Final Concept Design Report

Inland Link Road connecting Agnes Water and Baffle Creek

R2018071

Prepared for

Gladstone Regional Council

19 March 2019

Cardno

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Executive Summary

Cardno has been engaged by Gladstone Regional Council ('Council') to prepare concept designs for a new Inland Link Road connecting Agnes Water and Baffle Creek. Cardno has also undertaken an analysis of the design options to identify a recommended design option that Council can further progress. The design and analysis work undertaken by Cardno have been informed by technical assessments prepared as part of the project and other available information.

Council has identified a need to investigate the improvement of road connections between Agnes Water and Baffle Creek. The existing route, utilising primarily Round Hill Road and Tableland Road, is particularly inefficient and Council is seeking to reduce the travel distance and time through the construction of a shorter alternative route. The new route is intended to benefit both residents and tourists, noting the local / regional service role played by Agnes Water, whilst also improving local connectivity in emergency situations.

Cardno has prepared concept designs for eight (8) design options (refer to **Appendix A**), which are each supported by preliminary opinions of cost (**Appendix B**). An options analysis has been undertaken consisting of two stages:

- Stage 1 involving an initial qualitative assessment of all eight (8) design options to identify five (5) preferred design options; and
- Stage 2 involving a multiple criteria analysis of the five (5) preferred design options to identify a single recommended design option.

The analysis undertaken identifies that Design Option 2A is the recommended design option on the following basis:

- Design Option 2A provides value for money for Council, when compared to alternative designs, based on the concept designs prepared, for both interim and ultimate road designs;
- Design Option 2A is wholly located in Council owned or controlled land or existing road reserves and is not anticipated to require the resumption of any privately owned land;
- Design Option 2A has an acceptable environmental impact, acknowledging that the broader area is subject to a variety of environmental constraints;
- Design Option 2A connects to Anderson Way in the north, which is considered to be highly suitable to support anticipated traffic volumes based on existing road construction and overall road network layout;
- Design Option 2A connects to Maude Hill Road in the south, which is considered to be the most suitable tie in point in the south of the study area;
- Design Option 2A provides an efficient and direct connection between the north and south of the study area;
- Design Option 2A achieves Council's objectives in relation to the project;
- It is anticipated that limited external works would be required to facilitate the delivery of Design Option 2A;
- The connection points in the north and south of Design Option 2A are considered to minimise traffic related impacts on surrounding residents having regard to the form and function of existing roads;
- Design Option 2A does not impact on existing recreational facilities; and
- Design Option 2A does not present any notable safety concerns, with any potential concerns relating to speed management able to be controlled through design interventions in the road environment, as required and further investigated.

In order to further progress with the project, Cardno recommends that Council:

- Complete a detailed review of the recommended design option;
- Complete further investigations, as required, to confirm the accuracy of currently available information, noting the present limitations, in order to confirm the most suitable road alignment and design. These may include, but may not necessarily be limited to:
  - Detailed land survey of the corridor within which the recommended design option is to be located;
  - Environmental field assessment, to confirm the findings of the desktop assessment documented in this report and confirm approval requirements, further to the findings documented in Table 5-4;

  - Detailed flood assessment, particularly relating to the recommended design option, to confirm requirements in relation to waterway crossings and road levels; and
  - Detailed geotechnical investigations associated with the recommended design option, to confirm the required pavement design;
- Identify any instances where speed control measures may be required as part of the recommended design option to improve safety;
- Undertake further internal consultation to identify any additional matters of technical consideration;
- Engage with various external stakeholders (as relevant) including (but not limited to) local land holders and the broader community, local businesses and tourism operators, the Department of Natural Resources and Mines (with respect to new road reserves and other titling matters), the Department of Environment and Science (where required in relation to the Deepwater National Park), the Department of the Environment and Energy (relating to the EPBC Act) and Ergon Energy (with respect to the relationship between the new road and existing electricity infrastructure);
- Consider the co-location of telecommunications infrastructure in the road design, if appropriate; and
- Progress with the detailed design of the proposed road, when appropriate, to allow for the accurate costing of the project.

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1 Introduction

Cardno has been engaged by Gladstone Regional Council ('Council') to prepare concept designs for a new Inland Link Road connecting Agnes Water and Baffle Creek. Cardno has also undertaken an analysis of the design options to identify a recommended design option that Council can further progress. The design and analysis work undertaken by Cardno have been informed by technical assessments prepared as part of the project and other available information.

This report discusses the design options prepared by Cardno and documents the analysis exercise undertaken. The report contains the following chapters.

- Chapter 2 provides a summary of the background to the project, including Council's work to date;
- Chapter 3 outlines the methodology employed by Cardno in completing the design and analysis work documented in this report;
- Chapter 4 provides a description of each of the design options prepared by Cardno;
- Chapter 5 provides a summary of the technical assessments undertaken as part of the project, to inform the design and analysis work;
- Chapter 6 documents the analysis of the design options and identifies the recommended design option; and
- Chapter 7 provides a summary of the work undertaken and provides recommendations to Council for further work associated with the project.

The report is supported by a variety of information contained in technical appendices, the most relevant of which is **Appendix A**, which contains the concept design drawings for each of the design options.

2 Project Background

Council has identified a need to investigate the improvement of road connections between Agnes Water and Baffle Creek. The existing route, utilising primarily Round Hill Road and Tableland Road, is particularly inefficient and Council is seeking to reduce the travel distance and time through the construction of a shorter alternative route. The new route is intended to benefit both residents and tourists, noting the local / regional service role played by Agnes Water, whilst also improving local connectivity in emergency situations.

Council intends to deliver the road in three (3) stages:

1. Interim construction to an access track standard, with gravel surface and 5.5 metre width;
2. Upgraded construction to a two lane gravel road, with an intended design speed of 110km/h; and
3. Ultimate construction to a two lane sealed road, with an intended design speed of 110km/h.

Council has undertaken a preliminary review of the local area and has identified a broad potential corridor for the new link road. Within this broad corridor, five (5) potential alignments for the link road have been identified:

- Alignment 1: A new road running from Jobson Road in the north, partly utilising the existing sewerage treatment plant access road and connecting to Maude Hill Road in the south;
- Alignment 2: A new road running from Jobson Road in the north utilising a new alignment to the east of the sewerage treatment plant access road and connecting to Maude Hill Road in the south;
- Alignment 3: A new road running from Rocky Crossing Road in the north-west, then running southward to connect to Maude Hill Road;
- Alignment 4: A new road running from Springs Road in the north to Wreck Rock Road in the south. The interim construction of this road will follow an existing access track partly located within the Deepwater National Park while the upgraded and ultimate alignment will reflect an amended alignment to cater for the 110km/h design speed; and
- Alignment 5: A new road running from Uxbridge Road in the north-west along existing road reserves in a general north-south alignment and then an east-west alignment and connecting to Maude Hill Road in the south.

Alignments 1, 2 and 3 are common in the southern section, which generally follows an existing Ergon Energy maintenance track before connecting to Maude Hill Road.

The general location of each of the preliminary alignment options is shown in Figure 2-1.

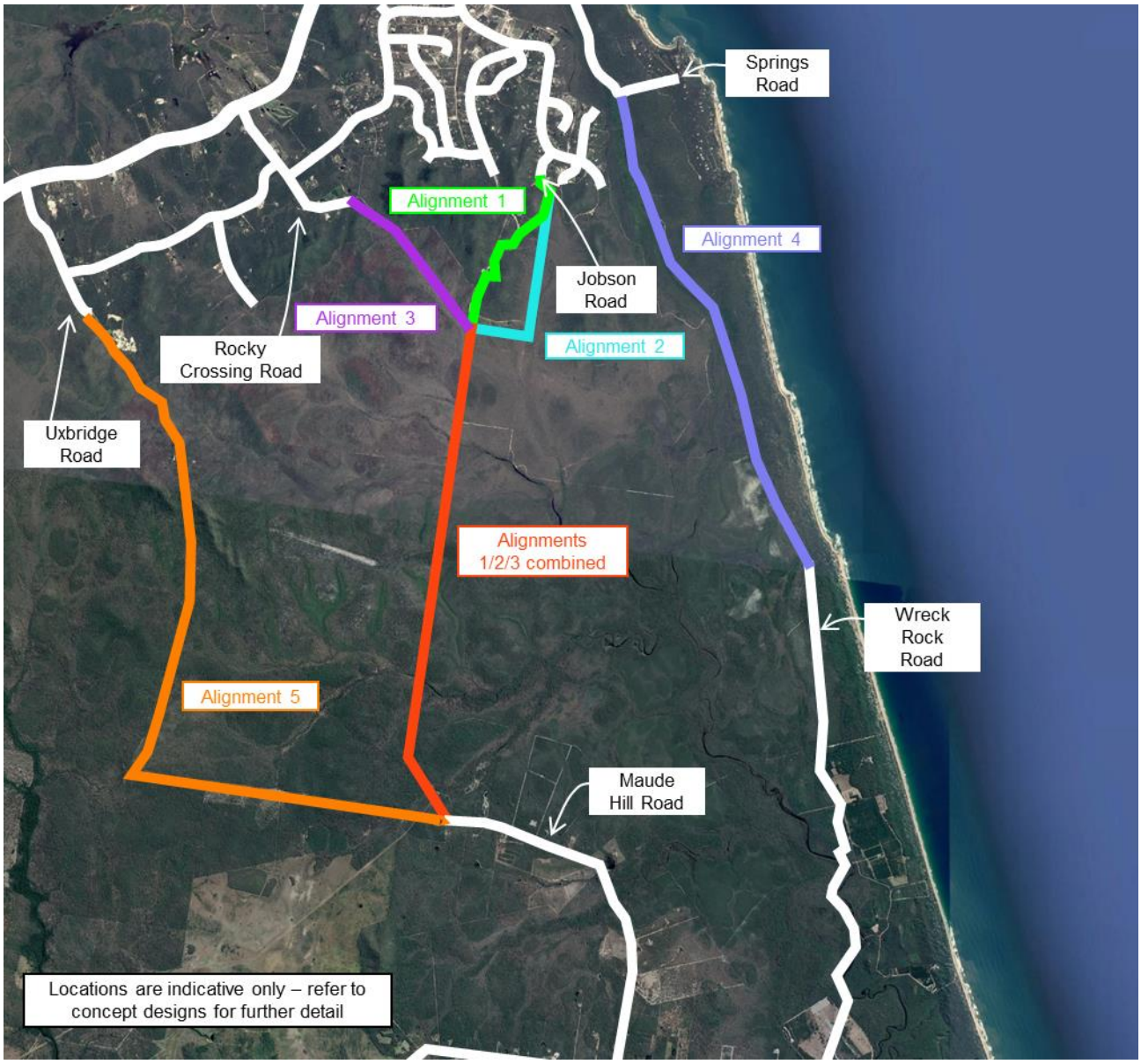

Figure 2-1 Potential Alignments identified by Council

Council has engaged Cardno to prepare a concept design for each of the preliminary alignments to allow Council to further consider the project before proceeding toward detailed design, funding and construction. The design work completed by Cardno is documented in the design options discussed in Chapter 4 and assessed in Chapters 5 and 6.

3 Methodology

Chapter 3 describes the methodology employed by Cardno in completing the design and analysis work for the project.

3.1 Design Approach and Considerations

Cardno has prepared concept designs for a total of eight design options, consisting of:

- The five (5) design options identified by Council, as discussed in Chapter 2; and
- Three (3) alternative design options resulting from further refinement and review of the Council identified options.

These design options are provided in **Appendix A**.

The design options have been prepared on the basis of the ultimate design achieving compliance, to the greatest extent practical, with Council's distributor road standard in rural areas, as described in Table 7 of Council's Road Hierarchy Policy (Policy No. P-2014/31). Table 3-1 describes the key parameters of this design standard.

Table 3-1 Road Design Standard

Parameter	Standard
Design speed	110km/h
Minimum road reserve width	30 metres
Carriageway Form	2 lanes
Road surface	Sealed
Shoulder surface	Sealed
Minimum curve radius	1,100 metres
Minimum formation width	13 metres
Carriageway width	9 metres
Through lane width	3.5 metre
Shoulder width	1 metre
Minimum verge width	1 metre (typically 2 metres)
Maximum longitudinal grade	7%

The ultimate design cross section, as derived from Table 3-1, has been applied to all road alignments, with localised areas of deficiency resolved on a case by case basis. Alternative standards, including Austroads Guide to Road Design, have been consulted in resolving deficiencies. Further discussion is provided in Chapter 4 of this report.

The interim design and upgraded designs have been produced based on the ultimate design cross section, with the exception of Option 4, which includes an alternative alignment for the interim design.

3.2 Consultation

Cardno has completed the design and analysis work in direct consultation and collaboration with Council. Specific consultation activities undertaken with Council for the project include:

- A project inception with Council held on 16 January 2019 to confirm project objectives and methodology;
- A design workshop with Council held on 6 February 2019 to present preliminary versions of the design options;
- A design workshop with Council held on 6 March 2019 to discuss a draft version of the project deliverables;
- Provision of a draft version of all project deliverables for Council review and incorporation of Council comments in the final project deliverables; and
- Ongoing liaison with Council throughout the course of the project, to discuss and resolve specific technical matters.

Minutes of project meetings are provided in **Appendix E**.

3.3 Information Gathering

The following information has informed the design and analysis work undertaken:

- Cadastral information sourced from the Queensland Government's Digital Cadastral Database (DCDB);
- Certificates of title sourced from the Queensland Government (refer to **Appendix D**);
- Survey data provided by Gladstone Regional Council covering design options outlined in the original project brief;
- LIDAR data sourced from the Commonwealth Government's Elevation System Information (ELVIS) covering the remaining design options;
- Geotechnical sampling undertaken by Construction Sciences at select locations between 23 and 25 January 2019. Further discussion in relation to geotechnical sampling and testing is provided in Section 5.2;
- The resources listed in Section 5.3.1, used to inform the Environmental Assessment; and
- Observations made during a site inspection of the northern connection points of select design options, undertaken on 6 February 2019.

3.4 Options Analysis

Upon completion of the concept designs, an options analysis was undertaken in order to identify a recommended design. The options analysis has been conducted in two stages:

- Stage 1 – Initial Assessment; and
- Stage 2 – Multiple Criteria Analysis.

The methodology employed in these two stages is discussed in greater detail in the following sub-sections and summarised in Figure 3-1. Further detail in relation to the methodology employed in the Multiple Criteria Analysis is also provided in **Appendix F**.

