirement(s) in question 17 <i>Note</i> : <i>See the Planning Regulation 2017 for referral requirements</i>	⊠ Yes
If building work is associated with the proposed development, Parts 4 to 6 of <u>DA Form 2 –</u> <u>Building work details</u> have been completed and attached to this development application	☐ Yes ⊠ Not applicable
Supporting information addressing any applicable assessment benchmarks is with the development application Note: This is a mandatory requirement and includes any relevant templates under question 23, a planning report and any technical reports required by the relevant categorising instruments (e.g. local government planning schemes, State Planning Policy, State Development Assessment Provisions). For further information, see <u>DA</u> Forms Guide: Planning Report Template.	🛛 Yes
Relevant plans of the development are attached to this development application Note : Relevant plans are required to be submitted for all aspects of this development application. For further information, see <u>DA Forms Guide: Relevant plans.</u>	🛛 Yes
The portable long service leave levy for QLeave has been paid, or will be paid before a development permit is issued (<i>see 21</i>)	☐ Yes ⊠ Not applicable

25) Applicant declaration

- By making this development application, I declare that all information in this development application is true and correct
- Where an email address is provided in Part 1 of this form, I consent to receive future electronic communications from the assessment manager and any referral agency for the development application where written information is required or permitted pursuant to sections 11 and 12 of the *Electronic Transactions Act 2001*

Note: It is unlawful to intentionally provide false or misleading information.

Privacy – Personal information collected in this form will be used by the assessment manager and/or chosen assessment manager, any relevant referral agency and/or building certifier (including any professional advisers which may be engaged by those entities) while processing, assessing and deciding the development application. All information relating to this development application may be available for inspection and purchase, and/or published on the assessment manager's and/or referral agency's website.

Personal information will not be disclosed for a purpose unrelated to the *Planning Act 2016*, Planning Regulation 2017 and the DA Rules except where:

- such disclosure is in accordance with the provisions about public access to documents contained in the *Planning Act 2016* and the Planning Regulation 2017, and the access rules made under the *Planning Act 2016* and Planning Regulation 2017; or
- required by other legislation (including the Right to Information Act 2009); or
- otherwise required by law.

This information may be stored in relevant databases. The information collected will be retained as required by the *Public Records Act 2002.*

PART 9 – FOR COMPLETION OF THE ASSESSMENT MANAGER – FOR OFFICE USE ONLY

Date received:		Reference numb	er(s):			
Notification of eng	agement of alternative a	assessment man	ager			
Prescribed assess	sment manager					
Name of chosen a	assessment manager					
Date chosen asse	essment manager engag	jed				
Contact number of	f chosen assessment m	anager				
Relevant licence r manager	number(s) of chosen ass	sessment				

QLeave notification and payment Note: For completion by assessment manager if applicable	
Description of the work	
QLeave project number	
Amount paid (\$)	Date paid (dd/mm/yy)
Date receipted form sighted by assessment manager	
Name of officer who sighted the form	

Company owner's consent to the making of a development application under the Planning Act 2016

DONALD MURDAY ١,

(Insert mame ur hill]

Director of the company mentioned below.

JOAN MURDAY Company Secretary and I.

(Insert name in full

[Insert position in full-i.e. another director, or a company secretary]

Of Mango Park Canefarming Coy Pty Ltd as Trustee for JD Johnston Family Trust

ABN: 28 256 245 346

the company being the owner of the premises identified as follows:

Lot 6 on SP212661

consent to the making of a development application under the Planning Act 2016 by:

The Douglas Shire Council

on the premises described above for:

For a Material Change of Use for a Utility Installation – An Additional Water Supply Intake and associated Intake Infrastructure extracting water from an Anabranch of the Mossman River

Company Name and ACN: Mango Park Canefarming Coy Pty Ltd as Trustee for JD Johnston Family Trust ABN: 28 256 245 346 Joan H. Murday Signature of Director/Secretary Signature of Director 26/06/2023 26/06/2023 Date Date

The Planning Act 2016 is administered by the Department of Local Government. Infrastructure and Planning, Queensland Government.

Appendix C

Certificates of Title



Current Title Search

Queensland Titles Registry Pty Ltd ABN 23 648 568 101

Title Reference:	20571063
Date Title Created:	26/02/1959
Previous Title:	20081168

ESTATE AND LAND

Estate in Fee Simple

LOT 1 REGISTERED PLAN 716977 Local Government: DOUGLAS

REGISTERED OWNER

Dealing No: 716386009 24/03/2015

DOUGLAS SHIRE COUNCIL

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by Deed of Grant No. 20081168 (POR 198)

ADMINISTRATIVE ADVICES

NIL

UNREGISTERED DEALINGS

NIL

** End of Current Title Search **



Current Title Search

Queensland Titles Registry Pty Ltd ABN 23 648 568 101

Title Reference:	20571064
Date Title Created:	26/02/1959
Previous Title:	20501210

ESTATE AND LAND

Estate in Fee Simple

LOT 4 REGISTERED PLAN 716977 Local Government: DOUGLAS

REGISTERED OWNER

Dealing No: 716386009 24/03/2015

DOUGLAS SHIRE COUNCIL

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by Deed of Grant No. 20081169 (POR 206)

ADMINISTRATIVE ADVICES

NIL

UNREGISTERED DEALINGS

NIL

** End of Current Title Search **



Current Title Search

Queensland Titles Registry Pty Ltd ABN 23 648 568 101

Title Reference:	50721832
Date Title Created:	28/05/2008
Previous Title:	50192321

ESTATE AND LAND

Estate in Fee Simple

LOT 6 SURVEY PLAN 212661 Local Government: DOUGLAS

REGISTERED OWNER

Dealing No: 711677037 27/05/2008

MANGO PARK CANEFARMING COY PTY LTD

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by Deed of Grant No. 20081168 (POR 198)

ADMINISTRATIVE ADVICES

Dealing Type 709682433 ACCESS RIGHT SUGAR INDUSTRY ACT 1999 Lodgement Date 15/06/2006 12:28

Status CURRENT

UNREGISTERED DEALINGS

NIL

** End of Current Title Search **

Appendix D

RPS Drawings PR152792-6b to 9b Plans of Proposed Water Intake, Potential Disturbance Footprint





Douglas Shire Council Site Plan - Mossman Proposed Water Intake

RPS Australia East Pty Ltd ACN 140 292 762 ACIA 140 292 702 135 Abbott St PO Box 1949 CAIRNS QLD 4870 **T** +61 7 4031 1336 **F** +61 7 4031 2942 W rpsgroup.com



100 125 250 75 50

Datum: MGA2020 Z55 | Scale: 1:2,500 @ A3 | Date: 3-4-2023 | Drawing: PR152792-6b



Douglas Shire Council Mossman Proposed Water Intake Potential Disturbance Footprints - Sheet 1 of 3

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RPS Australia East Pty Ltd ACN 140 292 762 135 Abbott St PO Box 1949 CAIRNS QLD 4870 **T** +61 7 4031 1336 **F** +61 7 4031 2942 **W** rpsgroup.com

rps

Datum: MGA2020 Z55 | Scale: 1:1,000 @ A3 | Date: 3-4-2023 | Drawing: PR152792-7b |





Douglas Shire Council Mossman Proposed Water Intake Potential Disturbance Footprints - Sheet 2 of 3

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100

RPS Australia East Pty Ltd ACN 140 292 762 135 Abbott St PO Box 1949 CAIRNS QLD 4870 **T** +61 7 4031 1336 **F** +61 7 4031 2942 **W** rpsgroup.com

rps

Datum: MGA2020 Z55 | Scale: 1:1,000 @ A3 | Date: 3-4-2023 | Drawing: PR152792-8b



Douglas Shire Council Mossman Proposed Water Intake Potential Disturbance Footprints - Sheet 3 of 3

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RPS AAP Consulting Pty Ltd ACN 117 883 173 135 Abbott St PO Box 1949 CAIRNS QLD 4870 **T** +61 7 4031 1336 **F** +61 7 4031 2942 W rpsgroup.com


Appendix E

Douglas Shire Council Planning Scheme Property Reports



Douglas Shire Planning Scheme 2018 version 1.0 1RP716977

Produced: 24/04/2023

2018 Douglas Shire Council Planning Scheme Property Report

The following report has been automatically generated to provide a general indication of development related information applying to the premise.

For more information and to determine if the mapping layers are applicable, refer to the 2018 Douglas Shire Council Planning Scheme. This report is not intended to replace the need for carrying out a detailed assessment of Council and State controls or the need to seek your own professional advice on any town planning instrument, local law or other controls that may impact on the existing or intended use of the premise mentioned in this report. For further information please contact Council by phone: 07 4099 9444 or 1800 026 318 or email enquiries@douglas.qld.gov.au.

Visit Council's website to apply for an <u>official property search or certificate</u>, or contact the <u>Department of Natural Resources</u>, <u>Mines and Energy</u> to undertake a title search to ascertain how easements may affect a premise.

Property Information

Property Address	Drumsara Sand Pit Drumsara Sand Pit <u>3 Manjal Dimbi Road MOSSMAN</u>
Lot Plan	<u>1RP716977</u> (Freehold - 50990m ²)
Selected Property	Easements Property

Douglas Shire Planning Scheme 2018 version 1.0 The table below provides a summary of the Zones and Overlays that apply to the selected property.

D Zoning

Applicable Zone Rural

- <u>View Section 6.2.10 Rural Zone Code</u>
- <u>View Section 6.2.10 Rural Zone Compliance table</u>
- <u>View Section 6.2.10 Rural Zone Assessment table</u>





Douglas Shire Planning Scheme 2018 version 1.0

1RP716977

Produced: 24/04/2023

Douglas Shire Planning Scheme 2018 version 1.0 The table below provides a summary of the Zones and Overlays that apply to the selected property.		
∅ <u>Acid Sulfate Soils</u>	Applicable Precinct or Area Acid Sulfate Soils (5-20m AHD)	 More Information View Section 8.2.1 Acid Sulfate Soils Overlay Code View Section 8.2.1 Acid Sulfate Soils Overlay Compliance table
即 Bushfire Hazard	Applicable Precinct or Area Potential Impact Buffer Medium Potential Bushfire Intensity	 More Information <u>View Section 8.2.2 Bushfire Hazard Overlay Code</u> <u>View Section 8.2.2 Bushfire Hazard Overlay Compliance</u> table
仰 <u>Landscape Values</u>	Landscape Values High landscape values Medium Landscape Value	 More Information <u>View Section 8.2.6 Landscape Values Overlay Code</u> <u>View Section 8.2.6 Landscape Values Overlay</u> <u>Compliance table</u>
仰 <u>Landslide</u>	Applicable Precinct or Area Landslide Hazard (High & Medium Hazard Risk)	 More Information View Section 8.2.9 Potential Landslide Hazard Overlay Code View Section 8.2.9 Potential Landslide Hazard Overlay Compliance table
仰 <u>Natural Areas</u>	Applicable Precinct or Area MSES - Wildlife Habitat MSES - Regulated Vegetation	 More Information View Section 8.2.7 Natural Areas Overlay Code View Section 8.2.7 Natural Areas Overlay Compliance table



Zoning

Applicable Zone Rural

- <u>View Section 6.2.10 Rural Zone Code</u>
- View Section 6.2.10 Rural Zone Compliance table
- View Section 6.2.10 Rural Zone Assessment table





Acid Sulfate Soils

Applicable Precinct or Area Acid Sulfate Soils (5-20m AHD)

- More Information
- <u>View Section 8.2.1 Acid Sulfate Soils Overlay Code</u>
- <u>View Section 8.2.1 Acid Sulfate Soils Overlay Compliance table</u>







Bushfire Hazard

Applicable Precinct or Area Potential Impact Buffer Medium Potential Bushfire Intensity

- More Information
- <u>View Section 8.2.2 Bushfire Hazard Overlay Code</u>
- <u>View Section 8.2.2 Bushfire Hazard Overlay Compliance table</u>





Landscape Values

Landscape Values High landscape values Medium Landscape Value

- More Information
- <u>View Section 8.2.6 Landscape Values Overlay Code</u>
- <u>View Section 8.2.6 Landscape Values Overlay Compliance table</u>





Landslide

Applicable Precinct or Area Landslide Hazard (High & Medium Hazard Risk)

- <u>View Section 8.2.9 Potential Landslide Hazard Overlay Code</u>
- <u>View Section 8.2.9 Potential Landslide Hazard Overlay Compliance table</u>





Natural Areas

Applicable Precinct or Area MSES - Wildlife Habitat MSES - Regulated Vegetation

- More Information
- <u>View Section 8.2.7 Natural Areas Overlay Code</u>
- <u>View Section 8.2.7 Natural Areas Overlay Compliance table</u>



Disclaimer

This report is not a substitute for a Planning and Development Certificate and should not be relied upon where the reliance may result in loss, damage or injury. While every effort is taken to ensure the information in this report is accurate and up to date, Douglas Shire Council makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs that may occur as a result of the report being inaccurate or incomplete in any way or for any reason.





Douglas Shire Planning Scheme 2018 version 1.0 4RP716977

2018 Douglas Shire Council Planning Scheme Property Report

The following report has been automatically generated to provide a general indication of development related information applying to the premise.

For more information and to determine if the mapping layers are applicable, refer to the 2018 Douglas Shire Council Planning Scheme. This report is not intended to replace the need for carrying out a detailed assessment of Council and State controls or the need to seek your own professional advice on any town planning instrument, local law or other controls that may impact on the existing or intended use of the premise mentioned in this report. For further information please contact Council by phone: 07 4099 9444 or 1800 026 318 or email enquiries@douglas.qld.gov.au.

Visit Council's website to apply for an <u>official property search or certificate</u>, or contact the <u>Department of Natural Resources</u>, <u>Mines and Energy</u> to undertake a title search to ascertain how easements may affect a premise.

Property Information

Property Address	Drumsara Sand Pit <u>Drumsara Sand Pit</u> <u>1 Manjal Dimbi Road MOSSMAN</u> <u>4RP716977</u> (Freehold - 36280m ²)	Q
Selected Property	Easements Property	

Douglas Shire Planning Scheme 2018 version 1.0 The table below provides a summary of the Zones and Overlays that apply to the selected property.

D Zoning

Applicable Zone Rural

- <u>View Section 6.2.10 Rural Zone Code</u>
- <u>View Section 6.2.10 Rural Zone Compliance table</u>
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4RP716977

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∅ <u>Acid Sulfate Soils</u>	Applicable Precinct or Area Acid Sulfate Soils (5-20m AHD)	 More Information View Section 8.2.1 Acid Sulfate Soils Overlay Code View Section 8.2.1 Acid Sulfate Soils Overlay Compliance table
即 <u>Bushfire Hazard</u>	Applicable Precinct or Area Potential Impact Buffer Medium Potential Bushfire Intensity	 More Information <u>View Section 8.2.2 Bushfire Hazard Overlay Code</u> <u>View Section 8.2.2 Bushfire Hazard Overlay Compliance</u> table
仰 <u>Landscape Values</u>	Landscape Values Medium Landscape Value	 More Information View Section 8.2.6 Landscape Values Overlay Code View Section 8.2.6 Landscape Values Overlay Compliance table
卻 <u>Natural Areas</u>	Applicable Precinct or Area MSES - Regulated Vegetation (Intersecting a Watercourse MSES - Wildlife Habitat MSES - Regulated Vegetation	 More Information View Section 8.2.7 Natural Areas Overlay Code View Section 8.2.7 Natural Areas Overlay Compliance table





Zoning

Applicable Zone Rural

- <u>View Section 6.2.10 Rural Zone Code</u>
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Acid Sulfate Soils

Applicable Precinct or Area Acid Sulfate Soils (5-20m AHD)

- More Information
- <u>View Section 8.2.1 Acid Sulfate Soils Overlay Code</u>
- <u>View Section 8.2.1 Acid Sulfate Soils Overlay Compliance table</u>







Bushfire Hazard

Applicable Precinct or Area Potential Impact Buffer Medium Potential Bushfire Intensity

- More Information
- <u>View Section 8.2.2 Bushfire Hazard Overlay Code</u>
- <u>View Section 8.2.2 Bushfire Hazard Overlay Compliance table</u>







Landscape Values

Landscape Values Medium Landscape Value

- More Information
- <u>View Section 8.2.6 Landscape Values Overlay Code</u>
- <u>View Section 8.2.6 Landscape Values Overlay Compliance table</u>





Natural Areas

Applicable Precinct or Area MSES - Regulated Vegetation (Intersecting a Watercourse) MSES - Wildlife Habitat MSES - Regulated Vegetation

- More Information
- <u>View Section 8.2.7 Natural Areas Overlay Code</u>
- <u>View Section 8.2.7 Natural Areas Overlay Compliance table</u>



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Douglas Shire Planning Scheme 2018 version 1.0 6SP212661

2018 Douglas Shire Council Planning Scheme Property Report

The following report has been automatically generated to provide a general indication of development related information applying to the premise.

For more information and to determine if the mapping layers are applicable, refer to the 2018 Douglas Shire Council Planning Scheme. This report is not intended to replace the need for carrying out a detailed assessment of Council and State controls or the need to seek your own professional advice on any town planning instrument, local law or other controls that may impact on the existing or intended use of the premise mentioned in this report. For further information please contact Council by phone: 07 4099 9444 or 1800 026 318 or email enquiries@douglas.qld.gov.au.

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Douglas Shire Planning Scheme 2018 version 1.0 The table below provides a summary of the Zones and Overlays that apply to the selected property.

D Zoning

Applicable Zone Rural

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Douglas Shire Planning Scheme 2018 version 1.0

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仰 <u>Acid Sulfate Soils</u>	Applicable Precinct or Area Acid Sulfate Soils (5-20m AHD)	 More Information <u>View Section 8.2.1 Acid Sulfate Soils Overlay Code</u> <u>View Section 8.2.1 Acid Sulfate Soils Overlay Compliance</u> <u>table</u>
∅ <u>Bushfire Hazard</u>	Applicable Precinct or Area Potential Impact Buffer Medium Potential Bushfire Intensity	 More Information <u>View Section 8.2.2 Bushfire Hazard Overlay Code</u> <u>View Section 8.2.2 Bushfire Hazard Overlay Compliance</u> <u>table</u>
節 <u>Flood Storm</u>	Applicable Precinct or Area 100 Year ARI - Mosman and Port Douglas Flood Studies Floodplain Assessment Overlay (Mossman River)	 More Information View Section 8.2.4 Flood and Storm Tide Hazard Overlay Code View Section 8.2.4 Flood and Storm Tide Hazard Overlay Compliance table
∅ <u>Landscape Values</u>	Landscape Values High landscape values Medium Landscape Value	 More Information View Section 8.2.6 Landscape Values Overlay Code View Section 8.2.6 Landscape Values Overlay Compliance table
ወ <u>Landslide</u>	Applicable Precinct or Area Landslide Hazard (High & Medium Hazard Risk)	 More Information <u>View Section 8.2.9 Potential Landslide Hazard Overlay</u> <u>Code</u> <u>View Section 8.2.9 Potential Landslide Hazard Overlay</u> <u>Compliance table</u>
Ø <u>Natural Areas</u>	Applicable Precinct or Area MSES - Regulated Vegetation (Intersecting a Watercourse) MSES - Wildlife Habitat MSES - Regulated Vegetation	 More Information <u>View Section 8.2.7 Natural Areas Overlay Code</u> <u>View Section 8.2.7 Natural Areas Overlay Compliance</u> <u>table</u>
∅ <u>Transport Pedestrian Cycle</u>	Applicable Precinct or Area Iconic Recreation Route	More Information • View Section 8.2.10 Transport Network Overlay Code • View Section 8.2.10 Transport Network Overlay Compliance table
∅ <u>Transport Road Hierarcy</u>	Applicable Precinct or Area Collector Road Unformed Road	 More Information View Section 8.2.10 Transport Network Overlay Code View Section 8.2.10 Transport Network Overlay Compliance table





Zoning

Applicable Zone Rural

- <u>View Section 6.2.10 Rural Zone Code</u>
- View Section 6.2.10 Rural Zone Compliance table
- View Section 6.2.10 Rural Zone Assessment table





Acid Sulfate Soils

Applicable Precinct or Area Acid Sulfate Soils (5-20m AHD)

- More Information
- <u>View Section 8.2.1 Acid Sulfate Soils Overlay Code</u>
- <u>View Section 8.2.1 Acid Sulfate Soils Overlay Compliance table</u>







Bushfire Hazard

Applicable Precinct or Area Potential Impact Buffer Medium Potential Bushfire Intensity

- More Information
- <u>View Section 8.2.2 Bushfire Hazard Overlay Code</u>
- <u>View Section 8.2.2 Bushfire Hazard Overlay Compliance table</u>





Flood Storm

Applicable Precinct or Area

100 Year ARI - Mosman and Port Douglas Flood Studies Floodplain Assessment Overlay (Mossman River)

- More Information
- <u>View Section 8.2.4 Flood and Storm Tide Hazard Overlay Code</u>
- <u>View Section 8.2.4 Flood and Storm Tide Hazard Overlay Compliance table
 </u>







Landscape Values

Landscape Values High landscape values

Medium Landscape Value

- More Information
- <u>View Section 8.2.6 Landscape Values Overlay Code</u>
- <u>View Section 8.2.6 Landscape Values Overlay Compliance table</u>





Landslide

Applicable Precinct or Area

Landslide Hazard (High & Medium Hazard Risk)

- More Information
- <u>View Section 8.2.9 Potential Landslide Hazard Overlay Code</u>
- <u>View Section 8.2.9 Potential Landslide Hazard Overlay Compliance table</u>







Natural Areas

Applicable Precinct or Area

MSES - Regulated Vegetation (Intersecting a Watercourse) MSES - Wildlife Habitat MSES - Regulated Vegetation

- More Information
- <u>View Section 8.2.7 Natural Areas Overlay Code</u>
- <u>View Section 8.2.7 Natural Areas Overlay Compliance table</u>





Transport Pedestrian Cycle

Applicable Precinct or Area Iconic Recreation Route

- View Section 8.2.10 Transport Network Overlay Code
- <u>View Section 8.2.10 Transport Network Overlay Compliance table</u>





Transport Road Hierarcy

Applicable Precinct or Area Collector Road Unformed Road More Information

- <u>View Section 8.2.10 Transport Network Overlay Code</u>
- View Section 8.2.10 Transport Network Overlay Compliance table



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Appendix F

Detailed Design Report prepared by GHD, dated January 2020



Douglas Shire Council

Design Additional Water Extraction Site Mossman Detailed Design Report

January 2020

Overview

1.1 Purpose of this report

The purpose of this report is to summarise the final design, and alternatives considered in the development of the design. As the current design will be used for approvals etc, it is likely that subsequent updates will be required. This report intends to highlight key matters which should be considered during subsequent updates.

1.2 Scope and limitations

GHD otherwise disclaims responsibility to any person other than Douglas Shire Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

Table of contents

	1.1	Purpose of this report	i
	1.2	Scope and limitations	i
2.	Desig	gn Overview	2
	2.1	Mossman WTP Water Supply	2
	2.2	Background to the Project	3
	2.3	Dry season supplementation	3
	2.4	Wet season alternative supply	3
	2.5	Design Pressures	4
3.	Moss	man River	5
	3.1	Mossman River Hydrology	5
	3.2	Mossman River Flood Levels	5
4.	Site S	Selection	5
	4.1	Selection of the Preferred Site	5
5.	Intak	e Selection	6
	5.1	Design of the Submerged Gallery	6
	5.2	Constructability	11
	5.3	Environmental	11
	5.4	Maintenance	11
6.	Pump	bing Solution	14
7.	Risin	g Main	17
	7.1	Material selection	17
	7.2	Thrust Forces	17
	7.3	Out of Service Management	19
8.	Conn	ection to Rex Creek RM	19
9.	Acce	ss Road and Stormwater Management	20
-	9.1	Design	20
	9.2	Truck Turning	20
	9.3	Stormwater Management	20
	9.4	Security and Access	21
10.	Stand	d-by power and Diesel Storage	21
11.	Cost	Estimate	23
12.	Intak	e Options considered	29
	12.1	Indirect (River Bank) Abstraction Borefield Option	29
	12.2	Pre-cast concrete slab with stainless steel underdrains	29
	12.3	No-fines concrete with perforated underdrain	30
	12.4	Gabion baskets with perforated pipe	30
	12.1	Selection of Preferred Intake	30

13.	Innovative Options Considered		
14.	Alterr	native Pumping Solutions	31
	14.1	Submersible Pumps	31
	14.2	Installation of Pump to Inclined Enveloper	31
	14.3	Single Lift	32
	14.4	Two Stage Lift	32
	14.1	Pump Suction Detail	

Table index

Table 1 Preferred Intake Key Criteria	2
Table 2 Anabranch Photos	1
Table 3 Respective Levels of Anabranches	3
Table 4 Calculated Hydraulic Conductivity	9
Table 5 Thrust Forces on DN300 DICL High Lift Rising Main at 2000 kPA	18
Table 6 Engineering Cost Estimate	23
Table 7 Advantages and Disadvantages of the Underdrain	29
Table 8 Advantages and Disadvantages of No-Fines Option	30
Table 9 Advantages and Disadvantages of No-Fines Option	30
Table 10 Two Stage Lift Advantages and Disadvantages	33

Figure index

Figure 1 Rex Creek to Mossman WTP Relative Levels	4
Figure 2 Local Survey and Anabranches	6
Figure 3 Historical Aerial Image	2
Figure 4 Selected Intake Location, at convergence looking upstream	4
Figure 5 Selected Intake Location, midway of intake looking downstream	4
Figure 6 Selected Intake Location, upstream of intake looking downstream	5
Figure 7 Selected Intake Location, upstream of intake looking upstream	5
Figure 8 Schematic Detail of Preferred Submerged Gallery - Plan	7
Figure 9 Schematic Detail of Preferred Submerged Gallery – Section	8
Figure 10 Mossman WTP Turbidity Driven Shutdowns	13
Figure 11 Low Lift Pump System Curve	15
Figure 12 High Lift Pump System Curve	16
Figure 13 Typical Access Road Section	20

Figure 14 Proposed Location of High Lift PS and Associated	22
Figure 15 Inclined Single Lift Bore Schematic	32
Figure 16 Hard Plumbed In-River Suction	34
Figure 17 Concrete Chamber Suction	34

Appendices

Appendix A – Mossman River Hydrology
Appendix B – Douglas Partners Trial Pits
Appendix C – Localised Flooding
Appendix D - Alternative Options Considered
Appendix E – Douglas Partners Borehole Log

Table of Abbreviations

Abbreviation	Description
DSC	Douglas Shire Council
km	Kilometre
kN	Kilonewton
L/s	Litre per second
ML	Megalitre
WTP	Water Treatment Plant

GHD | Report for Douglas Shire Council - Design Additional Water Extraction Site Mossman, 4221142 | 1

2. **Design Overview**

2.1 Mossman WTP Water Supply

Mossman Water Treatment Plant (WTP) produces water to meet the water demands of Mossman, Port Douglas and surrounds. The WTP has a single raw water supply on Rex Creek, approximately 5 km up the Mossman Gorge. This is a run of stream intake with no storage i.e. solely dependent on consistent rainfall. DSC is licensed to abstract a portion of the stream flow, which diminishes into the dry winter season, generally May to November.

The primary issue is water demand peaks when the least raw water is available, as the peak tourist season occurs in the dryer, cooler months.

Since 2010, the supply area has regularly experienced water restrictions, despite having only used ~4,000 ML/annum of their 4,800 ML/annum, 83% of DSCs allocation. The water is not available for Licensed abstraction from Rex Creek to meet the peak water demands.

The alternative Mossman intake at the Drumsara site was selected primarily for the following reasons (in no particular order):

Criteria	Description
Water Quality	Minimal upstream agricultural activities (herbicides, pesticides and fertiliser)
Water Availability	Improved water supply in dryer months (larger catchment);
Construction cost and complexity	Cost to install were prioritised over the operating costs, as the system is only expected to run frequently during the dryer months;
	Construction complexity was reduced by avoiding trenchless pipe installation under the Mossman River, which is likely to encounter boulders.
Land Acquisition	Least land aquistion risk, compared with the options.
Approvals	Potential time for approvals was considered, which prioritised the least environmentally disruptive option;
Access during flooding	Operator safety and supply continuity.
Single Point of Failure	Damage to the Rex Creek intake or pipeline could disrupt supply until access and repair materials can be sourced.
	The Rex Creek pipeline is now years old and in need of refurbishment and replacement in sections. The existing water demand cannot be met with the supply offline;

Table 1 Preferred Intake Key Criteria

GHD were subsequent appointed to complete the detailed design of the alternative raw water intake (this project).

2.2 Background to the Project

Despite having a substantial mean annual rainfall (1884-2019) of 2,034mm, DSC have been required to implement water restrictions, at an increasing frequency over the past 5-10 years. Level 4 restrictions were applied in 2018 for the first time. The existing single raw water source off Rex Creek is a run of stream intake, with no upstream storage. The License enforces a diminishing abstraction rate proportional to the level in the creek.

Tourism is the Douglas Shire Councils primary industry. Peak tourism occurs in the dry season, when allowable abstraction is lowest leading to shortfalls in supply / demand.

A bulk storage dam, to store wet season flows for the dry would likely resolve the seasonal water supply shortfalls. DSC is however is bounded by the Daintree Forest (Wet Tropics World Heritage Area) and construction of a dam is unlikely to be approved.

As an alternative, in 2016 GHD was appointed to investigate fourteen sites within DSC, to shortlist three preferred sites as an alternative water source. A multi-criteria analysis was undertaken, which considered amongst other factors, water availability, water quality and constructability. The preferred sites were all located in the upper reaches of the respective catchments, primarily due to water quality requirements, with downstream sites subject to agricultural run-off and potential saltwater intrusion.

Subsequently, GHD was appointed in 2018 to undertake a further investigation to develop concept designs and cost estimates to identify the preferred location. During this, DSC requested the Drumsara site originally purchased by Cairns Council, as an alternative intake location, be considered as a fourth alternative. The Drumsara site is owned by DSC, is located on elevated ground (for improved access during flood events), and is in close proximity (2.1km) to Mossman WTP. Based on a more Multi-Criteria Analysis, the investigation identified the submerged gallery intake at the Drumsara site as the most viable location.

2.3 Dry season supplementation

The key driver behind the project is to access a new raw water supply of approximately 75 L/s during the dry season, to meet the peak season water demands and DSCs targeted Level of Service. During the dry season, the Mossman River experiences relatively shallow flows (<500 mm) of very clear water. A submerged gallery intake was selected to maximise the volume of water which could reliably extracted, with shallow flows.

Mossman River, in the dry season contains very low turbidity water, of high clarity, which is unlikely to contaminate the intake over time.

2.4 Wet season alternative supply

An additional benefit of the alternative Mossman intake is to provide an alternative raw water source, if damage to the existing single raw water supply occurs. This is possible as the existing raw water supply is predominately within the high-risk rainforest area. Key risks are flooding (limited access) landslips (limited access or damage) or tree falls (limited access or damage).

Further, during wet weather events Turbidity and suspended solids concentrations in the surface waters increase and cannot be efficiently processed at the Mossman WTP, which utilises direct membrane filtration. Any improvement in the raw water quality, to enable extended operation of the WTP was desirable. The water quality interruptions have been considered in the design of the new water storage reservoir, and should therefore be less critical than historical events.
A peak flow of 150 L/s was targeted for times when Rex Creek is offline. The design challenge was to develop a system for the range of flows from wet to dry seasons, whilst considering costs associated with the occasional wet season use (typically weeks per decade).

The wet season abstraction is the key design risk, as drawing peak volumes of turbid water is the most likely to impact the systems performance.

2.5 Design Pressures

2.5.1 Injection to Rex Creek Raw Water Pipeline

The Mossman WTP is located on a narrow ridge, with limited access and space for future extension. Installing a new pipeline to the WTP was therefore not possible. The design therefore includes the injection to the Rex Creek pipeline on Mossman Gorge road, approximately 1km upstream of the WTP. The injection point is at the lowest point on the pipeline, and subject to the highest pressures.

If both systems are operated in parallel, whether the hydraulic connection is at Mossman WTP or Mossman Gorge road, the required delivery pressures remain the same.

2.5.2 Rex Creek to Mossman WTP Gravity Pipe

Rex Creek Intake is located at RL 145m and discharges to Mossman WTP at RL 89m; a maximum static head of 56m at the WTP. A residual pressure is required at the WTP to pass through the treatment steps.

Water gravitates through a series of single and parallel pipelines, including DN450 and DN600 DICL pipework, between the Rex Creek Intake and Mossman WTP. Based on DSC GIS information, confirmation from Operators and the services location undertaken as part of this design, at the proposed injection point a single DN450 DICL pipe exists.

A flow control valve installed at Mossman WTP manages the flow rate in the raw water pipeline based on current operations within the WTP. The flow rate reduces by ~20% when a rack of membranes is in backwash. In addition frequent every few minutes the pre-filter and hydro-cyclones run through backwash sequences, which also reduces the flow to the WTP.

Based on data previously provided to Contractors for the design if the backwash recovery water injection; WTP Operators noted the average residual pressure at the WTP is 460 kPa, but ranges from 300 kPa to 650 kPa depending on the WTP status.



Schematically, the relative levels are represented in Figure 1.

Figure 1 Rex Creek to Mossman WTP Relative Levels

3. Mossman River

3.1 Mossman River Hydrology

A hydrological assessment of the Mossman River is included as Appendix A. The assessment considers full use of current water allocations (i.e. that DSC uses their full 4,800 ML/a allocation), in determining an additional available supply of ~100 L/s in the most dry seasons.

The intent is initially to request approval to abstract the existing 4,800 ML/a allocation to be withdrawn from either Rex or Mossman.

A future application for an additional allocation would be required to meet future demands.

3.2 Mossman River Flood Levels

Based on flood modelling data provided, the Q100 level at the alternative Mossman intake location is approximately the same level as Finlayvale Road on the northern river bank (RL 15m AHD). Discussions with Brian Lees (DSC Operator) confirmed witnessed maximum water levels witnessed in the Mossman River align with the 15m Q100 level.

The riverbank at Drumsara is RL 18 m.

To allow for modelling assumptions and inaccuracies a minimum design level of 17 m was adopted, where practical.

4. Site Selection

4.1 Selection of the Preferred Site

Four river anabranches exist in the immediate proximity of the intake location as shown in Figure 2. For completeness, the bullet points below summarise the key criteria for excluding Anabranches 1 and 2.

Anabranch 1: Flood access to north of river not possible

Costly trenchless pipe construction under river, with high risk of boulders.

Anabranch 2: High risk of flood damage,

High energy zone, not suitable for submerged gallery infrastructure.

Dewatering / constructability requires major river management.

Access during any high flow limited



Figure 2 Local Survey and Anabranches

The initial intent was to construct the intake at the junction between Anabranch 3 and 4, to access flows from both anabranches to increase water security. This was not ideal as this located the intake in an area exposed to high river energy and potential flood or erosion damage, and was likely to incur damage during major flood events.

The key issues impacting the design at the convergence point between Anabranch 3 and 4 are:

- Turbulence caused by the 45 degree merge of two streams eroding the intake;
- Localised steep gradient of river before the downstream stilling pond;
- Risk of a hydraulic jump developing at the intake during changing river conditions;

In October 2019 Anabranch 3 was found to be dry (Table 2) and therefore deemed to have no hydraulic advantage. The opportunity to relocate the intake from the high-energy convergence zone to Anabranch 4 was taken, which significantly reduced the exposure risks of the intake.

Anabranch 4 is the inside channel on a bend, protected from the main river channel by a densely vegetated island. The channel includes smaller cobbles and stones compared to the main channel, with large rocks and boulders – empirically velocities in Anabranch 4 are relatively low.

Photos of the proposed intake location, in Anabranch 4 immediately upstream of the convergence point are included as Figure 4, Figure 5, Figure 6 and Figure 7 respectively.



Table 2 Anabranch Photos

Historical imagery shows minor deviations in the anabranches over time, although no major shift in the river alignment is evident. Data to assess the relative flow rates and migration of flows between anabranches does not exist.

The minor anabranch adopted for the alternative intake is evident in historical imagery, which coupled with confirmation from DSC Staff that the anabranch has not been dry in approximately 40 years, except when a farmer temporarily diverted the flow.



Figure 3 Historical Aerial Image

A cross section of the river was surveyed by RPS, with respective levels of the anabranches summarised in Table 3. At the upstream extents of the survey, the proposed intake location is the lowest. It is therefore likely that permeation between anabranches could occur to Anabranch 4, to improve the flow reliability. This appears to be supported by the October inspection findings, where Anabranch 3 (highest) was dry.

Anabranch	Upstream extent of survey (RL m)	Dry Season Flow (October 2019)
1	11.64	Consistent Flow Cobbles and sand/gravel settled in channel
2	12.58	Strongest flow Large boulders (300-500mm) form the river bed, indicating high energy zone and main flood channel;
3	12.73	Dry Boulders (100-300mm) in the riverbed.
4	10.50	Consistent Flow Cobbles and sand/gravel settled in channel

Table 3 Respective Levels of Anabranches



Figure 4 Selected Intake Location, at convergence looking upstream



Figure 5 Selected Intake Location, midway of intake looking downstream



Figure 6 Selected Intake Location, upstream of intake looking downstream



Figure 7 Selected Intake Location, upstream of intake looking upstream

5. Intake Selection

The remainder of this report focusses on the design of the alternative Mossman River intake at the Drumsara site, on Anabranch 4.

The design has been presented in the following sub-sections, presented as Chapters hereafter:

Sub-Section	Objective
Intake	Abstract water from the river flow
Pump Station	Lift abstracted water from the river, discharge to Mossman WTP
Rising Main	Sizing and material selection
Access Road	Design of new access road to the intake infrastructure

5.1 Design of the Submerged Gallery

With reference to the summary of options included in Appendix D, the preferred gallery style adopted was permeable pipes encased in no-fines concrete. The intake gallery is overlain with ~800mm of natural river material (if geotechnical testing confirms suitability) alternatively imported filter sand will be installed over the no-fines.

No-fines was adopted, essentially due to the rigidity / protection it offers during flood events. This is buried below the natural river profile, to minimise localised scour around the structure.

5.1.1 Sizing of the Submerged Gallery Intake

Limited design guidelines exist for submerged gallery intakes, as they vary significantly from case to case, strongly influenced by local conditions, flow rates, water quality etc. To consider design principles and lessons learned, experiences within GHD were considered, and an external literature study was completed.

Within GHD experience with submerged gallery intakes has the following learnings;

- Iron and manganese (oxidising metals) can prematurely clog the upper layers of the intake; Based on water quality data for Mossman, this is a low risk;
- Difficulties constructing in the river bed, does not allow the same level of accuracy required in filter designs for designing of air and water backwash systems. Combined with potential cross flow (stream flow), there is a high risk of flushing media from the intake.