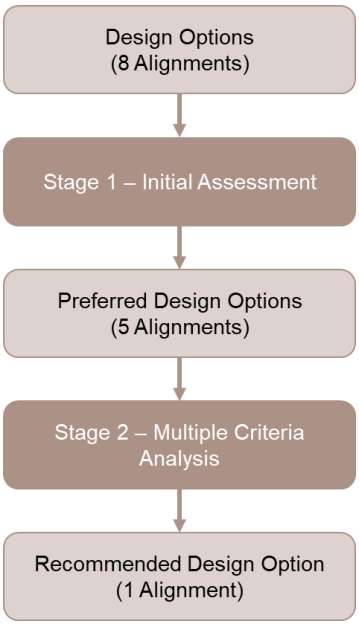

Figure 3-1 Options Analysis Methodology

3.4.2 Stage 1 – Initial Assessment

Stage 1 involves the assessment of all eight (8) design options. The intent of Stage 1 is to identify five (5) preferred design options that will be further considered in Stage 2. Stage 1 employs a qualitative analysis of each design option, identifying benefits and potential areas of concern, based on available information. Preliminary opinions of cost have also been prepared for each design option (refer to **Appendix B**) and have been used to inform financial considerations associated with the analysis.

The selection of the preferred design options was undertaken in consultation with Council as part of the project's design workshop (refer to Section 3.2).

3.4.3 Stage 2 – Multiple Criteria Analysis

Stage 2 involves the assessment of the five (5) preferred design options utilising a multiple-criteria analysis (MCA). MCA is an evaluation method which ranks the performance of options against criteria. Each design option is rated against criterion, which collectively form an evaluation matrix. Criteria are weighted to represent their importance. The weights are combined with the evaluation matrix to attain an overall rank or score for each decision option. Figure 3-2 provides an overview of the MCA process that was used as part of the Stage 2 analysis.

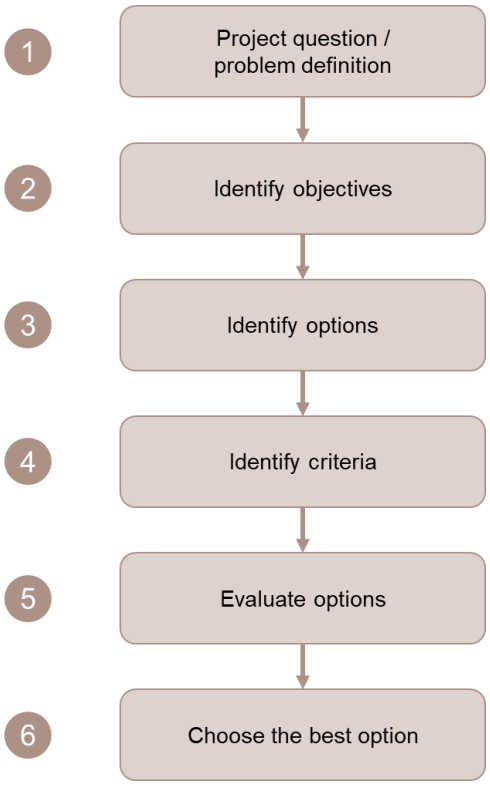

Figure 3-2 Multiple Criteria Analysis

The criteria used for the MCA are described in Section 6.2 of this report. The criteria and their weightings were formulated in consultation with Council, having regard to the intention and objectives of the project and the technical assessments undertaken.

3.5 Qualifications and Assumptions

The design and analysis work documented in this report has been undertaken based on the information available at the time the work was completed. In the event that new or changed information becomes available, this may change the relevance of the designs presented or the accuracy of the analysis undertaken. The following specific qualifications and assumptions are relevant to the project:

- The design recommendations included in this design package are conceptual in nature only and are not for construction. All engineering details including Safety in Design considerations shall be confirmed during the detail design phase of the project by the relevant engineering disciplines;
- All horizontal and vertical alignments have been prepared using publicly available base information such as cadastral boundaries and LIDAR information. The accuracy of this base information shall be confirmed prior to commencement of the detail design works;
- Superelevation, whilst not considered as part of the concept design, is acknowledged as being required in the detail design phase of the project. An allowance has been made within each option's "Opinion of Cost" (**Appendix B**) to account for this;
- A general assessment of the major cross drainage locations has been considered and applied across all relevant options. Particular consideration to drainage and waterway barrier works requirements have been made with both requirements noted within this report. A full detailed assessment will need to be undertaken during the detail design phase of the project to determine the dominant requirement for each major crossing and further cross drainage requirements;
- A hydraulic assessment of the design options is not part of the concept design scope and will need to be undertaken as part of the detail design phase of the project;
- The location of, and impact of the design options on, any Ergon Energy assets has been assumed based on available information. A detailed land survey of the locations of Ergon Energy infrastructure is to be commissioned in the near future and will be incorporated into the findings of this report once complete; and

> Easements affecting relevant lots have been identified in Section 5.4 of this report, however the terms of these easements have not been reviewed. It is recommended that the terms of any affected easement be reviewed by Council (or its legal advisors) to inform the project.

4 Design Options

4.1 Summary

This report relates to eight (8) design options prepared by Cardno for the proposed Inland Link Road. The design options have been summarised in Table 4-1 below. The numbering used in Table 4-1 has been consistently used throughout this report and the supporting documentation. The design options are based on the Council supplied alignments discussed in Chapter 2 of this report, with numbering of the design options also linking to these alignment (i.e. Design Option 2A is a derivative of Alignment 2).

Table 4-1 Design Options

Design Option	Northern Connection	Southern Connection
1	Jobson Road	Maude Hill Road
2	Jobson Road	Maude Hill Road
2A	Anderson Way	Maude Hill Road
2B	Streeter Drive	Maude Hill Road
3	Rocky Crossing Road	Maude Hill Road
3A	Rocky Crossing Road	Maude Hill Road
4 (Interim)	Springs Road	Wreck Rock Road
4 (Ultimate)		
5	Uxbridge Road	Maude Hill Road

Design Options 1, 2, 2A, 2B, 3 and 3A share the same alignment in the south of the study area. This section of road has been referred to as the shared southern section for the purposes of this report.

Design Option 4 comprises different interim and ultimate alignments, with Design Option 4 initially involving the upgrading of an existing access track to the interim design standard, prior to the construction of a new road on a different alignment under the ultimate scenario. The interim and ultimate alignments are considered to form a single design option for the purpose of this report.

Concept drawings for each of the design options are presented in **Appendix A**.

4.2 General Design Principles

The design options and road profiles are intended to maximise the use of the natural terrain providing a realistic, efficient and safe design for public use.

The topography of the site area is generally low-lying flat / gently sloping land with exception of the tie in locations for Design Options 1, 2, 2A, 3 and 3A and Design Option 4 to the east through the Deepwater National Park. The major consideration or limitation to these alignments is these undulating areas, particularly when applying geometric constraints and tying into existing road formations. As a result, these areas will have some degree of cutting and filling to traverse through the ridges / gullies, which in some instances may produce high volumes and structural requirements.

Where the use of retaining structures has been recommended, further geotechnical and structural investigations will be required in order to determine a suitable structural solution. However, for the purposes of the conceptual design and quantification, Cardno has assumed a face slope of 5V:1H for all retaining structures (benching has not been considered at this point).

With the exception of Design Options 4 (interim) and 5, all alignments achieve a design speed of 110km/h across the majority of their lengths. Joining into external road networks does however adversely affect the achievable design speed for all design options. It is recommended to locally reduce the design speed to a maximum of 70km/h through difficult locations in order to provide a safe, compliant and cost effective road design.

The intension of Design Option 4 (interim) is to upgrade the existing four-wheel drive track, providing access for two-wheeled vehicles. Achieving the desirable 110km/h design speed set out in Council's Road Hierarchy Policy is not feasible due to steep and undulating terrain within the study area. Significant earthworks and

heavy retaining structures will be required to achieve compliance with these requirements. Design Option 4 (Ultimate) is intended to provide a 110km/h design speed alignment.

In relation to Design Option 5, horizontal constraints associated with the boundaries of the road reserve mean that a 110km/h design speed is generally not achievable. Whilst a vertical profile has been applied to the concept design, further direction from Council will be required to understand the design intention of this option.

5 Technical Assessments

Technical assessments have been undertaken to inform the location, design and assessment of the design options. The overarching findings of the technical assessments are presented in this chapter, with commentary in relation to each design option provided in Chapter 6.

5.1 Drainage Assessment

The rational method has been employed to complete a drainage assessment of the upstream catchment of the design options. It is noted that the Queensland Urban Drainage Manual does not limit the catchment size to which the rational method can be applied in a rural setting.

Longitudinal and cross drainage have been considered and allowances made to cater for overland flows expected within the project catchment area. It is not practical to analyse all drainage details as part of this concept design exercise, however table drains and cross drainage culverts (located at 500 metre intervals) have been accounted for throughout the project. Confirmation of the drainage requirements will be undertaken during the detail design phase of the project.

It is noted that each of the preferred design options traverse waterways classified by the Department of Agriculture and Fisheries as subject to assessment for waterway barrier works purposes. For Design Options 2, 2A and 3A waterways are only mapped in the shared southern section. Culverts required for waterway crossings in each of the design options have been sized having regard to the findings of the drainage assessment and the requirements associated with waterway barrier works (where applicable), which are further discussed in greater detail in Section 5.3.2.4 of this report.

The following summary is provided in relation to the drainage assessment undertaken:

- Ideally, the flood immunity of new crossings consider a Q20 flood event;
- Preliminary drainage calculations at major crossings exceed 400m^3/sec in a Q20 event, indicating significant structures will need to be constructed to achieve this level of flood immunity. The costs associated with these types of crossings could be prohibitive;
- Requirements at major crossings associated with waterway barrier works are far less than hydraulic requirements, meaning hydraulic requirements will be the key design determinant;
- Given the rural setting it may be more appropriate for the road and subsequent crossings to be designed at a lower flood immunity (such as Q1 or even Q0.5) in order to reduce construction costs. This will require Council's approval; and
- Further consideration is also required with regard to the treatment of the road surface, to reduce costs and environmental impacts associated with flood events. For an unsealed road this may include the use of cement stabilised pavements.

In order to understand the relationship between the proposed road and the hydraulic characteristics of the surrounding locality, a flood / hydraulic assessment at varying levels is required. It is recommended that a 'Time of Closure' assessment be included in this assessment. This will allow Council to determine an achievable and acceptable level of immunity for the road and the required crossings. The cost estimates provided in **Appendix B** have assumed a nominal amount for waterway crossings given the unknown nature of required works.

5.2 Geotechnical Sampling and Testing

Construction Sciences Pty Ltd undertook soil sampling at 23 boreholes in the study area between 23 and 25 January 2019. The findings of the testing of each collected soil sample are documented in the report provided as **Appendix C**. The findings of the geotechnical report have been used to inform the pavement design presented as part of the design options provided as **Appendix A**.

Given the vast project area and uncertainty of the preferred option, a typical pavement has been applied throughout the project. This pavement aims to account for the poorer low-lying areas, sandy material to the east (Design Option 4) and rocky northern tie in locations of the central options. These have been detailed in the concept drawings (**Appendix A**) and include a recommendation that a geotextile material be placed under the sub-grade material to provide a more stable foundation for the road pavement.

5.3 Environmental Assessment

5.3.1 Methodology

An Environmental Assessment has been undertaken with specific consideration of the preferred design options discussed in Section 6.2 of this report. The assessment has been informed by undertaking a range of desktop searches using available database and mapping resources, including:

- Agnes Water STP Rising Main Replacement Protected Plant Assessment (GHD Pty Ltd 2015);
- high resolution aerial photography sourced from Nearmap;
- historical imagery;
- Protected Plants Trigger Mapping under the *Nature Conservation Act 1992* ('the NC Act);
- mapping associated with the Koala State Planning Regulatory Provisions;
- the *Vegetation Management Act 1999* ('the VM Act') Regulated Vegetation Management Map ('Regulated Vegetation Map') produced by the Department of Natural Resources, Mines and Energy (DNRME);
- the Wildlife Online database which is maintained by the Department of Environment and Science (DES) under the NC Act;
- the *Environment Protection and Biodiversity Conservation Act 1999* ('the EPBC Act') Protected Matters Search Tool;
- the Atlas of Living Australia database and mapping tools;
- the Australian Virtual Herbarium;
- mapping associated with the State Development Assessment Provisions;
- mapping associated with the Queensland State Planning Policy;
- mapping associated with the Gladstone Regional Council Planning Scheme; and
- the Aboriginal and Torres Strait Islander Cultural Heritage Register and Database.

5.3.2 Desktop Assessment Results

5.3.2.1 Environment Protection and Biodiversity Conservation Act 1999

Due to the coarseness of the EPBC Act mapping and the fact that the alignment options are spatially close to each other there is very little differentiation in the database outputs.

Primarily the difference relates to the fact that the search area for Design Option 4 coincides with the marine and estuarine environment. There is a larger number of species that rely on these specific habitat conditions, such as sea turtles, migratory shorebirds and whales. None of these species would be significantly impacted by the proposed works.

Two flora species, *Cycas megacarpa* and *Germainia capitata,* both listed as Endangered under the EPBC Act have been returned in the results for all alignments. Given these two species have been recorded by GHD in the vicinity of the shared southern section and suitable habitat is considered to occur across the broader study area it is likely that further consideration including targeted surveys for these species would be required regardless of the design option selected.

A number of Threatened Ecological Communities (TEC) were also returned by the EPBC Act Protected Matters Search Tool (PMST) including:

- Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community;
- Littoral Rainforest and Coastal Vine Thickets of Eastern Australia; and
- Lowland Rainforest of Subtropical Australia.

Regional Ecosystem 12.2.2, which is discussed further in Section 5.3.2.2, is consistent with the description for the Littoral Rainforest TEC. RE 12.2.2 is only mapped as occurring along the coastal dunes associated with Design Option 4.

None of the other RE returned in the desktop searches are wholly consistent with any of the other TECs noted above. However, a field survey would be required to confirm the presence or absence of these TECs within the design options.

5.3.2.2 Vegetation Management Act 1999

Pursuant to Schedule 21, Part 2, Section 5 of the *Planning Regulation 2017*, the clearing of vegetation within a road reserve is exempt clearing work for which development approval is not required under the VM Act, provided the clearing is undertaken by Council and:

- is necessary to construct or maintain road transport infrastructure or to source construction material for roads; or
- involves Category R or Category X vegetation.

However, for the purpose of this desktop assessment, the remnant Regional Ecosystems (RE) potentially impacted by the various design option have been identified in Table 5-1 along with short descriptions of each RE, its designation under the VM Act and any possible special values associated with the RE.

It is important to note that parts of the design options are not presently covered by road reserves and until such time as road reserves are created, approvals may be required for the clearing of vegetation in these locations.

Table 5-1 identifies in bold the most common RE within each preferred design option. It is important to note the following.

- For Design Option 5 there is approximately:
  - 40 ha of RE that is considered to be suitable habitat for *Cycas megacarpa* which is listed as Endangered under the EPBC Act and the NC Act and which has been positively identified from the broader locality during surveys completed in 2015, and
  - 70 ha of RE that is considered to be suitable habitat for *Germainia capitata* which is listed as Vulnerable under the EPBC Act and the NC Act and which has been positively identified from the broader locality during surveys completed in 2015.
- For the shared southern section there is approximately 40 ha of RE that is considered to be suitable habitat for *Germainia capitata* which is listed as Vulnerable under the EPBC Act and the NC Act and which has been positively identified from the broader locality during surveys completed in 2015.

Table 5-1 Regional Ecosystems

RE	Short Description	VM Act Status[1]	Special Values	Area of RE contained within 1 km buffer of design option (ha)					
				Shared Southern Section (2, 2A, 3A)	2	2A	3A	4	5
12.12.28	Eucalyptus moluccana woodland on Mesozoic to Proterozoic igneous rocks	OC	None	-	-	-	-	-	9.0
12.12.21	Corymbia intermedia, E. exserta woodland on Mesozoic to Proterozoic igneous rocks	OC	Habitat for threatened plant species including Cycas megacarpa.	-	-	-	-	-	**37.39**
12.12.13	Araucarian Complex microphyll to notophyll vine forest on Mesozoic to Proterozoic igneous rocks	LC	Habitat for threatened plant species including Sarcochilus weinthalii, Corynocarpus rupestris subsp. arborescens and near threatened species including Hernandia bivalvis.	-	<0.01	-	0.58	-	-
12.12.12	Eucalyptus tereticornis, Corymbia intermedia, E. crebra +/- Lophostemon suaveolens woodland on Mesozoic to Proterozoic igneous rocks	OC	None	-	-	-	-	-	8.27
12.12.11	Eucalyptus portuensis or E. acmenoides, Corymbia trachyphloia subsp. trachyphloia woodland on Mesozoic to Proterozoic igneous rocks	LC	None	-	3.25	**5.28**	3.69	-	26.91
12.12.5	Corymbia citriodora subsp. variegata, Eucalyptus crebra woodland on Mesozoic to Proterozoic igneous rocks	LC	Habitat for threatened plant species including Cycas megacarpa.	-	0.02	-	3.23	-	0.02
12.5.10	Eucalyptus latisinensis and/or Banksia aemula low open woodland on complex of remnant Tertiary surface and Tertiary sedimentary rocks	LC	None	5.04	-	-	-	-	-

[1] Note:
E = Endangered
OC = Of Concern
LC = Least Concern

RE	Short Description	VM Act Status[1]	Special Values	Area of RE contained within 1 km buffer of design option (ha)					
				Shared Southern Section (2, 2A, 3A)	2	2A	3A	4	5
12.5.5	Eucalyptus portuensis, Corymbia intermedia open forest on remnant Tertiary surfaces. Usually deep red soils	OC	None	8.38	0.36	0.59	1.22	-	19.47
12.5.4 / 12.5.4a	Eucalyptus latisinensis +/- Corymbia intermedia, C. trachyphloia subsp. trachyphloia, Angophora leiocarpa, Eucalyptus exserta woodland on complex of remnant Tertiary surfaces and Cainozoic and Mesozoic sediments	LC	Habitat for threatened plant species including Macrozamia lomandroides, Germainia capitata and near threatened species including Melaleuca cheelii.	**21.19**	2.9	3.84	4.4	-	33.0
12.5.2a	Corymbia intermedia, Eucalyptus tereticornis open forest on remnant Tertiary surfaces, usually near coast. Usually deep red soils	E	Habitat for threatened plant species including Melaleuca irbyana.	5.16	-	-	-	-	5.81
12.3.13	Closed heathland on seasonally waterlogged alluvial plains usually near coast	LC	None	0.48	-	-	-	0.5	-
12.3.12	Eucalyptus latisinensis or E. exserta, Melaleuca viridiflora var. viridiflora woodland on alluvial plains	LC	Habitat for threatened plant species including Germainia capitata.	20.89	**3.61**	2.85	1.85	-	34.44
12.3.7	Eucalyptus tereticornis, Casuarina cunninghamiana subsp. cunninghamiana +/- Melaleuca spp. fringing woodland	LC	Habitat for an extensive range of aquatic flora and fauna.	-	-	-	-	-	0.58
12.3.6	Melaleuca quinquenervia +/- Eucalyptus tereticornis, Lophostemon suaveolens, Corymbia intermedia open forest on coastal alluvial plains	LC	Habitat for threatened fauna species including the wallum froglet Crinia tinnula.	10.1	1.79	2.34	**4.84**	13.7	11.96
12.3.4	Melaleuca quinquenervia, Eucalyptus robusta woodland on coastal alluvium	OC	Habitat for threatened fauna species including the wallum froglet Crinia tinnula.	1.9	-	-	-	-	-
12.3.3	Eucalyptus tereticornis woodland on Quaternary alluvium	E	Habitat for threatened plant species including Rhaponticum australe.	-	-	-	-	0.01	4.5
12.2.11	Corymbia tessellaris +/- Eucalyptus tereticornis, C. intermedia and Livistona decora woodland on beach ridges in northern half of bioregion	LC	None	-	-	-	-	**36.93**	-

RE	Short Description	VM Act Status[1]	Special Values	Area of RE contained within 1 km buffer of design option (ha)					
				Shared Southern Section (2, 2A, 3A)	2	2A	3A	4	5
12.2.9	Banksia aemula low open woodland on dunes and sand plains. Usually deeply leached soils	LC	Habitat for near threatened plant species including Macarthuria complanata.	-	-	-	-	12.82	-
12.2.7	Melaleuca quinquenervia or rarely M. dealbata open forest on sand plains	LC	Habitat for threatened plant species including Phaius australis, P. bernaysii and near threatened species including Durringtonia paludosa.	-	-	-	-	3.38	-
12.2.2	Microphyll/notophyll vine forest on beach ridges	E	Habitat for threatened plant species including Acronychia littoralis and near threatened species including, Xylosma ovata and Dansiea elliptica.	-	-	-	-	8.97	-
Non-remnant	N/A	N/A	None	4.75	10.04	9.66	0.5	-	14.64

5.3.2.3 Nature Conservation Act 1992

5.3.2.3.1 Protected Plants – High Risk Trigger Area

All five preferred design options partly traverse land mapped as 'High risk area' pursuant to the Protected Plants Flora Survey Trigger Map. Figure 5-1 shows the mapped High risk areas, with the red lines indicatively showing Design Options 4 and 5 for context. Figure 5-1 shows that the primary constraint associated with the High risk area is in the northern portion of Design Options 2, 2A and 3. It is relevant to note that this area coincides with the known populations of *Germainia capitata* and *Cycas megacarpa* recorded by GHD.

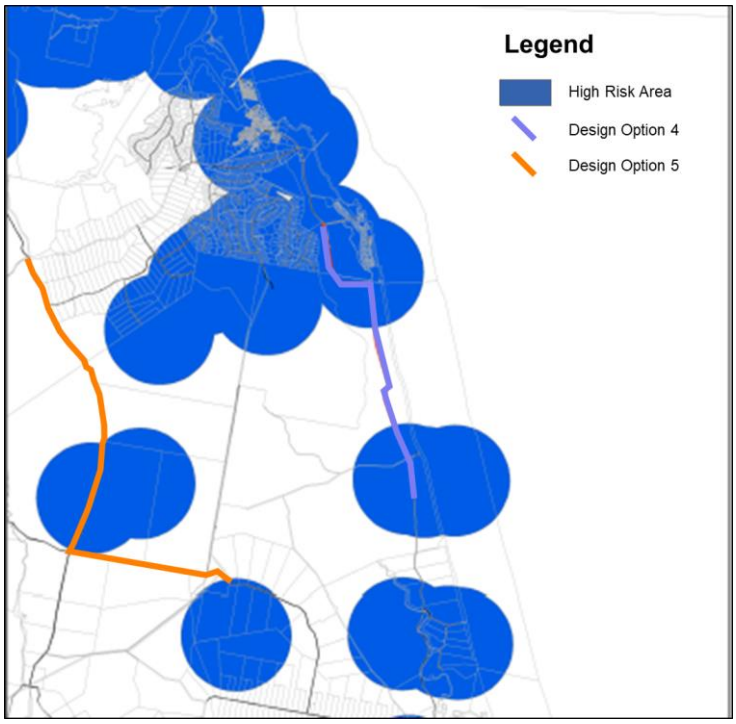

Figure 5-1 Extract of Protected Plants Flora Survey Trigger Map

5.3.2.3.2 Conservation Significant Species

All of the preferred design options have returned records for Endangered, Vulnerable or Near Threatened species (EVNT) under the NC Act. As has been noted previously, the most consistently recorded species appear to be *Germainia capitata* and *Cycas megacarpa*, which, based on reporting completed by GHD, are confirmed in the northern portion of the broader locality. It is also relevant to note that suitable habitat for these species occurs across a broader area of the preferred design options and given the existing information it is likely that they will occur.

The largest number of EVNT species was returned for Design Option 4. Many of these are directly associated with the marine and/or intertidal environment, however, there are a number of species that were recorded in the Design Option 4 area that are also considered likely to occur across the broader locality. The species considered most likely to occur across the broader locality have been listed below along with their designation under the NC Act and the EPBC Act:

- Powerful owl (*Ninox strenua*), Vulnerable and N/A;
- Southern greater glider (*Petauroides volans volans*), Vulnerable and Vulnerable; and
- Koala (*Phascolarctos cinereus*), Vulnerable and Vulnerable.

Further on ground assessments would be required to determine if these species and/or likely habitat for same occurs within the impact area of the other preferred design options.

5.3.2.3.3 Native Fauna Breeding Places

Given the extensive areas of remnant vegetation and the proximity of Deepwater National Park it is likely that the broader locality supports abundant fauna breeding locations. This is likely to include:

- recognised breeding features such as nests, hollows and termitaria; and

> generalised breeding features such as waterways and ponded areas.

Field surveys would be required to more accurately determine the number and location of breeding features within each of the preferred design options.

5.3.2.3.4 Protected Areas

The relationship between protected areas and the preferred design options is summarised in Table 5-2.

Table 5-2 Protected Areas

Design Option	Protected Areas
2	The design option adjoins, but does not traverse, Deepwater National Park at the southern limit of the alignment.
2A	The design option adjoins, but does not traverse, Deepwater National Park at the northern and southern limits of the alignment.
3A	The design option traverses Deepwater National Park at the northern end of the alignment and adjoins Deepwater National Park at the southern end of the alignment.
4	The design is entirely located within Deepwater National Park and a Nature Refuge to the north.
5	The design option does not traverse or adjoin any mapped Projected Areas.

5.3.2.4 Fisheries Act 1994

Waterways, mapped by the Department of Agriculture and Fisheries (DAF), for the purpose of Waterway Barrier Works approval, traverse the broader locality. The mapped waterways traversed by each of the preferred design options are described in Table 5-3.

Table 5-3 Mapped Waterways

Design Option	Mapped Waterways
2, 2A and 3A (Shared Southern Section)	▪ Four (4) Green – Low Risk Waterways ▪ Two (2) Amber – Moderate Risk Waterways.
2 (north)	No crossings of mapped waterways
2A (north)	No crossings of mapped waterways
3A (north)	No crossings of mapped waterways
4	▪ One (1) Red – High Risk Waterway
5	▪ Five (5) Green – Low Risk Waterways ▪ One (1) Amber – Moderate Risk Waterway

Figure 5-2 shows the mapped waterways described in Table 5-3.

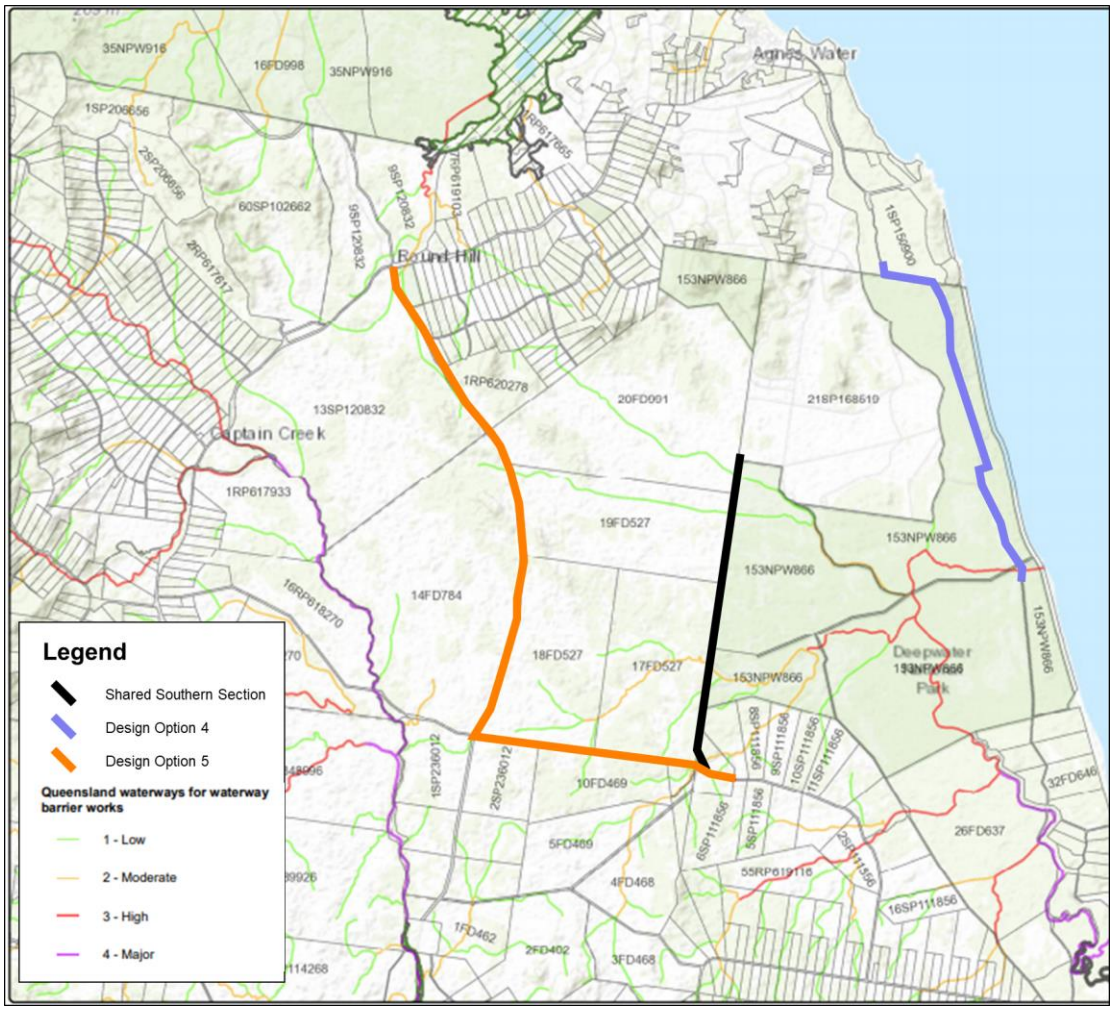

Figure 5-2 Queensland Waterways for Waterway Barrier Works Extract

5.3.2.5 State Assessment and Referral Agency – Development Assessment Mapping

5.3.2.5.1 Queensland Heritage Register

None of the preferred design options are located near any known features on the Queensland Heritage Register.