The key reference documentation were the "Infiltration Gallery Guidelines, Design Construction, Operation and Maintenance" (prepared for Marlborough District Council – April 2014) and "Diversion of Water from Surface Water Sources, through Infiltration Galleries" – Agriculture and Agri-Food Canada.

The following key points were identified:

- In high energy, or major flood risk areas, submerged gallery intakes should be avoided when possible. Anabranch 4 is a reasonably protected channel, to reduce the scour / flood damage risks.
- Maintenance of submerged gallery intakes is required. Delayed maintenance results in fines working into the intake media, leading to deterioration in performance, which ultimately requires extensive in-stream maintenance activities;

 Woven geotextiles should be avoided. Once contaminated they cannot be cleaned. If unavoidable the geotextile layer should be designed for complete removal, disposal and replacement during maintenance;

5.1.2 Sizing of the Submerged Gallery Intake

Based on the criteria presented in Sections 5.1.3 to 5.1.5, to abstract 150 L/s an intake gallery footprint of 140 m² is required. With reference to the original GHD concept design, for 75 L/s a 70m² intake gallery was required. Anabranch 4 is narrow channel (6m wide) therefore a width of 4 m was adopted to provide working space around the intake. The length required is 35m. The gallery layout is shown in Figure 8 (Plan) and Figure 9 (Sections).



Figure 8 Schematic Detail of Preferred Submerged Gallery - Plan





Figure 9 Schematic Detail of Preferred Submerged Gallery - Section

5.1.3 Natural River Bed Permeability

Douglas Partners were previously appointed to complete two test pits at the convergence point between Anabranches 3 and 4 in the Mossman River. Samples were graded and a hydraulic conductivity estimated as summarised in Table 4.

A copy of the previous geotechnical report is included as Appendix B.

The average permeability for each of the trial holes using the following formula.

The average vertical permeability of this deposit will be

$$K_{V} = \frac{\frac{H}{H1} + \frac{H2}{K2} + \frac{H3}{K3}}{\frac{H1}{K2} + \frac{H3}{K3}}$$

Table 4 Calculated Hydraulic Conductivity

Pit 1, sample		1	2	3	Avg.
D10 (mm)		0.9	1.1	1	
Layer Thickness (m)	H (1,2,3)	1	0.2	0.3	1.5
Coefficient of permeability (cm/s)	K (1,2,3)	0.8	1.2	1	0.874

Pit 2, sample		1	2	3	Avg.
D10 (mm)		0.7	0.8	0.7	
Layer Thickness (m)	H (1,2,3)	0.5	0.5	1	2
Coefficient of permeability (cm/s)	K (1,2,3)	0.5	0.6	0.5	0.522

5.1.4 Factor of Safety

A Factor-of-Safety (FOS) between two (2) and three (3) for high-risk scenarios is generally adopted. The FOS account for variations in natural material and fouling of the intake media between maintenance events. This also considers changes over time, as water is drawn through the riverbed, not occurring in natural systems. GHD adopted a factor of safety of 3x to the average permeability rates to determine the **design permeability rate of 0.2326 cm/s**.

The tender includes for additional geotechnical testing of the natural riverbed material, to confirm the design permeability is achieved. If not suitable, the provision to import suitable filter media to replace the natural material has been included.

The intake sizing calculation considers a 45-degree zone of influence around the immediate perimeter. In practice, for highly permeable riverbeds such as the Mossman River, bed flow and percolation of water from surrounding areas through the underside of the gallery is likely.

Calculating these contributions is not possible without extensive site investigations and has not been considered. If non-permeable material is encountered under the gallery, this approach ensures that the intake is adequately sized. If the full extent of the intake can be utilised, the loading rate is significantly reduced, which will reduce maintenance frequency.

5.1.5 Submerged Gallery Pipework

A compromise between water quality, intake size and constructability was required. The deeper the intake the better the filtration capacity for improving water quality.

The deeper the gallery the higher the losses and the larger the required gallery area to reduce flow velocities.

Constructability of the buried gallery in a location selected for water availability is considered in the design. GHD have adopted a gallery pipe depth of ~1.2m as a compromise between water quality, constructability, size of intake and high flow protection by reinstating the natural riverbed profile.

Permeable Pipework

The initial design included two DN360 PVC permeable pipes to connect to downstream PE pipework. Due to incompatibility in flange and pipe sizes, a complex arrangement was required. GHD therefore adopted three DN300 pipes, to simplify the interconnections.

Perforated PVC with sufficiently small openings to retain fine media, generally have 2-3 % openings per metre. This does not achieve the generally accepted guideline velocity of 3 cm/s across the screen. GHD sourced multiple options for slotted PVC pipes with ~6-8 % openings which meet the design requirement. These have some spare capacity for nominal contamination

of the slots during casting of the no-fines. Slotted PVC pipes are generally used as bore casings. Schedule 80 PVC was adopted to provide rigidity and strength.

Pipework Generally

All pipework in the submerged gallery has been sized for a maximum velocity of 0.9 m/s to minimise headloss across the gallery arrangement.

Permeable pipework has been designed as "level", to achieve a consistent immersion depth in the stream. Pipework outside of the gallery is sealed, and designed with a 2% fall.

Flexibility in Pipework

Differential settlement of the no-fines concrete and downstream pipework is possible. Shear at the interface has been managed with the installation of a flanged DICL fitting at the transition. Flexibility will be taken up in the PE pipework. Rocker joints were not used as a fully restrained pipe in the riverbed was preferred.

Full encasement of the downstream PE pipework was abandoned. The pipe is protected by ~1.2m of re-instated natural river bed. Further, if the pipe were encased and scour occurred, the weight of the encasement was likely to shear the pipework and was identified as a more significant risk.

5.1.6 No-Fines Concrete

No fines concrete generally contains 15-25% void openings, which will form the flow path through to the slotted PVC underdrains.

Assuming worst case, vertical flow only i.e. the sides and base of the gallery are not permeable, at a 15% void ratio, with 50% of openings blocked the flow velocity through the no-fines is 1.429 cm/s. This is below the generally accepted flow velocity of 3 cm/s, to minimise headloss in the system and therefore acceptable.

As flows concentrate towards the underdrains, the localised velocity increases. For three DN300 pipes, with 50% of openings blocked the interpore velocity was calculated at 2.021 cm/s, which is acceptable.

5.2 Constructability

5.2.1 Dewatering

If approved, the intake to Anabranch 4 could be temporarily restricted to reduce the stream flow during construction. The residual stream flow will need to be diverted past the excavation area, to ensure that dewatering is only required for the sub-surface flows.

The intake pipework is designed parallel to the river flow. The intent is for sealed pipes to be installed to these "sleeves" during construction, and extended to the upstream side. Most water should be able to gravitate to the downstream side, although temporary pumping may be required. Dewatering will be required, particularly during excavation and installation of the working platform and first no-fines layer.

Continuous dewatering during installation of the no-fines concrete is critical, as a dewatering failure may compromise the structural integrity of the no-fines concrete.

5.2.2 Excavation

Vacuum excavation of the riverbed may be considered to manage access and hauling challenges over the river bank. This would also minimise the sediment disturbed in the river.

5.2.3 Natural river media or imported media

Considering the environmental sensitivity of the Mossman River and surrounds, limiting the placing of imported materials to the river is preferred.

5.3 Environmental

5.3.1 Minimise disturbance and least impact solution

Due to the high potential of flood damage to any exposed infrastructure in the river, the design has minimised equipment and infrastructure in the river to a minimum.

5.3.2 Riparian zone and tree and root zone

Pipe routes and infrastructure have been constrained to existing cleared areas, wherever possible.

5.4 Maintenance

5.4.1 Backwash and Air Scour

Backwash flow rates for submerged galleries are generally similar to those adopted in filter designs. A guideline flow rate for fluidisation of the filter media is 35 m/h, or 1,361 L/s for the Mossman intake. This would also require 800 m³ to be stored for a 10 minute backwash. Generally, to manage the flow and storage requirements, intake galleries are backwashed in sub-sections. Considering four sub-sections with isolating valves and backwash pumps, to achieve flow reversal. Three sections remain in duty to provide water for backwashing of the backwash zone. For Mossman the ¼ backwash rate is 340 L/s, which exceeds the peak design capacity.

Due to the slender shape of the intake in the confined anabranch, installing four large pipes was not feasible. The option to install water backwashing was abandoned, and a lower hydraulic loading rate adopted, to reduce the likely need for water backwashing.

5.4.2 Air Scour System

GHD initially proposed an air sparge spear be used to clean the intake media; this was to avoid the need for additional infrastructure to be installed to the river. DSC requested a formal air scour system be installed, with connection to a trailer mounted compressor in the river bank.

To suite compressors locally available for hire, the gallery was sub-divided into four air scour sections. To avoid valves in the river a shared manifold was not suitable. Four dedicated supply lines have been designed. The supply pipes will be installed to a DN300 enveloper, in the river bank, thereafter they are installed directly to the river bed, and subsequently cast into the no-fines concrete.

Installation to the no-fines provides mechanical protection and to improve the distribution of air through the intake gallery. In addition, the underdrains will support and level the smaller diameter air sparge pipework during the casting of the no-fines layers.

Achieving a full air scour rate of 40-60m/h, as per filter designs requires a blower to be installed. To maintain the intent for an occasional trailer-mounted compressor the air scour rate was set at a nominal three times the normal hydraulic loading rate of the system, typically applied for pool filters. For Mossman this is an air scour rate of 11.52 m/h or;150 L/s / 4 (scour zones) = 37.5 L/s (hydraulic loading rate) x 3 (Factor) = 112 L/s air flow rate at atmospheric pressure or 240 Cubic Feet per Minute (CFM-for compressor sizing).

Each scour system includes a hose connection point on the riverbank, with a DN50 PE pipe (ID38) rated for compressed air (hot) conveying the air to the gallery.

Each branch then sub-divides to five distribution fingers installed to the no-fines concrete immediately above the underdrains. Each finger will include 35 No. 2 mm holes at 100 mm centres to achieve distribution of the air.

5.4.3 Maintenance Frequency

GHD reviewed the historic process interruptions due to elevated turbidity on Rex Creek provided by Mossman WTP Operators as shown in Figure 10, which shows the longest interruptions were 24 hours.



Figure 10 Mossman WTP Turbidity Driven Shutdowns

Based on the above GHD recommend avoiding the use of the gallery during high turbidity events (hours to 1-2 days), to minimise entrainment of solids to the gallery and the required maintenance input.

A Turbidity probe and communication cable, to the river could not be practically installed to a safe location. The design includes for Turbidity monitoring in the Break Tanks, which will detect Turbidity within minutes of start up, to stop the system.

Alternatively, site inspection and sampling in the river should be undertaken (when safe access is possible), to avoid solids being drawn into the intake. During the dry season, high Turbidity events are unlikely.

6. **Pumping Solution**

A range of options were considered to transfer the water to Mossman WTP. The key issues are the 8 m static level difference (before system losses) between the river level and the riverbank and the required discharge pressure ranging from 110-140m (as a single lift). A summary of the pumping solutions considered is included in Appendix D.

To summarise, the NPSH cannot be overcome with self-priming or dry mounted pumps on the riverbank and options for dry mounted pumps were abandoned. Submersible pumps could not be located within the river, without concrete tanks and difficult access and were abandoned. It was preferred to install borehole type pumps to an inclined enveloper.

A single lift system from the river to Mossman WTP was not possible due to the required size of the pump (330 kW) and the length at 4.5m. Downstream flow and pressure variations at the WTP, is not ideal for borehole pumps. In addition, it was preferred to have major infrastructure (switchboards, access etc.) remote from the river for equipment and operator safety during flood events. The single lift option was subsequently abandoned.

The two stage lift considered a low lift pump and high lift inline booster. Considering the downstream flow and pressure variations, the control requirements between the two systems, with no flexibility, was deemed to be too variable for reliable programming. The option to install a Break Tanks as the source for the High Lift pumps was adopted to provide minor system flexibility, and also to enable the incorporation of pre-treatment in future, if required.

6.1.1 Inclined Enveloper Installation

Whilst trenchless installation of the enveloper was preferred to minimise disturbance of the river bank, it was abandoned due to the ~DN600-700 diameter required and potential rejection of the installation, if boulders, cobbles and roots were encountered.

As an alternative shallow trenched installation of the enveloper was adopted. The design includes re-stabilisation of the excavated trench using no-fines concrete. Mass concrete was not used due to the "heat-of-hydration" effect of curing concrete de-rating the PE Enveloper and temporary thermal expansion during curing, and residual tension in the pipe once cooled.

6.1.2 In-River Connection to Intake Gallery Discharge

As summarised in Appendix D, hydraulic connection between the pump suction and the intake gallery is required. GHD considered an in-river concrete chamber, but this was exposed to damage during flood events, and required confined space access. The option to hard plumb the enveloper and intake gallery discharge was adopted, as this would be completely buried after installation.

6.1.3 Low Lift Pump Configuration

To reduce the in-river construction requirements GHD have proposed a single duty low lift inclined pump, with cold (uninstalled) stand-by. Initial sizing indicates the pump is 55 kW, VSD driven to enable a delivery flow ranging between 75 and 150 L/s. The pump will be fitted with a remote variable speed drive (at High Lift Pump Station), for flow control.

Due to very low head on the system, the delivery pipe diameter was reduced to DN225 PN20 DICL to add friction head and increase the range of pumps available. The design velocity at 150 L/s is 3.34 m/s, but within the design range for DICL. As the 150 L/s application is an occasional / emergency use system, the energy losses associated with the friction were minor over the life of the project. At 75 L/s the velocity is 1.67 m/s.

If approvals or land for the intake gallery cannot be acquired and a fall back option to install a submersible pump in the river, the pipeline size can be increased to reduce friction losses as submersible pumps are available for the duty.

6.1.4 Low Lift System Curve

System curves are included below, based on DN225 PN20 DICL pipework, with the discharge point set 200m away from the river, on the existing quarry footprint, as described in Section 10.





Figure 11 Low Lift Pump System Curve

Pump Selection:

Two specialist pump providers were contacted; both proposed submerged turbine pumps. The full duty range could not be achieved with conventional borehole pumps, which are generally more suited to high lift, low flow applications.

6.1.5 High Lift Pump Configuration

The high lift pumps would include a duty/assist/stand-by arrangement for flow flexibility. Duty will meet the low flow duty (75 L/s) the assist pump would increase flows to achieve peak flow objective (150 L/s). Pumps are equipped with variable speed drives for flow flexibility.

Two specialist pump providers were approached for initial pump selections. One offered three 160 kW single stage centrifugal pumps in a D/A/S configuration, each to deliver 75 L/s. The second supplier offered 4 x 75 kW multi-stage pumps in a D/A/A/A configuration, with each to deliver 37.5 L/s. Either option is suitable for the application, however the design was progressed on the 3 x 160kW pump option.

During the tender process Contractors may offer alternative configurations for consideration.

The suction pipework from the Break Tanks has been oriented to feed from both ends, to halve the flow in each suction to reduce the suction velocity. The common suction manifold is configured to accept additional pumps in parallel.

6.1.6 High Lift System Curve

The High Lift system curve is included in Figure 12. There is only a nominal difference (5m) if all water is supplied from the Mossman Alternative intake, as a result of pumping the full 150 L/s in the DN300 RM, with no supplementation from the existing large bore Rex Creek gravity main.



Figure 12 High Lift Pump System Curve

6.1.7 Interconnections between the Low Lift and High Lift Systems

Formal pipework connections between the low and high lift systems for ease of scour and flushing activities were considered. This developed a risk of back-flushing over-pressure to the intake gallery. No formal connection between the two systems was therefore adopted, to reduce the risk of damage to the intake gallery and low lift pump system.

7. **Rising Main**

This section summaries the design and considerations pertaining to the size and material for the proposed new rising main.

7.1 Material selection

7.1.1 Polyethylene

GHD initially investigated polyethylene (PE) pipework. Key advantages included a fully restrained pipe with end anchors in the quarry area. This overcame the uncertainty and varying geotechnical nature detected. Additionally the flexible pipe enabled differential settlement to be accommodated.

The following key factors drove a re-consideration of pipe material in the High Lift Rising Main:

• With system pressures in the order of 100-130m, and an allowance of 50% for transient pressures (195m) the use of PN20 PE pipe was marginal. Further with temperature derating and pressure cycling* of PE pipe, PN20 PE was not suitable for the application,

*For the occasional use intake, the pressure cycling (events per life) is reduced.

7.1.2 Ductile Iron Cement Lined

Due to likely differential settlement in the quarry area, rubber ring joint (RRJ) DICL was adopted. To minimise the number of thrust blocks the alignment was designed to follow the road using the allowable deflection in the couplings. Where un-avoidable, bend angles were minimised.

For consistency across the project socketed DICL was adopted for the Low Lift Rising Main, although pressure ratings vary between the systems:

- Low Lift PS DN225 PN20 RRJ
- High Lift Rising Main DN300 PN35 RRJ

Note: Tyton-LOK DICL pipework was proposed by GHD to reduce the requirement for intermittent thrust blocks, however DSC rejected this based on previous experience.

7.1.3 Pipe Size

The pipeline has been sized primarily for the dry season supplementary flow rate of 75 L/s for which the system may run for extended periods (months) with consideration for the 150 L/s duty, as this will be an occasional use (days).

7.2 Thrust Forces

7.2.1 Geotechnical Conditions

The high lift pipeline traverses the Drumsara quarry area, which includes variable material. The Douglas Partners report included factors of safety to reduce movement to 1-2 mm/m depth. The factors of safety range from 2 (for natural clay) to 5 (for natural sand).

In GHDs opinion these factors are conservative, which, combined with the substantial thrust forces would significantly increase the project costs. The design therefore includes imported engineered fill, of known quality.

The preliminary design targeted a cover depth of 900mm. The Douglas Partners report recommended the top 600mm be ignored in the thrust block design, due to potential seasonal cracking. This resulted in a substantial increase in pipe depth to 2000 mm in areas of high thrust. The increased depth extended beyond the original 1.6m deep trial pits scoped for Douglas Partners.

7.2.2 Allowable Pipe Deflection

A maximum deflection of 2.5 degrees has been adopted in the RRJ. An allowable movement of up to 15mm was adopted for the DICL fittings.

7.2.3 Low Lift Rising Main Thrust Blocks

The low lift system is a low pressure system. Standard SEQ thrust block designs have been adopted. A test pressure of 1200 kPA is proposed.

7.2.4 High Lift Rising Main Thrust Design

The operating pressure in the pipeline ranges between 980 and 1300 kPA. Transient pressures on the system were not modelled, but an allowance of 50% (1950 kPA) was considered. A test pressure of 2000 kPA is required.

Bend	Thrust Force (No Factor of Safety)
11.25	37 kN
22.5	73 kN
45	143 kN
60	187 kN
90	265 kN

Table 5 Thrust Forces on DN300 DICL High Lift Rising Main at 2000 kPA

7.2.5 Bend Angles

For bends > 22.5 degrees, specifically engineered reinforced concrete thrust blocks were required in conjunction with engineered fill. To reduce construction cost and complexity, bend angles were minimised wherever possible.

For conventional unreinforced mass concrete thrust blocks; for each 11.25 degree bend approximately 48m³ of engineered fill is required, approximately 80m³ for each 22.5 degree bend.

7.2.6 Thrust Management on Rex Creek Pipeline

Thrust forces developing at the proposed new DN450 isolation valve on the existing Rex Creek pipeline are the largest forces on the project at 380 kN, before applying a factor of safety.

GHD have recommended to DSC this valve be omitted, if alternative isolation valves exist in close proximity, as this will be a significant project cost component.

If the isolation valve on the Rex Creek pipeline is required, GHD propose additional geotechnical testing be carried out to ensure the design is optimised. The cost of additional geotechnical testing is likely to achieve a significant project saving to avoid conservative assumptions.

7.3 Out of Service Management

Standing water in the dormant intake system will deteriorate over time, requiring the system to be run occasionally to keep it active and healthy. Two options to manage this have been considered.

7.3.1 Operate the Whole System

To keep the high lift pumps on their curve, they can only be operated if the discharge to the Mossman WTP is available. This would need to be carried out regularly (weekly), to keep the system turning over and ensuring acceptable water quality is discharged to the WTP. The advantage of this approach is the entire system frequently operated, and will identify operational issues before the system is needed.

If however the water quality in the system has deteriorated, this water cannot be diverted from the WTP whilst running the High Lift Pumps. To manage this, the low lift system can be operated to fill and flush the Break Tanks. The High Lift rising main would need to be scoured to dispose of the water.

7.3.2 Low Pressure System Flush

The top water level in the Break Tanks is ~21.85m, and the highest point on the High Lift Main is 18m. The connection to Rex Creek at 15.5m. Therefore if the High Lift Rising Main is isolated from the Rex Creek pipeline, and a temporary connection installed to by-pass the High Lift Pumps, a low pressure gravity flush of the complete new system can be completed.

A scour point upstream of the connection to Rex Creek has been incorporated in the design.

This approach is recommended for initial filling of the High Lift Rising Main.

8. Connection to Rex Creek RM

In order to minimise risks to the existing Rex Creek pipeline, the design has minimised changes to the existing system.

As an absolute minimum, a new tee and DN450 isolation valve upstream of the tie in point is required for future isolation of the Rex Creek section of the pipe, for future maintenance activities. This will be a slow closing valve, of at least 5 minutes, to minimise transient pressures. A water hammer analysis on the Rex Creek Gravity pipe was not included in GHDs scope, and sufficient detail on the pipeline does not exist to undertake this investigation.

9.

Access Road and Stormwater Management

9.1 Design

The road design is typically in accordance with FNQROC standards, including the target offset from the edge of road of 1.7m. The main access to the quarry turning area is a 4.5m surfaced road. Thereafter, due to occasional access to the intake infrastructure on the Mossman River the road narrows to surfaced 3.5m wide, with a typical section shown in Figure 13.



Figure 13 Typical Access Road Section

9.2 Truck Turning

A turning loop for semi-trucks around the High Lift PS was excluded, due to the additional roadworks and turning area required. The adopted intent is for (occasional) trucks to turn at the existing wash-down loop, and reverse into the bay provided at the High Lift Pump station.

9.3 Stormwater Management

A hydrological assessment of the localised area was outside of GHDs scope. The proposed stormwater improvements are therefore based on DSC input, and oversizing of drainage infrastructure, considering the relatively small catchment areas. The general approach was to achieve an improvement over current site drainage.

A sketch of the stormwater problem areas is included as Appendix C.

9.3.1 Localised Low Point

GHD met with Council staff who indicated a sheet flow of 60-80mm across the existing gravel access road occurs during the wet season, typically between CH570 and CH670. DSC requested concrete paving to this section, to enable the area to be safely traversed.

The design includes for a new DN450 RCP culvert to drain the low point west of the road, which currently has no discharge other than over the road.

9.3.2 Choked discharge point

The localised area drains in a northerly direction, and ultimately discharges to a low point adjacent to the Mossman River. A final drainage path to the river could not be identified, however Council staff noted the area drains once Mossman River levels recede. Considering the gravel / sand in the upper layers, it is assumed the ponded water dissipates via infiltration.

Council staff noted the existing V-drain discharging to this low point (approximately 1.2m deep, 400mm wide at base and 1m wide at top) is the choke point, before a free discharge down the bank. DSC staff requested 2 x 900 RCP culverts be installed to convey flows under the access road, where the V-drain cannot be avoided.

9.3.3 Revised Road and Pipe Alignment

The original design had the road and pipeline tracking the existing Ergon Easement. The survey revealed the drainage channel in this area, and batter slopes and pipeline construction encroached on the drainage path. Considering the localised drainage issues, the pipe and road alignment was revised to avoid this area. The re-alignment minimised the impact of the design on stormwater, and the number and size of thrust blocks on the initial alignment.

A section of the new alignment was not included in the survey, however the area is generally flat, and was interpolated between surveyed points for the design. Some minor adjustment of levels may be required during construction.

9.4 Security and Access

With the formalisation of the access road to the Mossman River, it is likely this will increase access to the intake location. In order to protect infrastructure and water quality at the intake a gated access was suggested by GHD. DSC confirmed they are installing a boom gate to limit access to the Drumsara site (at the railway crossing), which they accepted is sufficient to limit public access to the intake.

DSC requested the High Lift PS be a secure compound (security fence, with pedestrian and vehicular access points), to minimise vandalism of equipment, which has been included in the design.

Most equipment at the Low Lift PS is buried to limit vandalism. The option to bury all infrastructure was not preferred by DSC, as this became subject to water ingress.

DSC requested an expanded mesh aluminium box be installed over exposed equipment. Due to the footprint and minimum height requirements, GHD adopted a fence around the above ground pipework.

10. Stand-by power and Diesel Storage

The high-lift pumps are the largest power users. The main switchboard and connection point for mobile generator has been installed in close proximity to the High Lift Pumps set some 200m back from the River as indicated in Figure 14. Power and control will be distributed to the Low Lift Pump station to enable a single power supply point to the complete intake.

A major advantage of this is to limit the size and frequency of major vehicle access to the river bank. Further setting the diesel generator, delivery and storage remote from the river was environmentally preferred.



Figure 14 Proposed Location of High Lift PS and Associated

11. Cost Estimate

An engineering cost estimate ($\pm 30\%$) for the project has been completed, as summarised in Table 6. Preliminary costs have been set at 25% of the construction cost. The 25% contingency of \$1,1million has been pro-rata distributed across the Sections.

Table 6 Engineering Cost Estimate

Section	Total, including 25% Contingency
Preliminaries	\$1,107,492.19
Submerged Gallery Intake	\$700,625.00
Low Lift Pump Station	\$270,343.75
Low Lift Rising Main	\$206,125.00
High Lift Pump Station	\$579,500.00
High Lift Rising Main	\$1,427,500.00
Electrical	\$438,250.00
Earthworks, Roadworks and Site Works	\$713,875.00
Commissioning and Testing	\$93,750.00
Total (excl. GST)	\$5,535,000.00

"GHD has prepared the preliminary cost estimate provided using information reasonably available to the GHD employees who prepared the estimate; and based on assumptions and judgments made by GHD.

The Cost Estimate has been prepared for the purpose of order of cost estimate and must not be used for any other purpose. The Cost Estimate is a preliminary estimate only. Actual prices, costs and other variables may be different to those used to prepare the Cost Estimate and may change. Unless as otherwise specified, no detailed quotation has been obtained for actions identified in this estimate. GHD does not represent, warrant or guarantee that the options assessed can or will be undertaken at a cost which is the same or less than the Cost Estimate.

This estimate is to be used by Douglas Shire Council as an order of estimate (only) for the purpose of comparing Contractor quotations. This estimate is not to be used for final allocations of budget for Construction. GHD is not liable for any inconsistencies in project budget resulting from the use of this estimate.

Appendices

GHD | Report for Douglas Shire Council - Design Additional Water Extraction Site Mossman, 4221142 | 24

Appendix A – Mossman River Hydrology

Appendix B – Douglas Partners Trial Pits

Appendix C – Localised Flooding



Appendix D – Alternative Options Considered

12. Intake Options considered

This section summarises the of intake types considered.

12.1 Indirect (River Bank) Abstraction Borefield Option

Due to the sensitivity of the Mossman River, and whether approval to construct in the river will be acquired, GHD investigated an alternative to install a borefield to indirectly abstract water from the Mossman River. This would have avoided all river construction.

Douglas Partners was appointed to complete an initial geotechnical bore investigation. A 28 m bore was drilled from a ground level of 18m (bore log included as Appendix E). The investigation determined that from river level (RL 10m) and below the Geotech was increasingly silty and clayey, and therefore not suitable for a borefield intake which requires deep layers of permeable material.

The option was abandoned, and the submerged gallery intake resumed.

12.2 Pre-cast concrete slab with stainless steel underdrains

This option includes the excavation of the riverbed to install pre-cast concrete slabs, complete with stainless steel underdrains, typically used in water treatment filters. This option was was initially developed for the high-energy turbulent zone at the convergence between Anabranch 3 and 4, for minimised in stream works (time) and the robustness of the materials.

Table 7 Advantages and Disadvantages of the Underdrain

Key Advantages	Key Disadvantages		
• Ability to be constructed adjacent to the river and craned into place, to minimise river works and risks.	• Required to minimise the size of units for safe lifting and extended crane reach for positioning.		
• The stainless steel underdrains offered the opportunity to air scour and backwash the full intake bed.	• Multiple units required interconnecting pipework and re-introduced risk to flood / scour damage and differential settling.		
	 By minimising the sizing required a higher loading rate, typical of rapid gravity filters, making combined air and water backwashing of the intake essential. 		
	 Backwash flow rates, require additional storage and backflush infrastructure (pumps). 		

12.3 No-fines concrete with perforated underdrain

The option to encase perforated intake pipes in no-fines concreted was considered in the turbulent zone at the convergence between Anabranch 3 and 4 due to the concrete mass.

Table 8 Advantages and Disadvantages of No-Fines Option

Key Advantages	Key Disadvantages		
Mass concrete for robustness;	• Rigid solution, which will not move with river		
Single large unit	• Unable to pump no-fines, requiring chute (limited reach) or crane access;		

12.4 Gabion baskets with perforated pipe

This option was not considered in the convergence zone due to the turbulence and potential damage of the intake. With the adopted location in the protected side stream, this became feasible.

Initial iterations were to overlay the intake with a gabion mattress however oversizing the basket to encapsulate the entire intake offered mass stability, with the flexibility to settle or manage localised scour.

Table 9 Advantages and Disadvantages of No-Fines Option

Key Advantages	Key Disadvantages
Mass for robustness;	Placing of the rock;
Single large unit	 Potential migration of sand into gravel layer;
• Flexible to adapt with stream changes;	
 Washed stone or locally selected stone can be used, to minimise environmental risk to the river; 	

12.1 Selection of Preferred Intake

The backwashing requirements of the stainless steel underdrain system, excluded this option due to the costs and risk of flushing intake media during wet weather events. The no-fines concrete or the gabion solutions were both considered feasible. During the Detailed Design meeting, DSC confirmed their preference for the no-fines option as it is less likely to wash away, and that the constructability issues of placing the no-fines were less than "hand-placing" of rock media to the gabions.

13. Innovative Options Considered

Other options were considered during the preliminary design and intake selection, these are summarised below, including with the key reason/s for exclusion

Trenchless pipe installation to river island and connect to Finlayvale Road intake

This option includes the installation of a submerged gallery intake to the Finlayvale side of the river, with an extended suction to the Drumsara intake side to avoid wet season access to the northern bank. The intent was to land the trenchless pipe in the island between anabranches 1 and 2 respectively. This would then be hard plumbed to the extended pump suction.

- Cost of trenchless pipe installation
- Accuracy of landing the trenchless installation, and risk of boulders in river bed
- Finlayvale intake is in a local swimming hole;

Conventional screen intake installed to the downstream pond

This option considered the installation of a stainless steel screen intake to the free water surface in the pond.

- Free water intake with no water quality improvement,
- Located in a local swimming hole
- Access for maintenance or self-cleaning of intake difficult;
- Damage risk during flood events; scour, boulders, trees.

Ogee type intake on natural side stream channel

To overcome the maintenance requirements of a submerged gallery intake, an ogee type intake (similar to Rex intake) but installed to the natural channel on Anabranch 4 was considered. The following key issues were identified;

- Physical barrier on river, unlikely to be approved;
- No water quality improvement over Rex Creek intake;
- Potential flood damage;

14. Alternative Pumping Solutions

14.1 Submersible Pumps

The option to install a caisson type submersible pump station to the riverbank was considered, however this was 10m deep. If set back in the riverbank to reduce the erosion risk, the interconnecting pipe to the caisson is deep and likely need to be launched from the pit. Launching pipes enlarges the diameter of the caisson. This resulted in a large structure with full establishment of a specialist construction teams for a short length of pipe. Considering the costs and boulder / tree root risks to trenchless pipe installation, this option was abandoned.

Alternatively, setting the structure forward, partially in the riverbank was considered. Access would require a bridge. Due to potential instability of a 10m high structure exposed to the high river energy, this would require piled foundations, and became a significant construction cost.

This option was abandoned, to close out the submersible pump options.

14.2 Installation of Pump to Inclined Enveloper

GHD considered an inclined pipe enveloper, to accept the new pump. The incline was adopted to enable pump removal / installation from the riverbank, whilst accessing water from the river.

In principle the inclined enveloper solution was viable, provided a suitable pump could be sourced.

14.3 Single Lift

A single lift system to minimise infrastructure (number of pumps and motors) and control requirements was investigated.

To meet the 150 L/s at 140 m head requirement, a 300 kW multi-stage pump was required. As shown in Figure 15 due to the number of pump stages to meet the pressure target the pump was too long (4.5m) for sufficient immersion, without deep installation in the River.



Figure 15 Inclined Single Lift Bore Schematic

14.4 Two Stage Lift

A two stage pumping solution was then investigated. The pump was approximately 2m shorter and capable of meeting the peak design flow of 150 L/s using a single pump.

The Two Stage Lift with Break Tanks was adopted for the design, for the reasons described below.

14.4.1 Inline Booster

For this configuration, the low lift pumps deliver directly to the high lift pump suction, which boosts the pressure to the required injection pressure. Interlocked control is required between the two systems, as there is no flow or pressure "buffer" in the system.

This option was abandoned as frequent downstream flow control (every 2-3 minutes), and associated pressure variations will be difficult to accommodate in the programming loops.

14.4.2 Break Pressure Tank

This option involves the low lift pump discharging to a break pressure tank, which in turn provides a flooded suction to the high-lift pumps.

The low lift pumps are controlled to match the high lift pump flow rate, or to maintain a target level in the break pressure tanks.

Initially the high lift pumps were intended to be pressure controlled to automatically adjust to WTP operations. However, due to frequent pressure changes, the operating intent was adapted to "set flow rate", where Operators request a flow rate which the system delivers. Pressure and flow variations would be accommodated in the Rex Creek gravity supply.

To minimise the construction costs, PE Break Tanks were adopted.

Due to the limited maximum nozzle size of DN315 to a single tank, the discharge velocity (and associated turbulence) for a 150 L/s was deemed excessive. The adopted solution includes a flow split to two tanks, splits the flow from a single DN225 to two DN300 pipes to reduce the velocity entering the tanks. The injection point is below BWL to minimise air entrainment and turbulence.

A bottom water level of 1m was adopted, with a DN300 outlet per tank to reduce the likelihood of vortexing and maintaining a flooded suction to the High Lift Pump Suction. Each tank is equipped with an overflow rated to 100 L/s.

Table 10 Two Stage Lift Advantages and Disadvantages

Advantages	Disadvantages
Minimises size of infrastructure in river	More drives and control
Can set high lift pumps, and larger equipment back from river;	Break tank required
Easier access for generator and diesel	
Refer Section 10.	
Smaller equipment to be lifted from river	
Flat grade once out of river, can locate booster at most convenient location	
More flexibility to install multiple smaller pumps, for improved flow pacing	
More efficient high lift pumps	
Some buffer capacity in pumping system	

14.1 Pump Suction Detail

A hydraulic connection between the submerged gallery discharge pipe and the Low Lift pump suction is required. Two options were considered. Based on the advantages and disadvantages of the options, the concrete chamber arrangement is the preferred arrangement.

14.1.1 Plumbed in river pipework

For this option, the inclined enveloper pipe would be physically plumbed to the gallery discharge pipe. The advantage of this approach is once constructed all pipework can be buried below riverbed level, to minimise the aesthetic/environmental impacts and scour risk during high flow events.

This solution was preferred by DSC and adopted for this project.


Figure 16 Hard Plumbed In-River Suction

14.1.2 Concrete Structure

For this option a structure in the river would be constructed. The gallery discharge pipe would physically discharge into the sump, which would then serve as the low lift PS suction.

The advantage of this approach is for cleaning / access to the chamber. Based on the construction complexities, likely environmental resistance and the risk to exposed infrastructure in storm events, this option was not considered further.



Figure 17 Concrete Chamber Suction

Appendix E - Douglas Partners Borehole Log



RIG: Scout DRILLER: Saxon LOGGED: Brooks CASING: H to 12 m depth TYPE OF BORING: Solid flight auger to 3.5 m depth, SIMCAS to 0.5 m depth, wash bore to 30 m depth WATER OBSERVATIONS: Ground water observed at 8.1 m depth REMARKS: Location coordinates are in GDA94 Zone 55K.

		SAMPLIN	G& IN SITU TESTING	LEGEND	
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BOREHOLE LOG

R	OJEC1 CATIO	Douglas Shire Council F: Proposed Raw Water Intake N: Drumsara, Mossman		EA NC DIF	RFA STIN RTH P/AZI	G: ING: MUTH	324187 8178747 1: 90°/		PROJECT No: 77794. DATE: 3/6/2019 SHEET 2 OF 2
Γ	14	Description	.9	-	San	ipling &	in Situ Testing	1	Well
ĺ	(m)	of Strata	Graph	Type	Depth	Sample	Results & Comments	Wale	Construction Details
	18	CLAYEY SAND/SANDY CLAY - dense yellow brown clayey fine to coarse sand with some fine subrounded gravel; moist; [ALLUVIAL] (continued) - medium dense and mottled brown, red brown and		g	16,0		4.8.10		19
	17	White from 16.0 m depth			16.45		4-70		57
	18	- medium quartz gravel encountered at 17.95 m deplh		a .	17.95		4,9,11 N = 20		la la
	19			9	19.0 19.45	P	4.6,9 N = 15	ķ	19
	80		E		1	M			20
	.20:5 - 21	CLAYEY SILT - very stiff to hard red brown motiled grey orange clayey silt w <pl [residual]<="" td=""><td></td><td>S</td><td>20.5</td><td></td><td>pp = 150-200 5.9,12 N = 21</td><td></td><td>2.6mm sand gravel</td></pl>		S	20.5		pp = 150-200 5.9,12 N = 21		2.6mm sand gravel
	22	0		s	22.0 22.45		μρ = 450-500 7,10,20 N = 30		4
	23	-	11					1	-23
	24	0		8	23.95		pp = 350-400 5.11.17 N = 28		24
	28	- 0.2m thick interbedded sandy fine súbrounded gravel laver at 25 35 m denth. Sand fraction is line drained.		8	25.0 25,45		00 >600 12,16,25 N = 41		25
	26	alle, a to se al estas, ca d'annor a na Barroa		01	26.0 26.45		pp = 350-400 12.18.28 N = 46		26
	27	- with line grained send from 27.5 m depth-		s,	27.5		pp = 350-400 8.12.21 N = 33		28
	28				29.0		pp = 400-450		29
	1.1	the second s	111	S	29.45		12.18.30 N = 48		

BOREHOLE LOG

RIG: Scout DRILLER: Saxon LOGGED: Brooks CASING: H to 12 m depth TYPE OF BORING: Solid flight auger to 3.5 m depth, SIMCAS to 8.5 m depth, wash bore to 30 m depth WATER OBSERVATIONS: Ground water observed at 8.1 m depth

REMARKS: Location coordinates are in GDA94 Zone 55K.