5.3.2.5.2 Unexploded Ordinance

None of the preferred design options are located within known Unexploded Ordinance zones.

5.3.2.5.3 Coastal Management District including Erosion Prone Area and Storm Tide Inundation Area

Design Option 4 is the only preferred design option that will traverse the mapped Coastal Management District (CMD) and areas mapped as Erosion Prone and Medium Storm Tide Inundation.

The shared southern section will traverse a small area of Medium Storm Tide Inundation, associated with Fullers Creek.

5.3.2.5.4 Wetland Protection Area

All of the preferred design options will traverse areas of mapped Wetland Protection Area and associated trigger areas. The extract provided in Figure 5-3 shows that Design Options 2, 2A and 3A traverse the largest area of mapped wetland and trigger area.

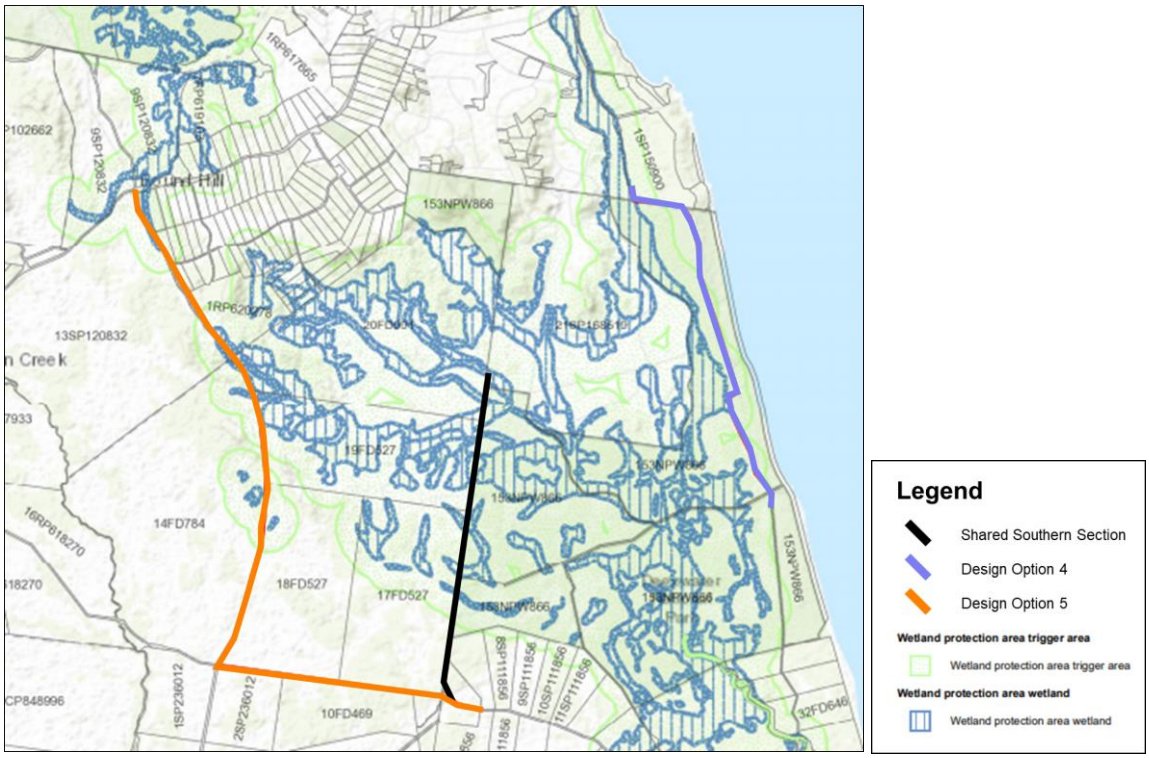

Figure 5-3 Extract of Wetland protection area mapping and alignment options

5.3.2.6 Environmental Protection Act 1994

Design Options 2, 2A, 3A and 5 with either traverse or immediately adjoin land that is subject to the following Environmental Authorities (EA):

- DTMR ERA 16 - Extraction and Screening (EPPR00770213); and
- GRC ERA 63 – Sewage Treatment (EPPR00770213).

The location of the land subject to the EAs is shown in Figure 5-4.

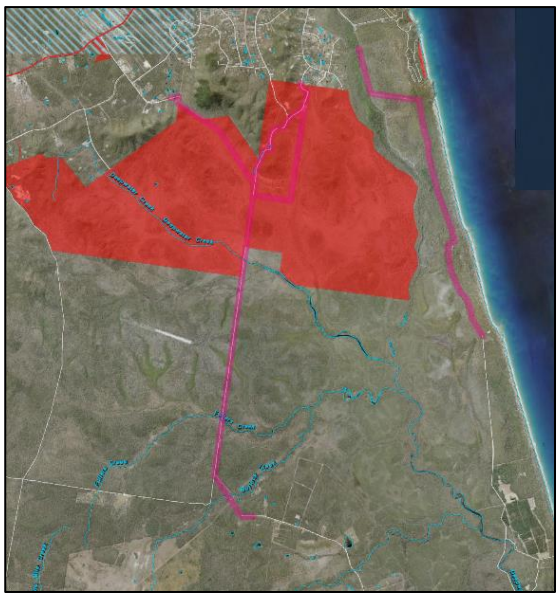

Figure 5-4 Land subject to Environmental Authorities

5.3.2.7 Aboriginal Cultural Heritage Act 2003

Based on the search results of the Aboriginal and Torres Strait Islander Cultural Heritage Register and Database, there is one known Scarred/carved tree close to the northern extent of Option 3A. There are also a larger number of artefact scatters in the broader locality.

5.3.3 Recommendations and Approval Requirements

Table 5-4 provided below summarises the key results obtained though the desktop assessment process. It is important to note that only matters that must be addressed through additional assessment and/or approval are identified in Table 5-4.

Table 5-4 Recommendations and Approval Requirements

Area of Consideration	Element Present within Site?	Approval or Further Action Required	Key Findings and recommendations
Environment Protection and Biodiversity Conservation Act 1999	Possible	Yes	▪ Matters of National Environmental Significance (MNES) are likely to occur in the broader locality. ▪ Field surveys are required to determine the likely occurrence of MNES and habitat for same within and adjoining areas of proposed disturbance. ▪ Once a design option has been selected and, if MNES are known or likely to be impacted by the selected design option, it is recommended that a self-assessment against the EPBC Act Significant Impact Guidelines is completed to determine if a referral to the Commonwealth Department of Environment and Energy for a decision on whether the action is a controlled action is warranted.
Nature Conservation Act 1992 Protected Plants	Yes	Yes	▪ All of the preferred design options partly traverse land mapped within a High Risk Trigger Area for a Protected Plants Flora Survey. At this stage it is understood that there will likely be clearing of native in the wild vegetation. ▪ A survey in accordance with the guidelines must be conducted within the areas of proposed clearing and a 100 metre buffer of the extent of clearing. ▪ If any Endangered, Vulnerable or Near Threatened flora species are detected, a clearing permit and Impact Management Plan would be required prior to clearing any native vegetation.
Fisheries Act 1994 Waterway Barrier Works	Yes	Yes	▪ Mapped waterways are traversed by all of the preferred design options. ▪ Any instream works (e.g. culverts, bridges) will need to comply with the *Accepted development requirements for operational work that is constructing or raising waterway barrier works* (ADR) for Waterway Barrier Works or will need a Development Approval for Carrying Out Operational Work.
Nature Conservation Act 1992 Species Management Program (SMP) – Fauna Breeding Places	Probable	Yes	▪ It is likely that the areas of native vegetation with the study area support breeding places for native wildlife. ▪ A field survey should be conducted to ascertain if there are any known or likely fauna breeding features within selected design option. ▪ Based on the desktop assessment, it is possible that a 'High Risk' SMP for EVNT fauna species would be required for works that result in the disturbance to these features.

Area of Consideration	Element Present within Site?	Approval or Further Action Required	Key Findings and recommendations
Nature Conservation Act 1992 Protected Estates	Yes	Yes	▪ Design Options 3A and 4 will involve works within a Protected Area (Deepwater National Park). ▪ Under the NC Act, the chief executive of the DES can allow use of a national park or protected area in a manner that is inconsistent with the management principles or plan. This can occur if: – the basic principle for the management of national parks will be observed as far as possible (if the land is in a national park) – the use will be in the public interest – the use is ecologically sustainable – there is no reasonable alternative to the use. ▪ If either of these design options is selected, Council would need to apply for Authority under Sections 34, 35, 38 of the NC Act. The application would need to be supported by a Submission Report, Environmental Management Plan, Survey Plans, maps and the required fee.
Planning Regulation 2017 GBR Wetlands	Yes	Yes	▪ All of the preferred design options traverse land that is mapped as Great Barrier Reef wetlands and associated trigger areas. ▪ The proposed works are likely to constitute 'High Impact Earthworks'. If these occur within wetland protection area, Development Approval for Operational Work within a Wetland Protection Area will be required. ▪ Despite the above, the works may constitute Accepted Development pursuant to Schedule 14 of the Planning Regulation. However, it would be necessary to complete a field assessment to confirm whether the works will not impact mapped or field confirmed wetlands. ▪ It is recommended that once a design option has been selected, field surveys are conducted to ascertain if mapped or field confirmed wetlands will be impacted and also determine if the proposed works completed in the vicinity of same constitute 'High Impact Earthworks'.
Indigenous Cultural Heritage	Possible	Possible	▪ A search of the Aboriginal and Torres Strait Islander cultural heritage database and register was completed. There are known items of indigenous cultural heritage within the broader locality. ▪ The proposed works will be required to comply with the Aboriginal Cultural Heritage Act 2003 Duty of Care Guidelines Gazettal Date: 16 April 2004 (DoC Guidelines). Specifically: – Category 4 - Areas previously subject to Significant Ground Disturbance. This will include areas that have been subject to past disturbance (i.e. the road reserves); and – Category 5 – Activities causing additional surface disturbance and new areas of disturbance. This would be associated with clearing vegetation and construction outside of the existing road reserves. ▪ For previously disturbed areas within the road reserves, appropriate measures to maintain compliance with the DoC Guideline would include recording possible discoveries via a Construction Environment Management Plan (CEMP) and notification of the recognised aboriginal party, should a known or potential find be made. ▪ For areas of new disturbance outside the existing road reserves it is recommended that Council notify the recognised aboriginal party in accordance with the DoC Guideline, and seek: – Advice as to whether the area is culturally significant; – If it is, agreement on how best the activity may be managed to avoid or minimise harm to any cultural heritage values – this may include completing a cultural heritage assessment and/or cultural heritage management plan.

Area of Consideration	Element Present within Site?	Approval or Further Action Required	Key Findings and recommendations
Environmental Authorities and Contaminated Land	Probable	Possible	▪ Searches of the EMR and CLR were not completed as part of this scope. Once a design option is selected, these searches should be completed. ▪ A number of parcels of land are subject to EAs. This is not likely to constrain the design options provided the proposed works do not affect the operations authorized. It is also likely that the land associated with the EA for sewerage treatment will be listed on the EMR/CLR and as such there may be implications associated with any proposed removal of fill from this land.

5.4 Land Titling and Ownership

A preliminary review of land titling matters, including land ownership, has been undertaken in relation to the design options, to inform the assessment undertaken in Chapter 6. A review of existing cadastral information was undertaken to determine land of relevance to the project. Certificates of title were obtained and reviewed for each identified lot, a copy of which is provided as **Appendix D**.

Table 5-5 provides the details of lots and easements of relevance to the project. Table 5-5 should be read in conjunction with the plans provided in **Appendix A**.

Table 5-5 Land Titling and Ownership

Real Property Description	Owner	Tenure	Easements
Lot 12 on FD638	The State of Queensland (Gladstone Regional Council as trustee)	Reserve (Water)	Easement X on SP189311 burdening the lot for electricity purposes to the benefit of Ergon Energy Corporation Limited.
Lot 7 on SP111856	Thomas Balto (Personal Representative Under Instrument 718640239)	Freehold	-
Lot 17 on FD527	Joan Pamela Hills	Freehold	Easement Y on SP189312 burdening the lot for electricity purposes to the benefit of Ergon Energy Corporation Limited.
Lot 19 on FD527	Woodkel Pty Ltd	Freehold	Easement Z on SP189313 burdening the lot for electricity purposes to the benefit of Ergon Energy Corporation Limited.
Lot 153 on NPW866	The State of Queensland (Represented by Department of National Parks, Sport and Racing)	National Park	-
Lot 20 on FD991	Gladstone Regional Council	Freehold	Easement AA on SP189314 burdening the lot for electricity purposes to the benefit of Ergon Energy Corporation Limited.
Lot 21 on SP168519	Gladstone Regional Council	Freehold	Easement AB on SP189314 burdening the lot for electricity purposes to the benefit of Ergon Energy Corporation Limited.
Lot 28 on RP619598	John Hargreaves / June Anne Hargreaves (Joint Tenants)	Freehold	-
Lot 18 on FD527	CBS Corporation Pty Ltd (Trustee Under Instrument 707097829)	Freehold	-
Lot 14 on FD784	CBS Corporation Pty Ltd (Trustee Under Instrument 707097829)	Freehold	-

Real Property Description	Owner	Tenure	Easements
Lot 13 on SP120832	Suzanne Lee Turner	Freehold	-
Lot 1 on RP620278	Traywar Pty Ltd	Freehold	-
Lot 16 on FD526	Kennith Alan D'arcy and Rita Lucia D'arcy (Joint Tenants)	Freehold	-
Lot 15 on FD526	Robert John Anstey and Annette Maree Anstey (Joint Tenants)	Freehold	-
Lot 10 on FD469	Steven Gary Czerwonka (Trustee under Instrument 716714610)	Freehold	-
Lot 1 on SP236012	CBS Corporation Pty Ltd (Trustee under Instrument 707097829)	Freehold	-
Lot 2 on SP236012	CBS Corporation Pty Ltd (Trustee under Instrument 707097829)	Freehold	-
Lot 1 on SP150900	Australian Bush Heritage Fund	Freehold	Easement E on SP150900 burdening the lot to the benefit of Miriam Vale Shire Council. Easement G on SP160548 burdening the lot to the benefit of Lot 2 on SP150900. Easement Q on SP168968 burdening the lot to the benefit of Lots 2, 3 and 4 on SP150900. Easement H on SP160548 (located in Lot 0 on SP150901) benefitting the lot
Lot 0 on SP150901	Body Corporate for Sunrise at 1770 Community Titles Scheme 32536	Freehold	Various easements outside the area of interest for the project – refer to **Appendix D** for further detail.

In addition to the above lots, various road reserves exist within the study area. The location of the existing road reserves is shown in **Appendix A**.

5.5 Speed Control

The proposed road designs have been prepared on the basis of Council's design requirements, applicable standards and surrounding contextual features, in order to deliver road designs that align with Council's objectives for the project. Direct consideration has not been given to speed control as part of the design process. It is acknowledged that there are locations where the road designs may be conducive to a speed of travel above the intended posted speed limit. It is therefore recommended that Council further consider any requirements for speed control as part of their ongoing investigations relating to the project.

6 Options Analysis

6.1 Stage 1 – Initial Assessment

Stage 1 provides for the initial assessment of each of the design options presented in Chapter 4 of this report, with the intent of selecting preferred design options that will be further considered as part of Stage 2 of the analysis process.

Table 6-1 documents the initial assessment undertaken.

Table 6-1 Initial Assessment

Design Option	Commentary
Shared Southern Section	▪ Terrain is generally low lying with slight contours. ▪ There is the potential for conflicts to exist with existing Ergon Energy assets (subject to further investigation). ▪ Geotechnical material is a poor foundation for road pavement. ▪ Earthworks would be reasonable however ▪ No immediate drainage concerns. ▪ Four (4) green and two (2) amber waterway crossings (for waterway barrier works). ▪ Limited external works would be required to complete the link to an adequate standard. ▪ Crossing of waterways will increase construction costs. ▪ Relatively straight connection between Deepwater/Baffle Creek and Agnes Water ▪ Potential safety concerns associated with the substantial straight section, although sufficient sight distance exists. ▪ Wholly located in land that is controlled or owned by Council, being a combination of freehold land, road reserves and state reserve land (for which Council is trustee).
1 (North)	▪ Terrain is hilly. ▪ Design passes through the existing sewerage treatment plant, which could result in interface/safety issues. ▪ There is the potential for conflicts to exist with existing Ergon Energy assets (subject to further investigation). ▪ Geotechnical material is solid and good foundation for road pavement. ▪ Notable earthworks are likely to be required given the terrain, with the use of significant retaining structures. ▪ No immediate drainage concerns. ▪ No waterway crossings (for waterway barrier works). ▪ External works would be required to complete the link to an adequate standard, particularly along Jobson Road. ▪ Construction costs would likely be high given the earthworks and retaining structures required. ▪ Relatively straight connection between Deepwater and Agnes Water. ▪ Wholly located in Lot 21 on SP168519, which is freehold land owned by Council.
2 (North)	▪ Terrain is hilly. ▪ Alignment passes to the east of the sewerage treatment plant. ▪ Limited conflict with existing Ergon Energy assets. ▪ Geotechnical material is solid and good foundation for road pavement. ▪ Earthworks would be notable given the terrain and would require significant retaining structures. ▪ No immediate drainage concerns. ▪ No waterway crossings (for waterway barrier works). ▪ External works would be required to complete the link to an adequate standard, particularly on Jobson Road. ▪ Construction costs are likely to be significant given the earthworks and retaining structures required. ▪ Relatively straight connection between Deepwater and Agnes Water. ▪ Wholly located in Lot 21 on SP168519, which is freehold land owned by Council.

Design Option	Commentary
2A (North)	▪ Terrain is hilly. ▪ Alignment passes to the east of the sewerage treatment plant. ▪ Limited conflict with existing Ergon Energy assets. ▪ Geotechnical material is solid and good foundation for road pavement; ▪ Earthworks would be acceptable as this alignment uses the existing terrain to reduce the need for heavy structures. ▪ No immediate drainage concerns, although there will likely be a need for a moderate cross drainage structure towards the north. ▪ No waterway crossings (for waterway barrier works). ▪ Limited external works would be required to complete the link to an adequate standard. Anderson Way appears to be the most suitable tie in point for this standard of road. ▪ Construction costs are anticipated to be acceptable. ▪ Relatively straight connection between Deepwater and Agnes Water. ▪ No significant safety concerns based on the concept design. ▪ Wholly located in Lot 21 on SP168519, which is freehold land owned by Council.
2B (North)	▪ Terrain is hilly. ▪ Alignment passes to the east of the sewerage treatment plant. ▪ Limited conflict with existing Ergon Energy assets; ▪ Geotechnical material is solid and good foundation for road pavement. ▪ Notable earthworks are likely to be required given the terrain, with the use of significant retaining structures. ▪ No immediate drainage concerns. ▪ No waterway crossings (for waterway barrier works). ▪ External works would be required to complete the link to an adequate standard, particularly on Streeter Drive. ▪ Construction costs are likely to be high given the earthworks and retaining structures required. ▪ Relatively straight connection between Deepwater and Agnes Water. ▪ Wholly located in Lot 21 on SP168519, which is freehold land owned by Council.
3 (North)	▪ Terrain is generally flat / slightly graded with the exception of a mountainous section toward the northern end of the option. ▪ Limited conflict with existing Ergon Energy assets. ▪ Geotechnical material is solid and good foundation for road pavement. ▪ Earthworks are significant given the terrain and would require significant retaining structures. ▪ No immediate drainage concerns. ▪ No waterway crossings (for waterway barrier works). ▪ Limited external works would be required to complete the link to an adequate standard. ▪ Construction costs would be high given the earthworks and retaining structures required; ▪ Extensive cutting is required near the tie in point and poses safety concerns associated with batter protection and falling rocks. ▪ The northern section of Design Option 3 will require the use of a small portion of privately owned land (Lot 28 on RP619508) to facilitate the required connection to Rocky Crossing Road. The northern section of Design Option 3 is otherwise wholly located in freehold land that is owned by Council.

Design Option	Commentary
3A (North)	▪ Terrain is generally flat / slightly graded. ▪ Limited conflict with existing Ergon Energy assets. ▪ Geotechnical material is solid and good foundation for road pavement. ▪ Earthworks are acceptable given the terrain. ▪ No immediate drainage concerns. ▪ No waterway crossings (for waterway barrier works). ▪ Limited external works would be required to complete the link to an adequate standard. ▪ Construction costs would be acceptable. ▪ No significant safety concerns based on available information and concept design. ▪ The northern section of Design Option 3A will require the use of part of Deepwater National Park to facilitate the required connection to Rocky Crossing Road. The northern section of Design Option 3A is otherwise wholly located in freehold land that is owned by Council.
4	▪ Terrain is undulating consistent with a coastal dune environment. ▪ No known conflicts with existing utilities. ▪ Geotechnical material is poor with sandy foundation for road pavement. ▪ Substantial earthworks are required given the terrain, with significant retaining structures. ▪ No immediate drainage concerns. ▪ One (1) red waterway crossing (for waterway barrier works). ▪ Extensive external works would be required to complete the link to an adequate standard, particularly in relation to crossing Deepwater causeway, which could require heavy structural solutions. ▪ Construction costs would be high given the earthworks and retaining structures required. ▪ The extensive cutting poses safety concerns associated with batter protection and falling rocks. ▪ The interim alignment of Design Option 4 is based on an existing access track alignment and as such does not comply with any applicable standard. Use of this interim alignment may cause safety concerns and expose Council to liability issues, noting the substantial deficiencies. ▪ Both the interim and ultimate alignments for Design Option 4 are located in land that is not owned or controlled by Council. The majority of land to which Design Option 4 relates is the Deepwater National Park, which will require specific ownership and environmental investigations.
5	▪ Terrain is generally flat / slightly graded to undulating. ▪ Limited conflict with existing Ergon Energy assets. ▪ Geotechnical material is expected to be poor to average foundation for road pavement. ▪ Earthworks are acceptable given the terrain. ▪ No immediate drainage concerns. ▪ Five (5) green and one (1) amber waterway crossings (for waterway barrier works). ▪ Significant external works would be required to complete the link to an adequate standard. It is recommended the intersection with Uxbridge Road / Eurimbula Road / Round Hill Road be considered for upgrading as part of the project, to ensure ongoing safety. It is likely the intersection will require full upgrading (possibly a staggered T-intersection) with land resumptions to achieve a safe outcome. ▪ Construction costs may be considerable depending on design / public consultation. ▪ Wholly located within existing road reserves or Council controlled land.

Based on the initial assessment documented in Table 6-1, it is considered that Design Options 2, 2A, 3A, 4 and 5 represent preferred design options.

6.2 Stage 2 – Multiple Criteria Analysis

As discussed in Section 6.1, Stage 1 of the options analysis has identified Options 2, 2A, 3A, 4 and 5 to be preferred options, for which further analysis is required. As discussed in Section 3.4 of this report, a Multiple Criteria Analysis (MCA) has been employed for Stage 2 of the options analysis process, relating only to the preferred options, with the intent of identifying a recommended design option.

The following criteria have been used for the MCA.

- **Opinion of Cost (Construction) – Interim** relating to the construction cost of the interim road design, with a higher score indicating a lower cost option;
- **Opinion of Cost (Construction) – Ultimate** relating to the construction cost of the ultimate road design, with a higher score indicating a lower cost option;
- **Opinion of Cost (Maintenance) – Interim** relating to the cost of maintaining the interim road, with a higher score indicating a lower cost of maintenance;
- **Opinion of Cost (Maintenance) – Ultimate** relating to the cost of maintaining the ultimate road, with a higher score indicating a lower cost of maintenance;
- **Ownership** relating to the relationship between the road design and the ownership of the land on which it is proposed, with a higher score indicating more appropriate land ownership;
- **Environment** relating to the impact of the road design on the environment, with a higher score indicating a lesser relative environmental impact. The environment criteria has been separated into five sub-criteria relating to impacts on regulated vegetation, protected areas, waterways, wetlands and other matters;
- **Connection (North)** relating to the suitability of the connection of the design option to the existing road network in the north of the study area, with a higher score indicating better suitability;
- **Connection (South)** relating to the suitability of the connection of the design option to the existing road network in the south of the study area, with a higher score indicating better suitability;
- **Serviceability** relating to the ability of the design option to achieve Council's objective for the project, being to provide a new road connecting Agnes Water to Baffle Creek;
- **Travel Time** relating to the time taken to travel between Agnes Water and Baffle Creek using the design option at the achievable road speed, with a higher score indicating a quicker travel time;
- **Potential Flood Impact** relating to the extent to which the road design may be subject to flooding (subject to further detailed investigations), with a lower score indicating greater potential extent of flooding;
- **Additional Works** relating to the need for additional works to be undertaken on the surrounding road network to support the road design, with a lower score indicating increased additional works;
- **Social Impacts** relating to the impact of the road design on social matters including amenity and recreational opportunities, with a lower score indicating greater social impact;
- **Safety** relating to the safety of the road design, with a higher score indicating greater relative safety; and
- **Existing Utilities Interface** relating to the interface of the road design with existing utility infrastructure, with a lower score indicating greater potential for conflict with services.

Table 6-2 documents the MCA undertaken in relation to the preferred design options. A 1 (worst) to 10 (best) rating system has been employed. Table 6-2 should be read in conjunction with the explanatory table provided in **Appendix F**, which provides further detail in relation to the methodology used to rate each of the design options. Where possible, quantitative data stemming from the technical assessments has been used to inform the scoring of each design option in the MCA.

Table 6-2 Multiple Criteria Analysis

Criteria	Weighting	Design Options				
		2	2A	3A	4	5
Opinion of Cost (Construction) – Interim	10%	2	6	6	10	2
Opinion of Cost (Construction) – Ultimate	10%	9	9	9	2	7
Opinion of Cost (Maintenance) – Interim	2.5%	9	9	9	10	9
Opinion of Cost (Maintenance) – Ultimate	2.5%	6	6	6	1	4
Ownership	10%	8	8	3	0	9
Environment - Regulated Vegetation	2%	7	7	7	7	1
Environment - Protected Areas	3%	8	8	3	0	10
Environment - Waterways	3%	2	2	2	7	3
Environment - Wetlands	2%	3	3	3	6	8
Environment - Other	2%	5	5	5	6	7
Connection (North)	3%	4	7	3	8	5
Connection (South)	3%	7	7	7	5	7
Serviceability	5%	10	10	10	10	10
Travel Time (Interim)	5%	6	6	6	6	2
Travel Time (Ultimate)	5%	6	6	6	9	4
Potential Flood Impact	5%	4	4	4	8	8
Additional Works	4%	5	7	4	3	2
Social Impacts	8%	5	7	7	3	8
Safety	12%	6	8	8	3	4
Existing Utilities Interface	3%	4	6	6	9	8
Unweighted Total	**200**	**116**	**131**	**114**	**113**	**118**
Weighted Total	**10**	**5.95**	**6.98**	**6.09**	**5.10**	**5.84**

Note – Table 6-2 provides a summary of the MCA undertaken. Further detail is provided in the explanatory table in **Appendix F**.

6.3 Summary

The two-stage options analysis documented in this chapter identifies that Design Option 2A is the recommended design option, on the basis of a weighted total of 6.98 out of 10. The two-stage analysis process to arrive at the recommended design option is summarised in Figure 6-1.