SAMPLING & IN SITU TESTING LEGEND 2 6.00

Auger sample Bulk sample BUK Block sample Core driling Dissurbed sample Environmental sample	GRUNA	as semple iston sample late sample (x mm dla.) later sample later snep later level	PEC PM>	Photo cression devetor (ppm) Point load avial lest lo(50) (MPa) Point load demetral test lo(50) (MPa) Poder panamonian (MPa) Standard penetration test Standard penetration test Standard vano (MRa)
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42-SO1-568048316-

21/https://projects.ghd.com/oc/NQOC2/douglaswatersecurity/Delivery/Documents/4221142_REP-Mossman Alternative Intake Detailed Design Report.docx

Document Status

Revision	Author	Reviewer	Approved for Issue			
		Name	Signature	Name	Signature	Date
A	G.Gademan					

www.ghd.com



Appendix G

Rehabilitation Management Plan



REHABILITATION PLAN

Mossman Water Intake



REPORT

Document status							
Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date		
0	Rehabilitation Plan	N. May	M Davis	N. May	18 May 2023		
1	Minor edits	O. Caddick-King	M. Davis	M. Davis	26 July 2023		

Approval for issue

Natalie May 26 July 2023

This report was prepared by RPS within the terms of RPS' engagement with its client and in direct response to a scope of services. This report is supplied for the sole and specific purpose for use by RPS' client. The report does not account for any changes relating the subject matter of the report, or any legislative or regulatory changes that have occurred since the report was produced and that may affect the report. RPS does not accept any responsibility or liability for loss whatsoever to any third party caused by, related to or arising out of any use or reliance on the report.

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Contents

1	INTR	ODUCTION	.1
2	PRO	JECT AREA	2
		2.1.1 Flora	3
3	REVE	EGETATION METHODOLOGY	.5
	3.1	Weed Control	5
	3.2	Topsoil Management	5
	3.3	Fauna Management	5
	3.4	Timing	5
	3.5	Site Preparation	5
	3.6	Ongoing Maintenance and Monitoring	5
	3.7	Signage	6
4	RECO	OMMENDATIONS AND CONCLUSION	.7

Figures

Figure 1	Project area and RE mapping	2
Figure 2	Mapped RE 7.3.17, RE 7.3.19 and RE 7.3.10	3

Appendices

ix A Site Plan

1 INTRODUCTION

RPS AAP Consulting Pty Ltd (RPS) has been engaged by Douglas Shire Council (DSC) to prepare a Vegetation Rehabilitation Plan to enable vegetation of cleared areas required for the development of the proposed additional water supply intake, and linked intake infrastructure extracting water from the Mossman River. The water supply intake is located on part of Lot 6 on SP212661, the project will be management and developed by Council.

The related infrastructure, which includes a low-level pump, high-level pump, and linked pipeline are proposed to be placed on Lot 6 on SP212661, Lot 1 and 4 on RP716977 and Road Reserve with the proposed works extending from the anabranch of the Mossman River to Mossman Gorge Road via Drumsara Road, Mossman.

As part of this engagement, RPS were required to create a Rehabilitation Plan to address any potential vegetation/ land health impacts and provide recommendations to enable DSC to commence work and support their Development Approval conditions.

The following actions were taken in delivering the Rehabilitation Plan:

- Source and review existing desktop ecological information/mapping for the subject site, plus any local knowledge of the ecological values based on previous assessments undertaken in the vicinity of the project area.
- Prepare a Rehabilitation Report.
- Provide recommendations on land rehabilitation areas across the project area.

2 PROJECT AREA

The proposed works are shown in Appendix A for the water intake infrastructure.

The site includes regional ecosystem (RE) 7.3.17 which is listed as Endangered while RE 7.3.19 and 7.3.10 are listed as Of Concern under the *Vegetation Management Act*. Further east from the waterway, the RE changes to 7.3.19 and 7.3.10. These vegetation communities are key elements of healthy functional ecosystems. Figure 1 shows the project site location. Figure 2 shows the impact of RE 7.3.17.



Figure 1 Project Area and RE Mapping



Figure 2 Mapped RE 7.3.17, RE 7.3.19 and RE 7.3.10

Approximately 1509m² of RE 7.3.17 is required to be cleared as a result of the water intake infrastructure, refer to Figure 2 above and Appendix A. It is proposed that this area is naturally revegetated as much as feasible allowing for ongoing operations through the methodology detailed below.

2.1.1 Flora

2.1.1.1 Existing Plant Communities Present on Site

There are three (3) regional ecosystems present within the project area. One (1) RE 7.3.17 listed as Endangered and two (2) RE 7.3.19 and 7.3.10 listed as Of Concern under the Vegetation Management Act. Regional Ecosystem/plant community descriptions for all four are listed below:

2.1.1.1.1 Regional Ecosystem: 7.3.17

Vegetation Management Act: Endangered

Biodiversity Status: Endangered

Description: Complex mesophyll vine forest. Well-drained alluvium of high fertility. Not a Wetland.

2.1.1.1.2 Regional Ecosystem: 7.3.19

Vegetation Management Act: Of Concern

Biodiversity Status: Of Concern

Description: Corymbia intermedia (pink bloodwood) or *C. tessellaris* (Moreton Bay ash) +/- Eucalyptus tereticornis (forest red gum) open forest (or vine forest with these species as emergents). Well-drained alluvium. Not a Wetland.

Vegetation communities in this regional ecosystem include:

7.3.19a: Corymbia intermedia, Eucalyptus tereticornis, E. drepanophylla, Allocasuarina torulosa, A. littoralis, Lophostemon suaveolens, woodland with Acacia cincinnata, A. flavescens, Banksia aquilonia and Xanthorrhoea johnsonii. Well-drained alluvium. Not a Wetland.

7.3.19b: *Corymbia tessellari*s and *C. intermedia* woodland and open forest. Well-drained alluvium. Not a Wetland.

7.3.19c: *Corymbia tessellaris* and *C. intermedia* woodland and open forest with a very well-developed vine forest understorey. Well-drained alluvium. Not a Wetland.

7.3.19d: Corymbia intermedia open forest. Well-drained alluvium. Not a Wetland.

7.3.19e: *Corymbia intermedia* open forest with a very well-developed vine forest understorey. Well-drained alluvium. Not a Wetland.

7.3.19f: *Eucalyptus moluccana* woodland and open forest. Alluvium. Not a Wetland.

7.3.19g: *Eucalyptus tereticornis, E. drepanophylla, E. portuensis, Corymbia intermedia, C. tessellaris,* woodland and open forest with *Allocasuarina torulosa* and *Angophora floribunda*. Uplands and highlands on alluvium, of the dry rainfall zone. Not a Wetland.

7.3.19h: Corymbia tessellaris +/- Eucalyptus tereticornis, C. intermedia, E. drepanophylla, E. platyphylla and Lophostemon suaveolens layered grassy woodland with Acacia celsa and Cycas media. Lowlands on alluvium, of the wet and moist rainfall zones. Not a Wetland.

7.3.19i: *Corymbia intermedia, Allocasuarina torulosa* and *Lophostemon suaveolens* woodland and open forest. Uplands on alluvium, of the moist rainfall zone. Not a Wetland.

7.3.19j: Themeda triandra and Imperata cylindrica grassland. Alluvium, Palm Islands. Not a Wetland.

2.1.1.1.3 Regional Ecosystem 7.3.10

Vegetation Management Act: Of Concern

Biodiversity Status: Endangered

Simple-complex mesophyll to notophyll vine forest. Moderately to poorly-drained alluvial plains of moderate fertility. Contains Palustrine.

Vegetation communities in this regional ecosystem include:

7.3.10a: Mesophyll vine forest. Moderately to poorly-drained alluvial plains, of moderate fertility. Lowlands of the very wet and wet zone. Not a Wetland.

7.3.10b: Mesophyll vine forest recovering from disturbance, with *Acacia spp.* canopy or emergents. Moderately to poorly-drained alluvial plains, of moderate fertility. Lowlands of the very wet and wet zone. Not a Wetland.

7.3.10c: Mesophyll vine forest with scattered *Archontophoenix alexandrae* (feather palm) in the sub-canopy. Seasonally inundated lowland alluvial plains. Palustrine.

7.3.10d: Open areas in vine forests dominated by sprawling vines, with emergent vine-draped trees or clumps of trees. Vines commonly include *Decalobanthus peltatus*. Alluvial plains. Not a Wetland.

7.3.10e: Simple notophyll vine forest with *Blepharocarya involucrigera, Acacia celsa, Flindersia bourjotiana, Syzygium angophoroides, Dillenia alata, Grevillea baileyana, Syzygium kuranda, Calophyllum sil,*

Backhousia hughesii and Acronychia acronychioides. Swampy alluvial plains. Palustrine.

7.3.10f: Simple Notophyll vine forest with Syzygium angophoroides. Swampy alluvial plains. Palustrine.

7.3.10g: Simple notophyll vine forest dominated by *Blepharocarya involucrigera*. Alluvial plains. Not a Wetland.

3 **REVEGETATION METHODOLOGY**

3.1 Weed Control

Weeds pose a serious threat to the project area. Weeds can harm native plants and animals, natural landscape and water catchment within the project area.

Environmental weeds threaten the biodiversity of the project area by:

- reducing the diversity and abundance of native species
- upsetting the balance of natural ecosystems.

Weeds compete with native plant species for nutrients, water, sunlight and space. Weeds can form dense areas of vegetation that shade and smother native species and may alter key environmental events. This can threaten both native plants and the animals that rely on them for food and shelter.

Weed control will involve herbicide treatments to reduce the amount of weeds present. This will reduce the competition for available water and nutrients with the native seedlings, leading to a more successful revegetation outcome. Weed control will be carried out once the annuals emerge.

Areas to be revegetated will ideally be sprayed before planting with a residual herbicide (e.g. Simazine) and knockdown (e.g. Glyphosate) mix, although it is noted that this area is within close proximity to the Mossman River and no herbicide should be allowed to runoff into the waterway.

A follow up spray in spring with Fusilade or Verdict may be required to control narrow leaf grasses. If narrow leaf grasses are prevalent on the site it would be anticipated this herbicide treatment would be required.

3.2 Topsoil Management

During construction, it is recommended that topsoil is stripped and stockpiled for reuse for revegetation. Topsoil should be stockpiled in small stockpiles to ensure the viability of the native seedstock.

3.3 Fauna Management

It is recognised that fauna along waterways can provide valuable corridor for movement of native wildlife. During clearing, it is recommended that a spotter catcher is engaged to prevent impacts to native wildlife and any cleared vegetation is mulched for reuse during revegetation or large logs/trees are retained and placed throughout the revegetation area to enable use for wildlife by providing habitat.

3.4 Timing

It is recommended that for improved success rates of native rehabilitation, the area is prepared prior to the wet season to allow for natural seed dispersal and establishment during the rains.

3.5 Site Preparation

Prior to planting/seeding any available site topsoil and mulched vegetation will be spread across the revegetation site to a minimum depth of 50 mm and not more than 100 mm thick. The topsoil and mulch will be blended at a 5:1 ratio before spreading and applied in one application.

3.6 Ongoing Maintenance and Monitoring

Monitoring should occur regularly at the site, preferably monthly for the first 6 months then reducing thereafter.

Ongoing monitoring will ensure the successful establishment of the revegetated rehabilitated areas.

Criteria for success: Follow-up herbicide treatment will take place when the weed cover (non-indigenous species) exceeds 30% and these weed species are assessed by the Council or contractor during the

ongoing monitoring are deemed to be having a detrimental impact on the survival of the revegetation that will result in the quantity and species diversity dropping below the set completion criteria.

Target composition: 9-10 indigenous species present consistent with mapped vegetation 5 years after establishment. 10% Upper Story and 70% Mid Story and 20% Low Story. If the species density or diversity has dropped significantly below these amounts infill planting will be required.

Follow up weed control is likely to be vital to the success of native vegetation re-establishment.

3.7 Signage

Revegetated areas will be signed and preferably taped off to prevent access from staff where possible.

4 RECOMMENDATIONS AND CONCLUSION

As detailed above, it is proposed that the area to be cleared for the Mossman Water Intake project will be naturally revegetated with active site preparation, monitoring and weeding for at least the first year or until the success criteria is met.

Appendix A Site Plan





Douglas Shire Council Site Plan - Mossman Proposed Water Intake

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100 125 250 75 50

Datum: MGA2020 Z55 | Scale: 1:2,500 @ A3 | Date: 3-4-2023 | Drawing: PR152792-6b



Douglas Shire Council Mossman Proposed Water Intake Potential Disturbance Footprints - Sheet 1 of 3

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Datum: MGA2020 Z55 | Scale: 1:1,000 @ A3 | Date: 3-4-2023 | Drawing: PR152792-7b |





Douglas Shire Council Mossman Proposed Water Intake Potential Disturbance Footprints - Sheet 2 of 3

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Datum: MGA2020 Z55 | Scale: 1:1,000 @ A3 | Date: 3-4-2023 | Drawing: PR152792-8b



Douglas Shire Council Mossman Proposed Water Intake Potential Disturbance Footprints - Sheet 3 of 3

100

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RPS AAP Consulting Pty Ltd ACN 117 883 173 135 Abbott St PO Box 1949 CAIRNS QLD 4870 **T** +61 7 4031 1336 **F** +61 7 4031 2942 W rpsgroup.com



Datum: MGA2020 Z55 | Scale: 1:1,000 @ A3 | Date: 3-4-2023 | Drawing: PR152792-9b

Appendix H

RPS Drawing No PR152742-4 Proposed Road Closure Plan



Douglas Shire Council Proposed Road Closure Plan Mossman Proposed Water Intake

60

PRELIMINARY - FOR DISCUSSION PURPOSES ONLY

RPS AAP Consulting Pty Ltd ACN 117 883 173 135 Abbott St PO Box 1949 CAIRNS QLD 4870 **T** +61 7 4031 1336 **F** +61 7 4031 2942 **W** rpsgroup.com



:600 @ A3 | Date: 2-11-2022 | Drawing: PR152792-4

Appendix I

Department of Resources Relevant Purposed Determination, dated 3 April 2023



Department of **Resources**

Author : Rachel Buckley Ref number : 2023/001116

3rd April 2023

Mr Owen Caddick-King C/- RPS AAP Consulting Pty Ltd PO Box 1949 CAIRNS QLD 4870

Email: owen.caddick-king@rpsgroup.com.au

Dear Mr Caddick-King,

Application for a Relevant Purpose determination under section 22A of the *Vegetation Management Act 1999* for the clearing of native vegetation on lot/s 4 RP716977 & 6 SP212661 - Douglas Shire Council.

I refer to your application submitted to the Department of Resources (the department) on 17 March 2023.

As delegate for the Chief Executive, I have considered your request and am satisfied that the proposed development to clear vegetation for the purpose of Relevant Infrastructure Activities meets the relevant requirements of section 22A of the *Vegetation Management Act 1999*. The areas determined to be for a relevant purpose are shown in Kml: 'Potential Disturbance footprints' which was supplied with your application.

This decision is based on the development proposal and information you submitted to the department on 17 March 2023, circumstances at the time of this determination; and the attached Kml: 'Potential Disturbance footprints'.

Should your proposal change (eg. development footprint) or circumstances associated with your proposal change (eg. legislation changes, regional ecosystem mapping changes), you will need to request another section 22A relevant purpose determination.

This relevant purpose determination is valid for 2 years and will expire on 2 April 2025.

Please note that this letter is not a development approval to carry out vegetation clearing. You will need to apply for a development approval from your local Council, or the Department of State Development, Infrastructure, Local Government and Planning (DSDILGP) under the *Planning Act 2016.*

Prior to lodging a development application, it is strongly recommended that, you arrange a prelodgement meeting through the State Assessment and Referral Agency (SARA) to identify all relevant State legislation, approvals and application requirements.

Please note, clearing vegetation to the extent the clearing is in any category C areas or category R areas is not for a relevant purpose under the *Vegetation Management Act 1999*. Accordingly clearing of vegetation in these areas cannot be approved under a development approval. If your proposed development includes clearing vegetation in any category C areas

Telephone: 13 58 34 or 135 VEG Email: vegetation@resources.qld.gov.au Web: www.resources.qld.gov.au or category R areas you should ensure this clearing can be undertaken as exempt clearing work or in accordance with an Accepted Development Vegetation Clearing Code (ADVCC). Clearing vegetation in any category C areas or category R areas that is not exempt or in accordance with an ADVCC is prohibited development. Information on exempt clearing work or ADVCCs is available online at www.qld.gov.au (search 'exempt clearing work' or 'accepted development vegetation clearing codes').

Performance Outcomes within State Development Assessment Provisions (SDAP) State Code 16 requiring a detailed response by the development application include:

- Essential Habitat
- Conserving endangered and of concern regional ecosystems

Disclaimer: Please note, assessment of rehabilitation requirements and environmental offset requirements will be undertaken as part of the State Development Assessment Provisions: State Code 16 (SDAP: State Code 16) assessment. Accordingly, any determination that the proposed development is for a relevant purpose under section 22A of the Vegetation Management Act 1999 is not a finding that the proposed development also satisfies any Performance Outcome requirements to rehabilitate or provide environmental offsets where required under SDAP: State Code 16.

Other relevant Commonwealth or State approvals may also be required to undertake vegetation clearing. An indicative list of other legislation is provided in Attachment 1.

Should you require any additional information please contact your local SARA office as below:

SARA Cairns Office

Location: Ground Floor, Ports North Building, Cnr Grafton and Hartley Streets, Cairns

Postal address: PO Box 2358, Cairns Qld 4870

Telephone: 07 4037 3214

Email: <u>CairnsSARA@dsdilgp.qld.gov.au</u>

Should you have any enquiries or require assistance regarding this request, please do not hesitate to contact Rachel Buckley, Natural Resource Management Officer, of the department on telephone 07 4530 1210 quoting the above reference number.

Yours sincerely

Andrew Collins Senior Natural Resource Management Officer

Attachment 1 - Legislation and Acts

Activity	Legislation	Agency	Contact details
Interference with overland flow	Water Act 2000	Department of Regional Development, Manufacturing and Water (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dnrme.qld.gov.au
Earthworks, significant disturbance	Soil Conservation Act 1986	Department of Resources (Queensland Government)	Ph: 13 QGOV (13 74 68) www.resources.qld.gov.au
Indigenous Cultural Heritage	Aboriginal Cultural Heritage Act 2003 Torres Strait Islander Cultural Heritage Act 2003	Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (Queensland Government)	Ph. 13 QGOV (13 74 68) www.datsip.qld.gov.au
Mining and environmentally relevant activities Infrastructure development (coastal) Heritage issues Protected plants and protected areas ¹	Environmental Protection Act 1994 Coastal Protection and Management Act 1995 Queensland Heritage Act 1992 Nature Conservation Act 1992	Department of Environment and Science (Queensland Government)	Ph: 13 QGOV (13 74 68) www.des.qld.gov.au
Interference with fish passage in a watercourse, mangroves Forest activities	Fisheries Act 1994 Forestry Act 1959 ²	Department of Agriculture and Fisheries (Queensland Government)	Ph: 13 25 23 www.daf.qld.gov.au
Matters of National Environmental Significance including listed threatened species & ecological communities	Environment Protection and Biodiversity Conservation Act 1999	Department of the Environment, (Australian Government)	Ph: 1800 803 772 www.environment.gov.au
Development and planning processes	Planning Act 2016 State Development and Public Works Organisation Act 1971	Department of State Development, Infrastructure, Local Government and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dsdmip.qld.gov.au
Local government requirements	Local Government Act 2009 Planning Act 2016	Your relevant local government office	

- Any sandalwood on state-owned land (including leasehold land)
- On freehold land in a 'forest consent area'

¹ In Queensland, all plants that are native to Australia are protected plants under the <u>Nature Conservation Act 1992</u>, which endeavours to ensure that protected plants (whether whole plants or protected plants parts) are not illegally removed from the wild, or illegally traded. Prior to *clearing*, you should check the flora survey trigger map to determine if the *clearing* is within a high-risk area by visiting For further information or assistance on the protected plants flora survey trigger map for your property, contact the Department of Environment and Science on 13QGOV (13 74 68) or email palm@des.qld.gov.au

² Contact the Department of Agriculture and Fisheries before *clearing:*

More than five hectares on state-owned land (including leasehold land) containing commercial timber species listed in parts 2 or 3 of Schedule 6 of the Vegetation Management Regulation 2012 and located within any of the following local government management areas–Banana, Bundaberg Regional, Fraser Coast Regional, Gladstone Regional, Isaac Regional, North Burnett Regional, Somerset Regional, South Burnett Regional, Southern Downs Regional, Tablelands Regional, Toowoomba Regional, Western Downs Regional.



Appendix J

State Code 16 Assessment

State code 16: Native vegetation clearing

For guidance on how to address this code, please refer to the State Development Assessment Provisions Guidance material: State code 16: Native vegetation clearing.

Please note: It is only necessary to provide a response to the performance outcomes relevant to the clearing purpose(s). Table 16.1 below specifies which tables of performance outcomes are relevant for each clearing purpose. Tables that are not relevant to your clearing purpose can be left blank or deleted.

As an example, only Table 16.2 and Table 16.15 are relevant for a development application for operational works that involves managing thickened vegetation. The remaining tables may be deleted.

Table 16.1: Relevant code provisions for each type of development

Clearing purpose	Relevant provisions
Material change of use and / or reconfiguring a lot and / or operational we	prk
Public safety, relevant infrastructure activities and / or consequential	Table 16.2 and Table 16.3
development of IPA approval	
Extractive industry	Table 16.2 and Table 16.4
Coordinated project (agriculture)	Table 16.2 and Table 16.5
Coordinated project (extractive industry)	Table 16.2 and Table 16.6
Coordinated project (all other purposes)	Table 16.2 and Table 16.7
Material change of use and / or reconfiguring a lot for all other purposes	Table 16.2 and Table 16.8
Material change of use and / or reconfiguring a lot for which there will be no	Table 16.9
clearing as a result of the material change of use or reconfiguring a lot	
Material change of use and / or reconfiguring a lot for which clearing is	Table 16.2 and Table 16.10
limited to clearing that could be done as exempt clearing work for the	
purpose of the development prior to the material change of use or	
reconfiguring a lot application being approved	
Operational work	1
Necessary environmental clearing	Table 16.2 and Table 16.11
Control non-native plants or declared pests	Table 16.2 and Table 16.12
Encroachment	Table 16.2 and Table 16.13
Fodder harvesting	Table 16.2 and Table 16.14
Managing thickened vegetation	Table 16.2 and Table 16.15

Table 16.2: General

Performance outcomes	Acceptable outcomes	Response
PO1 Clearing of vegetation is consistent with any	No acceptable outcome is prescribed.	Not Applicable
notice requiring compliance on the land subject to		
the development application, unless a better		
environmental outcome can be achieved.		
PO2 Clearing of vegetation is consistent with	No acceptable outcome is prescribed.	Not Applicable
vegetation management requirements for		
particular regulated areas unless a better		
environmental outcome can be achieved.		
PO3 Clearing of vegetation in a legally secured	No acceptable outcome is prescribed.	Not Applicable
offset area:		
1. is consistent with the offset delivery plan; or		
2. is consistent with an agreement for the offset		
area on the land subject to the development		
application; or		
3. only occurs if an additional offset is provided.		

Table 16.3: Public safety, relevant infrastructure activities and / or consequential development of IPA approval

Performance outcomes	Acceptable outcomes	Response
Clearing avoids and minimises impacts		
 PO4 Clearing of vegetation and adverse impacts of clearing vegetation do not occur unless the application has demonstrated that the clearing and the adverse impacts of clearing have been: 1. reasonably avoided; or 2. reasonably minimised where it cannot be reasonably avoided. 	No acceptable outcome is prescribed.	Complies with PO4 As indicated in the Planning Report, the need for the Additional Water Intake to supplement Council's existing Rex Creek water supply intake has been confirmed and the specific Water Intake location has been determined subsequent to the consideration of a number of alternative locations by GHD, Council's Engineering Consultants. Based on the investigations and reporting undertaken by GHD, it is evident that the establishment of the Water Intake in the location determined to be the preferred location by GHD is necessary (refer to Detailed Design Report prepared by GHD in Appendix F for detail).

Performance outcomes	Acceptable outcomes	Response
		Based on the specific location determined for the establishment of the Water Intake Gallery and Low Level Pump and the Water Intake Infrastructure generally, vegetation clearing and the adverse impacts of vegetation clearing have been minimised, as indicated in the Potential Disturbance Footprint detailed on RPS Drawings PR152792-6a to 9a provided for reference in Appendix D of this report, as follows:
		• Any disturbance of vegetation to facilitate the installation of the Water Intake Gallery is generally to be limited to the southern stream bank for the length of the stream where the infrastructure is to be installed (including an allowance of 10 metres upstream for water management purposes during construction) and an area between the stream bank and the Category X area which exists east of the stream bank and extends into the unformed road reserve;
		 Any disturbance of vegetation on the northern stream bank, to facilitate the installation of the Water Intake Gallery, is to be limited to 3 metres;
		• The Low Level Pump and High Level Pump infrastructure that is to be established above ground and the road access and pipeline and drainage is generally located in Category X areas and the location of the road access and pipeline and drainage generally follows the alignment of the existing access track into the subject land;
		 Where the proposed raw water pipeline and drainage infrastructure and the proposed road access impact Regrowth Vegetation, vegetation clearing is to be limited to the Potential Disturbance Footprint and be undertaken as Exempt Clearing Work on

Performance outcomes	Acceptable outcomes	Response
		Freehold Land as Routine Management or as
		Accepted Development – Clearing for
		Intrastructure in a Dedicated Road (where not
		Exempt Cleaning Work) pursuant to the
		 The alignment of the proposed raw water pipeling and proposed road access has been
		designed to minimise the potential impacts on
		Category B Of Concern vegetation that exists
		within the north-eastern portion of Lot 4 on
		RP716977 and Drumsara Road.
Clearing associated with wetlands		
PO5 Clearing of vegetation within a natural	AO5.1 Clearing does not occur in a natural	Not Applicable
wetland and/or within 100 metres of the defining	wetland or within 100 metres of the defining bank	A wetland on the vegetation management
bank of a natural wetland maintains the	of any natural wetland .	wetlands map is not located within 100m of the
composition, structure and function of any regional		subject land.
ecosystem associated with any natural wetland to	UR	
protect all of the following:	AOE 2 Clearing within 100 metros of the defining	
erosion:	hank of any natural wotland:	
2 water quality by filtering sediments nutrients	1 does not occur within 10 metres of the	
and other pollutants:	defining bank of any natural wetland; and	
3 aquatic habitat	2 does not exceed widths in reference table 1 in	
4. terrestrial habitat.	this code.	
PO6 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	Not Applicable
ecosystem associated with a natural wetland does		A wetland on the vegetation management
not maintain the composition, structure and function		wetlands map is not located within the locality.
of the regional ecosystem , and cannot be avoided		
and has been mitigated, an offset is provided for		
any acceptable significant residual impact.		
Clearing associated with watercourses and drainage features		
PO7 Clearing of vegetation within a watercourse	AO7.1 Clearing does not occur in any of the	Complies with PO7
and/or drainage feature and/or within the relevant	following areas:	Mossman River, which is located downstream of
distance (listed in reference table 2) of a	1. inside the defining bank of a watercourse or	the location where the water intake is proposed, is
watercourse and/or drainage feature, maintains	drainage feature; and	indicated to be mapped on the vegetation
the composition, structure and function of the	2. within the relevant distance of the defining	management watercourse and drainage features
regional ecosystem associated with the	bank of any watercourse or drainage feature	map as a Stream Order 5 watercourse. The
	in reference table 2 of this code.	stream where the water intake is to be installed is

Performance outcomes	Acceptable outcomes	Response
watercourse and/or drainage feature to protect all		not mapped on the vegetation management
of the following:	OR	watercourse and drainage features map as a
1. bank stability by protecting against bank		watercourse.
erosion;	A07.2 Clearing within any watercourse or	The water intake infrastructure is to be installed
2. water quality by filtering sediments, nutrients	drainage feature, or within the relevant distance of	approximately 33m from the defining bank of the
and other pollutants;	the defining bank of any watercourse or	Mossman River.
3. aquatic habitat;	drainage feature in reference table 2 of this code:	The installation of the water intake infrastructure is
4. terrestrial habitat.	1. does not exceed the widths in reference table	considered to maintain the composition, structure
	1 of this code; and	and function of the regional ecosystem associated
	2. does not occur within 10 metres of the	with the Mossman River, on the basis that;
	defining bank, unless clearing is required into	1. The proposed works are reasonably distant, 33
	or across the watercourse or drainage	metres, from the defining bank of the
	feature.	Mossman River and are unlikely to impact
		bank stability of the Mossman River;
		2. During construction, water quality will be
		adequately managed to avoid potential
		impacts associated with the disturbance of
		sediments and sediment runoff and potential
		impacts related to the release of nutrients and
		other pollutants; and
		3. Post construction, the disturbed areas of
		aquatic habitat and terrestrial habitat will be
		rehabilitated, as far as possible, to its original
		natural state, exclusive of that required for
		permanent infrastructure and for maintenance
		access. Also, in terms of permanent
		infrastructure, it is noted that;
		a. The Water Intake Gallery is to be
		installed approximately 800mm below
		the existing natural stream bed level
		and the back fill material to be placed
		on the vvater intake Gallery, to restore
		the existing stream bed level, is
		intended to comprise in its upper layer
		rock extracted from the stream;
		D. I NE LOW LEVEL PUMP IS to be installed
		below the natural stream bed level and
		natural ground level of the stream
		bank and the trench within which the

Performance outcomes	Acceptable outcomes	Response
		 Low Level Pump is to be installed, up the stream bank, is to be backfilled with concrete to a level that is intended to blend with the existing stream bank profile; and c. The permanent infrastructure to be located above ground and a distance of approximately 40-45m from the defining bank of the Mossman River, including part of the Low Level Pump and road access is generally located in a Category X area and has an Ergon powerline passing through it which requires a cleared corridor of 10m either side of the powerline; and 4. The proposed Water Intake Gallery and associated disturbance area is located in an area of Category B Endangered Vegetation which transitions to a Category X area within approximately 10m – 30m from the location of the Water Intake Gallery. This area of vegetation has been subject to disturbances from rural cropping activities, other rural activities and access requirements, the need to keep the Ergon powerline corridor clear of vegetation and the provision of access within the road reserve corridor.
PO8 Where clearing of vegetation in a regional ecosystem associated with a watercourse and/or drainage feature does not maintain the composition, structure and function of the regional ecosystem , and cannot be avoided and has been mitigated, an offset is provided for any acceptable significant residual impact .	No acceptable outcome is prescribed.	Not Applicable As indicated in the response to PO7, the installation of the water intake infrastructure is considered to maintain the composition, structure and function of the regional ecosystem associated with the Mossman River. Further, should this interpretation not be supported, the proposed disturbed areas, once rehabilitated, as far as possible to its original natural state, exclusive of that required for permanent infrastructure and for maintenance

Performance outcomes	Acceptable outcomes	Response
		access (refer to response to PO7 above), the
		proposed development is not Likely to be deemed
Connectivity		a Significant Residual Impact.
Connectivity	A OD 4 Classing accurs in accordance with	Complian with BO0
 PO9 Regional ecosystems on the subject land and any adjacent land retain sufficient vegetation to: 1. maintain ecological processes; and 2. ensure the regional ecosystem remains in the landscape despite threatening processes. 	A09.1 Clearing occurs in accordance with reference table 3 in this code.	Complies with PO9 The main area of vegetation clearing relates to where the water intake gallery and low level pump are to be established and this location comprises part of and is located on the periphery of the existing vegetated riparian corridor relating to the Mossman River. Consequently, the proposed vegetation clearing in this location complies with the area and width criteria in Table 3. The vegetation clearing required to establish the water intake gallery and low level pump is proposed in a location where the extent of vegetation on Lot 6 on SP212661 is already slightly less than 30% of the total area of the lot. However, the existing vegetated riparian corridor that relates to the Mossman River is located immediately adjacent to Lot 6 which significantly adds to scale of vegetated areas in the immediate location and will ensure that sufficient vegetation is retained to: 1. maintain ecological processes; and 2. ensure the regional ecosystem remains in the
		landscape despite threatening processes.
Soll erosion if the local government is not the assessment manager for the development application		
accelerated soil erosion within or outside the land	sediment control plan is developed and	
the subject of the development application.	implemented to prevent increased soil erosion	
	and instability resulting from the clearing.	
Salinity		
 PO11 Clearing of vegetation within 100 metres of a salinity expression area does not contribute to or accelerate land degradation through either of the following: 1. waterlogging; 	AO11.1 Clearing does not occur within 100 metres of a salinity expression area .	Not Applicable The proposed works are not known and given the vegetated riparian corridor, are not expected to be located close to a salinity expression area.

State code 16: Native vegetation clearing
Performance outcomes	Acceptable outcomes	Response
2. the salinisation of groundwater , surface water		
or soil.		
Conserving least concern regional ecosystems - M	linimising clearing of areas temporarily required to	o enable construction of the infrastructure
PO12 Clearing of vegetation for temporary use	AO12.1 Clearing for temporary use areas to	Not Applicable
areas to construct necessary infrastructure, such as	construct necessary infrastructure does not occur	
temporary use roads or access tracks, maintains the	in a least concern regional ecosystem .	
composition, structure and function of least		
concern regional ecosystems.	OR	
	AO12.2 Total clearing for temporary use areas to construct necessary infrastructure in any regional ecosystem combined does not exceed the widths prescribed in table reference table 1 of this code.	
	OR	
	AO12.3 Total clearing for temporary use areas to construct necessary infrastructure in any regional ecosystem combined does not exceed areas prescribed in table reference table 1 of this code.	
PO13 Where clearing of vegetation in a regional ecosystem for temporary use areas to construct necessary infrastructure does not maintain the composition, structure and function of the regional ecosystem , and cannot be avoided and has been mitigated, the cleared area is rehabilitated .	No acceptable outcome is prescribed.	Not Applicable
Conserving endangered and of concern regional e	ecosystems	
PO14 Clearing of vegetation maintains the	AO14.1 Clearing does not occur in an	Complies with AO14.3
composition, structure and function of endangered regional ecosystems and/or of concern regional ecosystems .	endangered regional ecosystem or an of concern regional ecosystem. OR	Total clearing of endangered regional ecosystems and of concern regional ecosystems combined is a total area of 1,790m ² .
	AO14.2 Total clearing of endangered regional ecosystems and of concern regional ecosystems combined does not exceed the	

Performance outcomes	Acceptable outcomes	Response
	widths prescribed in table reference table 1 of this code.	
	OR	
	AO14.3 Total clearing of endangered regional	
	ecosystems and of concern regional ecosystems combined does not exceed areas prescribed in table reference table 1 of this code.	
 PO15 Where clearing of vegetation in an endangered regional ecosystem or an of concern regional ecosystems does not maintain the composition, structure and function of the regional ecosystem, and cannot be avoided and has been mitigated, the cleared area: 1. is rehabilitated; or 2. where the cleared area cannot reasonably be rehabilitated, an offset is provided for any acceptable significant residual impact. 	No acceptable outcome is prescribed.	Complies with PO15 As is evident from the details provided in support of the water supply intake proposal, the vegetation clearing required to facilitate the establishment of the intake infrastructure has been limited to what is necessary and cannot be avoided. Post construction, the disturbed areas of aquatic habitat and terrestrial habitat will be rehabilitated, as far as possible, to its original natural state, exclusive of that required for permanent infrastructure and for maintenance access. Given the rehabilitation works proposed, the proposed works are not considered to give rise to
Essential habitat excluding essential habitat for P	hascolarctos cinereus (koalas) if development is a	a significant residual impact. ssessable under Schedule 10. Part 10 of the
Planning Regulation 2017	· · · · · · · · · · · · · · · · · · ·	
PO16 Clearing of vegetation in a regional ecosystem that is an area of essential habitat maintains the composition, structure and function of the regional ecosystem for each protected wildlife species individually.	AO16.1 Clearing does not occur in essential habitat.	Complies with AO16.3 Clearing of essential habitat is a total area of 1,790m ² .
	AO16.2 Clearing in essential habitat does not exceed the widths prescribed in reference table 1 of this code.	
	OR	
	AO16.3 Clearing in essential habitat does not exceed the areas prescribed in table reference table 1 of this code.	

Performance outcomes	Acceptable outcomes	Response
PO17 Where clearing of vegetation in a regional ecosystem that is an area of essential habitat does not maintain the composition, structure and function of the regional ecosystem , and cannot be avoided and has been mitigated, an offset is provided for any acceptable significant residual impact for each protected wildlife species individually.	No acceptable outcome is prescribed.	Complies with PO17 As is evident from the details provided in support of the water supply intake proposal, the vegetation clearing required to facilitate the establishment of the intake infrastructure has been limited to what is necessary and cannot be avoided. Post construction, the disturbed areas of aquatic habitat and terrestrial habitat will be rehabilitated, as far as possible, to its original natural state, exclusive of that required for permanent infrastructure and for maintenance access. Given the rehabilitation works proposed, the proposed works are not considered to give rise to a significant residual impact.
Acid sulfate soils if the local government is not the	e assessment manager for the development applic	ation
 PO18 Clearing of vegetation does not result in, or accelerate, disturbance of acid sulfate soils or changes to the hydrology of the location that will result in either of the following: aeration of horizons containing iron sulphides; mobilisation of acid or metals. 	 AO18.1 Clearing does not occur in land zone 1, land zone 2 or land zone 3. OR AO18.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the five metre Australian Height Datum only occurs where: 1. mechanical clearing does not disturb the soil to a depth greater than 30 centimetres; and 2. acid sulfate soils are managed consistent with the soil management guidelines in the Queensland Acid Sulfate Soil Technical Manual. 	Not Applicable

Table 16.4: Extractive industry

Performance outcomes	Acceptable outcomes	Response
Clearing avoids and minimises impacts		
 PO19 Clearing of vegetation and adverse impacts of clearing vegetation do not occur unless the application has demonstrated that the clearing and the adverse impacts of clearing have been: 1. reasonably avoided; or 	No acceptable outcome is prescribed.	