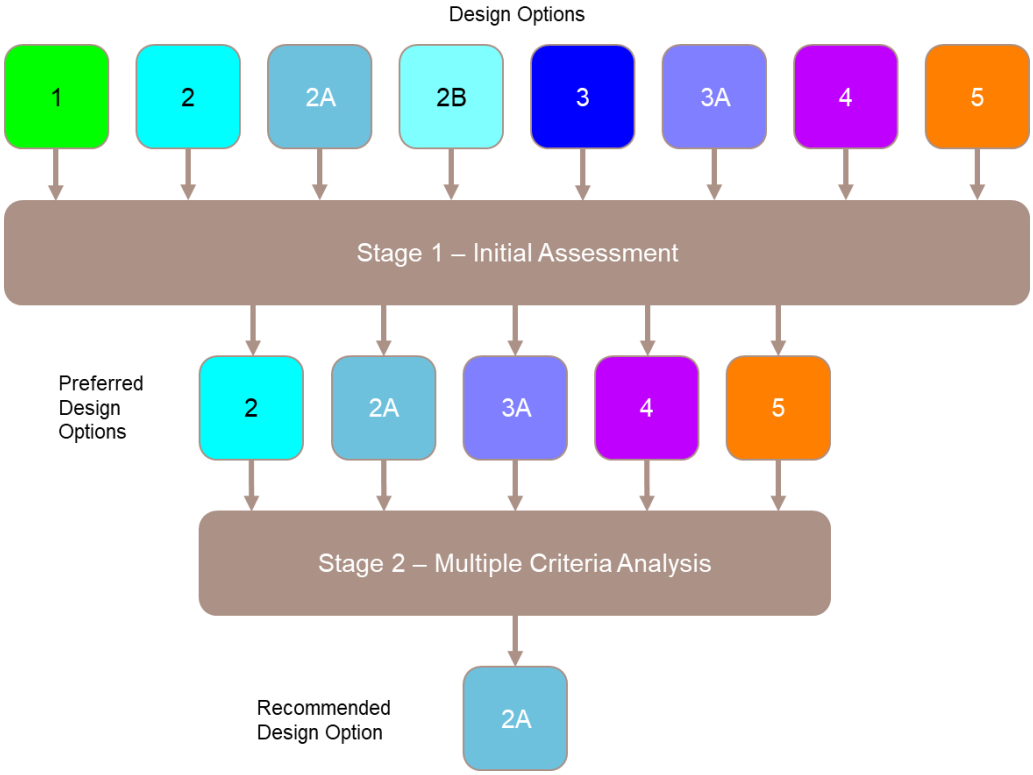

Figure 6-1 Analysis Process

7 Conclusion and Recommendations

This report documents the design and analysis work undertaken by Cardno in relation to the Inland Link Road connecting Agnes Water and Baffle Creek. Work undertaken by Cardno comprises:

- Preparation of concept designs for each of the design options, as discussed in Chapter 4 and presented in **Appendix A**;
- Preparation of preliminary cost estimates for each design option, as presented in **Appendix B**;
- Completion of technical assessments to inform the design and analysis work, as discussed in Chapter 5;
- Completion of a two-stage analysis process to identify five preferred design options and a recommended design option, as discussed in Chapter 6; and
- Ongoing consultation with Council throughout the project to inform the design and analysis work.

The report identifies that Design Option 2A is the recommended design option. On the basis of the design and analysis work undertaken, it is recommended that Council:

- Complete a detailed review of the recommended design option;
- Complete further investigations, as required, to confirm the accuracy of currently available information, noting the present limitations and the most suitable road alignment and design. These may include, but not be limited to:
  - Detailed land survey of the corridor within which the recommended design option is to be located;
  - Environmental field assessment, to confirm the findings of the desktop assessment documented in this report (Table 5-4) and confirm approval requirements;
  - Detailed flood assessment, particularly relating to the recommended design option, to confirm requirements for waterway crossings and road levels; and
  - Detailed geotechnical investigations associated with the recommended design option, to confirm the required pavement design;
- Identify any instances where speed control measures may be required as part of the recommended design option to improve safety;
- Undertake further internal consultation to identify any additional matters of technical consideration;
- Engage with various external stakeholders (as relevant) including (but not limited to) local land holders and the broader community, local businesses and tourism operators, the Department of Natural Resources and Mines (with respect to new road reserves and other titling matters), the Department of Environment and Science (where required in relation to the Deepwater National Park), the Department of the Environment and Energy (relating to the EPBC Act) and Ergon Energy (with respect to the relationship between the new road and existing electricity infrastructure);
- Consider the co-location of telecommunications infrastructure in the road design if appropriate; and
- Progress with the detailed design of the proposed road, when appropriate, to allow for the accurate costing of the project.

APPENDIX A

DESIGN OPTIONS

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GLADSTONE REGIONAL COUNCIL

AGNES WATER AND BAFFLE CREEK INLAND LINK ROAD CONCEPT DESIGN

SCHEDULE OF DRAWINGS

DRAWING No.	DESCRIPTION
R2018071-CI-000	COVER SHEET AND DRAWING SCHEDULE
R2018071-CI-001	CONCEPTUAL ALIGNMENTS
R2018071-CI-002	TYPICAL SECTIONS AND DETAILS SHEET 1 OF 2
R2018071-CI-003	TYPICAL SECTIONS AND DETAILS SHEET 2 OF 2
R2018071-CI-010	MAUDE HILL ROAD TO YABBY ROAD ALIGNMENT MCA0
R2018071-CI-011	LONGITUDINAL SECTION ALIGNMENT MCA0 - SHEET 1 OF 3
R2018071-CI-012	LONGITUDINAL SECTION ALIGNMENT MCA0 - SHEET 2 OF 3
R2018071-CI-013	LONGITUDINAL SECTION ALIGNMENT MCA0 - SHEET 3 OF 3
R2018071-CI-020	YABBY ROAD TO JOBSON ROAD VIA SEWERAGE TREATMENT PLANT CONNECTION OPTION 1 - ALIGNMENT MC01
R2018071-CI-021	LONGITUDINAL SECTION ALIGNMENT MC01 - SHEET 1 OF 2
R2018071-CI-022	LONGITUDINAL SECTION ALIGNMENT MC01 - SHEET 2 OF 2
R2018071-CI-030	YABBY ROAD TO JOBSON ROAD EASTERN CONNECTION OPTION 2 - ALIGNMENT MC02
R2018071-CI-031	LONGITUDINAL SECTION ALIGNMENT MC02 - SHEET 1 OF 2
R2018071-CI-032	LONGITUDINAL SECTION ALIGNMENT MC02 - SHEET 2 OF 2
R2018071-CI-033	YABBY ROAD TO JOBSON ROAD EASTERN CONNECTION OPTION 2A - ALIGNMENT MC02A
R2018071-CI-034	LONGITUDINAL SECTION ALIGNMENT MC02A - SHEET 1 OF 2
R2018071-CI-035	LONGITUDINAL SECTION ALIGNMENT MC02A - SHEET 2 OF 2
R2018071-CI-036	YABBY ROAD TO JOBSON ROAD EASTERN CONNECTION OPTION 2B - ALIGNMENT MC02B
R2018071-CI-037	LONGITUDINAL SECTION ALIGNMENT MC02B - SHEET 1 OF 2
R2018071-CI-038	LONGITUDINAL SECTION ALIGNMENT MC02B - SHEET 2 OF 2
R2018071-CI-040	YABBY ROAD TO ROCKY CONNECTION ROAD OPTION 3 - ALIGNMENT MC03
R2018071-CI-041	LONGITUDINAL SECTION ALIGNMENT MC03 - SHEET 1 OF 2
R2018071-CI-042	LONGITUDINAL SECTION ALIGNMENT MC03 - SHEET 2 OF 2
R2018071-CI-043	YABBY ROAD TO ROCKY CONNECTION ROAD OPTION 3A - ALIGNMENT MC03A
R2018071-CI-044	LONGITUDINAL SECTION ALIGNMENT MC03A - SHEET 1 OF 2
R2018071-CI-045	LONGITUDINAL SECTION ALIGNMENT MC03A - SHEET 2 OF 2
R2018071-CI-050	DEEP WATER THROUGH NATIONAL PARK OPTION 4 (INTERIM) - ALIGNMENT MC04
R2018071-CI-051	LONGITUDINAL SECTION ALIGNMENT MC04 - SHEET 1 OF 4
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R2018071-CI-053	LONGITUDINAL SECTION ALIGNMENT MC04 - SHEET 3 OF 4
R2018071-CI-054	LONGITUDINAL SECTION ALIGNMENT MC04 - SHEET 4 OF 4
R2018071-CI-055	DEEP WATER THROUGH NATIONAL PARK OPTION 4A (ULTIMATE) - ALIGNMENT MC04A
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R2018071-CI-059	LONGITUDINAL SECTION ALIGNMENT MC04A - SHEET 4 OF 4
R2018071-CI-060	MAUDE HILL ROAD TO UXBRIDGE ROAD OPTION 5 - ALIGNMENT MC05
R2018071-CI-061	LONGITUDINAL SECTION ALIGNMENT MC05 - SHEET 1 OF 6
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R2018071-CI-065	LONGITUDINAL SECTION ALIGNMENT MC05 - SHEET 5 OF 6
R2018071-CI-066	LONGITUDINAL SECTION ALIGNMENT MC05 - SHEET 6 OF 6

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R2018071-CI-000
Drawing Number

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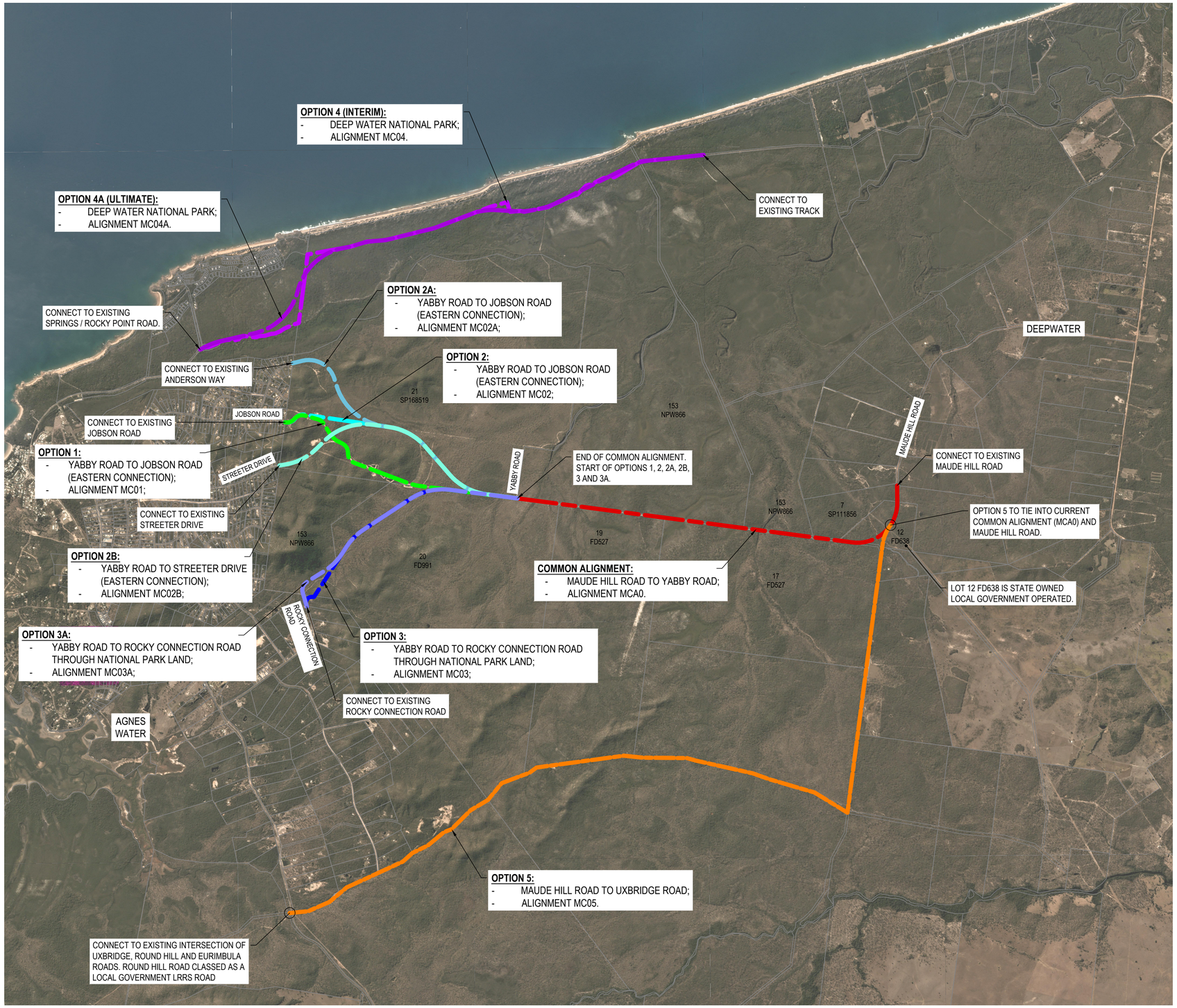
Revision



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0	31/01/2019	INITIAL ISSUE	GM	CF	CF

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Checked		Date
Designed	GDM	Date 29/01/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK INLAND LINK ROAD CONCEPT DESIGN

Title: CONCEPTUAL ALIGNMENTS

Status: PRELIMINARY
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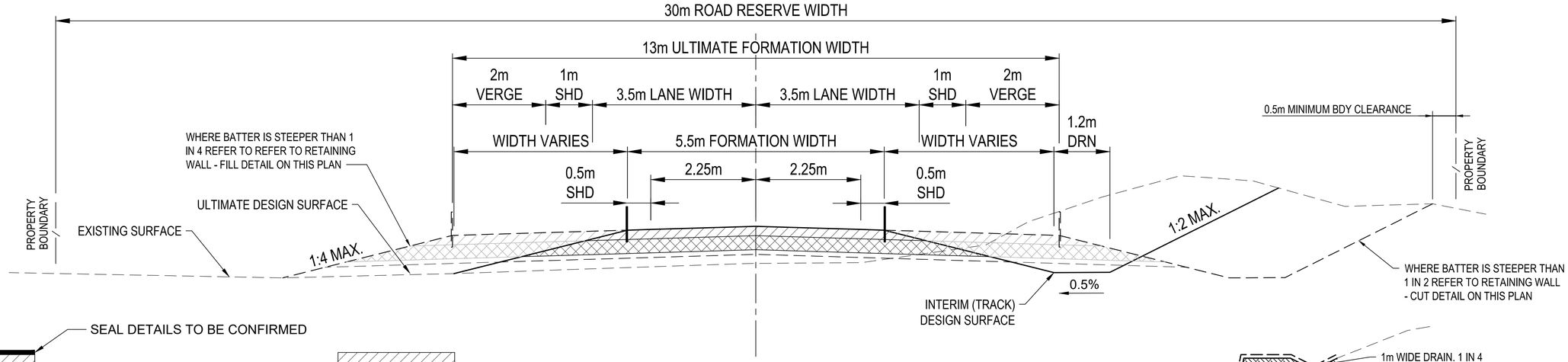
Revision: 2