Performance outcomes	Acceptable outcomes	Response
2. reasonably minimised where it cannot be		
reasonably avoided.		
Clearing associated with wetlands		
PO20 Clearing of vegetation within a natural	AO20.1 Clearing does not occur in a natural	
wetland and/or within 100 metres of the defining	wetland or within 100 metres of the defining bank	
bank of a natural wetland maintains the	of any natural wetland .	
composition, structure and function of any regional		
ecosystem associated with any natural wetland to	OR	
protect all of the following:		
1. bank stability by protecting against bank erosion;	AO20.2 Clearing within 100 metres of the	
2. water quality by filtering sediments, nutrients	defining bank of any natural wetland:	
and other pollutants,	defining bank of any natural wetland: and	
J. terrestrial habitat	2 does not exceed widths in table reference	
	table 1 in this code	
PO21 Where clearing of vegetation in a regional	No acceptable outcome is prescribed	
ecosystem associated with a natural wetland does		
not maintain the composition structure and function		
of the regional ecosystem , and cannot be avoided		
and has been mitigated, an offset is provided for		
any acceptable significant residual impact.		
Clearing appreciated with watercourses and drains	no footuroo	
Clearing associated with watercourses and draina	ge realures	
PO22 Clearing of vegetation within a watercourse	AU22.1 Clearing does not occur in any of the	
distance (listed in reference table 2) of a	1010wing areas.	
watercourse and/or drainage feature, maintains	drainage feature: and	
the composition structure and function of the	2 within the relevant distance of the defining	
regional ecosystem associated with the	bank of any watercourse or drainage feature	
watercourse and/or drainage feature to protect all	in reference table 2 of this code	
of the following:		
1. bank stability by protecting against bank erosion:	OR	
2. water quality by filtering sediments, nutrients		
and other pollutants;	AO22.2 Clearing within any watercourse or	
3. aquatic habitat;	drainage feature, or within the relevant distance	
4. terrestrial habitat.	of the defining bank of any watercourse or	
	drainage feature in reference table 2 of this code:	
	1. does not exceed the widths in table reference	
	table 1 of this code; and	

Performance outcomes	Acceptable outcomes	Response
	2. does not occur within 10 metres of the	
	defining bank, unless clearing is required	
	into or across the watercourse or drainage	
	feature.	
PO23 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem associated with a watercourse and/or		
drainage feature does not maintain the		
composition, structure and function of the regional		
ecosystem, and cannot be avoided and has been		
mitigated, an offset is provided for any acceptable		
significant residual impact.		
Connectivity		[
PO24 Regional ecosystems on the subject land	AO24.1 Clearing occurs in accordance with	
and any adjacent land retain sufficient vegetation to	reference table 3 in this code.	
maintain:		
1. ecological processes; and		
2. ensure the regional ecosystem remains in the		
landscape despite threatening processes.		
Soli erosion if the local government is not the asse	essment manager for the development application	· · · · · · · · · · · · · · · · · · ·
PO25 Clearing does not result in accelerated soll	AU25.1 Clearing only occurs if an erosion and	
erosion within or outside the land the subject of the	sediment control plan is developed and	
development application.	implemented to prevent soil erosion and	
Solipity	instability resulting from the cleaning.	
Salifily	Accession deserves within 100	· · · · · · · · · · · · · · · · · · ·
PO26 Clearing within 100 metres of a salinity	AU26.1 Clearing does not occur within 100	
expression area does not contribute to or	metres of a salinity expression area.	
following:		
1 waterloaging		
2 the salinisation of groundwater surface water		
or soil		
Conserving endangered and of concern regional e	ucosveteme	
PO27 Clearing of vegetation maintains the	AO27 1 Clearing does not occur in an	
composition structure and function of endangered	endangered regional ecosystem or an of	
regional ecosystems and/or of concern regional	concern regional ecosystem	
ecosystems		
	OR	
	1	

Performance outcomes	Acceptable outcomes	Response
	AO27.2 Total clearing of endangered regional ecosystems and of concern regional ecosystems combined does not exceed the widths prescribed in table reference table 1 of this code.	
	OR	
	AO27.3 Total clearing of endangered regional ecosystems and of concern regional ecosystems combined does not exceed areas prescribed in table reference table 1 of this code.	
 PO28 Where clearing of vegetation in an endangered regional ecosystem or an of concern regional ecosystems does not maintain the composition, structure and function of the regional ecosystem, and cannot be avoided and has been mitigated, the cleared area: 1. is rehabilitated; or 	No acceptable outcome is prescribed.	
2. where the cleared area cannot be rehabilitated , an offset is provided for any acceptable significant residual impact .		
Essential habitat excluding essential habitat for <i>P</i> Planning Regulation 2017	hascolarctos cinereus (koalas) if development is a	ssessable under Schedule 10, Part 10 of the
PO29 Clearing of vegetation in a regional ecosystem that is an area of essential habitat maintains the composition, structure and function of the regional ecosystem for each protected wildlife species individually.	AO29.1 Clearing does not occur in essential habitat.	
	AO29.2 Clearing in essential habitat does not exceed the widths prescribed in table reference table 1 of this code.	
	OR	
	AO29.3 Clearing in essential habitat does not exceed the areas prescribed in table reference table 1 of this code.	

Performance outcomes	Acceptable outcomes	Response
PO30 Where clearing of vegetation in a regional ecosystem that is an area of essential habitat does not maintain the composition, structure and function of the regional ecosystem , and cannot be avoided and has been mitigated, an offset is provided for any acceptable significant residual impact for each protected wildlife species individually.	No acceptable outcome is prescribed.	
Acid sulfate soils if the local government is not the	e assessment manager for the development applic	ation
 PO31 Clearing does not result in, or accelerate, disturbance of acid sulfate soils or changes to the hydrology of the location that will result in either of the following: 1. aeration of horizons containing iron sulphides 2. mobilisation of acid or metals. 	 AO31.1 Clearing does not occur in land zone 1, land zone 2 or land zone 3. OR AO31.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the five metre Australian Height Datum only occurs where: 1. mechanical clearing does not disturb the soil to a depth greater than 30 centimetres; and 2. acid sulfate soils are managed consistent with the soil management guidelines in the Queensland Acid Sulfate Soil Technical Manual. 	
Staged clearing	•	•
 PO32 Clearing of vegetation: 1. is staged in line with operational needs that restrict clearing to the current operational area; and 2. only occurs in the area from which material will be extracted, and any reasonably associated built infrastructure, within the term of the development approval; and 3. does not occur without required permits. 	No acceptable outcome is prescribed.	

Table 16.5: Coordinated project (agriculture)

Performance outcomes	Acceptable outcomes	Response
Clearing avoids and minimises impacts		
PO33 Clearing of vegetation and adverse impacts	No acceptable outcome is prescribed.	
of clearing vegetation do not occur unless the		
application has demonstrated that the clearing and		
the adverse impacts of clearing have been:		
1. reasonably avoided; or		
2. reasonably minimised where it cannot be		
reasonably avoided.		
Clearing associated with wetlands	1	1
PO34 Clearing of vegetation within a natural	AO34.1 Clearing does not occur in a natural	
wetland and/or within 100 metres of the defining	wetland or within 100 metres of the defining bank	
bank of a natural wetland maintains the	of any natural wetland .	
composition, structure and function of any regional		
ecosystem associated with any natural wetland to	OR	
protect all of the following:		
1. bank stability by protecting against bank	AO34.2 Clearing within 100 metres of the	
erosion;	defining bank of any natural wetland:	
2. water quality by filtering sediments, nutrients	1. does not occur within 10 metres of the	
and other pollutants;	defining bank of any natural wetland; and	
3. aquatic nabitat;	2. does not exceed widths in table reference	
4. terrestrial habitat.	lable i in lnis code.	
PO35 where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem associated with a natural wetland does		
of the regional approximation, structure and function		
and has been mitigated, an offset is provided for		
and has been miligated, an Unset is provided for		
Clearing associated with watercourses and draina	ao fosturos	
PO36 Clearing of vegetation within a watercourse	AO36 1 Clearing does not occur in any of the	
and /or drainage feature and/or within the relevant	following areas:	
distance (listed in reference table 2) of a	1 inside the defining bank of a watercourse or	
watercourse and/or drainage feature, maintains	drainage feature: and	
the composition, structure and function of the	2. within the relevant distance of the defining	
regional ecosystem associated with the	bank of any watercourse or drainage feature	
watercourse and/or drainage feature to protect all	in reference table 2 of this code.	
of the following:		

State Development Assessment Provisions v3.0

Performance outcomes	Acceptable outcomes	Response
1. bank stability by protecting against bank	OR	
erosion;		
2. water quality by filtering sediments, nutrients	AO36.2 Clearing within any watercourse or	
and other pollutants;	drainage feature, or within the relevant distance	
3. aquatic habitat;	of the defining bank of any watercourse or	
4. terrestrial habitat.	drainage feature in reference table 2 of this code:	
	1. does not exceed the widths in table reference	
	2 does not occur within 10 metros of the	
	defining hank unless clearing is required	
	into or across the watercourse or drainage	
	feature.	
PO37 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem associated with a watercourse and/or		
drainage feature does not maintain the		
composition, structure and function of the regional		
ecosystem, and cannot be avoided and has been		
mitigated, an offset is provided for any acceptable		
significant residual impact.		
Connectivity		
PU38 Regional ecosystems on the subject land	AU38.1 Clearing occurs in accordance reference	
and any adjacent land retain sufficient vegetation	ladie 3 of this code.	
1 maintain acalogical processos : and		
2 ensure the regional ecosystem remains in the		
landscape despite threatening processes.		
PO39 Where:	No acceptable outcome is prescribed.	
1. clearing of vegetation in a regional		
ecosystem does not maintain ecological		
processes; and		
2. the regional ecosystem does not remain in the		
landscape despite threatening processes; and		
3. the clearing cannot be avoided; and		
4. the clearing has been mitigated		
an onset is provided for any acceptable significant		
residual impact.	noment meneral for the development and the time	
Soli erosion if the local government is not the asse	essment manager for the development application	

Performance outcomes	Acceptable outcomes	Response
PO40 Clearing does not result in accelerated soil erosion within or outside the land the subject of the development application.	AO40.1 Clearing only occurs if an erosion and sediment control plan is developed and implemented to prevent soil erosion and	
Salinity	instability resulting from the clearing.	
PO41 Clearing within 100 metres of a salinity expression area does not contribute to or accelerate land degradation through either of the following:	AO41.1 Clearing does not occur within 100 metres of a salinity expression area .	
 waterlogging, the salinisation of groundwater, surface water or soil. 		
Conserving endangered and of concern regional e	cosystems	
PO42 Clearing of vegetation maintains the composition, structure and function of endangered regional ecosystems and/or of concern regional ecosystems.	AO42.1 Clearing does not occur in an endangered regional ecosystem or an of concern regional ecosystem. OR AO42.2 Total clearing of endangered regional	
	ecosystems and of concern regional ecosystems combined does not exceed the widths prescribed in table reference table 1 of this code.	
	AO42.3 Total clearing of endangered regional ecosystems and of concern regional ecosystems combined does not exceed areas prescribed in table reference table 1 of this code.	
 PO43 Where clearing of vegetation in an endangered regional ecosystem or an of concern regional ecosystems does not maintain the composition, structure and function of the regional ecosystem, and cannot be avoided and has been mitigated, the cleared area: 1. is rehabilitated; or 	No acceptable outcome is prescribed.	

Performance outcomes	Acceptable outcomes	Response
2. where the cleared area cannot be rehabilitated ,		
an offset is provided for any acceptable		
significant residual impact.		
Essential habitat excluding essential habitat for P	hascolarctos cinereus (koalas) if development is a	ssessable under Schedule 10, Part 10 of the
Planning Regulation 2017	AQ444 Cleaning date not exert in eccential	
PO44 Clearing of vegetation in a regional	A044.1 Clearing does not occur in essential	
maintains the composition structure and function of		
the regional ecosystem for each protected	OR	
wildlife species individually.		
	AO44.2 Clearing in essential habitat does not	
	exceed the widths prescribed in table reference	
	table 1 of this code.	
	OB	
	OR	
	AO44.3 Clearing in essential habitat does not	
	exceed the areas prescribed in table reference	
	table 1 of this code.	
PO45 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem that is an area of essential habitat		
does not maintain the composition, structure and		
function of the regional ecosystem , and cannot be		
provided for any acceptable significant residual		
impact for each protected wildlife species		
individually.		
Acid sulfate soils if the local government is not th	e assessment manager for the development applic	cation
PO46 Clearing does not result in, or accelerate,	AO46.1 Clearing does not occur in land zone 1,	
disturbance of acid sulfate soils or changes to the	land zone 2 or land zone 3.	
hydrology of the location that will result in either of	0.0	
Ine ionowing:		
 acration of nonzons containing non sulprides, mobilisation of acid or metals 	AO46 2 Clearing in land zone 1 land zone 2 or	
	land zone 3 in areas below the five metre	
	Australian Height Datum only occurs where:	
	1. mechanical clearing does not disturb the soil	
	to a depth greater than 30 centimetres; and	

Performance outcomes	Acceptable outcomes	Response
	2. acid sulfate soils are managed consistent with the soil management guidelines in the Queensland Acid Sulfate Soil Technical Manual.	
Clearing for agriculture		
PO47 Clearing of vegetation only occurs where the land is suitable for agriculture having regard to topography, climate and soil attributes.	No acceptable outcome is prescribed.	
PO48 For applications for irrigated crops, the owner of the land has, or may have, access to enough water for establishing, cultivating and harvesting the crops to which the clearing of vegetation relates.	No acceptable outcome is prescribed.	

Table 16.6: Coordinated project (extractive industry)

Performance outcomes	Acceptable outcomes	Response
Clearing avoids and minimises impacts		
PO49 Clearing of vegetation and adverse impacts	No acceptable outcome is prescribed.	
of clearing vegetation do not occur unless the		
application has demonstrated that the clearing and		
the adverse impacts of clearing have been:		
1. reasonably avoided; or		
2. reasonably minimised where it cannot be		
reasonably avoided.		
Clearing associated with wetlands		
PO50 Clearing of vegetation within a natural	AO50.1 Clearing does not occur in a natural	
wetland and/or within 100 metres of the defining	wetland or within 100 metres of the defining bank	
bank of a natural wetland maintains the	of any natural wetland .	
composition, structure and function of any regional		
ecosystem associated with any natural wetland to	OR	
protect all of the following:		
1. bank stability by protecting against bank erosion;	AO50.2 Clearing within 100 metres of the	
2. water quality by filtering sediments, nutrients	defining bank of any natural wetland:	
and other pollutants;	 does not occur within 10 metres of the 	
3. aquatic habitat;	defining bank of any natural wetland; and	

State Development Assessment Provisions v3.0

Performance outcomes	Acceptable outcomes	Response
4. terrestrial habitat.	 does not exceed widths in reference table 1 in this code. 	
PO51 Where clearing of vegetation in a regional ecosystem associated with a natural wetland does not maintain the composition, structure and function of the regional ecosystem , and cannot be avoided and has been mitigated, an offset is provided for any acceptable significant residual impact .	No acceptable outcome is prescribed.	
Clearing associated with watercourses and drama	AOE2.1 Clearing does not accur in any of the	
 POS2 Clearing of vegetation within a watercourse and /or drainage feature and/or within the relevant distance (listed in reference table 2) of a watercourse and/or drainage feature, maintains the composition, structure and function of the regional ecosystem associated with the watercourse and/or drainage feature to protect all of the following: bank stability by protecting against bank erosion; water quality by filtering sediments, nutrients and other pollutants; aquatic habitat; terrestrial habitat. 	 A052.1 Clearing does not occur in any of the following areas: 1. inside the defining bank of a watercourse or drainage feature; and 2. within the relevant distance of the defining bank of any watercourse or drainage feature in reference table 2 of this code. OR A052.2 Clearing within any watercourse or drainage feature, or within the relevant distance of the defining bank of any watercourse or drainage feature in reference table 2 of this code: 1. does not exceed the widths in reference table 1 of this code; and 2. does not occur within 10 metres of the defining bank, unless clearing is required into or across the watercourse or drainage feature. 	
PO53 Where clearing of vegetation in a regional ecosystem associated with a watercourse and/or	No acceptable outcome is prescribed.	
drainage feature does not maintain the composition, structure and function of the regional		
ecosystem, and cannot be avoided and has been		
mitigated, an offset is provided for any acceptable		
significant residual impact.		
Connectivity		

Performance outcomes	Acceptable outcomes	Response
PO54 Regional ecosystems on the subject land	AO54.1 Clearing occurs in accordance with	
and any adjacent land retain sufficient vegetation	reference table 3 of this code.	
to:		
 maintain ecological processes; and 		
2. ensure the regional ecosystem remains in the		
landscape despite threatening processes.		
PO55 Where:	No acceptable outcome is prescribed.	
1. clearing of vegetation in a regional		
ecosystem does not maintain ecological		
processes; and		
2. the regional ecosystem; and		
3. the clearing cannot be avoided; and		
4. the clearing has been mitigated		
an onset is provided for any acceptable significant		
residual impact.		
Soll erosion if the local government is not the ass	sessment manager for the development application	
P056 Clearing does not result in accelerated soil	AU56.1 Clearing only occurs if an erosion and	
erosion within or outside the land the subject of the	sediment control plan is developed and	
	instability resulting from the elegring	
Solinity		
BOEZ Clearing within 400 metres of a colinity	ADEZ 4 Clearing data not accumulthin 400	1
PO57 Clearing within 100 metres of a salinity	AU57.1 Clearing does not occur within 100	
expression area does not contribute to of	mettes of a samily expression area.	
following:		
1 waterlogging:		
2 the salinisation of aroundwator surface water		
or soil		
Conserving endangered and of concern regional	ecosystems	<u> </u>

Performance outcomes	Acceptable outcomes	Response
PO58 Clearing of vegetation maintains the composition, structure and function of endangered regional ecosystems and/or of concern regional ecosystems	AO58.1 Clearing does not occur in an endangered regional ecosystem or an of concern regional ecosystem.	
	OR	
	AO58.2 Total clearing of endangered regional ecosystems and of concern regional ecosystems combined does not exceed the widths prescribed in reference table 1 of this code.	
	OR	
	AO58.3 Total clearing of endangered regional ecosystems and of concern regional ecosystems combined does not exceed areas prescribed in reference table 1 of this code.	
 PO59 Where clearing of vegetation in an endangered regional ecosystem or an of concern regional ecosystems does not maintain the composition, structure and function of the regional ecosystem, and cannot be avoided and has been mitigated, the cleared area: 1. is rehabilitated; or 2. where the cleared area cannot be rehabilitated, an offset is provided for any acceptable significant residual impact. 	No acceptable outcome is prescribed.	
Essential habitat excluding essential habitat for <i>Phascolarctos cinereus</i> (koalas) if development is assessable under Schedule 10, Part 10 of the Planning Regulation 2017		
PO60 Clearing of vegetation in a regional ecosystem that is an area of essential habitat maintains the composition, structure and function of the regional ecosystem for each protected wildlife species individually.	 AO60.1 Clearing does not occur in essential habitat. OR AO60.2 Clearing in essential habitat does not exceed the widths prescribed in reference table 1 of this code. 	

Performance outcomes	Acceptable outcomes	Response
	AO60.3 Clearing in essential habitat does not exceed the areas prescribed in reference table 1 of this code.	
PO61 Where clearing of vegetation in a regional ecosystem that is an area of essential habitat does not maintain the composition, structure and function of the regional ecosystem , and cannot be avoided and has been mitigated, an offset is provided for any acceptable significant residual impact for each protected wildlife species individually.	No acceptable outcome is prescribed.	
Acid sulfate soils if the local government is not the	e assessment manager for the development applic	ation
 PO62 Clearing does not result in, or accelerate, disturbance of acid sulfate soils or changes to the hydrology of the location that will result in either of the following: aeration of horizons containing iron sulphides; mobilisation of acid or metals. 	 AO62.1 Clearing does not occur in land zone 1, land zone 2 or land zone 3. OR AO62.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the five metre Australian Height Datum only occurs where: 1. mechanical clearing does not disturb the soil to a depth greater than 30 centimetres; and 2. acid sulfate soils are managed consistent with the soil management guidelines in the Queensland Acid Sulfate Soil Technical Manual. 	
Staged clearing		
 PO63 Clearing: is staged in line with operational needs that restrict clearing to the current operational area; and only occurs in the area from which material will be extracted, and any reasonably associated built infrastructure, within the term of the development approval; and does not occur without required permits. 	No acceptable outcome is prescribed.	

Table 16.7: Coordinated project (all other purposes)

Performance outcomes	Acceptable outcomes	Response
Clearing avoids and minimises impacts		
PO64 Clearing of vegetation and adverse impacts	No acceptable outcome is prescribed.	
of clearing vegetation do not occur unless the		
application has demonstrated that the clearing and		
the adverse impacts of clearing have been:		
1. reasonably avoided; or		
2. reasonably minimised where it cannot be		
reasonably avoided.		
Clearing associated with wetlands		
PO65 Clearing of vegetation within a natural	AO65.1 Clearing does not occur in a natural	
wetland and/or within 100 metres of the defining	wetland or within 100 metres of the defining bank	
bank of a natural wetland maintains the	of any natural wetland .	
composition, structure and function of any regional		
ecosystem associated with any natural wetland to	OR	
protect all of the following:		
1. bank stability by protecting against bank	AO65.2 Clearing within 100 metres of the	
erosion;	defining bank of any natural wetland:	
2. water quality by filtering sediments, nutrients	1. does not occur within 10 metres of the	
and other pollutants;	defining bank of any natural wetland; and	
3. aquatic habitat;	2. does not exceed widths in table reference	
4. terrestrial habitat.	table 1 in this code.	
PO66 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem associated with a natural wetland does		
not maintain the composition, structure and function		
of the regional ecosystem, and cannot be avoided		
and has been mitigated, an offset is provided for		
any acceptable significant residual impact.		
Clearing associated with watercourses and drainage features		
PO67 Clearing of vegetation within a watercourse	AO67.1 Clearing does not occur in any of the	
and/or drainage feature and/or within the relevant	following areas:	
distance (listed in reference table 2) of a	1. Inside the defining bank of a watercourse or	
watercourse and/or drainage feature, maintains	drainage feature; and	
the composition, structure and function of the	2. within the relevant distance of the defining	
regional ecosystem associated with the	bank of any watercourse of drainage feature	
watercourse and/or drainage teature to protect all	in reference table 2 of this code.	
or the following:	OD	
	UK	

Performance outcomes	Acceptable outcomes	Response
 bank stability by protecting against bank erosion; water quality by filtering sediments, nutrients and other pollutants; aquatic habitat; terrestrial habitat. 	 AO67.2 Clearing within any watercourse or drainage feature, or within the relevant distance of the defining bank of any watercourse or drainage feature in reference table 2 of this code: 1. does not exceed the widths in table reference table 1 of this code; and 2. does not occur within 10 metres of the defining bank, unless clearing is required into or across the watercourse or drainage feature. 	
PO68 Where clearing of vegetation in a regional ecosystem associated with a watercourse and/or drainage feature does not maintain the composition, structure and function of the regional ecosystem , and cannot be avoided and has been mitigated, an offset is provided for any acceptable significant residual impact .	No acceptable outcome is prescribed.	
Connectivity		
 PO69 Regional ecosystems on the subject land and any adjacent land retain sufficient vegetation to: 1. maintain ecological processes; and 2. ensure the regional ecosystem remains in the landscape despite threatening processes. 	AO69.1 Clearing occurs in accordance with reference table 3 of this code.	
 PO70 Where: 1. clearing of vegetation in a regional ecosystem does not maintain ecological processes; and 2. the regional ecosystem; and 3. the clearing cannot be avoided; and 4. the clearing has been mitigated an offset is provided for any acceptable significant residual impact. 	No acceptable outcome is prescribed.	
Soil erosion if the local government is not the asso	essment manager for the development application	
erosion within or outside the land the subject of the development application.	AU/1.1 Clearing only occurs if an erosion and sediment control plan is developed and implemented to prevent soil erosion and instability resulting from the clearing.	

Performance outcomes	Acceptable outcomes	Response
Salinity		
PO72 Clearing within 100 metres of a salinity	AO72.1 Clearing does not occur within 100	
expression area does not contribute to or	metres of a salinity expression area.	
accelerate land degradation through either of the		
following:		
1. waterlogging;		
2. the salinisation of groundwater, surface water		
or soil.		
Conserving least concern regional ecosystems - N	linimising clearing of areas temporarily required to	o enable construction of the infrastructure
PO73 Clearing of vegetation for temporary use	AO73.1 Clearing for temporary use areas to	
areas to construct necessary infrastructure, such as	construct necessary infrastructure does not occur	
temporary use roads or access tracks, maintains the	in a least concern regional ecosystem.	
regional ecosystems.		
	A073 2 Total clearing for temporary use areas to	
	construct necessary infrastructure in any regional	
	ecosystem combined does not exceed the widths	
	prescribed in table reference table 1 of this code.	
	F	
	OR	
	AO73.3 Total clearing for temporary use areas to	
	construct necessary infrastructure in any regional	
	ecosystem combined does not exceed areas	
	prescribed in table reference table 1 of this code.	
PO74 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem for temporary use areas to construct		
necessary infrastructure does not maintain the		
composition, structure and function of the regional		
ecosystem, and cannot be avoided and has been		
Concerning and angered and of concern regional a	acouctomo	
PO75 Clearing of vegetation maintains the	AO75 1 Clearing doos not occur in an	
composition structure and function of and angered	endangered regional ecosystem or an of	
regional ecosystems and/or of concern regional	concern regional ecosystem	
ecosystems	concern regional coopstem.	
	OR	
		•

Performance outcomes	Acceptable outcomes	Response
	AO75.2 Total clearing of endangered regional ecosystems and of concern regional ecosystems combined does not exceed the widths prescribed in table reference table 1 of this code.	
	OR	
	AO75.3 Total clearing of endangered regional ecosystems and of concern regional ecosystems combined does not exceed areas prescribed in reference table 1 of this code.	
 PO76 Where clearing of vegetation in an endangered regional ecosystem or an of concern regional ecosystems does not maintain the composition, structure and function of the regional ecosystem, and cannot be avoided and has been mitigated, the cleared area: 1. is rehabilitated; or 2. where the cleared area cannot be rehabilitated, an offset is provided for any acceptable significant residual impact. 	No acceptable outcome is prescribed.	
Essential habitat excluding essential habitat for P Planning Regulation 2017	hascolarctos cinereus (koalas) if development is a	ssessable under Schedule 10, Part 10 of the
PO77 Clearing of vegetation in a regional ecosystem that is an area of essential habitat maintains the composition, structure and function of the regional ecosystem for each protected wildlife species individually.	 A077.1 Clearing does not occur in essential habitat. OR A077.2 Clearing in essential habitat does not exceed the widths prescribed in reference table 1 of this code. OR A077.3 Clearing in essential habitat does not 	
	exceed the areas prescribed in reference table 1 of this code.	

Performance outcomes	Acceptable outcomes	Response
PO78 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem that is an area of essential habitat		
does not maintain the composition, structure and		
function of the regional ecosystem, and cannot be		
avoided and has been mitigated, an offset is		
provided for any acceptable significant residual		
individually		
Acid sulfate soils if the local government is not the	assessment manager for the development applic	ation
DOTO Clearing does not result in an appelarate		
PO/9 Clearing does not result in, or accelerate,	AU79.1 Clearing does not occur in land zone 1,	
disturbance of acid suitate soils or changes to the	land zone 2 or land zone 3.	
hydrology of the location that will result in either of		
Ine following:	UR	
1. aeration of nonzons containing from sulphides	AO70.2 Cleaning in land same 4 land same 2 ar	
2. mobilisation of acid of metals.	A079.2 Cleaning III land zone 1, land zone 2 0	
	Australian Usight Datum only acquire where	
	Australian Height Datum only occurs where.	
	to a depth greater than 20 contimetroe; and	
	to a depth greater than 50 centimetres, and	
	2. actu sunate sons are manageu consistent with	
	Queeneland Asid Sulfate Sail Technical	
	i Manuai.	

Table 16.8: Material change of use and / or reconfiguring a lot for all other purposes

Performance outcomes	Acceptable outcomes	Response
Clearing avoids and minimises impacts		
PO80 Clearing of vegetation and adverse impacts	No acceptable outcome is prescribed.	
of clearing vegetation do not occur unless the		
application has demonstrated that the clearing and		
the adverse impacts of clearing have been:		
1. reasonably avoided; or		
2. reasonably minimised where it cannot be		
reasonably avoided.		
Clearing associated with wetlands		
PO81 Clearing of vegetation within a natural	AO81.1 Clearing does not occur in a natural	
wetland and/or within 100 metres of the defining	wetland or within 100 metres of the defining bank	
bank of a natural wetland maintains the	of any natural wetland .	

State Development Assessment Provisions v3.0

Performance outcomes	Acceptable outcomes	Response
 composition, structure and function of any regional ecosystem associated with any natural wetland to protect all of the following: 1. bank stability by protecting against bank erosion; 2. water quality by filtering sediments, nutrients and other pollutants; 3. aquatic habitat; 4. terrestrial habitat. PO82 Where clearing of vegetation in a regional ecosystem associated with a natural wetland does not maintain the composition, structure and function of the regional ecosystem, and cannot be avoided and has been mitigated, an offset is provided for any acceptable significant residual impact	 OR AO81.2 Clearing within 100 metres of the defining bank of any natural wetland: 1. does not occur within 10 metres of the defining bank of any natural wetland; and 2. does not exceed widths in reference table 1 in this code. No acceptable outcome is prescribed. 	
Clearing associated with watercourses and draina	ne features	
 PO83 Clearing of vegetation within a watercourse and /or drainage feature and/or within the relevant distance (listed in reference table 2) of a watercourse and/or drainage feature, maintains the composition, structure and function of the regional ecosystem associated with the watercourse and/or drainage feature to protect all of the following: bank stability by protecting against bank erosion; water quality by filtering sediments, nutrients and other pollutants; aquatic habitat; PO84 Where clearing of vegetation is a residered. 	 AO83.1 Clearing does not occur in any of the following areas: 1. inside the defining bank of a watercourse or drainage feature; and 2. within the relevant distance of the defining bank of any watercourse or drainage feature in reference table 2 of this code. OR AO83.2 Clearing within any watercourse or drainage feature, or within the relevant distance of the defining bank of any watercourse or drainage feature in reference table 2 of this code. OR AO83.2 Clearing within any watercourse or drainage feature, or within the relevant distance of the defining bank of any watercourse or drainage feature in reference table 2 of this code: 1. does not exceed the widths in table reference table 1 of this code; and 2. does not occur within 10 metres of the defining bank, unless clearing is required into or across the watercourse or drainage feature. 	
ecosystem associated with a watercourse and/or drainage feature does not maintain the	no acceptable outcome is prescribed.	

Performance outcomes	Acceptable outcomes	Response
composition, structure and function of the regional		
ecosystem, and cannot be avoided and has been		
mitigated, an offset is provided for any acceptable		
significant residual impact.		
Connectivity		
PO85 Regional ecosystems on the subject land	AO85.1 Clearing occurs in accordance with	
and any adjacent land, retain sufficient vegetation	reference table 3 in this code.	
to maintain:		
1. ecological processes; and		
2. ensure the regional ecosystem remains in the		
landscape despite threatening processes.		
Soli erosion if the local government is not the asse	essment manager for the development application	
POst Clearing does not result in accelerated soll	AU86.1 Clearing only occurs II an erosion and	
erosion within or outside the land the subject of the	sediment control plan is developed and	
	inclohility resulting from the clearing	
Solipity	instability resulting from the cleaning.	
BO97 Clearing within 100 metros of a calinity	A097 1 Clearing does not accur within 100	
expression area does not contribute to or	motros of a calinity expression area	
accelerate land dogradation through either of the	mettes of a samily expression area.	
following:		
1 waterlogging:		
2 the salinisation of groundwater surface		
water or soil.		
Conserving endangered and of concern regional e	cosvstems	I
PO88 Clearing of vegetation maintains the	AO88.1 Clearing does not occur in an	
composition, structure and function of endangered	endangered regional ecosystem or an of	
regional ecosystems and/or of concern regional	concern regional ecosystem.	
ecosystems.		
	OR	
	AO88.2 Total clearing of endangered regional	
	ecosystems and of concern regional	
	ecosystems combined does not exceed the	
	widths prescribed in reference table 1 of this code.	
	OR	

Performance outcomes	Acceptable outcomes	Response
	AO88.3 Total clearing of endangered regional	
	ecosystems and of concern regional	
	ecosystems combined does not exceed areas	
	prescribed in reference table 1 of this code.	
PO89 Where clearing of vegetation in an	No acceptable outcome is prescribed.	
endangered regional ecosystem or an of concern		
regional ecosystems does not maintain the		
composition, structure and function of the regional		
ecosystem, and cannot be avoided and has been		
mitigated, the cleared area:		
1. is rehabilitated ; or		
2. where the cleared area cannot be rehabilitated ,		
an offset is provided for any acceptable		
significant residual impact.		
Essential habitat excluding essential habitat for Pl	hascolarctos cinereus (koalas) if development is a	ssessable under Schedule 10, Part 10 of the
Planning Regulation 2017		E
PO90 Clearing of vegetation in a regional	AO90.1 Clearing does not occur in essential	
ecosystem that is an area of essential habitat	habitat.	
maintains the composition, structure and function of		
the regional ecosystem for each protected	OR	
wildlife species individually.		
	A090.2 Clearing in essential habitat does not	
	exceed the widths prescribed in reference table 1	
	of this code.	
	UR	
	A OOO 2 Cleaning in eccential babitat data not	
	AU90.3 Clearing in essential nabitat does not	
	exceed the areas prescribed in reference table 1 of	
DO01 Where electing of vegetation in a regional	Ins code.	
PO91 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
deep not maintain the composition structure and		
function of the regional approvation, structure and		
avoided and has been mitigated, an officiat is		
provided for any acceptable significant residual		
impact for each protocted wildlife energies		
individually		

Performance outcomes	Acceptable outcomes	Response
Acid sulfate soils if the local government is not the	e assessment manager for the development applic	ation
PO92 Clearing does not result in, or accelerate,	AO92.1 Clearing does not occur in land zone 1,	
disturbance of acid sulfate soils or changes to the	land zone 2 or land zone 3.	
hydrology of the location that will result in either of		
the following:	OR	
1. aeration of horizons containing iron sulphides;		
2. mobilisation of acid or metals.	AO92.2 Clearing in land zone 1, land zone 2 or	
	land zone 3 in areas below the five metre	
	Australian Height Datum only occurs where:	
	1. mechanical clearing does not disturb the soil	
	to a depth greater than 30 centimetres; and	
	2. acid suitate soils are managed consistent with	
	the Queensiand Acid Sulfate Soll Technical	
	Manual.	

Table 16.9: Material change of use and / or reconfiguring a lot for which there will be no clearing as a result of the material change of use or reconfiguring a lot

Performance outcomes	Acceptable outcomes	Response
PO93 Clearing as a result of a material change of	No acceptable outcome is prescribed.	
use or clearing as a result of reconfiguring a lot		
does not occur.		

Table 16.10: Material change of use and / or reconfiguring a lot for which clearing is limited to clearing that could be done as exempt clearing work for the purpose of the development prior to the material change of use or reconfiguring a lot application being approved

Performance outcomes	Acceptable outcomes	Response
Clearing avoids and minimises impacts		
 PO94 Clearing of vegetation and adverse impacts of clearing vegetation do not occur unless the application has demonstrated that the clearing and the adverse impacts of clearing have been: 1. reasonably avoided; or 2. reasonably minimised where it cannot be 	No acceptable outcome is prescribed.	
reasonably avoided.		

Performance outcomes	Acceptable outcomes	Response
Clearing that could already be done under an exer	nption	
PO95 Clearing of vegetation does not occur unless	No acceptable outcome is prescribed.	
it is clearing that could be done as exempt clearing		
work for the purpose of the development prior to the		
material change of use or reconfiguring a lot		
application being approved.		

Table 16.11: Necessary environmental clearing

Performance outcomes	Acceptable outcomes	Response
Clearing avoids and minimises impacts		
 PO96 Clearing of vegetation and adverse impacts of clearing vegetation do not occur unless the application has demonstrated that the clearing and the adverse impacts of clearing have been: 1. reasonably avoided; or 2. reasonably minimised where it cannot be reasonably avoided. 	No acceptable outcome is prescribed.	
Clearing associated with wetlands (Land Restorati	on and Natural Disaster Preparation)	
 PO97 Clearing of vegetation within a natural wetland and/or within 100 metres of the defining bank of a natural wetland maintains the composition, structure and function of any regional ecosystem associated with any natural wetland to protect all of the following: bank stability by protecting against bank erosion; water quality by filtering sediments, nutrients and other pollutants; aquatic habitat; terrestrial habitat. 	 AO97.1 Clearing does not occur in any of the following areas: 1. inside the defining bank of any natural wetland; and 2. within 100 metres of the defining bank of any natural wetland. OR AO97.2 Clearing within 100 metres of the defining bank of any natural wetland only occurs where: 1. clearing does not exceed 0.5 hectares; and 2. clearing that is for flood preparation complies with all of the following: a. clearing is undertaken by felling only; and: b. clearing does not exceed 100 square metres; and 	

Performance outcomes	Acceptable outcomes	Response
	 clearing does not occur outside the defining banks of a natural wetland 	
	OR	
	 AO97.3 Clearing to provide necessary access to undertake necessary environmental clearing only occurs where clearing: 1. does not exceed 10 metres in width; and 2. retains all mature trees and habitat trees; and 3. the access track: a. runs parallel to a natural wetland and clearing is not within 10 metres of the defining bank of a natural wetland; or b. is required to provide access across the wetland. 	
PO98 Where clearing of vegetation in a regional ecosystem associated with a natural wetland does not maintain the composition, structure and function of the regional ecosystem , and cannot be avoided and has been mitigated, the cleared area is	No acceptable outcome is prescribed.	
rehabilitated.	diversion and contaminants removal)	
PO99 Clearing of vegetation within a natural	A099.1 Clearing does not occur in any of the	
 wetland and/or within 100 metres of the defining bank of a natural wetland maintains the composition, structure and function of any regional ecosystem associated with any natural wetland to protect all of the following: bank stability by protecting against bank erosion; water quality by filtering sediments, nutrients and other pollutants; aquatic habitat; terrestrial habitat. 	 AC99.2 Clearing within 100 metres of the defining bank of any natural wetland. OR AC99.2 Clearing within 100 metres of the defining bank of any natural wetland. I. clearing does not exceed 0.5 hectares; and I. clearing retains all mature trees and habitat trees. 	