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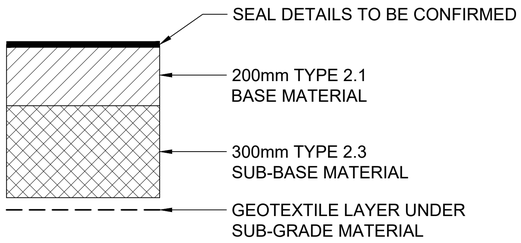

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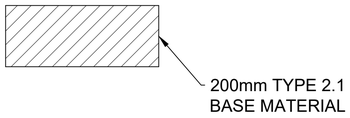

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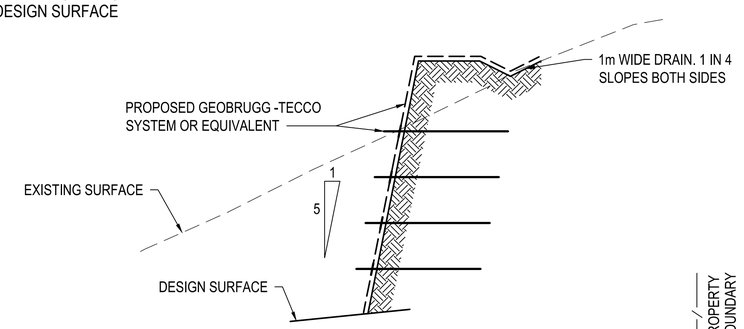

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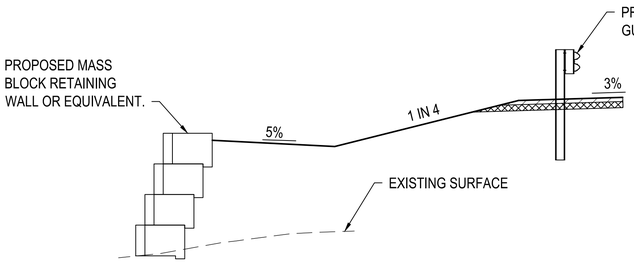

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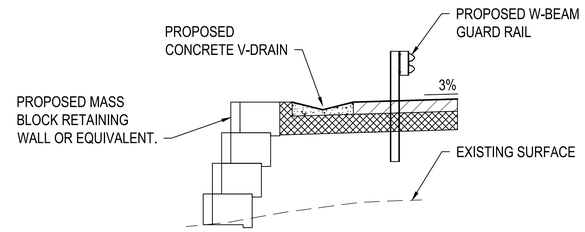

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Title: TYPICAL SECTIONS AND DETAILS SHEET 1 OF 2

Status: PRELIMINARY
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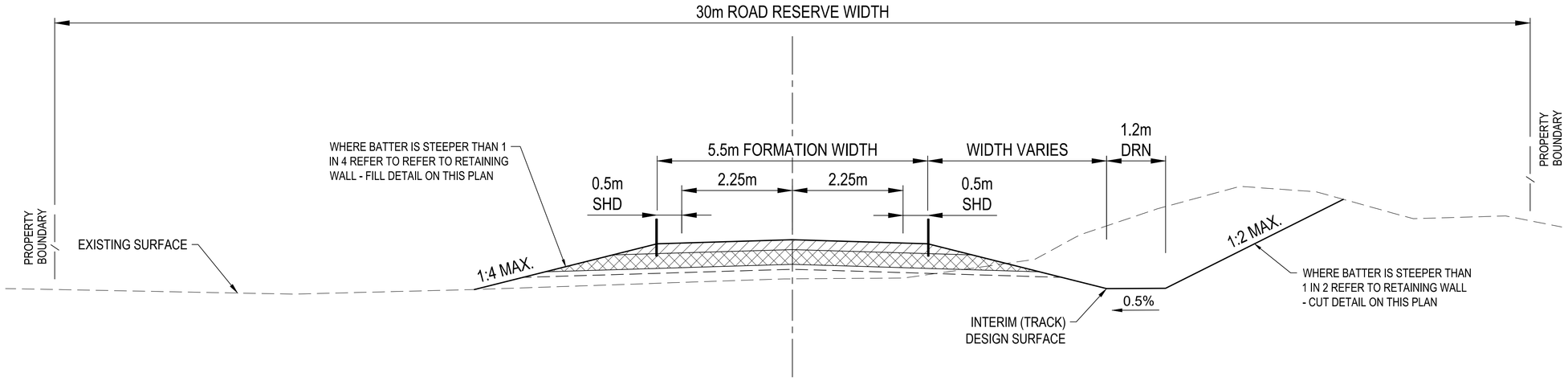
Revision: 1



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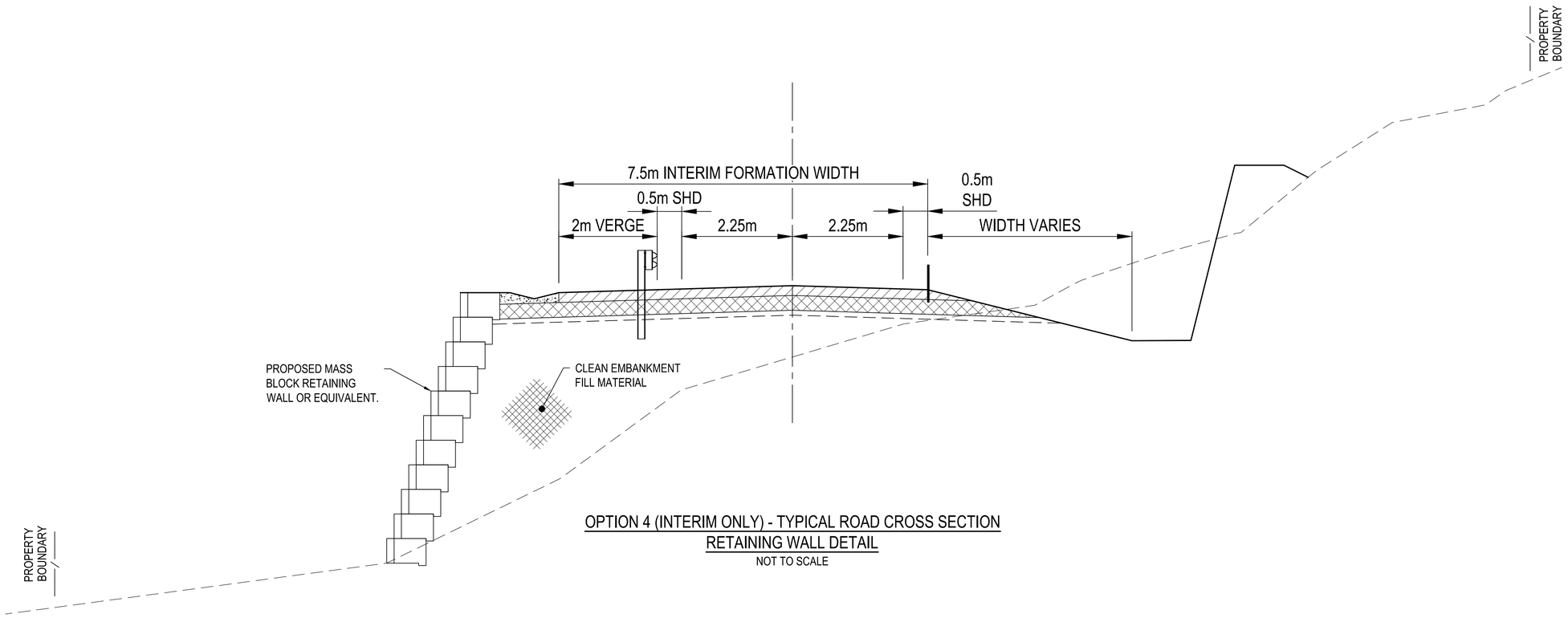

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Project: AGNES WATER AND BAFFLE CREEK INLAND LINK ROAD CONCEPT DESIGN
Title: TYPICAL SECTIONS AND DETAILS SHEET 2 OF 2
Status: PRELIMINARY NOT TO BE USED FOR CONSTRUCTION PURPOSES
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Revision: 0

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Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Status: PRELIMINARY
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Title: MAUDE HILL ROAD TO YABBY ROAD
ALIGNMENT MCA0

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Drawing Number: R2018071-CI-010
Revision: 1

DATE PLOTTED: 28 February 2019 8:28 AM BY : GERRY MOORE

DESIGN DETAILS:

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- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
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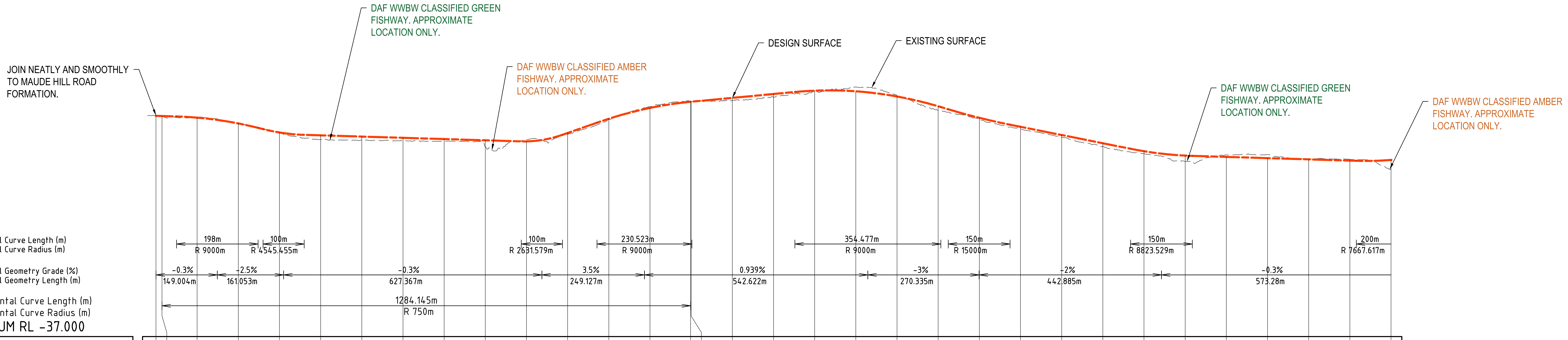

DATUM RL -37.000

CUT / FILL DEPTH TO EXISTING SURFACE	0	0.199	-0.103	-0.019	0.169	1.022	0.812	0.685	0.585	1.607	-0.46	0.27	0.21	-0.333	-0.234	-0.116
EXISTING SURFACE LEVELS	16.668	16.426	16.333	14.838	12.452	10.903	10.813	10.640	10.440	9.118	10.916	12.234	15.747	18.915	20.318	20.213
DESIGN LEVELS ROAD CENTRELINE	16.668	16.625	16.229	14.818	12.622	11.925	11.625	11.325	11.025	10.725	10.455	12.503	15.957	18.583	20.084	20.097
CONTROL LINE CHAINAGE ROAD CENTRELINE	0.000	14.514	100.000	200.000	300.000	400.000	500.000	600.000	700.000	800.000	900.000	1000.000	1100.000	1200.000	1298.658	1300.000
SUPER ELEVATION																

CUT / FILL DEPTH TO EXISTING SURFACE	0.651	0.797	0.244	-1.052	-0.229	0.975	0.469	0.504	0.537	0.761	0.657	1.399	-0.504	-0.845	-0.139	-0.314	2.334
EXISTING SURFACE LEVELS	20.385	21.177	22.540	23.685	21.601	18.024	15.722	13.502	11.469	9.244	7.409	5.603	7.189	7.230	6.224	6.099	3.615
DESIGN LEVELS ROAD CENTRELINE	21.036	21.974	22.785	22.634	21.372	18.998	16.191	14.006	12.006	10.006	8.066	7.002	6.685	6.385	6.085	5.785	5.949
CONTROL LINE CHAINAGE ROAD CENTRELINE	1400.000	1500.000	1600.000	1700.000	1800.000	1900.000	2000.000	2100.000	2200.000	2300.000	2400.000	2500.000	2600.000	2700.000	2800.000	2900.000	3000.000
SUPER ELEVATION	LHS and RHS -3%																

MCA0

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VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
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0	31/01/2019	INITIAL ISSUE	GM	CF	CF

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Approved		

Client GLADSTONE REGIONAL COUNCIL

Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title
LONGITUDINAL SECTION
ALIGNMENT MCA0 - SHEET 1 OF 3

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
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Drawing Number R2018071-CI-011
Revision 1

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DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
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  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

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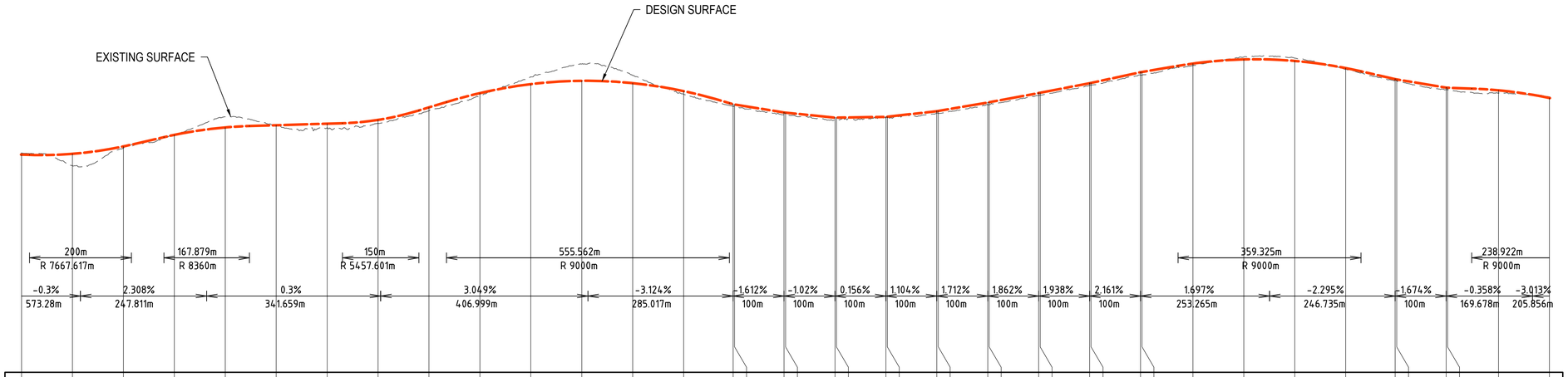

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Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