Performance outcomes	Acceptable outcomes	Response
	OR	
	AO99.3 Clearing to provide necessary access to	
	undertake necessary environmental clearing	
	only occurs where clearing :	
	1. does not exceed 10 metres in width; and	
	2. retains all mature trees and habitat trees ;	
	and	
	3. the access track:	
	a. runs parallel to a natural wetland and	
	clearing is not within 10 metres of the	
	defining bank of a natural wetland; or	
	b. is required to provide access across the	
	wetland.	
PO100 where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem associated with a natural wetland does		
not maintain the composition, structure and function		
of the regional ecosystem, and cannot be avoided		
1 is robabilitated: or		
2 where the cleared area cannot reasonably be		
rehabilitated an offset is provided for any		
acceptable significant residual impact		
Clearing associated with watercourses and draina	ge features (Land Restoration and Natural Disaste	r Preparation)
PO101 Clearing of vegetation within a	AO101.1 Clearing does not occur in any of the	
watercourse and/or drainage feature and/or within	following areas:	
the relevant distance (listed in reference table 2) of a	1. inside the defining bank of a watercourse or	
watercourse and/or drainage feature maintains the	drainage feature; and	
composition, structure and function of any regional	2. within the relevant distance of the defining	
ecosystem associated with any watercourse	bank of any watercourse or drainage feature	
and/or drainage feature to protect all of the	in reference table 2 of this code.	
following:		
1. bank stability by protecting against bank erosion;	OR	
2. water quality by filtering sediments, nutrients		
and other pollutants;	AO101.2 Clearing in any watercourse or	
3. aquatic habitat;	Grainage feature , or within the relevant distance of	
4. terrestrial habitat.	the defining bank of any watercourse or	
	drainage reature in reference table 2 of this code	
	only occurs where:	

Performance outcomes	Acceptable outcomes	Response
	1. clearing does not exceed 0.5 hectares; and	
	2. clearing retains all mature trees and habitat	
	trees; and	
	3. clearing that is for flood preparation	
	complies with all of the following:	
	a. clearing is undertaken by felling only; and	
	b. clearing does not exceed 100 square	
	metres; and	
	c. clearing does not occur outside of the	
	defining bank of any watercourse or	
	drainage feature.	
	OR	
	AO101.3 Clearing to provide necessary access to	
	undertake necessary environmental clearing	
	only occurs where clearing:	
	1. does not exceed 10 metres in width; and	
	2. retains all mature trees and habitat trees ;	
	and	
	3. the access track:	
	 runs parallel to a watercourse or 	
	drainage feature and clearing is not	
	within 10 metres of the defining bank of a	
	watercourse or drainage feature; or	
	b. is required to provide access across the	
	watercourse or drainage feature.	
PO102 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem associated with a watercourse and/or		
drainage feature does not maintain the		
composition, structure and function of the regional		
ecosystem, and cannot be avoided and has been		
mitigated, the cleared area is rehabilitated.		
Clearing associated with watercourses and draina	ge features (natural channel diversion and contam	linants removal)
PO103 Clearing of vegetation within a	AO103.1 Clearing does not occur within any of the	
watercourse and/or arainage feature and/or within	tollowing areas:	
the relevant distance (listed in reference table 2) of a	1. Inside the defining bank of a watercourse or	
watercourse and/or drainage feature maintains	arainage teature; and	
the composition, structure and function of any		

Performance outcomes	Acceptable outcomes	Response
 regional ecosystem associated with any watercourse or drainage feature to protect all of the following: 1. bank stability by protecting against bank erosion; 2. water quality by filtering sediments, nutrients and other pollutants; 3. aquatic habitat; 4. terrestrial habitat. 	 within the relevant distance of the defining bank of any watercourse or drainage feature in reference table 2 of this code. OR AO103.2 Clearing in any watercourse or drainage feature, or within the relevant distance of the defining bank of any watercourse or drainage feature in reference table 2 of this code only occurs where: clearing does not exceed 0.5 hectares; and clearing retains all mature trees and habitat trees. 	
PO104 Where clearing of vegetation in a regional	 OR AO103.3 Clearing to provide necessary access to undertake necessary environmental clearing only occurs where: clearing does not exceed 10 metres in width; and clearing retains all mature trees and habitat trees; and the access track: runs parallel to a watercourse or drainage feature and clearing is not within 10 metres of the defining bank of a watercourse or drainage feature; or is required to provide access across the watercourse or drainage feature. 	
 PO104 Where clearing of vegetation in a regional ecosystem associated with a watercourse and/or drainage feature does not maintain the composition, structure and function of the regional ecosystem, and cannot be avoided and has been mitigated, the cleared area: 1. is rehabilitated; or 	No acceptable outcome is prescribed.	

Performance outcomes	Acceptable outcomes	Response
2. where the cleared area cannot reasonably be		
rehabilitated, an offset is provided for any		
acceptable significant residual impact.		
Connectivity (land restoration and natural disaster	r preparation)	
PO105 Regional ecosystems on the subject land	AO105.1 Clearing occurs in accordance with	
and any adjacent land retain sufficient vegetation	reference table 3 of this code.	
to:		
1. maintain ecological processes; and		
2. ensure the regional ecosystem remains in the		
landscape despite threatening processes.		
PO106 Where:	No acceptable outcome is prescribed.	
1. clearing of vegetation in a regional		
ecosystem does not maintain ecological		
processes; and		
2. the regional ecosystem does not remain in the		
landscape despite threatening processes; and		
3. the clearing cannot be avoided; and		
4. the clearing has been mitigated;		
the cleared area is rehabilitated.		
Connectivity (natural channel diversion and conta	minants removal)	1
PO107 Regional ecosystems on the subject land	AO107.1 Clearing occurs in accordance with	
and any adjacent land retain sufficient vegetation	reference table 3 of this code.	
1. maintain ecological processes; and		
2. ensure the regional ecosystem remains in the		
PO109 Where:	No accontable outcome is prescribed	
1 clearing of vegetation in a regional	No acceptable outcome is prescribed.	
1. Cleaning of vegetation in a regional		
processes: and		
2 the regional ecosystem does not remain in the		
landscape despite threatening processes: and		
3 the clearing cannot be avoided: and		
4 the clearing has been mitigated.		
the cleared area:		
a. is rehabilitated ; or		

Performance outcomes	Acceptable outcomes	Response
b. where the cleared area cannot reasonably		
be rehabilitated , an offset is provided for		
any acceptable significant residual		
impact.		
Soil erosion if the local government is not the asse	essment manager for the development application	
PO109 Clearing does not result in accelerated soil	AO109.1 Clearing only occurs if an erosion and	
erosion within or outside the land the subject of the	sediment control plan is developed and	
development application.	implemented to prevent soil erosion and	
	instability resulting from the clearing.	
Salinity		Ι
PO110 Clearing within 100 metres of a salinity	AO110.1 Clearing does not occur within 100	
expression area does not contribute to or	metres of a salinity expression area.	
accelerate land degradation through either of the		
following:		
1. wateriogging;		
2. the salinisation of groundwater, surface water		
Or Soll.	 notes preparation) evoluting accordial hebitat for D	Near laveta a sinaraya (kaslaa) if dayalan mant is
assessable under Schedule 10. Part 10 of the Plan	ning Regulation 2017	mascolarcios cinereus (koalas) il development is
PO111 Clearing of vegetation in a regional	A0111 1 Clearing does not occur in essential	
ecosystem that is an area of essential habitat	habitat	
maintains the composition, structure and function of		
the regional ecosystem for each protected	OR	
wildlife species individually.		
	AO111.2 Clearing in essential habitat does not	
	exceed the widths prescribed in reference table 1	
	of this code.	
	OR	
	AO111.3 Clearing in essential habitat does not	
	exceed the areas prescribed in reference table 1 of	
	this code.	
PO112 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem that is an area of essential habitat		
does not maintain the composition, structure and		
function of the regional ecosystem for each		
protected wildlife species individually, and cannot		

Performance outcomes	Acceptable outcomes	Response
be avoided and has been mitigated, the cleared		
area is rehabilitated .		
Essential habitat (natural channel diversion and co	ontaminants removal) excluding essential habitat f	or Phascolarctos cinereus (koalas) if
development is assessable under Schedule 10, Pa	rt 10 of the Planning Regulation 2017	
PO113 Clearing of vegetation in a regional	AO113.1 Clearing does not occur in essential	
ecosystem that is an area of essential habitat	habitat.	
maintains the composition, structure and function of		
the regional ecosystem for each protected	OR	
wildlife species individually.		
	A0113.2 Clearing in essential habitat does not	
	exceed the widths prescribed in reference table 1	
	of this code.	
	AO113 3 Clearing in essential habitat does not	
	exceed the areas prescribed in reference table 1 of	
	this code.	
PO114 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem that is an area of essential habitat		
does not maintain the composition, structure and		
function of the regional ecosystem for each		
protected wildlife species individually, and cannot		
be avoided and has been mitigated, the cleared		
area:		
1. is rehabilitated ; or		
2. where the cleared area cannot reasonably be		
rehabilitated, an offset is provided for any		
acceptable significant residual impact for		
Acid sulfate soils if the local government is not the	assassment manager for the development applic	ation
PO115 Clearing does not result in or appolarate	AO115 1 Clearing doos not occur in land zone 1	
disturbance of acid sulfate soils or changes to the	and zone 2 or land zone 3	
hydrology of the location that will result in either of		
the following:	OR	
1. aeration of horizons containing iron sulphides		
2. mobilisation of acid or metals.	AO115.2 Clearing in land zone 1. land zone 2 or	
	land zone 3 in areas below the five metre	
	Australian Height Datum only occurs where:	

Performance outcomes	Acceptable outcomes	Response
	1. mechanical clearing does not disturb the soil	
	to a depth greater than 30 centimetres; and	
	2. acid sulfate soils are managed consistent with	
	the soil management guidelines in the	
	Queensland Acid Sulfate Soil Technical	
	Manual.	
Maintaining the composition, structure and function	on of the regional ecosystem (land restoration and	natural disaster preparation)
PO116 Clearing of vegetation maintains the	AO116.1 Clearing retains all of the following:	
composition, structure and function of the regional	1. habitat trees;	
ecosystem.	2. mature trees; and	
	3. the natural floristic composition and range of	
	sizes across the application area.	
	OR	
	A0116.2 Clearing is for the purpose of natural	
	disaster preparation and doop not exceed the	
	uisaster preparation and does not exceed the	
	widths prescribed in reference table 1 of this code.	
	OR	
	AO116.3 Clearing is for the purpose of natural	
	disaster preparation and does not exceed the	
	areas prescribed in reference table 1 of this code.	
PO117 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem does not maintain the composition.	··· ···· ··· · · · · · · · · · · · · ·	
structure and function of the regional ecosystem .		
and cannot be avoided and has been mitigated, the		
cleared area is rehabilitated .		
Maintaining the composition, structure and function of the regional ecosystem (natural channel diversion and contaminants removal)		
PO118 Clearing of vegetation maintains the	AO118.1 Clearing retains all of the following:	
composition, structure and function of the regional	1. habitat trees;	
ecosystem	2. mature trees; and	
-	3. the natural floristic composition and range of	
	sizes across the application area.	
PO119 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem does not maintain the composition,		
structure and function of the regional ecosystem ,		

Performance outcomes	Acceptable outcomes	Response
and cannot be avoided and has been mitigated, the		
cleared area:		
1. is rehabilitated ; or		
2. where the cleared area cannot reasonably be		
rehabilitated, an offset is provided for any		
acceptable significant residual impact.		
Duration of clearing, preventing land degradation,	and maintaining biodiversity, ecological processe	es and regional ecosystems (Land Restoration,
Natural Disaster Preparation and Contaminates Removal)		
PO120 Clearing occurs only during a period that:	No acceptable outcome is prescribed.	
1. will not contribute to land degradation ; and		
2. ensures the ongoing maintenance of ecological		
processes and biodiversity; and		
3. maintains the regional ecosystem .		

Table 16.12: Control non-native plants or declared pests

Performance outcomes	Acceptable outcomes	Response
Clearing avoids and minimises impacts		
PO121 Clearing of vegetation and adverse	No acceptable outcome is prescribed.	
impacts of clearing vegetation do not occur unless		
the application has demonstrated that the clearing		
and the adverse impacts of clearing have been:		
 reasonably avoided; or 		
reasonably minimised where it cannot be		
reasonably avoided.		
Clearing associated with wetlands		
 PO122 Clearing of vegetation within a natural wetland and/or within 100 metres of the defining bank of a natural wetland maintains the composition, structure and function of any regional ecosystem associated with a natural wetland to protect all of the following: 1. bank stability by protecting against bank erosion; 2. water quality by filtering sediments, nutrients and other pollutants; 3. aquatic habitat; 4. terrestrial habitat. 	 AO122.1 Mechanical clearing does not occur in any of the following areas, unless it is required to provide necessary access to control non-native plants or declared pests: 1. inside the defining bank of any natural wetland; and 2. within 20 metres of the defining bank of any natural wetland. AND 	

Performance outcomes	Acceptable outcomes	Response
	AO122.2 Clearing to provide necessary access to	
	control non-native plants or declared pests only	
	occurs where:	
	1. clearin g does not exceed five metres in width;	
	and	
	2. clearing retains all mature trees and habitat	
	trees; and	
	3. the access track:	
	a. runs parallel to a natural wetland and	
	clearing is not within 10 metres of the	
	defining bank of a natural wetland ; or	
	b. is required to provide access across the	
	wetland.	
	AND	
	A0122 3 Chemical clearing retains:	
	1 all mature trees: and	
	2. all habitat trees ; and	
	3. at least 50 per cent of immature trees in each	
	50 metre by 50 metre area.	
	AND	
	AO122 / Root absorbed broad spectrum	
	herbicides are not applied within whichever is the	
	greater distance from the defining bank of a	
	natural wetland :	
	1. 100 metres; or	
	2. the distance specified on the approved product	
	label; or	
	3. The distance specified in the safety and use	
	and Veterinary Medicines Authority	
	and votennary medicines Authonity.	
	AND	
Performance outcomes	Acceptable outcomes	Response
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	 AO122.5 Aerial application of a foliar herbicide does not occur within whichever is the greater distance from the defining bank of a natural wetland; 1. 50 metres; or 2. the distance specified for wetlands on the approved product label; or 3. the distance specified in the safety and use conditions issued by the Australian Pesticides and Veterinary Medicines Authority. 	
Clearing associated with watercourses or drainage	e features	
 PO123 Clearing of vegetation within a watercourse and/or drainage feature and/or within the relevant distance (listed in reference table 2) of a watercourse and/or drainage feature maintains the composition, structure and function of any regional ecosystem associated with any watercourse and/or drainage feature to protect all of the following: bank stability by protecting against bank erosion; water quality by filtering sediments, nutrients and other pollutants; aquatic habitat; 	 AO123.1 Mechanical clearing does not occur in any of the following areas, unless it is required to provide necessary access to control non-native plants or declared pests: 1. inside the defining bank of any watercourse or drainage feature; and 2. within 10 metres of the defining bank of a watercourse or drainage feature that is a stream order 1 or 2 watercourse or drainage feature; and 3. within 15 metres of the defining bank of a watercourse or drainage feature that is a stream order 3 or 4 watercourse or drainage feature; and 4. within 20 metres of the defining bank of a watercourse or drainage feature that is a stream order 5 or more watercourse or drainage feature. 	
	 AND AO123.2 Clearing to provide necessary access to control non-native plants or declared pests only occurs where: 1. clearing does not exceed five metres in width; and 2. clearing retains all habitat trees and mature trees; and 	

Performance outcomes	Acceptable outcomes	Response
	 3. the access track: a. runs parallel to the watercourse or drainage feature and is not within 10 metres of the defining bank of the watercourse or drainage feature; or b. is required to provide access across the watercourse or drainage feature. 	
	AND	
	 AO123.3 Chemical clearing retains all of the following: 1. mature trees; and 2. habitat trees; and 3. at least 50 per cent of immature trees in any 50 metre by 50 metre area. 	
	AND	
	 AO123.4 Root absorbed broad spectrum herbicides are not applied within whichever is the greater distance from the defining bank of a watercourse or drainage feature: 100 metres; or any distance specified on the approved product label; or the distance specified in the safety and use conditions issued by the Australian Pesticides and Veterinary Medicines Authority. 	
	AND	
	 AO123.5 Aerial application of a foliar herbicide does not occur within whichever is the greater distance from the defining bank of a watercourse or drainage feature: 1. 50 metres; or 2. any distance specified on the approved product label; or 	

Performance outcomes	Acceptable outcomes	Response
	3. the distance specified in the safety and use	
	conditions issued by the Australian Pesticides	
Sail areaian	and Veterinary Medicines Authority.	
Soli erosion		I
PO124 Clearing of vegetation does not result in	A0124.1 Clearing only occurs where recognised	
accelerated soil erosion within or outside the land	best practice methods are employed to:	
	from the clearing : and	
	2. stabilise soil erosion and instability which	
	would result from clearing ; and	
	3. prevent increased sediment run-off entering a	
	wetland, watercourse or drainage feature as	
	a result of the clearing .	
	AND	
	AO124.2 Mechanical clearing:	
	1. does not occur on a slope greater than 15	
	2 in each 50 by 50 metre area (0.25 hectares)	
	retains 50 per cent of the ground cover and	
	does not disturb more than 50 per cent of the	
	ground cover.	
	AO124.3 New access tracks required to provide	
	necessary access to control a non-native plant or	
	declared pests do not exceed five metres in width	
	or de-stabilise the banks of any watercourse or	
	construction or use	
Acid sulfate soils if the local government is not the	assessment manager for the development applic	ation
PO125 Clearing does not result in or accelerate	A0125.1 Clearing does not occur in land zone 1	
disturbance of acid sulfate soils or changes to the	land zone 2 or land zone 3.	
hydrology of the location that will result in either of		
the following:	OR	
1. aeration of horizons containing iron sulphides;		
2. mobilisation of acid or metals.		

Performance outcomes	Acceptable outcomes	Response
	 AO125.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the five metre Australian Height Datum only occurs where: 1. mechanical clearing does not disturb the soil to a depth greater than 30 centimetres: and 	
	 acid sulfate soils are managed consistent with the soil management guidelines in the Queensland Acid Sulfate Soil Technical Manual. 	
Conserving remnant vegetation that is a regional	ecosystem	I
PO126 Clearing activities:	AO126.1 Mechanical clearing:	
 maintain the natural floristic composition and range of sizes of each species of the regional ecosystem evenly spaced across the application area; and retain all habitat trees and mature trees. 	 only occurs within 1.5 metres from the edge of the canopy of individual non-native plants, unless the clearing is required to provide necessary access to control a non-native plant or declared pest; and does not occur using two machines linked by chain or cable; and retains all habitat trees and mature trees. 	
	AND	
	AO126.2 Clearing to provide necessary access to control non-native plants or declared pests does not exceed five metres in width.	
	AND	
	AO126.3 Any regional ecosystem burn is undertaken in accordance with the fire guideline for the regional ecosystem , as outlined in the Regional Ecosystem Description Database (REDD).	
	AND	
	AO126.4 Chemical clearing retains all of the following: 1. mature trees; and	

Performance outcomes	Acceptable outcomes	Response
	2. habitat trees; and	
	3. at least 50 per cent of immature trees in each	
	50 metre by 50 metre area.	
	AND	
	AO126.5 Aerial application of a root-absorbed broad spectrum herbicides does not occur.	
	AND	
	AO126.6 Root-absorbed broad spectrum	
	herbicides are not applied within whichever	
	distance is the greater from a mature tree or a	
	habitat tree;	
	1. 30 metres; or	
	2. the distance specified on the approved product	
	label; or	
	3. The distance specified in the safety and use	
	and Veterinary Medicines Authority	
Duration of clearing, preventing land degradation.	and maintaining biodiversity, ecological processe	s and regional ecosystems
PO127 Clearing occurs only during a period that:	No acceptable outcome is prescribed.	
1. will not contribute to land degradation: and		
2. ensures the ongoing maintenance of ecological		
processes and biodiversity; and		
3. maintains the regional ecosystem.		

Table 16.13: Encroachment

Performance outcomes	Acceptable outcomes	Response
Clearing associated with wetlands		
PO128 Clearing of vegetation within a natural	AO128.1 Mechanical clearing does not occur in	
wetland and/or within 100 metres of the defining	any of the following areas:	
bank of a natural wetland maintains the	1. inside the defining bank of any natural	
composition, structure and function of any regional	wetland; and	
ecosystem associated with a natural wetland to	2. within 20 metres of the defining bank of any	
protect all of the following:	natural wetland .	
1. bank stability by protecting against bank erosion;		

Pe	rformance outcomes	Acceptable outcomes	Response
2.	water quality by filtering sediments, nutrients	AND	
_	and other pollutants;		
3.	aquatic habitat;	AO128.2 Root absorbed broad spectrum	
4.	terrestrial habitat.	herbicides are not applied within whichever is the	
		greater distance from the defining bank of a	
		1 100 motros: or	
		2 the distance specified on the approved product	
		label: or	
		3. the distance specified in the safety and use	
		conditions issued by the Australian Pesticides	
		and Veterinary Medicines Authority.	
Cl	earing associated with watercourses or drainage	e features	•
PC	0129 Clearing of encroachment maintains:	AO129.1 Mechanical clearing does not occur in	
1.	bank stability by protecting against bank erosion;	any of the following areas:	
	and	1. inside the defining bank of any watercourse	
2.	water quality by filtering sediments, nutrients	or drainage feature; and	
	and other pollutants; and	2. within 10 metres of the defining bank of a	
3.	aquatic habitat; and	watercourse or drainage feature that is a	
4.	terrestrial habitat.	stream order 1 or 2 watercourse or drainage	
		within 15 metros of the defining bank of a	
		s. within 15 metres of the defining balls of a	
		stream order 3 or 4 watercourse or drainage	
		feature and	
		4. within 20 metres of the defining bank of a	
		watercourse or drainage feature that is a	
		stream order 5 or more watercourse or	
		drainage feature.	
		AND	
		AO129.2 Root-absorbed broad spectrum	
		herbicides are not applied within whichever is the	
		greater distance from the defining bank of a	
		watercourse or drainage feature:	
		1. 100 metres; or	
		2. any distance specified on the approved product	
		label; or	

Performance outcomes	Acceptable outcomes	Response
	3. the distance specified in the safety and use	
	conditions issued by the Australian Pesticides	
	and Veterinary Medicines Authority.	
Soil erosion		
PO130 Clearing does not result in accelerated soil	AO130.1 Clearing only occurs where recognised	
erosion within or outside the land subject of the	best practice methods are employed to:	
development application.	from the clearing: and	
	2 stabilise soil erosion and instability which	
	would result from clearing ; and	
	3. prevent increased sediment run-off entering a	
	wetland, watercourse or drainage feature as	
	a result of the clearing .	
	AO130.2 Mechanical clearing does not occur in	
	any of the following areas:	
	1. within 50 metres of an area of soil erosion	
	and instability; and	
Salinity	2. Slopes greater than live per cent.	
PO131 Clearing within 100 metres of a salinity	A0131 1 Clearing does not occur within 100	
expression area does not contribute to or	metres of a salinity expression area	
accelerate land degradation through either of the		
following:		
1. waterlogging;		
2. the salinisation of groundwater , surface water		
OF SOIL.	assassment manager for the development applic	ation
PO132 Clearing does not result in or accelerate	A0132 1 Clearing does not occur in land zone 1	
disturbance of acid sulfate soils or changes to the	land zone 2 or land zone 3.	
hydrology of the location that will result in either of	· · · · · · · · · · · · · · · · · · ·	
the following:	OR	
1. aeration of horizons containing iron sulphides; or		
2. mobilisation of acid or metals.	AO132.2 Clearing in land zone 1, land zone 2 or	
	and zone 3 in areas below the five metre	
	Australian Height Datum only occurs where:	

nechanical clearing does not disturb the soil o a depth greater than 30 centimetres; and acid sulfate soils are managed consistent with he soil management guidelines in the Queensland Acid Sulfate Soil Technical Manual	
cceptable outcome is prescribed.	
 34.1 Clearing retains all of the following: all mature trees; and all habitat trees; and all woody vegetation within a grove, unless it is undertaken by a regional ecosystem burn. 34.2 Any regional ecosystem burn is ortaken in accordance with the fire guideline for egional ecosystem, as outlined in the onal Ecosystem Description Database DD). 34.3 Clearing does not result in debris being ted or pushed against a mature tree or a tat tree. 34.4 Mechanical clearing does not occur in 10 metres of a mature tree or a habitat 	
3411 33 411 33 411 34 34 41 34 34 34 34 34 34 34 34 34 34 34 34 34	 4.1 Clearing retains all of the following: mature trees; and habitat trees; and woody vegetation within a grove, unless it undertaken by a regional ecosystem burn. 4.2 Any regional ecosystem burn is taken in accordance with the fire guideline for gional ecosystem, as outlined in the nal Ecosystem Description Database D). 4.3 Clearing does not result in debris being ed or pushed against a mature tree or a tat tree. 4.4 Mechanical clearing does not occur 10 metres of a mature tree or a habitat

Acceptable outcomes	Response
AO134.5 Aerial application of a herbicide does not occur.	
AND	
AO134.6 Chemical clearing does not occur within five metres of a mature tree or a habitat tree .	
AND	
 AO134.7 Root-absorbed broad spectrum herbicides are not applied in any of the following areas: regional ecosystems 11.4.11 and 11.8.11; and within whichever is the greater distance from a mature tree or a habitat tree: a. 10 metres; or b. the distance specified by the approved product label; or c. the distance specified in the safety and use conditions prescribed by the Australian Pesticides and Veterinary Medicines Authority; and within whichever is the greater distance from a grove: a. 30 metres; or b. the distance specified by the approved product label; or 	
Authority.	
and maintaining biodiversity, ecological processe	es and regional ecosystems
No acceptable outcome is prescribed.	
	 Acceptable outcomes AO134.5 Aerial application of a herbicide does not occur. AND AO134.6 Chemical clearing does not occur within five metres of a mature tree or a habitat tree. AND AO134.7 Root-absorbed broad spectrum herbicides are not applied in any of the following areas: regional ecosystems 11.4.11 and 11.8.11; and within whichever is the greater distance from a mature tree or a habitat tree: a metres; or the distance specified by the approved product label; or the distance specified in the safety and use conditions prescribed by the Australian Pesticides and Veterinary Medicines Authority; and within whichever is the greater distance from a grove: a metres; or the distance specified by the approved product label; or the distance specified in the safety and use conditions prescribed by the Australian Pesticides and Veterinary Medicines Authority; and within whichever is the greater distance from a grove: a metres; or the distance specified by the approved product label; or the distance specified by the approved product label; or the distance specified in the safety and use conditions issued by the Australian Pesticides and Veterinary Medicines Authority.

Pe	erformance outcomes	Acceptable outcomes	Response
2.	ensures the ongoing maintenance of ecological processes and biodiversity ; and		
3.	maintains the regional ecosystem .		

Table 16.14: Fodder harvesting

Performance outcomes	Acceptable outcomes	Response
Clearing associated with wetlands		
 PO136 Clearing of vegetation within a natural wetland and/or within 100 metres of the defining bank of a natural wetland maintains the composition, structure and function of any regional ecosystem associated with a natural wetland to protect all of the following: bank stability by protecting against bank erosion; water quality by filtering sediments, nutrients and other pollutants; aquatic habitat; terrestrial habitat. 	 AO136.1 Mechanical clearing does not occur in any of the following areas: 1. inside the defining bank of any natural wetland; and 2. within 20 metres of the defining bank of any natural wetland. AND AO136.2 Mechanical clearing that is strip harvesting or block harvesting does not occur in any of the following areas: 1. inside the defining bank of any natural wetland; and 2. within 100 metres of the defining bank of any natural wetland 	
Clearing associated with watercourses or drainage	e features	
 PO137 Clearing of vegetation within a watercourse and/or drainage feature and/or within the relevant distance (listed in reference table 2) of a watercourse and/or drainage feature maintains the composition, structure and function of any regional ecosystem associated with any watercourse and/or drainage feature to protect all of the following: 1. bank stability by protecting against bank erosion; 2. water quality by filtering sediments, nutrients and other pollutants; 3. aquatic habitat; 4. terrestrial habitat. 	 AO137.1 Mechanical clearing does not occur in any of the following areas: 1. inside the defining bank of any watercourse or drainage feature; and 2. within 20 metres of the defining bank of any watercourse or drainage feature. AND AO137.2 Mechanical clearing that is strip harvesting or block harvesting does not occur in any of the following areas: 1. inside the defining bank of any watercourse or drainage feature; and 	

Performance outcomes	Acceptable outcomes	Response
	2. within 100 metres of the defining bank of any	
	watercourse or drainage feature.	
Soil erosion		
PO138 Clearing does not result in accelerated soil	AO138.1 Clearing only occurs where recognised	
erosion within or outside the land subject of the	best practice methods are employed to:	
development application.	1. prevent soil erosion and instability resulting	
	2 stabilise soil erosion and instability which	
	would result from clearing : and	
	3. prevent increased sediment run-off entering a	
	wetland, watercourse or drainage feature as	
	a result of the clearing .	
	AND	
	AO138.2 Mechanical clearing does not occur on	
	a siope greater than live percent.	
	OR	
	AO138.3 Mechanical clearing does not occur	
	within 50 metres of an area of soil erosion and	
	instability.	
Salinity		
PO139 Clearing within 100 metres of a salinity	AO139.1 Clearing does not occur within 100	
expression area does not contribute to or	metres of a salinity expression area.	
following:		
1. waterlogging:		
2. the salinisation of groundwater , surface water		
or soil.		
Essential habitat excluding essential habitat for Pl	hascolarctos cinereus (koalas) if development is a	ssessable under Schedule 10, Part 10 of the
Plaining Regulation 2017 PO140 Clearing of vegetation in a regional	A0140 1 Cloaring does not occur in assantial	
ecosystem that is an area of essential habitat	habitat	
maintains the composition, structure and function of		
the regional ecosystem for each protected	OR	
wildlife species individually.		

Performance outcomes	Acceptable outcomes	Response
	AO140.2 Clearing in essential habitat does not	
	exceed the widths prescribed in reference table 1	
	of this code.	
	OR	
	AO140.3 Clearing in essential habitat does not	
	exceed the areas prescribed in reference table 1 of	
	this code.	
PO141 Where clearing of vegetation in a regional	No acceptable outcome is prescribed.	
ecosystem that is an area of essential habitat		
does not maintain the composition, structure and		
function of the regional ecosystem , and cannot be		
avoided and has been mitigated, an offset is		
provided for any acceptable significant residual		
impact for each protected wildlife species		
individually.		
Limits to clearing for fodder harvesting		
PO142 Clearing is limited to:	No acceptable outcome is prescribed.	
1. the extent necessary to provide fodder for stock;		
and		
2. areas where the stock is located, and the stock		
have sufficient water.		
PO143 Clearing must only occur:	No acceptable outcome is prescribed.	
1. in regional ecosystems listed in reference table		
6 or reference table 7 of this code; and		
2. in accordance with the harvesting method		
limitations for the regional ecosystem listed in		
reference table 6 or reference table 7 of this code.		
PO144 Clearing consists predominantly of fodder	No acceptable outcome is prescribed.	
species.		
Conserving vegetation		[
PO145 Clearing is carried out in a way that	AO145.1 Clearing does not result in the removal	
conserves:	of non-fodder species with a height of four	
1. remnant vegetation in perpetuity; and	metres or more.	
2. the regional ecosystem in which the vegetation		
is situated.	AND	
	AU145.2 Selective narvesting:	

Performance outcomes	Acceptable outcomes	Response
	 retains all non-fodder species except where the damage is an unavoidable consequence of clearing the selected fodder tree; and when using a chainsaw in regional ecosystems listed in reference table 6 of this code, retains at least one fodder tree for every fodder tree cleared; and in least concern regional ecosystems listed in reference table 7 of this code, retains at least one fodder tree for each fodder tree cleared; and in of concern regional ecosystems listed in reference table 7 of this code, retains at least one fodder tree for each fodder tree cleared; and in of concern regional ecosystems listed in reference table 7 of this code, retains at least two fodder trees for each fodder tree cleared. 	
	AND	
	 AO145.3 Strip harvesting and block harvesting: 1. where fodder harvesting has previously occurred in an area of a lot, only occurs if all of the following apply: a. the vegetation has not been cleared in the last 10 years; and b. the average height of the fodder trees is at least 70 per cent of the height of the tallest stands of fodder species in the regional ecosystem; and c. the fodder trees that were previously harvested have now attained an average height of at least 4 metres; and 2. aligns clearing along the contour where practical; and 3. does not occur in patches of regional ecosystems that are less than 10 hectares in area or less than 500 metres wide. AND AO145.4 Strip harvesting: 	

Performance outcomes	Acceptable outcomes	Response
	1. does not result in any strip harvesting area	
	exceeding 50 metres in width; and	
	2. results in all strip retention areas:	
	a. being preserved along the length of strip	
	harvest areas to a width of at least 1.5	
	times that of the adjacent strip harvest	
	area; and	
	b. containing fodder species with an	
	average height of at least four metres;	
	and	
	3. does not result in clearing for machinery	
	access between strip narvest areas	
	exceeding 15 metres in width.	
	AND	
	AO145 5 Block harvesting	
	1 does not result in any block harvest area	
	exceeding one hectare: and	
	2. results in block retention areas :	
	a. being preserved between block harvest	
	areas in accordance with the widths	
	specified in reference table 8 of this code;	
	and	
	b. containing fodder species with an	
	average height of at least four metres;	
	and	
	3. does not result in clearing for machinery	
	access between block harvest areas	
Oleaned we notation	exceeding 10 metres in width.	
Cleared vegetation	No accontable outcome is prescribed	
that results in the woody biomass of the cleared	No acceptable outcome is prescribed.	
vocetation remaining where it is cleared		
Conserving the fodder resource		
PO147 Fodder harvesting is carried out in a way	A0147 1 Clearing does not occur:	
that will conserve the fodder resource	1 in an area that has been cleared in the	
	previous 10-vear period: and	
	2. more than once in the same area of a lot; and	

Performance outcomes	Acceptable outcomes	Response
	 in more than 50 per cent of the area of the regional ecosystem listed in reference table 6 and reference table 7 of this code on the lot; and in areas required to be retained under this code, a development approval or any accepted development vegetation clearing code. 	
Duration of clearing, preventing land degradation, a	and maintaining biodiversity, ecological processe	s and regional ecosystems
PO148 Clearing occurs only during a period that:	No acceptable outcome is prescribed.	
1. will not contribute to land degradation; and		
2. ensures the ongoing maintenance of ecological		
processes and biodiversity; and		
3. maintains the regional ecosystem .		

Table 16.15: Managing thickened vegetation

Performance outcomes	Acceptable outcomes	Response
Clearing associated with wetlands		
 PO149 Clearing of vegetation within a natural wetland and/or within 100 metres of the defining bank of a natural wetland maintains the composition, structure and function of any regional ecosystem associated with a natural wetland to protect all of the following: 1. bank stability by protecting against bank erosion; 2. water quality by filtering sediments, nutrients and other pollutants; 3. aquatic habitat; 4 terrestrial babitat 	 AO149.1 Mechanical clearing does not occur in any of the following areas: 1. inside the defining bank of a natural wetland; and 2. within 20 metres of the defining bank of a natural wetland. 	
Clearing associated with watercourses or drainage	e features	
PO150 Clearing of vegetation within a watercourse and/or drainage feature and/or within the relevant distance (listed in reference table 2) of a watercourse and/or drainage feature maintains the composition, structure and function of any regional ecosystem associated with any watercourse	 AO150.1 Mechanical clearing does not occur in any of the following areas: 1. inside the defining bank of any watercourse drainage feature; 2. within 10 metres of the defining bank of a watercourse or drainage feature that is a 	

State Development Assessment Provisions v3.0

Performance outcomes	Acceptable outcomes	Response
 and/or drainage feature to protect all of the following: bank stability by protecting against bank erosion; water quality by filtering sediments, nutrients and other pollutants; aquatic habitat; terrestrial habitat. 	 stream order 1 or 2 watercourse or drainage feature; 3. within 15 metres of the defining bank of a watercourse or drainage feature that is a stream order 3 or 4 watercourse or drainage feature; 4. within 20 metres of the defining bank of a watercourse or drainage feature that is a stream order 5 or more watercourse or drainage feature. 	
Soil erosion		
PO151 Clearing does not result in accelerated soil erosion within or outside the land subject of the development application.	 AO151.1 Clearing only occurs where recognised best practice methods are employed to: 1. prevent soil erosion and instability resulting from the clearing; and 2. stabilise soil erosion and instability which would result from clearing; and 3. prevent increased sediment run-off entering a wetland, watercourse or drainage feature as a result of the clearing. 	
	AND	
	 AO151.2 Mechanical clearing does not: 1. occur in a regional ecosystem in reference table 4 of this code that states 'mechanical clearing not permitted'; 2. disturb more than 50 per cent of the ground surface or result in any hectare having less than 50 per cent ground cover; 3. occur on a slope greater than five per cent; and 4. occur within 50 metres of an area of soil erosion and instability. 	
Acid sulfate soils if the local government is not the	e assessment manager for the development applic	ation
PO152 Clearing does not result in, or accelerate, disturbance of acid sulfate soils or changes to the hydrology of the location that will result in either of the following:	AO152.1 Clearing does not occur in land zone 1, land zone 2 or land zone 3. OR	

Performance outcomes	Acceptable outcomes	Response
 aeration of horizons containing iron sulphides; mobilisation of acid or metals. 	 AO152.2 Clearing in land zone 1, land zone 2 or land zone 3 in areas below the five metre Australian Height Datum only occurs where: 1. mechanical clearing does not disturb the soil to a depth greater than 30 centimetres; and 2. acid sulfate soils are managed consistent with the soil management guidelines in the Queensland Acid Sulfate Soil Technical Manual. 	
Restoring the regional ecosystem		
 PO153 Clearing activities: 1. restore the natural floristic composition and range of sizes of each species of the regional ecosystem evenly spaced across the application area; and 2. retain mature trees, habitat trees and tall immature trees and thickets. 	 AO153.1 Clearing does not occur in thickets. AND AO153.2 Clearing retains: all mature trees and habitat trees; a full range of sizes and species typical of the regional ecosystem in the area; and where the number of mature trees plus habitat trees is less than 20 per hectare, tall immature trees to total 20 mature trees, habitat trees and tall immature trees per hectare. AND AO153.3 Clearing does not result in debris stacked or pushed against a mature tree, habitat tree or tall immature tree. AND AO153.4 If clearing immature trees, retain immature trees in each 50 metre by 50 metre area to at least the density specified reference table 4 of this code. AND 	

Performance outcomes	Acceptable outcomes	Response
	AO153.5 If clearing low shrubs:	
	1. in regional ecosystems where clearing is	
	restricted to low shrubs as specified in	
	reference table 4 of this code – clearing retains	
	all immature trees ;	
	2. in regional ecosystems where clearing is not	
	restricted to low shrubs as specified in	
	reference table 4 of this code – clearing retains	
	at least the number of immature trees	
	specified in reference table 4 of this code; and	
	3. clearing retains at least 10 per cent of the	
	predominate species that have thickened.	
	AND	
	AO153.6 Mechanical clearing does not occur	
	within 5 metres of the trunk of a mature tree ,	
	habitat tree or tall immature tree.	
	AND	
	AO153 7 Clearing is not undertaken by:	
	1. aerial application of any herbicide: and/or	
	2. application of a root-absorbed broad	
	spectrum herbicide	
	AND	
	AO153.8 Chemical clearing does not occur within	
	five metres of the trunk of a mature tree , habitat	
	tree or tall immature tree.	
	AND	
	AO153.9 Any regional ecosystem burn is	
	undertaken in accordance with the fire guideline for	
	the regional ecosystem , as outlined in the	
	Regional Ecosystem Description Database (REDD).	
Clearing limited to specific regional ecosystems a	and specific clearing methods	

Performance outcomes	Acceptable outcomes	Response
PO154 Clearing must be for the purpose of	No acceptable outcome is prescribed.	
restoring the remnant regional ecosystem and		
only occur if all of the following apply:		
1. clearing is in regional ecosystems prescribed		
in reference table 4 of this code; and		
2. clearing is in accordance with the clearing		
restrictions for the regional ecosystem		
prescribed in reference table 4 of this code.		
PO155 Clearing occurs only during a period that:	No acceptable outcome is prescribed.	
1. will not contribute to land degradation; and		
2. ensures the ongoing maintenance of		
ecological processes and biodiversity; and		
3. maintains the regional ecosystem .		

Appendix K

Douglas Planning Scheme Code Assessment



6.2.10 Rural zone code

6.2.10.1 Application

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

6.2.10.2 Purpose

- (1) The purpose of the Rural zone code is to provide for:
 - (a) provide for rural uses including cropping, intensive horticulture, intensive animal industries, animal husbandry, animal keeping and other primary production activities;
 - (b) provide opportunities for non-rural uses, such as ancillary tourism activities that are compatible with agriculture, the environmental features, and landscape character of the rural area where the uses do not compromise the long-term use of the land for rural purposes;
 - (c) protect or manage significant natural resources and processes to maintain the capacity for primary production.
- (2) The local government purpose of the code is to:
 - (a) implement the policy direction set in the Strategic Framework, in particular:
 - (i) Theme 2 : Environment and landscape values, Element 3.5.5 Scenic amenity.
 - (ii) Theme 3 : Natural resource management, Element 3.6.2 Land and catchment management, Element 3.6.3 Primary production, forestry and fisheries, Element 3.6.4 Resource extraction.
 - (iii) Theme 5 Economy, Element 3.8.2 Economic growth and diversification, Element 3.8.4 Primary production.
 - (iv) Theme 6: Infrastructure and transport, Element 3.9.4 Transport.
 - (b) recognise the primacy of rural production, in particular sugar cultivation, and other farming practices in rural areas;
 - (c) provide protection to areas of ecological significance and scenic amenity significance where present.
- (3) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Areas for use for primary production are conserved and fragmentation is avoided.
 - (b) Development embraces sustainable land management practices and contributes to the amenity and landscape of the area.
 - (c) Adverse impacts of land use, both on-site and on adjoining areas, are avoided and any unavoidable impacts are minimised through location, design, operation and management.

Douglas Shire Planning Scheme 2018 Version 1.0 Part 6: Zones Code Compliance Table – 6.2.10 Rural zone code Page 1 of 5



(d) Areas of remnant and riparian vegetation are retained or rehabilitated.

6.2.10.3 Criteria for assessment

Table 6.2.10.3.a – Rural zone code – assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable development		
PO1 The height of buildings is compatible with the rural character of the area and must not detrimentally impact on visual landscape amenity.	AO1.1 Dwelling houses are not more than 8.5 metres in height. Note – Height is inclusive of roof height.	Not applicable No buildings are proposed.
Setbacks	AO1.2 Rural farm sheds and other rural structures are not more than 10 metres in height.	Complies with AO1.2 Complies.
PO2 Buildings and structures are setback to maintain the rural character of the area and achieve separation from buildings on adjoining properties.	 AO2 Buildings are setback not less than: (a) 40 metres from the property boundary and a State-controlled road; (b) 25 metres from the property boundary adjoining Cape Tribulation Road; (c) 20 metres from the boundary with any other road; (d) 6 metres from side and rear property boundaries. 	Complies with PO2 The above ground infrastructure is appropriately positioned to allow the existing rural character to be maintained.
PO3	A03	Complies with PO3



Performance outcomes	Acceptable outcomes	Applicant response
Buildings/structures are designed to maintain the rural character of the area.	White and shining metallic finishes are avoided on external surfaces of buildings.	The above ground infrastructure is appropriately positioned to allow the structures to be screened from view and allow the existing rural character to be maintained.
For assessable development		
PO4 The establishment of uses is consistent with the outcomes sought for the Rural zone and protects the zone from the intrusion of inconsistent uses.	AO4 Uses identified in Table 6.2.10.3.b are not established in the Rural zone.	Complies with AO4 No uses identified in Table 6.2.10.3.b are proposed.
 PO5 Uses and other development include those that: (a) promote rural activities such as agriculture, rural enterprises and small scale industries that serve rural activities; or (b) promote low impact tourist activities based on the appreciation of the rural character, landscape and rural activities; or (c) are compatible with rural activities. 	AO5 No acceptable outcomes are prescribed.	Complies with PO5 The water intake infrastructure is compatible with the localities rural activities.
PO6 Existing native vegetation along watercourses and in, or adjacent to areas of environmental value, or areas of remnant vegetation of value is protected.	AO6 No acceptable outcomes are prescribed.	Complies with PO6 The water intake infrastructure is essential to allow Council to provide an uninterrupted water supply and the proposed works will be undertaken in a manner that minimises the disturbance of vegetation.



Performance outcomes	Acceptable outcomes	Applicant response
PO7 The minimum lot size is 40 hectares, unless	AO7 No acceptable outcomes are prescribed.	Not applicable
 (a) the lot reconfiguration results in no additional lots (e.g. amalgamation, boundary realignments to resolve encroachments); or (b) the reconfiguration is limited to one additional lot to accommodate: (i). Telecommunications facility; (ii). Utility installation. 		

Table 6.2.10.3.b - Inconsistent uses within the Medium density residential zone

Inconsistent uses		
 Adult store Bar Brothel Car wash Child care centre Club Community care centre Community residence 	 Hotel Indoor sport and recreation Low impact industry Medium impact industry Multiple dwelling Nightclub entertainment facility Non-resident workforce accommodation Office 	 Residential care facility Resort complex Retirement facility Rooming accommodation Sales office Service station Shop Shopping centre
Detention facility,Dual occupancy	Outdoor salesParking station	Short-term accommodationShowroom



•	Dwelling unit	Permanent plantation	Special industry
•	Food and drink outlet	Port services	Theatre
•	Hardware and tradesupplies	Relocatable home park	Warehouse
•	Health care services	 Renewable energy facility, being a wind farm 	
•	High impact industry		

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



8.2.1 Acid sulfate soils overlay code

8.2.1.1 Application

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

8.2.1.2 Purpose

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

Douglas Shire Planning Scheme 2018 Version 1.0 Part 8: Overlays Code Compliance Table – 8.2.1 Acid sulfate soils overlay code Page 1 of 4



Criteria for assessment

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

Performance outcomes	Acceptable outcomes	Applicant response
For assessable development		
PO1 The extent and location of potential or actual acid sulfate soils is accurately identified.	 AO1.1 No excavation or filling occurs on the site. or AO1.2 An acid sulfate soils investigation is undertaken. Note - Planning scheme policy SC 6.12– Potential and actual acid sulfate soils provides guidance on preparing an acid sulfate soils investigation. 	Complies with PO1 While the presence of potential or actual acid sulfate soils is considered unlikely, the contractor undertaking the proposed excavation works will have a standard work practice in place for the appropriate management of potential or actual acid sulfate soils.
PO2 Development avoids disturbing potential acid sulfate soils or actual acid sulfate soils, or is managed to avoid or minimise the release of acid and metal contaminants.	 AO2.1 The disturbance of potential acid sulfate soils or actual acid sulfate soils is avoided by: (a) not excavating, or otherwise removing, soil or sediment identified as containing potential or actual acid sulfate soils; (b) not permanently or temporarily extracting groundwater that results in the aeration of previously saturated acid sulfate soils; (c) not undertaking filling that results in: (i) actual acid sulfate soils being moved below the water table; (ii) previously saturated acid sulfate soils 	Complies with PO2 While the presence of potential or actual acid sulfate soils is considered unlikely, the contractor undertaking the proposed excavation works will have a standard work practice in place for the appropriate management of potential or actual acid sulfate soils.



Performance outcomes	Acceptable outcomes	Applicant response
	being aerated.	
	Or	
	A02.2	
	The disturbance of potential acid sulfate soils or actual acid sulfate soils is undertaken in accordance with an acid sulfate soils management plan and avoids the release of metal contaminants by:	
	 (a) neutralising existing acidity and preventing the generation of acid and metal contaminants; 	
	 (b) preventing the release of surface or groundwater flows containing acid and metal contaminants into the environment; 	
	 (c) preventing the in situ oxidisation of potential acid sulfate soils and actual acid sulfate soils through ground water level management; 	
	 (d) appropriately treating acid sulfate soils before disposal occurs on or off site; 	
	 documenting strategies and reporting requirements in an acid sulfate soils environmental management plan. 	
	Note - Planning scheme policy SC 6.12 – Acid sulfate soils provides guidance on preparing an acid sulfate soils management plan.	
PO3	A03	Complies with PO3
No environmental harm is caused as a result of exposure to potential acid sulfate soils or actual acid sulfate soils.	No acceptable outcomes are prescribed.	While the presence of potential or actual acid sulfate soils is considered unlikely, the contractor undertaking the proposed excavation works will have a standard work



Performance outcomes	Acceptable outcomes	Applicant response
		practice in place for the appropriate management of potential or actual acid sulfate soils.

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





8.2.2 Bushfire hazard overlay code

Note - Land shown on the bushfire hazard overlay map is designated as the bushfire prone area for the purposes of section 12 of the Building Regulations 2006. The bushfire hazard area (bushfire prone area) includes land covered by the high and medium hazard areas as well as the buffer area category on the overlay map.

8.2.2.1 Application

- (1) This code applies to assessing a material change of use, reconfiguring a lot, operational works or building work in the Bushfire hazard overlay, if:
 - (a) self-assessable or assessable where the code is identified as being applicable in the Assessment criteria for the Overlay Codes contained in the Levels of Assessment Tables in section 5.6;
 - (b) impact assessable development.
- (2) Land in the Bushfire hazard overlay is identified on the Bushfire hazard overlay map in Schedule 2 and includes the following sub-categories:
 - (a) Medium bushfire risk sub-category;
 - (b) High bushfire risk sub-category;
 - (c) Very high bushfire risk sub-category;
 - (d) Potential impact buffer sub-category.
- (3) When using this code, reference should be made to Part 5.

8.2.2.2 Purpose

- (1) The purpose of the Bushfire overlay code is to:
 - (a) implement the policy direction in the Strategic Framework, in particular:
 - (i) Theme 1 Settlement pattern: Element 3.4.7 Mitigation of hazards;
 - (ii) Theme 6 Infrastructure and transport: Element 3.9.2 Energy.
 - (b) enable an assessment of whether development is suitable on land within the Bushfire risk overlay sub-categories.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) development avoids the establishment or intensification of vulnerable activities within or near areas that are subject to bushfire hazard;
 - (b) development is designed and located to minimise risks to people and property from bushfires;
 - (c) bushfire risk mitigation treatments are accommodated in a manner that avoids or minimises impacts on the natural environment and ecological processes;



- (d) development involving the manufacture or storage of hazardous materials does not increase the risk to public safety or the environment in a bushfire event;
- (e) development contributes to effective and efficient disaster management response and recovery capabilities.

Note - A site based assessment may ground-truth the extent of hazardous vegetation and extent and nature of the bushfire hazard area (bushfire prone area). Such assessments should be undertaken using the methodology set out in Planning scheme policy SC6.9 - Natural Hazards.

Criteria for assessment

Table 8.2.2.3.a - Bushfire hazard overlay code -assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable developr	nent	
Compatible development		
PO1 A vulnerable use is not established or materially intensified within a bushfire hazard area (bushfire prone area) unless there is an overriding need or other exceptional circumstances. Note - See the end of this code for examples of vulnerable uses.	AO1 Vulnerable uses are not established or expanded. Note – Where, following site inspection and consultation with Council, it is clear that the mapping is in error in identifying a premises as being subject to a medium, high, very high bushfire hazard or potential impact buffer sub-category, Council may supply a letter exempting the need for a Bushfire Management Plan. Note – Where the assessment manager has not previously approved a Bushfire Management Plan (either by condition of a previous development approval), the development proponent will be expected to prepare such a plan. Note – Planning scheme policy SC6.9 - Natural hazards, provides a	Complies with AO1 The proposed development is not associated with a vulnerable use.
PO2 Emergency services and uses providing community support services are able to function effectively	guide to the preparation of a Bushfire Management Plan. AO2 Emergency Services and uses providing community support services are not located in a bushfire hazard	Not applicable The proposed development is not associated with emergency services or uses providing community support services.



Performance outcomes	Acceptable outcomes	Applicant response
during and immediately after a bushfire hazard event.	sub-category and have direct access to low hazard evacuation routes.	
PO3Development involving hazardous materials manufactured or stored in bulk is not located in bushfire hazard sub-category.Development design and separation from bushfire	AO3 The manufacture or storage of hazardous material in bulk does not occur within bushfire hazard sub- category.	Complies with PO3 Generator fuel to be stored on site in the Bushfire Hazard Potential Impact Buffer is not likely to be of a quantity that would be considered bulk storage.
PO4.1 Where reconfiguration is undertaken in an urban area or is for urban purposes or smaller scale rural residential purposes, a separation distance from hazardous vegetation is provided to achieve a radiant heat flux level of 29kW/m ² at the edge of the proposed lot(s). Note - "Urban purposes" and "urban area" are defined in the <i>Sustainable Planning Regulations 2009</i> . Reconfiguration will be taken to be for rural residential purposes where proposed lots are between 2000m ² and 2ha in area. "Smaller scale" rural residential purposes will be taken to be where the average proposed lot size is 6000m2 or less. Note - The radiant heat levels and separation distances are to be established in accordance with method 2 set out in AS3959- 2000	 AO4.1 No new lots are created within a bushfire hazard subcategory. or AO4.2 Lots are separated from hazardous vegetation by a distance that: (a) achieves radiant heat flux level of 29kW/m² at all boundaries; and (b) is contained wholly within the development site. Note - Where a separation distance is proposed to be achieved by utilising existing cleared developed areas external to the site, 	Not applicable The application does not involve reconfiguring a lot
PO4.2 Where reconfiguration is undertaken for other purposes, a building envelope of reasonable	 certainty must be established (through tenure or other means) that the land will remain cleared of hazardous vegetation. For staged developments, temporary separation distances, perimeter roads or fire trails may be absorbed as part of subsequent stages. 	



Performance outcomes	Acceptable outcomes	Applicant response
dimensions is provided on each lot which achieves radiant heat flux level of 29kW/m ² at any point.	Note - The achievement of a cleared separation distance may not be achievable where other provisions within the planning scheme require protection of certain ecological, slope, visual or character features or functions.	
PO5	AO5.1	Not applicable
Where reconfiguration is undertaken in an urban area or is for urban purposes, a constructed perimeter road with reticulated water supply is established between the lots and the hazardous vegetation and is readily accessible at all times for urban fire fighting vehicles. The access is available for both fire fighting and maintenance/defensive works.	 Lot boundaries are separated from hazardous vegetation by a public road which: (a) has a two lane sealed carriageway; (b) contains a reticulated water supply; (c) is connected to other public roads at both ends and at intervals of no more than 500m; (d) accommodates geometry and turning radii in accordance with Queensland Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines; (e) has a minimum of 4.8m vertical clearance above the road; (f) is designed to ensure hydrants and water access points are not located within parking bay allocations; and (g) incorporates roll-over kerbing. 	The application does not involve reconfiguring a lot
	AO5.2 Fire hydrants are designed and installed in accordance with AS2419.1 2005, unless otherwise specified by the relevant water entity.	Not applicable The application does not involve reconfiguring a lot



Performance outcomes	Acceptable outcomes	Applicant response
	Note - Applicants should have regard to the relevant standards set out in the reconfiguration of a lot code and works codes in this planning scheme.	
PO6	AO6	Not applicable
PO6AOWhere reconfiguration is undertaken for smaller scale rural residential purposes, either a constructed perimeter road or a formed, all weather fire trail is established between the lots and the hazardous vegetation and is readily accessible at all times for the type of fire fighting vehicles servicing the area.Lot 	 Lot boundaries are separated from hazardous vegetation by a public road or fire trail which has: (a) a reserve or easement width of at least 20m; (b) a minimum trafficable (cleared and formed) width of 4m capable of accommodating a 15 tonne vehicle and which is at least 6m clear of vegetation; (c) no cut or fill embankments or retaining walls adjacent to the 4m wide trafficable path; (d) a minimum of 4.8m vertical clearance; (e) turning areas for fire-fighting appliances in accordance with Queensland Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines; (f) a maximum gradient of 12.5%; 	The application does not involve reconfiguring a lot
	(g) a cross fall of no greater than 10 degrees:	
	 (h) drainage and erosion control devices in accordance with the standards prescribed in a planning scheme policy; 	
	 vehicular access at each end which is connected to the public road network at intervals of no more than 500m; 	
	(j) designated fire trail signage;	



Performance outcomes	Acceptable outcomes	Applicant response
	 (k) if used, has gates locked with a system authorised by Queensland Fire and Emergency Services; and (l) if a fire trail, has an access easement that is granted in favour of Council and Queensland Fire and Emergency Services. 	
P07	A07	Not applicable
Where reconfiguration is undertaken for other purposes, a formed, all weather fire trail is provided between the hazardous vegetation and either the lot boundary or building envelope, and is readily accessible at all times for the type of fire fighting vehicles servicing the area. However, a fire trail will not be required where it would not serve a practical fire management purpose.	 Lot boundaries are separated from hazardous vegetation by a public road or fire trail which has: (a) a reserve or easement width of at least 20m; (b) a minimum trafficable (cleared and formed) width of 4m capable of accommodating a 15 tonne vehicle and which is at least 6m clear of vegetation; (c) no cut or fill embankments or retaining walls adjacent to the 4m wide trafficable path; (d) a minimum of 4.8m vertical clearance; (e) turning areas for fire-fighting appliances in accordance with Queensland Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines; (f) a maximum gradient of 12.5%; (g) a cross fall of no greater than 10 degrees; (h) drainage and erosion control devices in accordance with the standards prescribed in a planning scheme policy; 	The application does not involve reconfiguring a lot



Performance outcomes	Acceptable outcomes	Applicant response
	 (i) vehicular access at each end which is connected to the public road network; 	
	(j) designated fire trail signage;	
	 (k) if used, has gates locked with a system authorised by Queensland Fire and Emergency Services; and 	
	 (I) if a fire trail, has an access easement that is granted in favour of Council and Queensland Fire and Emergency Services. 	
PO8	A08	Not applicable
The development design responds to the potential	The lot layout:	The application does not involve reconfiguring
threat of bushfire and establishes clear evacuation routes which demonstrate an acceptable or tolerable risk to people.	 (a) minimises the length of the development perimeter exposed to, or adjoining hazardous vegetation; 	a lot.
	 (b) avoids the creation of potential bottle-neck points in the movement network; 	
	 (c) establishes direct access to a safe assembly /evacuation area in the event of an approaching bushfire; and 	
	(d) ensures roads likely to be used in the event of a fire are designed to minimise traffic congestion.	
	Note - For example, developments should avoid finger-like or hour- glass subdivision patterns or substantive vegetated corridors between lots.	
	In order to demonstrate compliance with the performance outcome, a bushfire management plan prepared by a suitably qualified person may be required. The bushfire management plan should be developed in accordance with the Public Safety Business Agency (PSBA) guideline entitled "Undertaking a Bushfire Protection Plan.	


Performance outcomes	Acceptable outcomes	Applicant response
	Advice from the Queensland Fire and Emergency Services (QFES) should be sought as appropriate	
PO9 Critical infrastructure does not increase the potential bushfire hazard.	AO9 Critical or potentially hazardous infrastructure such as water supply, electricity, gas and telecommunications are placed underground.	Not applicable The application does not involve reconfiguring a lot
Development design and separation from bushfire	e hazard – material change of use	
PO10	AO10	Not Applicable
 Development is located and designed to ensure proposed buildings or building envelopes achieve a radiant heat flux level at any point on the building or envelope respectively, of: (a) 10kW/m² where involving a vulnerable use; or (b) 29kW/m² otherwise. The radiant heat flux level is achieved by separation unless this is not practically achievable. Note - The radiant heat levels and separation distances are to be established in accordance with method 2 set out in AS3959-2009. 	 Buildings or building envelopes are separated from hazardous vegetation by a distance that: (a) achieves a radiant heat flux level of at any point on the building or envelope respectively, of 10kW/m² for a vulnerable use or 29kW/m² otherwise; and (b) is contained wholly within the development site. Note - Where a separation distance is proposed to be achieved by utilising existing cleared developed areas external to the site, certainty must be established (through tenure or other means) that the land will remain cleared of hazardous vegetation. For staged developments, temporary separation distances, perimeter roads or fire trails may be absorbed as part of subsequent stages. Note - The achievement of a cleared separation distance may not be achievable where other provisions within the planning scheme require protection of certain ecological, slope, visual or character features or functions. 	No building are proposed.



Performance outcomes	Acceptable outcomes	Applicant response
PO11	A011	Not Applicable
A formed, all weather fire trail is provided between the hazardous vegetation and the site boundary or	Development sites are separated from hazardous vegetation by a public road or fire trail which has:	No building are proposed.
building envelope, and is readily accessible at all times for the type of fire fighting vehicles servicing	(a) a reserve or easement width of at least 20m;	
the area.	(b) a minimum trafficable (cleared and formed)	
However, a fire trail will not be required where it would not serve a practical fire management purpose.	tonne vehicle and which is at least 6m clear of vegetation;	
Note - Fire trails are unlikely to be required where a development site involves less than 2.5ha	(c) no cut or fill embankments or retaining walls adjacent to the 4m wide trafficable path;	
	(d) a minimum of 4.8m vertical clearance;	
	 (e) turning areas for fire-fighting appliances in accordance with Queensland Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines; 	
	(f) a maximum gradient of 12.5%;	
	(g) a cross fall of no greater than 10 degrees;	
	 (h) drainage and erosion control devices in accordance with the standards prescribed in a planning scheme policy; 	
	 (i) vehicular access at each end which is connected to the public road network which is connected to the public road network at intervals of no more than 500m; 	
	(j) designated fire trail signage;	



Performance outcomes	Acceptable outcomes	Applicant response
	 (k) if used, has gates locked with a system authorised by Queensland Fire and Emergency Services; and 	
	 (I) if a fire trail, has an access easement that is granted in favour of Council and Queensland Fire and Emergency Services. 	
All development		
PO12	A012	Complies with PO12
All premises are provided with vehicular access that	Private driveways:	Access will be suitable for evacuation and/or access by fire fighting appliances.
enables safe evacuation for occupants and easy access by fire fighting appliances.	 (a) do not exceed a length of 60m from the street to the building; 	
	(b) do not exceed a gradient of 12.5%;	
	(c) have a minimum width of 3.5m;	
	(d) have a minimum of 4.8m vertical clearance;	
	 (e) accommodate turning areas for fire-fighting appliances in accordance with Queensland Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines; and 	
	(f) serve no more than 3 dwellings or buildings.	
PO13	AO13	Not applicable
Development outside reticulated water supply areas includes a dedicated static supply that is available solely for fire fighting purposes and can be accessed by fire fighting appliances.	A water tank is provided within 10m of each building (other than a class 10 building) which:	No building are proposed.
	 (a) is either below ground level or of non-flammable construction; 	



Performance outcomes	Acceptable outcomes	Applicant response
	(b) has a take off connection at a level that allows the following dedicated, static water supply to be left available for access by fire fighters:	
	(i) 10,000l for residential buildings	
	Note – A minimum of 7,500l is required in a tank and the extra 2,500l may be in the form of accessible swimming pools or dams.	
	(ii) 45,000l for industrial buildings; and	
	(iii) 20,000l for other buildings;	
	 (c) includes shielding of tanks and pumps in accordance with the relevant standards; 	
	 (d) includes a hardstand area allowing medium rigid vehicle (15 tonne fire appliance) access within 6m of the tank; 	
	 (e) is provided with fire brigade tank fittings – 50mm ball valve and male camlock coupling and, if underground, an access hole of 200mm (minimum) to accommodate suction lines; and 	
	 (f) is clearly identified by directional signage provided at the street frontage. 	
PO14	A014	Not applicable
Landscaping does not increase the potential bushfire risk.	Landscaping uses species that are less likely to exacerbate a bushfire event, and does not increase fuel loads within separation areas.	No landscaping is proposed.
PO15	AO15 Bushfire risk mitigation treatments do not have a significant impact on the natural environment or	Not applicable No specific measure are required to mitigate bushfire hazard.



Performance outcomes	Acceptable outcomes	Applicant response
The risk of bushfire and the need to mitigate that risk is balanced against other factors (such as but not limited to, biodiversity or scenic amenity).	landscape character of the locality where this has value.	

Note - 'Vulnerable activities' are those involving:

- (1) the accommodation or congregation of vulnerable sectors of the community such as child care centres, community care centre, educational establishments, detention facilities, hospitals, rooming accommodation, retirement facilities or residential care facilities; or
- (2) the provision of essential services including community uses, emergency services, utility installation, telecommunications facility, substations and major electricity infrastructure.



8.2.4 Flood and storm tide hazard overlay code

8.2.4.1 Application

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

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

8.2.4.2 Purpose

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



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

Criteria for assessment

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

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable develop	oment	
PO1 Development is located and designed to:	AO1.1 Development is sited on parts of the land that is not	Complies with PO1 The water intake infrastructure has been
 a) ensure the safety of all persons; b) minimise damage to the development a contents of buildings; 	within the Flood and Storm tide hazards overlay maps contained in Schedule 2; or For dwelling houses.	designed to accommodate known flood levels. Refer to the Detailed Design Report prepared by GHD, dated January 2020 and provided for reference in Appendix F for detail.
 c) provide suitable amenity; d) minimise disruption to residents, recover time, and rebuilding or restoration costs after inundation events. 	AO1.2 Development within the Flood and Storm Tide hazards overlay maps (excluding the Flood plain assessment sub-category) is designed to provide	
assessment sub-category, a flood study by a suitably quali- professional is required to identify compliance with the inte- the acceptable outcome.	ied immunity to the Defined Inundation Event as outlined within Table 8.2.4.3.b plus a freeboard of 300mm.	



Performance outcomes	Acceptable outcomes	Applicant response
	 AO1.3 New buildings are: (a) not located within the overlay area; (b) located on the highest part of the site to minimise entrance of flood waters; (c) provided with clear and direct pedestrian and vehicle evacuation routes off the site. AO1.4 In non urban areas, buildings and infrastructure are set back 50 metres from natural riparian corridors to maintain their natural function of reducing velocity of floodwaters. 	
For assessable development		
PO2 The development is compatible with the level of risk associated with the natural hazard.	 AO2 The following uses are not located in land inundated by the Defined Flood Event (DFE) / Storm tide: (a) Retirement facility; (b) Community care facility; (c) Child care centre. 	Not Applicable
PO3 Development siting and layout responds to flooding	For Material change of use AO3.1	Complies with PO3 The water intake infrastructure has been designed to accommodate known flood



Performance outcomes	Acceptable outcomes	Applicant response
potential and maintains personal safety	 New buildings are: (a) not located within the overlay area; (b) located on the highest part of the site to minimise entrance of flood waters; (c) provided with clear and direct pedestrian and vehicle evacuation routes off the site. 	levels. Refer to the Detailed Design Report prepared by GHD, dated January 2020 and provided for reference in Appendix F for detail.
	or AO3.2 The development incorporates an area on site that is at least 300mm above the highest known flood inundation level with sufficient space to accommodate the likely population of the development safely for a relatively short time until flash flooding subsides or people can be evacuated. or AO3.3 Where involving an extension to an existing dwelling house that is situated below DFE /Storm tide, the maximum size of the extension does not exceed 70m ² gross floor area. Note – If part of the site is outside the Hazard Overlay area, this is the preferred location of all buildings.	
	For Reconfiguring a lot AO3.4 Additional lots: (a) are not located in the hazard overlay area;	Not Applicable



Performance outcomes	Acceptable outcomes	Applicant response
	 or (b) are demonstrated to be above the flood level identified for the site. Note - If part of the site is outside the Hazard Overlay area, this is the preferred location for all lots (excluding park or other open space and recreation lots). Note – Buildings subsequently developed on the lots will need to comply with the relevant building assessment provisions under the <i>Building Act 1975</i>. 	
	 AO3.5 Road and/or pathway layout ensures residents are not physically isolated from adjacent flood free urban areas and provides a safe and clear evacuation route path: (a) by locating entry points into the reconfiguration above the flood level and avoiding culs-de-sac or other non-permeable layouts; and (b) by direct and simple routes to main carriageways. 	Not Applicable
	AO3.6 Signage is provided on site (regardless of whether the land is in public or private ownership) indicating the position and path of all safe evacuation routes off the site and if the site contains, or is within 100m of a floodable waterway, hazard warning signage and depth indicators are also provided at key hazard points, such as at floodway crossings or entrances to low-lying reserves.	Not Applicable



Performance outcomes	Acceptable outcomes	Applicant response
	or AO3.7 There is no intensification of residential uses within the flood affected areas on land situated below the DFE/Storm tide	
	 For Material change of use (Residential uses) AO3.8 The design and layout of buildings used for residential purposes minimise risk from flooding by providing: (a) parking and other low intensive, non-habitable uses at ground level; Note - The high-set 'Queenslander' style house is a resilient low-density housing solution in floodplain areas. Higher density residential development should ensure only non-habitable rooms (e.g. garages, laundries) are located on the ground floor. 	Not Applicable
PO4 Development is resilient to flood events by ensuring design and built form account for the potential risks of flooding.	For Material change of use (Non-residential uses) AO4.2 Non residential buildings and structures allow for the flow through of flood waters on the ground floor. Note - Businesses should ensure that they have the necessary contingency plans in place to account for the potential need to relocate property prior to a flood event (e.g. allow enough time to transfer stock to the upstairs level of a building or off site). Note - The relevant building assessment provisions under the <i>Building Act 1975</i> apply to all building work within the Hazard Area and need to take into account the flood potential within the area.	Complies with PO4 The water intake infrastructure has been designed to accommodate known flood levels. Refer to the Detailed Design Report prepared by GHD, dated January 2020 and provided for reference in Appendix F for detail.



Performance outcomes	Acceptable outcomes	Applicant response
	 AO4.3 Materials are stored on-site: (a) are those that are readily able to be moved in a flood event; (b) where capable of creating a safety hazard by being shifted by flood waters, are contained in order to minimise movement in times of flood. Notes - (a) Businesses should ensure that they have the necessary contingency plans in place to account for the potential need to relocate property prior to a flood event (e.g. allow enough time to transfer stock to the upstairs level of a building or off site). (b) Queensland Government Fact Sheet 'Repairing your House after a Flood' provides information about water resilient products and building techniques. 	
PO5 Development directly, indirectly and cumulatively avoids any increase in water flow velocity or flood level and does not increase the potential flood damage either on site or on other properties. Note – Berms and mounds are considered to be an undesirable built form outcome and are not supported.	 For Operational works AO5.1 Works in urban areas associated with the proposed development do not involve: (a) any physical alteration to a watercourse or floodway including vegetation clearing; or (b) a net increase in filling (including berms and mounds). 	Not Applicable
	AO5.2 Works (including buildings and earthworks) in non	Not Applicable



Performance outcomes	Acceptable outcomes	Applicant response
	urban areas either:	
	 (a) do not involve a net increase in filling greater than 50m³; or 	
	 (b) do not result in any reductions of on-site flood storage capacity and contain within the subject site any changes to depth/duration/velocity of flood waters; 	
	or	
	 (c) do not change flood characteristics outside the subject site in ways that result in: 	
	(i) loss of flood storage;	
	(ii) loss of/changes to flow paths;	
	(iii) acceleration or retardation of flows or any reduction in flood warning times elsewhere on the flood plain.	
	For Material change of use	Not Applicable
	A05.3	
	Where development is located in an area affected by DFE/Storm tide, a hydraulic and hydrology report, prepared by a suitably qualified professional, demonstrates that the development	
	maintains the flood storage capacity on the subject site; and	
	 does not increase the volume, velocity, concentration of flow path alignment of stormwater flow across sites upstream, downstream or in the general vicinity of the 	



Performance outcomes	Acceptable outcomes	Applicant response
	 subject site; and (b) does not increase ponding on sites upstream, downstream or in the general vicinity of the subject site. 	
	For Material change of use and Reconfiguring a lot AO5.4 In non urban areas, buildings and infrastructure are set back 50 metres from natural riparian corridors to maintain their natural function of reducing velocity of floodwaters. Note – Fences and irrigation infrastructure (e.g. irrigation tape) in rural areas should be managed to minimise adverse the impacts that they may have on downstream properties in the event of a flood.	Complies with PO5 The water intake infrastructure has been designed to accommodate known flood levels. Refer to the Detailed Design Report prepared by GHD, dated January 2020 and provided for reference in Appendix F for detail.
PO6 Development avoids the release of hazardous materials into floodwaters.	For Material change of use AO6.1 Materials manufactured or stored on site are not hazardous or noxious, or comprise materials that may cause a detrimental effect on the environment if discharged in a flood event; or AO6.2 If a DFE level is adopted, structures used for the manufacture or storage of hazardous materials are: (a) located above the DFE level; or	Complies with PO6 The water intake infrastructure has been designed to accommodate known flood levels. Refer to the Detailed Design Report prepared by GHD, dated January 2020 and provided for reference in Appendix F for detail.



Performance outcomes	Acceptable outcomes	Applicant response	
	(b) designed to prevent the intrusion of floodwaters.		
	AO6.3	Not Applicable	
	Infrastructure is designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation by the DFE.		
	AO6.4	Complies with PO6	
	If a flood level is not adopted, hazardous materials and their manufacturing equipment are located on the highest part of the site to enhance flood immunity and designed to prevent the intrusion of floodwaters.	The water intake infrastructure has been designed to accommodate known flood levels. Refer to the Detailed Design Report prepared by GHD, dated January 2020 and	
	Note – Refer to <i>Work Health and Safety Act 2011</i> and associated Regulation and Guidelines, the <i>Environmental Protection Act 1994</i> and the relevant building assessment provisions under the <i>Building Act 1975</i> for requirements related to the manufacture and storage of hazardous materials.	provided for reference in Appendix F for detail.	
P07	A07	Complies with AO7	
The development supports, and does not unduly	Development does not:		
capacity and capabilities.	 (a) increase the number of people calculated to be at risk of flooding; 		
	 (b) increase the number of people likely to need evacuation; 		
	(c) shorten flood warning times; and		
	 (d) impact on the ability of traffic to use evacuation routes, or unreasonably increase traffic volumes on evacuation routes. 		



Performance outcomes	Acceptable outcomes	Applicant response
P08	AO8.1	Complies with PO8
Development involving community infrastructure:	The following uses are not located on land inundated	The water intake infrastructure has been
 (a) remains functional to serve community need during and immediately after a flood event; 	(a) community residence; and	levels. Refer to the Detailed Design Report prepared by GHD, dated January 2020 and
is designed, sited and operated to avoid adverse	(b) emergency services; and	provided for reference in Appendix F for
to impacts of flooding on infrastructure, facilities	(c) residential care facility; and	detall.
or access and egress routes;	(d) utility installations involving water and sewerage	
retains essential site access during a flood event;	(e) storage of valuable records or items of historic	
is able to remain functional even when other infrastructure or services may be compromised in a flood event.	or cultural significance (e.g. archives, museums, galleries, libraries).	
	or	
	A08.2	
	The following uses are not located on land inundated during a 1% AEP flood event:	
	 (a) community and cultural facilities, including facilities where an education and care service under the Education and care Services National law (Queensland) is operated or child care service under the <i>Child Care Act 2002</i> is conducted, 	
	(b) community centres;	
	(c) meeting halls;	
	(d) galleries;	
	(e) libraries.	
	The following uses are not located on land inundated	



Performance outcomes	Acceptable outcomes	Applicant response
	during a 0.5% AEP flood event.	
	(a) emergency shelters;	
	(b) police facilities;	
	(c) sub stations;	
	(d) water treatment plant	
	The following uses are not located on land inundated during a 0.2% AEP flood event:	
	(a) correctional facilities;	
	(b) emergency services;	
	(c) power stations;	
	(d) major switch yards.	
	and/or	
	AO8.3	
	The following uses have direct access to low hazard evacuation routes as defined in	
	Table 8.2.4.3.c :	
	(a) community residence; and	
	(b) emergency services; and	
	(c) hospitals; and	
	(d) residential care facility; and	
	(e) sub stations; and	
	(f) utility installations involving water and sewerage treatment plants.	



Performance outcomes	Acceptable outcomes	Applicant response
	 AO8.4 Any components of infrastructure that are likely to fail to function or may result in contamination when inundated by flood, such as electrical switch gear and motors, telecommunications connections, or water supply pipeline air valves are: (a) located above DFE/Storm tide or the highest known flood level for the site; (b) designed and constructed to exclude floodwater intrusion / infiltration. 	Complies with AO8.5
	Infrastructure is designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation by a flood.	The water intake infrastructure has been designed to accommodate known flood levels. Refer to the Detailed Design Report prepared by GHD, dated January 2020 and provided for reference in Appendix F for detail.



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

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



Table 8.2.4.3.c - Degree of flood

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

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

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



8.2.6 Landscape values overlay code

8.2.6.1 Application

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

8.2.6.2 Purpose

- (1) The purpose of the Landscape values overlay code is to:
 - (a) implement the policy direction of the Strategic Framework, in particular:
 - (i). Theme 2: Environment and landscape values Element 3.5.5 Scenic amenity;
 - (ii). Theme 3: Natural resource management Element 3.6.4 Resource extraction.
 - (b) enable an assessment of whether development is suitable on land within the Landscape values overlay sub-categories.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) areas of High landscape value are protected, retained and enhanced;
 - (b) areas of Medium landscape value are managed to integrate and limit the visual impact of development;
 - (c) the landscape values of the Coastal scenery area are managed to integrate and limit thevisual impact of development;
 - (d) development maintains and enhances the significant landscape elements and features which contribute to the distinctive character and identity of Douglas Shire;



- (e) ridges and vegetated hillslopes are not developed in a way that adversely impacts onlandscape values;
- (f) watercourses, forested mountains and coastal landscape character types remain predominantly natural in appearance in order to maintain the region's diverse characterand distinctive tropical image, in particular:
 - (i). areas in the coastal landscape character type which are predominantly natural and undeveloped in appearance retain this natural landscape character;
 - (ii). watercourses which are predominantly natural and undeveloped in appearance retain this natural landscape character;
 - (iii). the rural character of cane fields and lowlands landscape character types which are predominantly rural or natural in appearance are maintained;
 - (iv). landscape values are maintained when viewed from lookouts, scenic routes, gateways and public places.
- (g) views towards High landscape value areas and the Coral Sea are not diminished;
- (h) development is consistent with the prevailing landscape character of its setting, and isneither visually dominant nor visually intrusive;
- (i) advertising devices do not detract from the landscape values, character types or amenity of an area.

Criteria for assessment

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

Performance outcomes	Acceptable outcomes	Applicant response		
For assessable development				
PO1 Development within High landscape value areas identified on the Landscape values overlay maps contained in Schedule 2:	AO1.1 Buildings and structures are not more than 8.5 metres and two storeys in height. Note - Height is inclusive of roof height.	Complies with AO1.1		
(a) avoids detimiental impacts on the landscape values of forested skylines, visible hillslopes, ridgelines, the coastal foreshore or the shoreline of other water bodies through the	AO1.2 Buildings and structures are setback not less than 50 metres from ridgelines or peaks.	Not Applicable		



Ре	rformance outcomes	Acceptable outcomes	Applicant response
(b)	loss of vegetation; is effectively screened from view from a road, lookout or other public place by an existing natural landform or native vegetation, or will	AO1.3 Development is screened from view from roads or other public places by an existing natural landform or an existing native vegetation buffer.	Complies with AO1.3
(c)	within 3 years of construction; retains existing vegetation and incorporates new landscaping to enhance existing vegetation and visually soften built form elements;	AO1.4 Where development on land steeper than 1 in 6 (16.6%) cannot be avoided:	Not Applicable
(d)	incorporates development of a scale, design, height, position on site, construction materials and external finishes that are compatible with the landscape values of the locality;	(b) buildings are split level or suspended floor construction, or a combination of the two;	
(e)	avoids detrimental impacts on landscape values and excessive changes to the natural landform as a result of the location, position on site, scale, design, extent and alignment of earthworks, roads, driveways, retaining walls	 (c) lightweight materials are used to areas with suspended floors. Note - Examples of suitable lightweight materials include timber or fibre cement boards or sheeting for walls and factory treated metal sheeting for walls and roofs. 	
	and other on-ground or in-ground infrastructure;	AO1.5	Complies with PO1
(f)	avoids detrimental impacts on landscape values and views as a result of the location, position on site, scale, design and alignment of telecommunications facilities, electricity towers, poles and lines and other tall infrastructure;	The external features, walls and roofs of buildings and structures have a subdued and non-reflective palette. Note - Examples of suitable colours include shades of green, olive green, blue green, grey green, green blue, indigo, brown, blue grey, and green yellow.	Above ground structures will be screened from view by existing vegetation.
(g) Not	extractive industry operations are avoided. e - A visual impact assessment is undertaken in	AO1.6	Complies with PO1
acc	ordance with Planning scheme policy SC6.6 – Landscape	No clearing of native vegetation occurs on land	Above ground structures will be screened from



Performance outcomes	Acceptable outcomes	Applicant response			
values in order to satisfy performance outcomes.	with a slope greater than 1 in 6 (16.5%).	view by existing vegetation.			
	AO1.7 Where for accommodation activities or reconfiguration of a lot in a High landscape value area, development demonstrates that the height, design, scale, positioning on-site, proposed construction materials and external finishes are compatible with the landscape values. Note - A visual impact assessment undertaken in accordance with Planning scheme policy SC6.6 – Landscape values may be required.	Not Applicable			
	AO1.8 Advertising devices do not occur.	Not Applicable			
Development within the Medium landscape valu	Development within the Medium landscape value area				
PO2	A02.1	Complies with AO2.1			
Development within Medium landscape value areas identified on the Landscape values overlay maps contained in Schedule 2:	Buildings and structures are not more than 8.5 metres and two storeys in height. Note - Height is inclusive of the roof height.				
 (a) avoids detrimental impacts on the landscape values of forested skylines, visible hillslopes, ridgelines, the coastal foreshore or the shoreline of other water bodies through the loss of vegetation; (b) is offectively accouncil from view from a read 	AO2.2 Development is screened from view from roads or other public places by an existing natural landform or an existing native vegetation buffer.	Complies with AO2.2			
lookout or other public place by an existing	AO2.3	Complies with AO1.3			
		Douglas Shire Planning Scheme 2018 Version 1.0			

Code Compliance Table – 8.2.6 Landscape values overlay code Page 4 of 8



Performance outcomes		Acceptable outcomes	Applicant response
	natural landform or native vegetation, or will be effectively screened by native vegetation	Where development on land steeper than 1 in 6 (16.6%) cannot be avoided:	
(c)	retains existing vegetation and incorporates	(a) development follows the natural; contours of the site;	
	vegetation and visually soften built form elements;	 (b) buildings are split level or suspended floor construction, or a combination of the two; 	
(d)	incorporates development of a scale, design, height, position on site, construction materials	(c) lightweight materials are used to areas with suspended floors.	
	and external finishes that are compatible with the landscape values of the locality;	Note - Examples of suitable lightweight materials include timber or fibre cement boards or sheeting for walls and factorytreated metal sheeting for walls and roofs.	
(e)	avoids detrimental impacts on landscape values and excessive changes to the natural landform as a result of the location, position on site, scale, design and alignment of earthworks, roads, driveways, retaining walls and other on-ground or in-ground	A02.4	Complies with PO2
		The external features, walls and roofs of buildings and structures have a subdued and non-reflective palette.	Above ground structures will be screened from view by existing vegetation.
(0)	infrastructure;	Note - Examples of suitable colours include shades of green, olive green, blue green, grey green, green blue, indigo, brown,	
(†)	avoids detrimental impacts on landscape values and views as a result of the location, position on site, scale, design and alignment of telecommunications facilities, electricity	blue grey, and green yellow	
		AO2.5	Complies with PO2
	towers, poles and lines and other tall infrastructure;	No clearing of native vegetation occurs on land with a slope greater than 1 in 6 (16.6%).	Above ground structures will be screened from view by existing vegetation.
(g)	extractive industry operations are avoided, or where they cannot be avoided, are screened	AO2.6	Not Applicable.
	from view.	Advertising devices do not occur.	
Note acce valu	 A VISUAI Impact assessment is undertaken in ordance with Planning scheme policy SC6.6 – Landscape es in order to satisfy performance outcomes. 		



Performance outcomes	Acceptable outcomes	Applicant response		
Development within a Scenic route buffer / view corridor area				
PO3	AO3.1	Not Applicable		
Development within a Scenic route buffer / view corridor area as identified on the Landscape values overlay maps contained in Schedule 2:	Where within a Scenic route buffer / view corridor area, the height of buildings and structures is not more than identified within the acceptable			
(a) retains visual access to views of the	outcomes of the applicable zone code.			
water bodies;	AO3.2	Not Applicable		
(b) retains existing vegetation and incorporates landscaping to visually screen and soften built form elements whilst not impeding distant	No clearing of native vegetation is undertaken within a Scenic route buffer area.			
views or view corridors;	AO3.3	Not Applicable		
(c) incorporates building materials and external finishes that are compatible with the visual amenity and the landscape character;	Where within a Scenic route buffer / view corridor area development is set back and screened from view from a scenic route by existing native			
(d) minimises visual impacts on the setting and views in terms of:	vegetation with a width of at least 10 metres and landscaped in accordance with the requirements			
(i). the scale, height and setback of buildings;	of the landscaping code.			
(ii). the extent of earthworks and impacts	AO3.4	Not Applicable		
on the landform including the location and configuration of access roads and driveways;	Development does not result in the replacement of, or creation of new, additional, or enlarged advertising devices.			
(iii). the scale, extent and visual prominence of advertising devices.				
Note - A visual impact assessment is undertaken in accordance with Planning scheme policy SC6.6 – Landscape values in order to satisfy performance outcomes.				



Performance outcomes	Acceptable outcomes	Applicant response
Development within the Coastal scenery area		
PO4 The landscape values of the Coastal scenery zone as identified on the Landscape values overlay maps contained in Schedule 2 are managed to integrated and limit the visual impact of development. Note - A visual impact assessment is undertaken in accordance with Planning scheme policy SC6.6 – Landscape values in order to satisfy performance outcomes.	 AO4.1 The dominance of the natural character of the coast is maintained or enhanced when viewed from the foreshore. AO4.2 Where located adjacent to the foreshore buildings and structures are setback: (a) Where no adjoining development, a minimum of 50 metres from the coastal high water mark and the setback area is landscaped with a native vegetation buffer that has a minimum width of 25 metres; or (b) Where there is adjoining development, setbacks will be consistent with that of adjoining buildings and structures, but not less than 10 metres from the coastal high water mark. The setback area is landscaped in accordance with the requirements of the Landscaping code. 	Not Applicable Not Applicable
	AO4.3 Where separated from the foreshore by land contained within public ownership (e.g. unallocated State land, esplanade or other public open space), buildings and structures area setback:	Not Applicable



Performance outcomes	Acceptable outcomes	Applicant response
	 (a) where no adjoining development, a minimum of 6 metres from the coastward property boundary. The setback area is landscaped in accordance with the requirements of the Landscaping code; or (b) where there is adjoining development, 	
	setbacks will be consistent with that of adjoining buildings and structures. The setback area is landscaped in accordance with the requirements of the Landscaping code.	
PO5	A05	Not Applicable
Development is to maximise opportunities to maintain and/or enhance natural landscape values through the maintenance and restoration of vegetated buffers between development and coastal waters, where practical.	No clearing of native vegetation is undertaken within a Coastal scenery area zone, except for exempt vegetation damage undertaken in accordance with the Vegetation management code	
Note – A visual impact assessment is undertaken in accordance with Planning scheme policy SC6.6 – Landscape values in satisfaction of a performance outcome.		



8.2.7 Natural areas overlay code

8.2.7.1 Application

- (1) This code applies to assessing a material change of use, reconfiguring a lot, operational work or building work within the Natural areas overlay, if:
 - (a) self-assessable or assessable development where the code is identified as being applicable in the Assessment criteria for the Overlay Codes contained in the Levels of Assessment Tables in section 5.6;
 - (b) impact assessable development.
- (2) Land in the Natural areas overlay is identified on the Natural areas overlay map in Schedule 2 and includes the following sub-categories:
 - (a) MSES Protected area;
 - (b) MSES Marine park;
 - (c) MSES Wildlife habitat;
 - (d) MSES Regulated vegetation;
 - (e) MSES Regulated vegetation (intersecting a Watercourse);
 - (f) MSES High ecological significance wetlands;
 - (g) MSES High ecological value waters (wetlands);
 - (h) MSES High ecological value waters (watercourse);
 - (i) MSES Legally secured off set area.
- Note MSES = Matters of State Environmental Significance.
- (3) When using this code, reference should be made to Part 5.

8.2.7.2 Purpose

- (1) The purpose of the Natural areas overlay code is to:
 - (a) implement the policy direction in the Strategic Framework, in particular:
 - (i) Theme 2: Environment and landscape values, Element 3.5.3 Biodiversity, Element 3.5.4 Coastal zones;
 - (ii) Theme 3: Natural resource management Element 3.6.2 Land and catchment management, Element 3.6.3 Primary production, forestry and fisheries.
 - (b) enable an assessment of whether development is suitable on land within the Biodiversity area overlay sub-categories.



- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) development is avoided within:
 - (i) areas containing matters of state environmental significance (MSES);
 - (ii) other natural areas;
 - (iii) wetlands and wetland buffers;
 - (iv) waterways and waterway corridors.
 - (b) where development cannot be avoided, development:
 - (i) protects and enhances areas containing matters of state environmental significance;
 - (ii) provides appropriate buffers;
 - (iii) protects the known populations and supporting habitat of rare and threatened flora and fauna species, as listed in the relevant State and Commonwealth legislation;
 - (iv) ensures that adverse direct or indirect impacts on areas of environmental significance are minimised through design, siting, operation, management and mitigation measures;
 - (v) does not cause adverse impacts on the integrity and quality of water in upstream or downstream catchments, including the Great Barrier Reef World Heritage Area;
 - (vi) protects and maintains ecological and hydrological functions of wetlands, waterways and waterway corridors;
 - (vii) enhances connectivity across barriers for aquatic species and habitats;
 - (viii) rehabilitates degraded areas to provide improved habitat condition, connectivity, function and extent;
 - (ix) protects areas of environmental significance from weeds, pests and invasive species.
 - (c) strategic rehabilitation is directed to areas on or off site, where it is possible to achieve expanded habitats and increased connectivity.

Criteria for assessment

Table 8.2.7.3.a - Natural areas overlay code – assessable development

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



Performance outcomes	Acceptable outcomes	Applicant response	
Protection of matters of environmental significance			
PO1 Development protects matters of environmental significance.	 AO1.1 Development avoids significant impact on the relevant environmental values. or AO1.2 A report is prepared by an appropriately qualified person demonstrating to the satisfaction of the assessment manager, that the development site does not contain any matters of state and local environmental significance. or AO1.3 Development is located, designed and operated to mitigate significant impacts on environmental values. For example, a report certified by an appropriately qualified person demonstrating to the satisfaction of the assessment manager, how the proposed development mitigates impacts, including on water quality, hydrology and biological processes. 	Complies with PO1 The water intake infrastructure is essential to allow Council to provide an uninterrupted water supply and the proposed works will be undertaken in a manner that minimises the disturbance of MSES – Regulated Vegetation.	
Management of impacts on matters of environmental significance			
PO2	AO2	Complies with PO2	
Development is located, designed and constructed to avoid significant impacts on matters of	The design and layout of development minimises adverse impacts on ecologically important areas by:	The water intake infrastructure is essential to allow Council to provide an uninterrupted water supply and the proposed works will be	
		Douglas Shire Planning Scheme 2018 Version 1.0	

Code Compliance Table – 8.2.7 Natural areas overlay code Page 3 of 8



Performance outcomes	Acceptable outcomes	Applicant response
environmental significance.	 (a) focusing development in cleared areas to protect existing habitat; 	undertaken in a manner that minimises the disturbance of MSES – Regulated
	 (b) utilising design to consolidate density and preserve existing habitat and native vegetation; 	Vegetation.
	 (c) aligning new property boundaries to maintain ecologically important areas; 	
	 (d) ensuring that alterations to natural landforms, hydrology and drainage patterns on the development site do not negatively affect ecologically important areas; 	
	(e) ensuring that significant fauna habitats are protected in their environmental context; and	
	(f) incorporating measures that allow for the safe movement of fauna through the site.	
PO3	A03.1	Complies with PO3
An adequate buffer to areas of state environmental significance is provided and maintained.	A buffer for an area of state environmental significance (Wetland protection area) has a minimum width of:	The water intake infrastructure is essential to allow Council to provide an uninterrupted
	 (a) 100 metres where the area is located outside Urban areas; or 	water supply and the proposed works will be undertaken in a manner that minimises the disturbance of MSES – Regulated Vegetation
	(b) 50 metres where the area is located within a Urban areas.	and disturbed areas will be rehabilitated, as far as possible while allowing for operational
	or	requirements, to return the natural values of disturbed areas.
	A03.2	
	A buffer for an area of state environmental significance is applied and maintained, the width of which is supported by an evaluation of environmental values, including the function and threats to matters of	



Performance outcomes	Acceptable outcomes	Applicant response
	environmental significance.	
PO4 Wetland and wetland buffer areas are maintained, protected and restored.	AO4.1 Native vegetation within wetlands and wetland buffer areas is retained.	Not applicable No wetlands have been identified in the area surrounding the site.
Note – Wetland buffer areas are identified in AO3.1.	AO4.2 Degraded sections of wetlands and wetland buffer areas are revegetated with endemic native plants in patterns and densities which emulate the relevant regional ecosystem.	Not applicable No wetlands have been identified in the area surrounding the site.
PO5 Development avoids the introduction of non-native pest species (plant or animal), that pose a risk to	AO5.1 Development avoids the introduction of non-native pest species.	Complies with AO5.1 The proposed development would not introduce pest species.
coological integrity.	AO5.2 The threat of existing pest species is controlled by adopting pest management practices for long-term ecological integrity.	Not applicable No pest species have been identified on the site.
Ecological connectivity		
PO6 Development protects and enhances ecological connectivity and/or habitat extent.	AO6.1 Development retains native vegetation in areas large enough to maintain ecological values, functions and processes.	Complies with PO6 The water intake infrastructure is essential to allow Council to provide an uninterrupted water supply and the proposed works will be undertaken in a manner that minimises the



Performance outcomes	Acceptable outcomes	Applicant response
	and	disturbance of MSES – Regulated Vegetation and disturbed areas will be rehabilitated, as far as possible while allowing for operational requirements, to return the natural values of disturbed areas.
	AO6.2	Complies with AO6.2
	Development within an ecological corridor rehabilitates native vegetation. and	As above.
	AQ6.3	Not applicable
	Development within a conservation corridor mitigates adverse impacts on native fauna, feeding, nesting, breeding and roosting sites and native fauna movements.	The site is not located within a conservation corridor.
PO7 Development minimises disturbance to matters of state environmental significance (including existing ecological corridors).	A07.1 Development avoids shading of vegetation by setting back buildings by a distance equivalent to the height of the native vegetation. and	Complies with PO7 The water intake infrastructure is essential to allow Council to provide an uninterrupted water supply and the proposed works will be undertaken in a manner that minimises the disturbance of MSES – Regulated Vegetation and disturbed areas will be rehabilitated, as far as possible while allowing for operational requirements, to return the natural values of disturbed areas.
	A07.2	Complies with PO7



Performance outcomes		Acceptable outcomes	Applicant response
		Development does not encroach within 10 metres of existing riparian vegetation and watercourses.	The water intake infrastructure is essential to allow Council to provide an uninterrupted water supply and the proposed works will be undertaken in a manner that minimises the disturbance of MSES – Regulated Vegetation and disturbed areas will be rehabilitated, as far as possible while allowing for operational requirements, to return the natural values of disturbed areas.
Wat	erways in an urban area		
PO		AO8.1	Not Applicable.
Dev and	elopment is set back from waterways to protect maintain:	Where a waterway is contained within an easement or a reserve required for that purpose, development does	
(a)	water quality;	not occur within the easement or reserve;	
(b)	hydrological functions;	or	
(c)	ecological processes;	AO8.2	
(d)	biodiversity values;	Development does not occur on the part of the site affected by the waterway corridor	
(e)	riparian and in-stream habitat values and connectivity;	Note – Waterway corridors are identified within Table 8.2.7.3.b.	
(f)	in-stream migration		
Waterways in a non-urban area			
POS		AO9	Complies with PO9
Development is set back from waterways to protect		Development does not occur on that part of the site	The water intake infrastructure is essential to allow Council to provide an uninterrupted
		Ca	Douglas Shire Planning Scheme 2018 Version 1.0 Part 8: Overlays ode Compliance Table – 8.2.7 Natural areas overlay code Page 7 of 8



Perfo	ormance outcomes	Acceptable outcomes	Applicant response
and r	naintain:	affected by a waterway corridor.	water supply and the proposed works will be
(a)	water quality;		disturbance of the waterway and disturbed
(b)	hydrological functions;	Note – Waterway corridors are identified within Table 8.2.7.3.b.	areas will be rehabilitated, as far as possible
(c)	ecological processes;		while allowing for operational requirements, to return the natural values of disturbed areas.
(d)	biodiversity values;		
(e)	riparian and in-stream habitat values and connectivity;		
(f)	in-stream migration.		

Table 8.2.7.3.b — Widths of waterway corridors for waterways

Waterways classification	Waterway corridor width
Waterways in Urban areas	10 metres measured perpendicular from the top of the high bank.
Waterways in Other areas	For a dwelling house, 10 metres measured perpendicular from the top of the high bank. For all other development, 20 metres measured perpendicular from the top of the high bank.


8.2.9 Potential landslide hazard overlay code

8.2.9.1 Application

- (1) This code applies to assessing a material change of use, reconfiguring a lot, operational work or building work within the Potential landslide hazard overlay; if
 - (a) self-assessable or assessable development where the code is identified as being applicable in the Assessment criteria for the Overlay Codes contained in the Levels of Assessment Tables in section 5.6;
 - (b) impact assessable development.
- (2) Land in the Potential landslip hazard overlay is identified on the Potential landslide hazard overlay maps in Schedule 2 and includes the following subcategories:

Places of potential landslide hazard sub-category.

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

Note – The Potential landslide hazard overlay shows modelled areas where the factors contributing to landslip potential accumulate to provide a moderate or higher risk if certain factors are exacerbated (e.g factors include significant vegetation clearing, filling and excavation, changes to soil characteristics, changes to overland water flow, or changes to sub-surface water flow). It shows areas that the Council has identified where landslides may occur and where land may be impacted by a landslide, but does not mean that landslides will occur or that the land will be impacted by a landslide. Other areas not contained within the potential landslide hazard overlay may sustain landslides or be impacted by landslides and consideration should be given to this issue, where appropriate.

8.2.9.2 Purpose

- (1) The purpose of the Potential landslide hazard overlay code is:
 - (a) implement the policy direction of the Strategic Framework, in particular:
 - (i). Theme 1: Settlement pattern Element 3.4.7 Mitigation of hazards.
 - (b) enable an assessment of whether development is suitable on land within the Potential landslip hazard overlay.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) development is located, designed and constructed to not put at risk the safety of people, property and the environment;
 - (b) development is not at risk from and does not pose a risk to adjacent and nearby sites from landslides;
 - (c) ensures that community infrastructure is protected from the effects of potential landslides;
 - (d) ensures that vegetation clearing, stormwater management and filling and/or excavation does not create a landslide hazard and/or rectifies potential pre-existing landslide risks;



(e) development does not occur where works to provide a solution for safety of people, property or the environment involves complex engineering solutions to overcome the risk, or would result in a built form or outcome that causes an adverse visual impact on the Hillslopes or Landscape values of Douglas Shire.

Criteria for assessment

Table 8.2.9.3.a – Potential landslide hazard overlay code – assessable development

Performance outcomes		Acce	eptable outcomes	Applicant response
For s	For self-assessable and assessable development			
PO1		A01.	1	Complies with PO1
The s involv create risk to	iting and design of development does not ve complex engineering solutions and does not e or increase the potential landslide hazard o the site or adjoining premises through:	Deve affec or	elopment is located on that part of the site not ted by the Potential landslide hazard overlay.	The water intake infrastructure has been designed with the intent to maintain land stability and minimise the potential for erosion and instability.
(a)	building design;	A01.	2	
(b)	increased slope;	Deve and r	elopment is on an existing stable, benched site requires no further earthworks	
(c)	removal of vegetation;	or		
(d)	stability of soil;	AO1.	3	
(e)	earthworks;	A cor	mpetent person certifies that:	
(f) (g)	alteration of existing ground water or surface water paths; waste disposal areas.	(a)	the stability of the site, including associated buildings and infrastructure, will be maintained during the course of the development and will	
			remain stable for the life of the development;	
		(b)	development of the site will not increase the risk of landslide hazard activity on other land, including land above the site;	
		(c)	the site is not subject to the risk of landslide activity on other land;	



Performance outcomes	Acceptable outcomes	Applicant response	
	 (d) any measures identified in a site-specific geotechnical report for stabilising the site or development have been fully implemented; 		
	 (e) development does not concentrate existing ground water and surface water paths; 		
	(f) development does not incorporate on-site waste water disposal.		
	Note – Planning scheme policy SC6.9 – Natural hazards provides guidance on preparing a site specific geo-technical assessment.		
	Note – Development may alter the conditions of ground water and surface water paths in accordance with a site-specific geotechnical report but should ensure that its final disbursement is as-per pre- developed conditions. Consideration for location, velocity, volume and quality should be given		
PO2	A02	Not Applicable.	
The siting and design of necessary retaining	Excavation or fill:		
on landscape character or scenic amenity quality of the area.	 (a) is not more than 1.2 metres in height for each batter or retaining wall; 		
	(b) is setback a minimum of 2 metres from property boundaries;		
	 (c) is stepped with a minimum 2 metre wide berm to incorporate landscaping in accordance with Planning scheme policy SC6.7 – Landscaping; 		
	 (d) does not exceed a maximum of 3 batters and 3 berms (i.e. Not greater than 3.6 metres in height) on any one lot. 		
Additional requirements for Community infrastructure			



PO3 AO3 Complies with PO3	mance outcomes	Applicant response		
Development for community infrastructure:Development is designed in accordance with the recommendations of a site-specific geotechnical assessment which makes reference to the community infrastructure and its needs and function.The water intake infrastructure has been designed with the intent to maintain land stability and minimise the potential for ero and instability.(b)will function without impediment from a landslide;Note - A site specific geotechnical assessment will detail requirements that will address the Acceptable Outcomes of this Performance Outcome. Planning scheme policy SC6.9 - Natural hazards provides guidance on preparing a site specific geotechnical assessment.The water intake infrastructure has been designed with the intent to maintain land stability and minimise the potential for ero and instability.(d)does not contribute to an elevated risk of a landslide to adjoining properties.Development is designed in accordance with the recommendations of a site-specific geotechnical assessment which makes reference to the community infrastructure and its needs and function.The water intake infrastructure has been designed with the intent to maintain land stability and minimise the potential for ero and instability.	opment for community infrastructure: is not at risk from the potential landslide hazard areas; will function without impediment from a landslide; provides access to the infrastructure without impediment from the effects of a landslide; does not contribute to an elevated risk of a landslide to adjoining properties.	ty Complies with PO3 The water intake infrastructure has been designed with the intent to maintain land stability and minimise the potential for erosion and instability.	ucture: Il landslide ent from a ructure without of a landslide; vated risk of a es.	 PO3 Development for community infrastructure: a) is not at risk from the potential landslide hazard areas; b) will function without impediment from a landslide; c) provides access to the infrastructure without impediment from the effects of a landslide; d) does not contribute to an elevated risk of a landslide to adjoining properties.



8.2.10 Transport network overlay code

8.2.10.1 Application

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



8.2.10.2 Purpose

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

8.2.10.3 Criteria for assessment

Table 8.2.10.3 a – Transport network overlay code – assessable development

Performance outcomes	Acceptable outcomes	Applicant response		
For assessable development				
PO1	AO1.1	Complies with AO1.1		
Development supports the road hierarchy for the region. Note -A Traffic impact assessment report prepared in accordance with Planning scheme policy SC6.10 - Parking and access is one way to demonstrate achievement of the	Development is compatible with the intended role and function of the transport network as identified on the Transport network overlay maps contained in Schedule 2.			
Performance Outcomes.	AO1.2 Development does not compromise the safety and efficiency of the transport network.	Complies with AO1.2		



Performance outcomes	Acceptable outcomes	Applicant response
	AO1.3 Development is designed to provide access via the lowest order road, where legal and practicable access can be provided to that road.	Complies with AO1.3
PO2 Transport infrastructure is provided in an integrated and timely manner. Note - A Traffic impact assessment report prepared in accordance with Planning scheme policy SC6.10 - Parking and access is one way to demonstrate achievement of the Performance Outcomes.	 AO2 Development provides infrastructure (including improvements to existing infrastructure) in accordance with: (a) the Transport network overlay maps contained in Schedule 2; (b) any relevant Local Plan. Note – The Translink Public Transport Infrastructure Manual provides guidance on the design of public transport facilities. 	Complies with AO2
PO3 Development involving sensitive land uses within a major transport corridor buffer area is located, designed and maintained to avoid or mitigate adverse impacts on amenity for the sensitive land use.	AO3 No acceptable outcomes are prescribed. Note – Part 4.4 of the Queensland Development Code provides requirements for residential building design in a designated transport noise corridor.	Not Applicable
PO4 Development does not compromise the intended role and function or safety and efficiency of major transport corridors.	AO4.1 Development is compatible with the role and function (including the future role and function) of major transport corridors. AO4.2	Not Applicable Not Applicable



Performance outcomes	Acceptable outcomes	Applicant response
Note - A Traffic impact assessment report prepared in accordance with Planning scheme policy SC6.10 - Parking and access is one way to demonstrate achievement of the Performance Outcomes.	Direct access is not provided to a major transport corridor where legal and practical access from another road is available.	
	AO4.3	Not Applicable
	Intersection and access points associated with major transport corridors are located in accordance with:	
	(a) the Transport network overlay maps contained in Schedule 2; and	
	(b) any relevant Local Plan.	
	AO4.4	Not Applicable
	The layout of development and the design of the associated access is compatible with existing and future boundaries of the major transport corridor or major transport facility.	
P05	A05	Not Applicable
Development retains and enhances existing vegetation between a development and a major transport corridor, so as to provide screening to potential noise, dust, odour and visual impacts emanating from the corridor.	No acceptable outcomes are prescribed.	
Pedestrian and cycle network		
PO6	AO6.1	Not Applicable
	1	Douglas Shire Planning Scheme 2018 Version 1.0

Code Compliance Table – 8.2.10 Transport network overlay code Page 4 of 5



Performance outcomes	Acceptable outcomes	Applicant response
Lot reconfiguration assists in the implementation of the pedestrian and cycle movement network to achieve safe, attractive and efficient pedestrian and cycle networks	Where a lot is subject to, or adjacent to an element of the pedestrian and cycle Movement network (identified on the Transport network overlay maps contained in Schedule 2) the specific location of this element of the pedestrian and cycle network is incorporated in the design of the lot layout.	
	AO6.2 The element of the pedestrian and cycle network is constructed in accordance with the Design Guidelines set out in Sections D4 and D5 of the Planning scheme policy SC6.5 – FNQROC Regional Development Manual.	Not Applicable



9.4.1 Access, parking and servicing code

9.4.1.1 Application

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

9.4.1.2 Purpose

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



9.4.1.3 Criteria for assessment

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

Perform	nance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable development			
PO1		A01.1	Complies with PO1
Sufficient on-site car parking is provided to cater for the amount and type of vehicle traffic expected to be generated by the use or uses of the site, having		The minimum number of on-site vehicle parking spaces is not less than the number prescribed in Table 9.4.1.3.b for that particular use or uses.	
(a) the desired character of the area;	Note - Where the number of spaces calculated from the table is not a whole number, the number of spaces provided is the next highest whole number.		
(b)	the nature of the particular use and its specific characteristics and scale;	A01.2	Complies with PO1
(c)	the number of employees and the likely number of visitors to the site;	Car parking spaces are freely available for the parking of vehicles at all times and are not used for external	
(d)	the level of local accessibility;	storage purposes, the display of products or	
(e)	the nature and frequency of any public transport serving the area;		
(f)	whether or not the use involves the retention of an existing building and the previous requirements for car parking for the building	AO1.3 Parking for motorcycles is substituted for ordinary vehicle parking to a maximum level of 2% of total ordinary vehicle parking.	Complies with PO1
(g)	whether or not the use involves a heritage building or place of local significance;	A01.4	Complies with PO1
(h)	whether or not the proposed use involves the retention of significant vegetation.	For parking areas exceeding 50 spaces parking, is provided for recreational vehicles as a substitute for ordinary vehicle parking to a maximum of 5% of total ordinary vehicle parking rate.	



Performance outcomes	Acceptable outcomes	Applicant response
PO2 Vehicle parking areas are designed and constructed in accordance with relevant standards.	AO2 Vehicle parking areas are designed and constructed in accordance with Australian Standard: (a) AS2890.1; (b) AS2890.3; (c) AS2890.6.	Complies with PO2
 PO3 Access points are designed and constructed: (a) to operate safely and efficiently; (b) to accommodate the anticipated type and volume of vehicles (c) to provide for shared vehicle (including cyclists) and pedestrian use, where appropriate; 	 AO3.1 Access is limited to one access cross over per site and is an access point located, designed and constructed in accordance with: (a) Australian Standard AS2890.1; (b) Planning scheme policy SC6.5 – FNQROC Regional Development Manual - access crossovers. 	Complies with PO3
 (d) so that they do not impede traffic or pedestrian movement on the adjacent road area; (e) so that they do not adversely impact upon existing intersections or future road or intersection improvements; (f) so that they do not adversely impact current and future on-street parking arrangements; (g) so that they do not adversely impact on existing services within the road reserve adjacent to the site; 	 AO3.2 Access, including driveways or access crossovers: (a) are not placed over an existing: (i) telecommunications pit; (ii) stormwater kerb inlet; (iii) sewer utility hole; (iv) water valve or hydrant. (b) are designed to accommodate any adjacent footpath; 	Complies with PO3



Performance outcomes	Acceptable outcomes	Applicant response
 (h) so that they do not involve ramping, cutting of the adjoining road reserve or any built structures (other than what may be 	(c) adhere to minimum sight distance requirements in accordance with AS2980.1.	
necessary to cross over a stormwater channel)	AO3.3	Complies with PO3
	Driveways are:	
	 (a) designed to follow as closely as possible to the existing contours, but are no steeper than the gradients outlined in Planning scheme policy SC6.5 – FNQROC Regional Development Manual; 	
	(b) constructed such that where there is a grade shift to 1 in 4 (25%), there is an area with a grade of no more than 1 in in 6 (16.6%) prior to this area, for a distance of at least 5 metres;	
	(c) on gradients greater than 1 in 6 (16.6%) driveways are constructed to ensure the cross-fall of the driveway is one way and directed into the hill, for vehicle safety and drainage purposes;	
	 (d) constructed such that the transitional change in grade from the road to the lot is fully contained within the lot and not within the road reserve; 	
	(e) designed to include all necessary associated drainage that intercepts and directs storm water runoff to the storm water drainage system.	
	AO3.4	Complies with PO3
	Surface construction materials are consistent with the	



Performance outcomes	Acceptable outcomes	Applicant response
	current or intended future streetscape or character of the area and contrast with the surface construction materials of any adjacent footpath.	
PO4	AO4	Not Applicable
Sufficient on-site wheel chair accessible car parking spaces are provided and are identified and reserved for such purposes.	The number of on-site wheel chair accessible car parking spaces complies with the rates specified in AS2890 Parking Facilities.	No wheelchair accessible spaces are required for the proposed development.
PO5	A05	Not Applicable
Access for people with disabilities is provided to the building from the parking area and from the street.	Access for people with disabilities is provided in accordance with the relevant Australian Standard.	Access for people with disabilities is not applicable to this development.
PO6	A06	Not Applicable
Sufficient on-site bicycle parking is provided to cater for the anticipated demand generated by the development	The number of on-site bicycle parking spaces complies with the rates specified in Table 9.4.1.3.b	The proposed development is not subject to Bicycle parking requirements.
P07	A07.1	Not Applicable
Development provides secure and convenient bicycle parking which: (a) for visitors is obvious and located close to the building's main entrance; (b) for employees is conveniently located to provide secure and convenient access between the bicycle storage area, end-of-trip facilities and the main area	Development provides bicycle parking spaces for employees which are co-located with end-of-trip facilities (shower cubicles and lockers);	The proposed development is not subject to Bicycle parking requirements.
	A07.2	Not Applicable
of the building; (c) is easily and safely accessible from outside the site.	Development ensures that the location of visitor bicycle parking is discernible either by direct view or using signs from the street.	The proposed development is not subject to Bicycle parking requirements.



Performance outcomes	Acceptable outcomes	Applicant response
	AO7.3 Development provides visitor bicycle parking which does not impede pedestrian movement.	Not Applicable The proposed development is not subject to Bicycle parking requirements.
PO8	AO8	Not Applicable
through the site which:	are constructed on the carriageway or through the site	part of this development.
 (a) link to the external network and pedestrian and cyclist destinations such as schools, shopping centres, open space, public transport stations, shops and local activity centres along the safest, most direct and convenient routes; (b) encourage walking and cycling; 	 to: (a) create a walking or cycle route along the full frontage of the site; (b) connect to public transport and existing cycle and walking routes at the frontage or boundary of the site. 	
(c) ensure pedestrian and cyclist safety.		
PO9	AO9.1	Complies with PO9
Access, internal circulation and on-site parking for service vehicles are designed and constructed:	Access driveways, vehicle manoeuvring and onsite parking for service vehicles are designed and	
(a) in accordance with relevant standards;	AS2890.2.	
 (b) so that they do not interfere with the amenity of the surrounding area; 	AO9.2	Complies with PO9
 (c) so that they allow for the safe and convenient movement of pedestrians, cyclists and other vehicles. 	Service and loading areas are contained fully within the site.	
	AO9.3	Complies with PO9



Performance outcomes	Acceptable outcomes	Applicant response
	The movement of service vehicles and service operations are designed so they:	
	(a) do not impede access to parking spaces;	
	 (b) do not impede vehicle or pedestrian traffic movement. 	
PO10	AO10.1	Not Applicable
Sufficient queuing and set down areas are provided to accommodate the demand generated by the development.	Development provides adequate area on-site for vehicle queuing to accommodate the demand generated by the development where drive through facilities or drop-off/pick-up services are proposed as part of the use, including, but not limited to, the following land uses:	
	(a) car wash;	
	(b) child care centre;	
	(c) educational establishment where for a school;	
	(d) food and drink outlet, where including a drive through facility;	
	 (e) hardware and trade supplies, where including a drive-through facility; 	
	(f) hotel, where including a drive-through facility;	
	(g) service station.	
	AO10.2 Queuing and set-down areas are designed and constructed in accordance with AS2890.1.	Not Applicable



Douglas Shire Planning Scheme 2018 Version 1.0 Part 9: Development Codes Code Compliance Table – 9.4.1 Access, parking and servicing code Page 8 of 8



9.4.3 Environmental performance code

9.4.3.1 Application

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

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

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

9.4.3.2 Purpose

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

9.4.3.3 Criteria for assessment

Table 9.4.3.3.a – Environmental performance code – assessable development

Performance outcomes	Acceptable outcomes	Applicant response
Lighting		
PO1	A01.1	Not Applicable
Lighting incorporated within development does	Technical parameters, design, installation,	



Performance outcomes	Acceptable outcomes	Applicant response
not cause an adverse impact on the amenity of adjacent uses and nearby sensitive land uses.	operation and maintenance of outdoor lighting comply with the requirements of Australian standard AS4282-1997 Control of the obtrusive effects of outdoor lighting.	
	A01.2	Not Applicable
	Development that involves flood lighting is restricted to a type that gives no upward component of light where mounted horizontally.	
	AO1.3	Not Applicable
	Access, car parking and manoeuvring areas are designed to shield nearby residential premises from impacts of vehicle headlights.	
Noise		
PO2	AO2.1	Complies with PO2
Potential noise generated from the development is avoided through design, location and operation of the activity.	Development does not involve activities that would cause noise related environmental harm or nuisance;	Potential noise generated by the development will blend into the rural background.
Note – Planning Scheme Policy SC6.4 – Environmental management plans provides guidance on preparing a report to	or	
demonstrate compliance with the purpose and outcomes of the code.	AO2.2	Complies with PO2
	Development ensures noise does not emanate from the site through the use of materials, structures and architectural features to not cause an adverse noise impact on adjacent uses.	Potential noise generated by the development will blend into the rural background.
	A02.3	Complies with PO2
	The design and layout of development ensures car parking areas avoid noise impacting directly on adjacent sensitive land uses through one or more of the following:	Potential noise generated by the development will blend into the rural background.
	(a) car parking is located away from adjacent	



Performance outcomes	Acceptable outcomes	Applicant response
	sensitive land uses;	
	(b) car parking is enclosed within a building;	
	 (c) a noise ameliorating fence or structure is established adjacent to car parking areas where the fence or structure will not have a visual amenity impact on the adjoining premises; 	
	(d) buffered with dense landscaping.	
	Editor's note - The <i>Environmental Protection (Noise) Policy</i> 2008, Schedule 1 provides guidance on acoustic quality objectives to ensure environmental harm (including nuisance) is avoided.	
Airborne particles and other emissions		
PO3	AO3.1	Not Applicable
Potential airborne particles and emissions generated from the development are avoided through design, location and operation of the activity.	Development does not involve activities that will result in airborne particles or emissions being generated; or	
Note – Planning Scheme Policy SC6.4 – Environmental management plans provides guidance on preparing a report to demonstrate compliance with the purpose and outcomes of	AO3.2	Not Applicable
the code.	The design, layout and operation of the development activity ensures that no airborne particles or emissions cause environmental harm or nuisance.	
	Note - examples of activities which generally cause airborne particles include spray painting, abrasive blasting, manufacturing activities and car wash facilities.	
	Examples of emissions include exhaust ventilation from basement or enclosed parking structures, air conditioning/refrigeration ventilation and exhaustion.	
	The <i>Environmental Protection (Air) Policy 2008</i> , Schedule 1 provides guidance on air quality objectives to ensure environmental harm (including nuisance) is avoided.	



Performance outcomes	Acceptable outcomes	Applicant response
Odours		
PO4 Potential odour causing activities associated with the development are avoided through design, location and operation of the activity.	AO4.1 The development does not involve activities that create odorous emissions; or	Not Applicable
management plans provides guidance on preparing a report to demonstrate compliance with the purpose and outcomes of the code.	AO4.2 The use does not result in odour that causes environmental harm or nuisance with respect to surrounding land uses.	Not Applicable
Waste and recyclable material storage		
PO5	AO5.1	Complies with PO5
Waste and recyclable material storage facilities are located and maintained to not cause adverse impacts on adjacent uses.	The use ensures that all putrescent waste is stored in a manner that prevents odour nuisance and is disposed of at regular intervals.	Waste will be managed appropriately.
Note – Planning Scheme Policy SC6.4 – Environmental management plans provides guidance on preparing a report to demonstrate compliance with the purpose and outcomes of the code.	 AO5.2 Waste and recyclable material storage facilities are located, designed and maintained to not cause an adverse impact on users of the premises and adjacent uses through consideration of: (a) the location of the waste and recyclable material storage areas in relation to the noise and odour generated; (b) the number of receptacles provided in relation to the collection, maintenance and use of the receptacles; (c) the durability of the receptacles, sheltering and potential impacts of local climatic 	Complies with PO5 Waste will be managed appropriately.



Performance outcomes	Acceptable outcomes	Applicant response
	conditions;	
	(d) the ability to mitigate spillage, seepage or leakage from receptacles into adjacent areas and sensitive receiving waters and environments.	
	Editor's note - the <i>Environmental Protection (Waste Management) Policy 2008</i> provides guidance on the design of waste containers (receptacles) to ensure environmental harm (including nuisance) is avoided.	
Sensitive land use activities		
PO6	AO6.1	Not Applicable
Sensitive land use activities are not established in areas which will receive potentially incompatible impacts on amenity from surrounding, existing development activities and land uses.	Sensitive land use activities are not established in areas that will be adversely impacted upon by existing land uses, activities and potential development possible in an area;	
	AO6.2	Not Applicable
	Sensitive land activities are located in areas where potential adverse amenity impacts mitigateall potential impacts through layout, design, operation and maintenance.	
Stormwater quality		
P07	A07.1	Not Applicable
The quality of stormwater flowing over, through or being discharged from development activities into watercourses and drainage lines is of adequate	Development activities are designed to ensure stormwater over roofed and hard stand areas is directed to a lawful point of discharge.	The proposed development will not concentrate stormwater flows.
respect to:	A07.2	Not Applicable
 (a) the amount and type of pollutants borne from the activity; 	Development ensures movement of stormwater over the site is not impeded or directed through	The proposed development will not concentrate stormwater flows.



Performance outcomes	Acceptable outcomes	Applicant response
(b) maintaining natural stream flows;	potentially polluting activities.	
(c) the amount and type of site disturbance;(d) site management and control measures.	A07.3	Complies with PO7
	Soil and water control measures are incorporated into the activity's design and operation to control sediment and erosion potentially entering watercourses, drainage lines and downstream receiving waters.	The water supply intake infrastructure has been designed with the intent adequately manage water quality during and post construction.
	Note - Planning scheme policy - FNQROC Regional Development Manual provides guidance on soil and water control measures to meet the requirements of the <i>Environmental Protection Act 1994</i> .	
	During construction phases of development, contractors and builders are to have consideration in their work methods and site preparation for their environmental duty to protect stormwater quality.	
Pest plants (for material change of use on vacar	nt land over 1,000m²)	
PO8	AO8.1	If required, will comply with PO8
Development activities and sites provide for the removal of all pest plants and implement ongoing measures to ensure that pest plants do not	The land is free of declared pest plants before development establishes new buildings, structures and practices;	
reinfest the site or nearby sites.	or	
owner's obligations or responsibilities under the Land Protection (Pest and Stock Poule Management) Act 2002	AO8.2	If required, will comply with PO8
	Pest plants detected on a development site are removed in accordance with a management plan prepared by an appropriately qualified person prior to construction of buildings and structures or earthworks.	
	Note - A declaration from an appropriately qualified person validates the land being free from pest plants.	
	Declared pest plants include locally declared and Statedeclared pest plants.	



9.4.4 Filling and excavation code

9.4.4.1 Application

- (1) This code applies to assessing:
 - (a) operational work for filling or excavation which is self-assessable or code assessable development if this code is an applicable code identified in the assessment criteria column of a table of assessment; or
 - (b) a material change of use or reconfiguring a lot if:
 - (i) assessable development where this code is identified as a prescribed secondary code in the assessment criteria column of a table of assessment; or
 - (ii) impact assessable development, to the extent relevant.
 - Note—This code does not apply to building work that is regulated under the Building Code of Australia.
- (2) When using this code, reference should be made to Part 5..

9.4.4.2 Purpose

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

9.4.4.3 Criteria for assessment

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

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable development		
Filling and excavation - General		
PO1 All filling and excavation work does not create a detrimental impact on the slope stability, erosion potential or visual amenity of the site or the surrounding area.	AO1.1 The height of cut and/or fill, whether retained or not, does not exceed 2 metres in height. and Cuts in excess of those stated in A1.1 above are separated by benches/ terraces with a minimum width of 1.2 metres that incorporate drainage provisions and screen planting.	Complies with PO1 The water intake infrastructure has been designed to minimise potential erosion and to maintain land stability.
	AO1.2 Cuts are supported by batters, retaining or rock walls and associated benches/terraces are capable of supporting mature vegetation. AO1.3	Complies with PO1 The water intake infrastructure has been designed to minimise potential erosion and to maintain land stability. Not Applicable.
	AO1.4 Topsoil from the site is retained from cuttings and	Not Applicable.

COMPLEX EASY



Performance outcomes	Acceptable outcomes	Applicant response
	reused on benches/terraces.	
	AO1.5 No crest of any cut or toe of any fill, or any part of any retaining wall or structure is closer than 600mm to any boundary of the property, unless the prior written approval of the adjoining landowner has been obtained.	Not Applicable.
	AO1.6 Non-retained cut and/or fill on slopes are stabilised and protected against scour and erosion by suitable measures, such as grassing, landscaping or other protective/aesthetic measures	Complies with PO1 The water intake infrastructure has been designed to minimise potential erosion and to maintain land stability.
Visual Impact and Site Stability		
PO2	AO2.1	Complies with PO2
Filling and excavation are carried out in such a manner that the visual/scenic amenity of the area and the privacy and stability of adjoining properties is not compromised.	The extent of filling and excavation does not exceed 40% of the site area, or 500m2 whichever is the lesser, except that AO2.1 does not apply to reconfiguration of 5 lots or more.	Visual impact is a non-issue. The water intake infrastructure has been designed to minimise potential erosion and to maintain land stability.
	AO2.2 Filling and excavation does not occur within 2 metres of the site boundary.	Complies with AO2.2



Performance outcomes	Acceptable outcomes	Applicant response
Flood and Drainage		
PO3 Filling and excavation does not result in a change to the run off characteristics of a site which then have a detrimental impact on the site or nearby land or adjacent road reserves.	AO3.1 Filling and excavation does not result in the ponding of water on a site or adjacent land or road reserves.	Complies with AO3.1
	AO3.2 Filling and excavation does not result in an increase in the flow of water across a site or any other land or road reserves.	Complies with AO3.2
	AO3.3 Filling and excavation does not result in an increase in the volume of water or concentration of water in a watercourse and overland flow paths.	Complies with AO3.3
	AO3.4 Filling and excavation complies with the specifications set out in Planning Scheme Policy No SC5 – FNQROC Development Manual.	Complies with AO3.4 It is expected that all filling and excavation will be undertaken in accordance with the requirements of the FNQROC Development Manual.
Water Quality		
PO4 Filling and excavation does not result in a reduction	AO4 Water quality is maintained to comply with the specifications set out in Planning Scheme Policy No	Complies with AO4 The water intake infrastructure has been designed with the intent to maintain water



Performance outcomes	Acceptable outcomes	Applicant response
of the water quality of receiving waters.	SC5 – FNQROC Development Manual.	quality.
Infrastructure		
PO5 Excavation and filling does not impact on Public Utilities.	A05 Excavation and filling is clear of the zone of influence of public utilities.	Complies with PO5 The excavation and filling is intended to facilitate the construction of a public utility.



9.4.5 Infrastructure works code

9.4.5.1 Application

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

9.4.5.2 Purpose

- (1) The purpose of the Infrastructure works code is to ensure that development is safely and efficiently serviced by, and connected to, infrastructure.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) the standards of water supply, waste water treatment and disposal, stormwater drainage, local electricity supply, telecommunications, footpaths and road construction meet the needs of development and are safe and efficient;
 - (b) development maintains high environmental standards;
 - (c) development is located, designed, constructed and managed to avoid or minimise impacts arising from altered stormwater quality or flow, wastewater discharge, and the creation of non-tidal artificial waterways;
 - (d) the integrity of existing infrastructure is maintained;
 - (e) development does not detract from environmental values or the desired character and amenity of an area.



9.4.5.3 Criteria for assessment

Table 9.4.5.3.a – Infrastructure works code –assessable development

Performance outcomes	Acceptable outcomes	Applicant Response	
For self-assessable and assessable development	For self-assessable and assessable development		
Works on a local government road	Works on a local government road		
PO1 Works on a local government road do not adversely impact on footpaths or existing infrastructure within the road verge and maintain the flow, safety and efficiency of pedestrians, cyclists and vehicles.	AO1.1 Footpaths/pathways are located in the road verge and are provided for the hierarchy of the road and located and designed and constructed in accordance with Planning scheme policy SC5 – FNQROC Regional Development Manual.	Complies with PO1	
	AO1.2 Kerb ramp crossovers are constructed in accordance with Planning scheme policy SC 5 – FNQROC Regional Development Manual.	Complies with PO1	
	 AO1.3 New pipes, cables, conduits or other similar infrastructure required to cross existing footpaths: (a) are installed via trenchless methods; or (b) where footpath infrastructure is removed to install infrastructure, the new section of footpath is installed to the standard detailed in the Planning scheme policy SC5 – FNQROC Regional Development Manual, and is not less than a 1.2 metre section. 	Not Applicable	



Performance outcomes	Acceptable outcomes	Applicant Response
	 AO1.4 Where existing footpaths are damaged as a result of development, footpaths are reinstated ensuring: (a) similar surface finishes are used; (b) there is no change in level at joins of new and existing sections; (c) new sections are matched to existing in terms of dimension and reinforcement. Note – Figure 9.4.5.3.a provides guidance on meeting the outcomes. 	Not Applicable
	AO1.5 Decks, verandahs, stairs, posts and other structures located in the road reserve do not restrict or impede pedestrian movement on footpaths or change the level of the road verges.	Not Applicable
Accessibility structures PO2 Development is designed to ensure it is accessible for people of all abilities and accessibility features do not impact on the efficient and safe use of footpaths. Note – Accessibility features are those features required to ensure access to premises is provided for people of all abilities and include ramps and lifts.	AO2.1 Accessibility structures are not located within the road reserve.	Not Applicable
	ACCessibility structures are designed in accordance with AS1428.3.	Not Applicable

Douglas Shire Planning Scheme 2018 Version 1.0 Part 9: Development Codes Code Compliance Table – 9.4.5 Infrastructure works code Page 3 of 15



Performance outcomes	Acceptable outcomes	Applicant Response
	When retrofitting accessibility features in existing buildings, all structures and changes in grade are contained within the boundaries of the lot and not within the road reserve.	
Water supply		
PO3	AO3.1	Complies with PO3
An adequate, safe and reliable supply of potable, fire fighting and general use water is provided.	The premises is connected to Council's reticulated water supply system in accordance with the Design Guidelines set out in Section D6 of the Planning scheme policy SC5 – FNQROC Regional Development Manual;	
	or	
	AO3.2	
	Where a reticulated water supply system is not available to the premises, on site water storage tank/s with a minimum capacity of 10,000 litres of stored water, with a minimum 7,500 litre tank, with the balance from other sources (e.g. accessible swimming pool, dam etc.) and access to the tank/s for fire trucks is provided for each new house or other development. Tank/s are to be fitted with a 50mm ball valve with a camlock fitting and installed and connected prior to occupation of the house and sited to be visually unobtrusive.	
Treatment and disposal of effluent		
PO4	AO4.1	Not Applicable
Provision is made for the treatment and disposal of	The site is connected to Council's sewerage system	
		Douglas Shire Planning Scheme 2018 Version 1.0 Part 9: Development Codes



Performance outcomes	Acceptable outcomes	Applicant Response
effluent to ensure that there are no adverse impacts on water quality and no adverse ecological impacts as a result of the system or as a result of increasing the cumulative effect of systems in the locality.	and the extension of or connection to the sewerage system is designed and constructed in accordance with the Design Guidelines set out in Section D7 of the Planning scheme policy SC5 – FNQROC Regional Development Manual;	
	or	
	AO4.2	
	Where not in a sewerage scheme area, the proposed disposal system meets the requirements of Section 33 of the <i>Environmental Protection Policy (Water)</i> 1997 and the proposed on site effluent disposal system is designed in accordance with the <i>Plumbing and Drainage Act (2002)</i> .	
Stormwater quality		
PO5	A05.1	Complies with PO5
 Development is planned, designed, constructed and operated to avoid or minimise adverse impacts on stormwater quality in natural and developed catchments by: (a) achieving stormwater quality objectives; (b) protecting water environmental values; (c) maintaining waterway hydrology. 	A connection is provided from the premises to Council's drainage system; or AO5.2 An underground drainage system is constructed to convey stormwater from the premises to Council's drainage system in accordance with the Design Guidelines set out in Sections D4 and D5 of the Planning scheme policy SC5 – FNQROC Regional Development Manual.	
	AO5.3	Complies with PO5
	A stormwater quality management plan is prepared,	-



Performance outcomes	Acceptable outcomes	Applicant Response
	and provides for achievable stormwater quality treatment measures meeting design objectives listed in Table 9.4.5.3.b and Table 9.4.5.3.c , reflecting land use constraints, such as:	
	(a) erosive, dispersive and/or saline soil types;	
	(b) landscape features (including landform);	
	 (c) acid sulfate soil and management of nutrients of concern; 	
	(d) rainfall erosivity.	
	AO5.4	Complies with PO5
	Erosion and sediment control practices are designed, installed, constructed, monitored, maintained, and carried out in accordance with an erosion and sediment control plan.	
	AO5.5	Complies with PO5
	Development incorporates stormwater flow control measures to achieve the design objectives set out in Table 9.4.5.3.b and Table 9.4.5.3.c, including management of frequent flows, peak flows, and construction phase hydrological impacts.	
	Note – Planning scheme policy SC5 – FNQROC Regional Development Manual provides guidance on soil and water control measures to meet the requirements of the <i>Environmental Protection Act</i> 1994.	
	Note – During construction phases of development, contractors and builders are to have consideration in their work methods and site preparation for their environmental duty to protect stormwater quality.	



Performance outcomes	Acceptable outcomes	Applicant Response
Non-tidal artificial waterways		
 PO6 Development involving non-tidal artificial waterways is planned, designed, constructed and operated to: (a) protect water environmental values; (b) be compatible with the land use constraints for the site for protecting water environmental values; (c) be compatible with existing tidal and non-tidal waterways; (d) perform a function in addition to stormwater management; (e) achieve water quality objectives. 	 AO6.1 Development involving non-tidal artificial waterways ensures: (a) environmental values in downstream waterways are protected; (b) any ground water recharge areas are not affected; (c) the location of the waterway incorporates low lying areas of the catchment connected to an existing waterway; 	Not Applicable
	 (d) existing areas of ponded water are included. AO6.2 Non-tidal artificial waterways are located: (a) outside natural wetlands and any associated buffer areas; (b) to minimise disturbing soils or sediments; (c) to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazardous areas. 	Not Applicable
	AO6.3Non-tidal artificial waterways located adjacent to, or connected to a tidal waterway by means of a weir, lock, pumping system or similar ensures:(a) there is sufficient flushing or a tidal range of >0.3	Not Applicable



Performance outcomes	Acceptable outcomes	Applicant Response
	m; or	
	 (b) any tidal flow alteration does not adversely impact on the tidal waterway; or 	
	(c) there is no introduction of salt water into freshwater environments.	
	AO6.4	Not Applicable
	Non-tidal artificial waterways are designed and managed for any of the following end-use purposes:	
	 (a) amenity (including aesthetics), landscaping or recreation; or 	
	 (b) flood management, in accordance with a drainage catchment management plan; or 	
	 (c) stormwater harvesting plan as part of an integrated water cycle management plan; or 	
	(d) aquatic habitat.	
	AO6.5	Not Applicable
	The end-use purpose of the non-tidal artificial waterway is designed and operated in a way that protects water environmental values.	
	AO6.6	Not Applicable
	Monitoring and maintenance programs adaptively manage water quality to achieve relevant water quality objectives downstream of the waterway.	
	AO6.7	Not Applicable

Douglas Shire Planning Scheme 2018 Version 1.0 Part 9: Development Codes Code Compliance Table – 9.4.5 Infrastructure works code Page 8 of 15


Performance outcomes	Acceptable outcomes	Applicant Response
	Aquatic weeds are managed to achieve a low percentage of coverage of the water surface area, and pests and vectors are managed through design and maintenance.	
Wastewater discharge		
 PO7 Discharge of wastewater to waterways, or off site: (a) meets best practice environmental management; (b) is treated to: (i) meet water quality objectives for its receiving waters; (ii) avoid adverse impact on ecosystem health 	 AO7.1 A wastewater management plan is prepared and addresses: (a) wastewater type; (b) climatic conditions; (c) water quality objectives; (d) best practice environmental management. 	Complies with PO7
 (ii) article and the relation of the relation of waterway health; (iii) maintain ecological processes, riparian vegetation and waterway integrity; (iv) offset impacts on high ecological value waters. 	 AO7.2 The waste water management plan is managed in accordance with a waste management hierarchy that: (a) avoids wastewater discharge to waterways; or (b) if wastewater discharge cannot practicably be avoided, minimises wastewater discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water and ground water. 	Complies with PO7
	AO7.3 Wastewater discharge is managed to avoid or minimise the release of nutrients of concern so as to minimise the occurrence, frequency and intensity of	Complies with PO7



Performance outcomes	Acceptable outcomes	Applicant Response
	algal blooms.	
	A07.4	Complies with PO7
	Development in coastal catchments avoids or minimises and appropriately manages soil disturbance or altering natural hydrology and:	
	 (a) avoids lowering ground water levels where potential or actual acid sulfate soils are present; 	
	(b) manages wastewater so that:	
	 the pH of any wastewater discharges is maintained between 6.5 and 8.5 to avoid mobilisation of acid, iron, aluminium and other metals; 	
	 (ii) holding times of neutralised wastewater ensures the flocculation and removal of any dissolved iron prior to release; 	
	 (iii) visible iron floc is not present in any discharge; 	
	 (iv) precipitated iron floc is contained and disposed of; 	
	 (v) wastewater and precipitates that cannot be contained and treated for discharge on site are removed and disposed of through trade waste or another lawful method. 	
Electricity supply	·	
PO8	AO8.1	Complies with PO8
Development is provided with a source of power	A connection is provided from the premises to the	
		Douglas Shire Planning Scheme 2018 Version 1.0



Performance outcomes	Acceptable outcomes	Applicant Response
that will meet its energy needs.	electricity distribution network;	
	or	
	AO8.2	
	The premises is connected to the electricity distribution network in accordance with the Design Guidelines set out in Section D8 of the Planning scheme policy SC5 – FNQROC Regional Development Manual.	
	Note - Areas north of the Daintree River have a different standard.	
	AO9.1	Not Applicable
	Pad-mount electricity infrastructure is:	
	 (a) not located in land for open space or sport and recreation purposes; 	
	(b) screened from view by landscaping or fencing;	
	(c) accessible for maintenance.	
PO9	AO9.2	Not Applicable
Development incorporating pad-mount electricity infrastructure does not cause an adverse impact on amenity.	Pad-mount electricity infrastructure within a building, in a Town Centre is designed and located to enable an active street frontage.	
	Note – Pad-mounts in buildings in activity centres should not be located on the street frontage.	
Telecommunications		
PO10	AO10	Not Applicable
		Douglas Shire Planning Scheme 2018 Version 1.0 Part 9: Development Codes



Performance outcomes	Acceptable outcomes	Applicant Response
Development is connected to a telecommunications service approved by the relevant telecommunication regulatory authority.	The development is connected to telecommunications infrastructure in accordance with the standards of the relevant regulatory authority.	
PO11 Provision is made for future telecommunications services (e.g. fibre optic cable). Road construction	AO11 Conduits are provided in accordance with Planning scheme policy SC5 – FNQROC Regional Development Manual.	Not Applicable
 PO12 The road to the frontage of the premises is constructed to provide for the safe and efficient movement of: (a) pedestrians and cyclists to and from the site; (b) pedestrians and cyclists adjacent to the site; 	AO12.1 The road to the frontage of the site is constructed in accordance with the Design Guidelines set out in Sections D1 and D3 of the Planning scheme policy SC5 – FNQROC Regional Development Manual, for the particular class of road, as identified in the road hierarchy.	Complies with PO12
 (c) vehicles on the road adjacent to the site; (d) vehicles to and from the site; (e) emergency vehicles. 	 AO12.2 There is existing road, kerb and channel for the full road frontage of the site. AO12.3 Road access minimum clearances of 3.5 metres wide and 4.8 metres high are provided for the safe passage of emergency vehicles. 	Complies with PO12 Complies with PO12
Alterations and repairs to public utility services		



Performance outcomes	Acceptable outcomes	Applicant Response
PO13	AO13	Complies with PO13
Infrastructure is integrated with, and efficiently extends, existing networks.	Development is designed to allow for efficient connection to existing infrastructure networks.	
PO14	AO14.1	Complies with PO14
Development and works do not affect the efficient functioning of public utility mains, services or installations.	Public utility mains, services and installations are not required to be altered or repaired as a result of the development;	
	or	
	A014.2	
	Public utility mains, services and installations are altered or repaired in association with the works so that they continue to function and satisfy the relevant Design Guidelines set out in Section D8 of the Planning scheme policy SC5 – FNQROC Regional Development Manual.	
Construction management		
PO15	AO15	Complies with PO15
Work is undertaken in a manner which minimises	Works include, at a minimum:	
adverse impacts on vegetation that is to be retained.	 (a) installation of protective fencing around retained vegetation during construction; 	
	(b) erection of advisory signage;	
	 (c) no disturbance, due to earthworks or storage of plant, materials and equipment, of ground level and soils below the canopy of any retained vegetation; 	



Performance outcomes	Acceptable outcomes	Applicant Response	
	(d) removal from the site of all declared noxious weeds.		
PO16	AO16	Complies with PO16	
Existing infrastructure is not damaged by construction activities.	Construction, alterations and any repairs to infrastructure is undertaken in accordance with the Planning scheme policy SC5 – FNQROC Regional Development Manual.		
	Note - Construction, alterations and any repairs to State-controlled roads and rail corridors are undertaken in accordance with the Transport Infrastructure Act 1994.		
For assessable development High speed telecommunication infrastructure			
PO17	A017	Not Applicable	
Development provides infrastructure to facilitate the roll out of high speed telecommunications infrastructure.	No acceptable outcomes are prescribed.		
Trade waste	Trade waste		
PO18	AO18	Not Applicable	
Where relevant, the development is capable of providing for the storage, collection treatment and disposal of trade waste such that:	No acceptable outcomes are prescribed.		
(a) off-site releases of contaminants do not occur;			
(b) the health and safety of people and the environment are protected;			



Performance outcomes	Acceptable outcomes	Applicant Response
(c) the performance of the wastewater system is not put at risk.		
Fire services in developments accessed by comm	non private title	
PO19	AO19.1	Not Applicable
Hydrants are located in positions that will enable fire services to access water safely, effectively and efficiently.	Residential streets and common access ways within a common private title places hydrants at intervals of no more than 120 metres and at each intersection. Hydrants may have a single outlet and be situated above or below ground.	
	AO19.2	Not Applicable
	Commercial and industrial streets and access ways within a common private title serving commercial properties such as factories and warehouses and offices are provided with above or below ground fire hydrants located at not more than 90 metre intervals and at each intersection. Above ground fire hydrants have dual-valved outlets.	
PO20	AO20	Not Applicable
Hydrants are suitable identified so that fire services can locate them at all hours.	No acceptable outcomes are prescribed.	
Note – Hydrants are identified as specified in the Department of Transport and Main Roads Technical Note: 'Identification of street hydrants for fire fighting purposes' available under 'Publications'.		



9.4.6 Landscaping code

9.4.6.1 Application

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

9.4.6.2 Purpose

- (1) The purpose of the Landscaping code is to assess the landscaping aspects of a development.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) The tropical, lush landscape character of the region is retained, promoted and enhanced through high quality landscape works;
 - (b) The natural environment of the region is enhanced;
 - (c) The visual quality, amenity and identity of the region is enhanced;
 - (d) Attractive streetscapes and public places are created through landscape design;
 - (e) As far as practical, existing vegetation on site is retained, and protected during works and integrated with the built environment;
 - (f) Landscaping is provided to enhance the tropical landscape character of development and the region;
 - (g) Landscaping is functional, durable, contributes to passive energy conservation and provides for the efficient use of water and ease of ongoing maintenance;
 - (h) Landscaping takes into account utility service protection;
 - (i) Weed species and invasive species are eliminated from development sites;
 - (j) Landscape design enhances personal safety and incorporates CPTED principles.



9.4.6.3 Criteria for assessment

Table 9.4.6.3.a – Landscaping code –assessable development

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable development		
Landscape design		
PO1	A01	Not Applicable
Development provides landscaping that contributes to and creates a high quality landscape character for the site, street and local areas of the Shire by:	 Development provides landscaping: (a) in accordance with the minimum area, dimensions and other requirements of applicable development codes; 	The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.
 (a) promoting the Shire's character as a tropical environment; (b) softening the built form of development; 	(b) that is designed and planned in a way that meets the guidelines for landscaping outlined in Planning Scheme Policy SC6 7 –	
 (c) enhancing the appearance of the development from within and outside the development and makes a positive contribution to the streetscape; 	 (c) that is carried out and maintained in accordance with a landscaping plan that meets the guidelines for landscaping outlined in Planning Scheme Policy SC6.7 – 	
 (d) screening the view of buildings, structures, open storage areas, service equipment, machinery plant and the like from public places, residences and other sensitive development; 	Landscaping. Note - Planning scheme policy SC6.7 – Landscaping provides guidance on meeting the outcomes of this code. A landscape plan submitted for approval in accordance with the Planning policy is one way to achieve this outcome.	
(e) where necessary, ensuring the privacy of		
habitable rooms and private outdoor recreation areas;		
 (f) contributing to a comfortable living environment and improved energy efficiency, by providing shade to reduce glare and heat 		



Pe	formance outcomes	Acceptable outcomes	Applicant response
	absorption and re-radiation from buildings, parking areas and other hard surfaces;		
(g)	ensuring private outdoor recreation space is useable;		
(h)	providing long term soil erosion protection;		
(i)	providing a safe environment;		
(j)	integrating existing vegetation and other natural features of the premises into the development;		
(k)	not adversely affecting vehicular and pedestrian sightlines and road safety.		
Fo	For assessable development.		
РО	2	AO2.1	Not Applicable
Lar	dscaping contributes to a sense of place, is	No acceptable outcomes are specified.	The water intake infrastructure is adequately
tun stre dev	ctional to the surroundings and enhances the eetscape and visual appearance of the relopment.	Note - Landscaping is in accordance with the requirements specified in Planning scheme policy SC6.7 – Landscaping.	existing vegetation and no landscaping is proposed.
		AO2.2	Not Applicable
		Tropical urbanism is incorporated into building design.	The water intake infrastructure is adequately screened from view from public viewing points by
		Note – 'Tropical urbanism' includes many things such as green walls, green roofs, podium planting and vegetation incorporated into the design of a building.	existing vegetation and no landscaping is proposed.
РО	3	AO3.1	Not Applicable
Dev as Ian	velopment provides landscaping that is , as far practical, consistent with the existing desirable dscape character of the area and protects	Existing vegetation on site is retained and incorporated into the site design, wherever possible, utilising the methodologies and	The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is

Douglas Shire Planning Scheme 2018 Version 1.0 Part 9: Development Codes Code Compliance Table – 9.4.6 Landscaping code Page 3 of 6



Performance outcomes	Acceptable outcomes	Applicant response
trees, vegetation and other features of ecological, recreational, aesthetic and cultural value.	principles outline in AS4970-2009 Protection of Trees on Development Sites.	proposed.
	AO3.2	Not Applicable
	Mature vegetation on the site that is removed or damaged during development is replaced with advanced species.	The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.
	AO3.3	Not Applicable
	Where there is an existing landscape character in a street or locality which results from existing vegetation, similar species are incorporated into new development.	The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.
	AO3.4	Not Applicable
	Street trees are species which enhance the landscape character of the streetscape, with species chosen from the Planning scheme policy SC6.7 – Landscaping.	The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.
PO4	AO4	Not Applicable
Plant species are selected with consideration to the scale and form of development, screening, buffering, streetscape, shading and the locality of the area.	Species are selected in accordance with Planning scheme policy SC6.7 – Landscaping.	The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.
P05	A05	Not Applicable
Shade planting is provided in car parking areas where uncovered or open, and adjacent to driveways and internal roadways.	Species are selected in accordance with Planning scheme policy SC6.7 – Landscaping.	The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.



Performance outcomes	Acceptable outcomes	Applicant response
PO6	AO6.1	Not Applicable
Landscaped areas are designed in order to allow for efficient maintenance.	A maintenance program is undertaken in accordance with Planning scheme policy SC6.7 – Landscaping.	The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.
	AO6.2	Not Applicable
	Tree maintenance is to have regard to the 'Safe Useful Life Expectancy of Trees (SULE).	The water intake infrastructure is adequately screened from view from public viewing points by
	Note – It may be more appropriate to replace trees with a SULE of less than 20 years (as an example), and replant withyounger healthy species.	existing vegetation and no landscaping is proposed.
P07	A07.1	Not Applicable
Podium planting is provided with appropriate species for long term survival and ease of maintenance, with beds capable of proper drainage.	Podium planting beds are provided with irrigation and are connected to stormwater infrastructure to permit flush out.	The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.
	A07.2	Not Applicable
	Species of plants are selected for long term performance designed to suit the degree ofaccess to podiums and roof tops for maintenance.	The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.
PO8	AO8	Not Applicable
Development provides for the removal of all weed and invasive species and implement on-going measures to ensure that weeds and invasive species do not reinfest the site and nearby premises.	Weed and invasive species detected on a development site are removed in accordance with a management plan prepared by an appropriately qualified person.	The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.



Performance outcomes	Acceptable outcomes	Applicant response
PO9 The landscape design enhances personal safety and reduces the potential for crime and vandalism.	AO9 No acceptable outcomes are specified. Note - Planning scheme policy SC6.3 – Crime prevention through environmental design (CPTED) provides guidance on meeting this outcome.	Not Applicable The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.
PO10 The location and type of plant species does not adversely affect the function and accessibility of services and facilities and service areas.	AO10 Species are selected in accordance with Planning scheme policy SC6.7 – Landscaping.	Not Applicable The water intake infrastructure is adequately screened from view from public viewing points by existing vegetation and no landscaping is proposed.



9.4.9 Vegetation management code

9.4.9.1 Application

- (1) This code applies to assessing operational works for vegetation damage if:
 - (a) assessable development where the code is an applicable code identified in theassessment criteria column of a table of assessment;
 - (b) impact assessable development, to the extent relevant.
- (2) When using this code, reference should be made to Part 5.

9.4.9.2 Purpose

- (1) The purpose of the Vegetation management code is achieved through the overall outcomes.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) vegetation is protected from inappropriate damage;
 - (b) where vegetation damage does occur it is undertaken in a sustainable manner;
 - (c) significant trees are maintained and protected;
 - (d) biodiversity and ecological values are protected and maintained;
 - (e) habitats for rare, threatened and endemic species of flora and fauna are protected andmaintained;
 - (f) landscape character and scenic amenity is protected and maintained;
 - (g) heritage values are protected and maintained.

9.4.9.3 Criteria for assessment

Table 9.4.9.3.a – Vegetation management –assessable development

Note - All vegetation damage is to have regard to the provisions of AS4373-2009 Pruning of Amenity Trees

Performance outcomes	Acceptable outcomes	Applicant response
For self-assessable and assessable development		
P01	A01.1	Complies with PO1
	Vegetation damage is undertaken by a statutory	The water intake infrastructure is essential to allow



Performance outcomes	Acceptable outcomes	Applicant response
Vegetation is protected to ensure that: (a) the character and amenity of the local area is maintained;	authority on land other than freehold land that the statutory authority has control over; or	Council to provide an uninterrupted water supply and the proposed works will be undertaken in a manner that minimises the disturbance of vegetation and disturbed areas will be rehabilitated, as far as possible while allowing for operational requirements, to return the natural values of disturbed areas
 (b) vegetation damage does not result in fragmentation of habitats; (c) vegetation damage is undertaken in a sustainable manner; 	AO1.2 Vegetation damage is undertaken by or on behalf of the local government on land controlled, owned or operated by the local government;	
 (d) the Shire's biodiversity and ecological values are maintained and protected; (e) vegetation of historical, cultural and / or visual 	or AO1.3	
significance is retained;(f) vegetation is retained for erosion prevention and slope stabilisation.	 Vegetation damage, other than referenced in AO1.1 or AO1.2 is the damage of: (a) vegetation declared as a pest pursuant to the Land Protection (Pest and Stock Route) 	
	 (b) vegetation identified within the local government's register of declared plants pursuant to the local government's local laws; or 	
	 (c) vegetation is located within a Rural zone and the trunk is located within ten metres of an existing building; or 	
	(d) vegetation is located within the Conservation zone or Environmental management zone	
	and the trunk is located within three metres of an existing or approved structure, not including a boundary fence;.	
	or AO1.4	
	Vegetation damage that is reasonably necessary	



Performance outcomes	Acceptable outcomes	Applicant response
	for carrying out work that is:	
	(a) authorised or required under legislation or a local law;	
	(b) specified in a notice served by the local government or another regulatory authority;	
	or	
	AO1.5	
	Vegetation damage for development where the damage is on land the subject of a valid development approval and is necessary to give effect to the development approval;	
	or	
	AO1.6	
	Vegetation damage is in accordance with an approved Property Map of Assessable Vegetation issued under the <i>Vegetation Management Act 1999;</i>	
	or	
	A01.7	
	Vegetation damage is essential to the maintenance of an existing fire break;	
	or	
	AO1.8	
	Vegetation damage is essential to prevent interference to overhead service cabling;	
	or	

Douglas Shire Planning Scheme 2018 Version 1.0 Part 9: Development Codes Code Compliance Table – 9.4.9 Vegetation management code Page 3 of 5



Performance outcomes	Acceptable outcomes	Applicant response
	AO1.9 Vegetation damage is for an approved Forest practice, where the lot is subject to a scheme approved under the <i>Vegetation Management Act</i> <i>1999;</i> or AO1.10 Vegetation damage is undertaken in accordance with section 584 of the <i>Sustainable Planning Act</i> <i>2009.</i>	
	AO1.11 Vegetation damage where it is necessary to remove one tree in order to protect an adjacent more significant tree (where they are growing close to one another).	Complies with PO1 The water intake infrastructure is essential to allow Council to provide an uninterrupted water supply and the proposed works will be undertaken in a manner that minimises the disturbance of vegetation and disturbed areas will be rehabilitated, as far as possible while allowing for operational requirements, to return the natural values of disturbed areas
	AO1.12 Private property owners may only remove dead, dying, structurally unsound vegetation following receipt of written advice from, at minimum, a fully qualified Certificate V Arborist. A copy of the written advice is to be submitted to Council for its records, a minimum of seven business days priorto the vegetation damage work commencing.	Complies with PO1 The water intake infrastructure is essential to allow Council to provide an uninterrupted water supply and the proposed works will be undertaken in a manner that minimises the disturbance of vegetation and disturbed areas will be rehabilitated, as far as possible while allowing for operational requirements, to return the natural values of disturbed areas



Performance outcomes	Acceptable outcomes	Applicant response	
PO2	A02.1	To comply with AO2.1	
Vegetation damaged on a lot does not result in a nuisance	Damaged vegetation is removed and disposed of at an approved site; or		
	AO2.2 Damaged vegetation is mulched or chipped ifused onsite.	To comply with AO2.2	
For assessable development			
P03	A03	Not Applicable.	
Vegetation damage identified on the Places of significance overlay lot does not result in a negative impact on the site's heritage values.	No acceptable outcomes are prescribed.		