DATUM RL -37.000

CUT / FILL DEPTH TO EXISTING SURFACE	-0.314	2.334	0.347	-0.099	-2.095	0.098	0.845	0.678	0.647	0.543	-1.416	-3.306	-1.517	0.603
EXISTING SURFACE LEVELS	6.099	3.615	7.054	9.766	13.228	11.471	11.023	11.938	14.429	17.343	21.066	23.608	21.361	17.671
DESIGN LEVELS ROAD CENTRELINE	5.785	5.949	7.401	9.668	11.133	11.568	11.868	12.616	15.076	17.885	19.649	20.302	19.844	18.274
CONTROL LINE CHAINAGE ROAD CENTRELINE	2900.000	3000.000	3100.000	3200.000	3300.000	3400.000	3500.000	3600.000	3700.000	3800.000	3900.000	4000.000	4100.000	4200.000

CUT / FILL DEPTH TO EXISTING SURFACE	0.378	0.5	0.471	0.403	0.413	0.325	0.149	0.126	0.353	0.456	0.425	0.49	0.518	0.484
EXISTING SURFACE LEVELS	15.310	15.142	13.605	13.644	12.643	12.735	13.063	13.117	13.963	13.909	15.603	15.590	17.372	17.461
DESIGN LEVELS ROAD CENTRELINE	15.688	15.642	14.076	14.047	13.056	13.060	13.212	13.243	14.316	14.364	16.027	16.080	17.890	17.945
CONTROL LINE CHAINAGE ROAD CENTRELINE	4297.159	4300.000	4397.159	4400.000	4497.159	4500.000	4597.159	4600.000	4697.159	4700.000	4797.159	4800.000	4897.159	4900.000

CUT / FILL DEPTH TO EXISTING SURFACE	0.423	0.493	0.554	0.618	0.394	-0.477	-0.538	0.246	0.214	0.289	0.414	0.38	0.537	-0.222
EXISTING SURFACE LEVELS	19.404	19.396	21.434	21.419	23.292	24.980	24.746	22.557	20.409	20.286	18.534	18.558	17.889	17.150
DESIGN LEVELS ROAD CENTRELINE	19.828	19.889	21.988	22.037	23.686	24.503	24.208	22.803	20.623	20.575	18.948	18.938	18.426	16.928
CONTROL LINE CHAINAGE ROAD CENTRELINE	4997.159	5000.000	5097.159	5100.000	5200.000	5300.000	5400.000	5500.000	5597.159	5600.000	5697.159	5700.000	5800.000	5900.000

SUPER ELEVATION: LHS and RHS -3%

MCA0
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn	GDM	Date 29/01/2019
Checked		Date
Designed	GDM	Date 29/01/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title: LONGITUDINAL SECTION
ALIGNMENT MCA0 - SHEET 2 OF 3

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number: R2018071-CI-012
Revision: 1

DATE PLOTTED: 28 February 2019 8:30 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE;

Vertical Curve Length (m)	238.922m	150m
Vertical Curve Radius (m)	R 9000m	R 7773.754m

Vertical Geometry Grade (%)	Vertical Geometry Length (m)
-0.358%	169.678m
-3.013%	205.856m
-1.083%	224.466m
-1.069%	100m
-0.799%	100m
-0.011%	100m
-0.158%	100m
-0.19%	100m
0.3%	100m
-0.62%	100m
0.172%	100m
-0.27%	100m
0.089%	200m
0.348%	100m
0.136%	100m
0.088%	56.496m

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

DATUM RL -35.000

CUT / FILL DEPTH TO EXISTING SURFACE	EXISTING SURFACE LEVELS	DESIGN LEVELS ROAD CENTRELINE	CONTROL LINE CHAINAGE ROAD CENTRELINE
0.537	17.889	18.426	5800.000
-0.222	17.150	16.928	5900.000
-0.105	14.435	14.330	6000.000
0.483	11.508	11.990	6100.000
0.265	10.496	10.761	6200.000
0.343	9.365	9.709	6297.159
0.4	9.278	9.678	6300.000
0.51	8.130	8.640	6397.159
0.45	8.168	8.617	6400.000
0.398	7.444	7.841	6497.159
0.42	7.421	7.841	6500.000
0.411	7.419	7.830	6597.159
0.452	7.373	7.826	6600.000
0.44	7.233	7.673	6697.159
0.485	7.182	7.667	6700.000
0.432	7.051	7.483	6797.159
0.426	7.065	7.491	6800.000
0.476	7.307	7.783	6897.159
0.532	7.233	7.765	6900.000
0.516	6.647	7.163	6997.159
0.477	6.691	7.168	7000.000
0.519	6.816	7.335	7097.159
0.465	6.862	7.327	7100.000
0.429	6.637	7.066	7197.159
0.49	6.578	7.068	7200.000
1.494	5.664	7.157	7300.000
0.436	6.808	7.244	7397.159
0.403	6.850	7.254	7400.000
0.462	7.130	7.592	7497.159
0.476	7.120	7.596	7500.000
0.48	7.248	7.728	7597.159
0.441	7.290	7.730	7600.000
0.449	7.329	7.778	7653.654

SUPER ELEVATION: LHS and RHS -3%

MCA0
5800
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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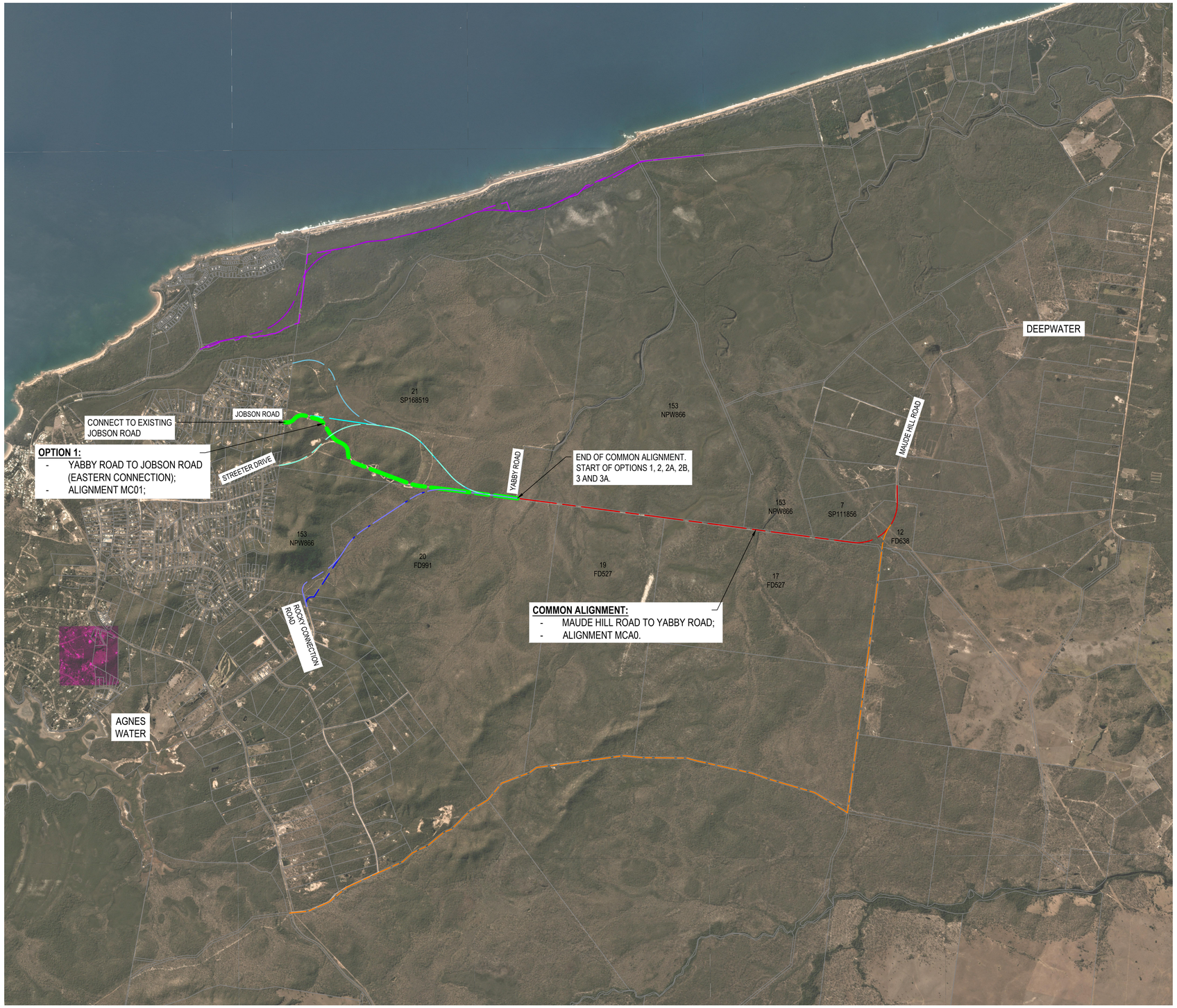
Drawn GDM Date 29/01/2019
Checked Date
Designed GDM Date 29/01/2019
Verified Date
Approved

Client GLADSTONE REGIONAL COUNCIL
Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN
Title
LONGITUDINAL SECTION
ALIGNMENT MCA0 - SHEET 3 OF 3

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
Zone: 56
Datum: AHD
Scale AS SHOWN
Size A1
Drawing Number R2018071-CI-013
Revision 1

XREF's: PLOT LS MCA03
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-013.dwg



PLAN
SCALE 1:40,000

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

0 1 2 3 4km
SCALE 1:40,000 @A1

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		Date
Drawn	GDM	29/01/2019
Checked		Date
Designed	GDM	29/01/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title: YABBY ROAD TO JOBSON ROAD
VIA SEWERAGE TREATMENT PLANT CONNECTION
OPTION 1 - ALIGNMENT MC01

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	1:20,000	A1

Drawing Number: R2018071-CI-020
Revision: 1

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

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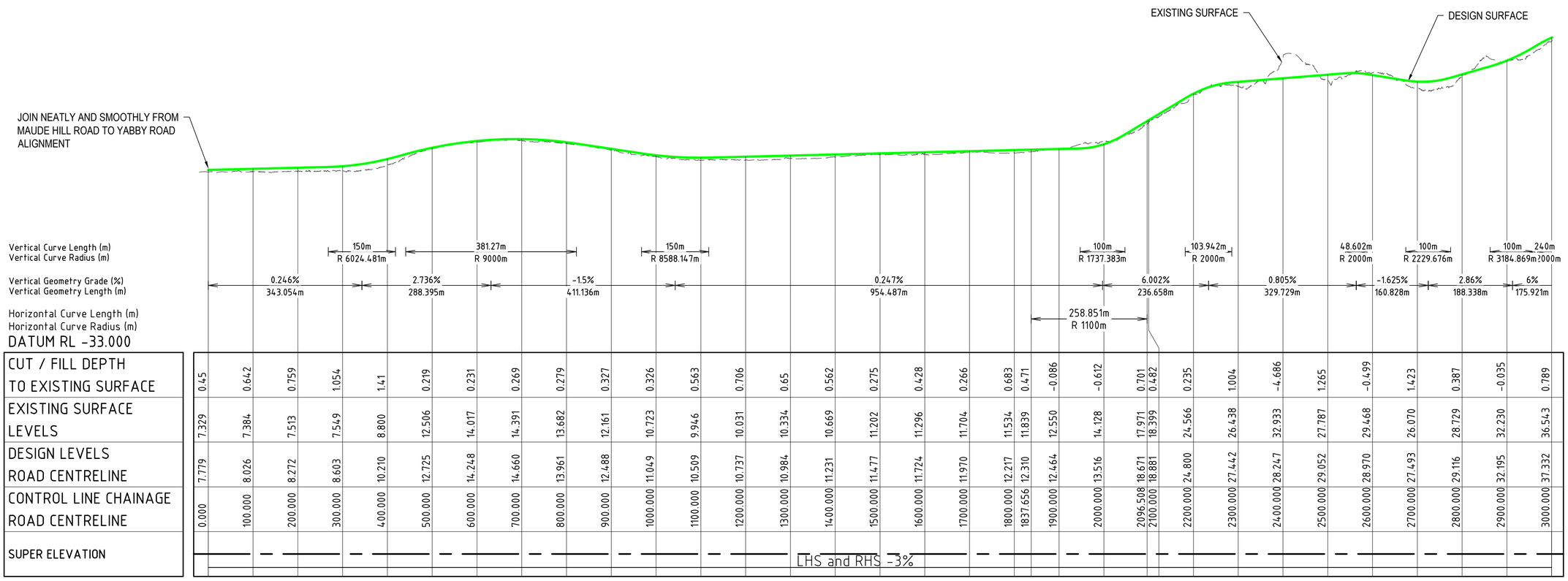

CUT / FILL DEPTH TO EXISTING SURFACE	0.45	0.642	0.759	1.054	1.41	0.219	0.231	0.269	0.279	0.327	0.326	0.563	0.706	0.65	0.562	0.275	0.428	0.266	0.683	0.471	-0.086	-0.612	0.701	0.482	0.235	1.004	-4.686	1.265	-0.499	1.423	0.387	-0.035	0.789
EXISTING SURFACE LEVELS	7.329	7.384	7.513	7.549	8.800	12.506	14.017	14.391	13.682	12.161	10.723	9.946	10.031	10.334	10.669	11.202	11.296	11.704	11.534	11.839	12.550	14.128	17.971	18.399	24.566	26.438	32.933	27.787	29.468	26.070	28.729	32.230	36.543
DESIGN LEVELS ROAD CENTRELINE	7.779	8.026	8.272	8.603	10.210	12.725	14.248	14.660	13.961	12.488	11.049	10.509	10.737	10.984	11.231	11.477	11.724	11.970	12.217	12.310	12.464	13.516	18.671	18.881	24.800	27.442	28.247	29.052	28.970	27.493	29.116	32.195	37.332
CONTROL LINE CHAINAGE ROAD CENTRELINE	0.000	100.000	200.000	300.000	400.000	500.000	600.000	700.000	800.000	900.000	1000.000	1100.000	1200.000	1300.000	1400.000	1500.000	1600.000	1700.000	1800.000	1837.656	1900.000	2000.000	2096.508	2100.000	2200.000	2300.000	2400.000	2500.000	2600.000	2700.000	2800.000	2900.000	3000.000
SUPER ELEVATION	LHS and RHS -3%																																

MC01
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m @A1
SCALE: H:1:5000 V:1:500

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Drawn GDM	Date 29/01/2019	
Checked	Date	
Designed GDM	Date 29/01/2019	
Verified	Date	
Approved		

Client: GLADSTONE REGIONAL COUNCIL
Project: AGNES WATER AND BAFFLE CREEK INLAND LINK ROAD CONCEPT DESIGN
Title: LONGITUDINAL SECTION ALIGNMENT MC01 SHEET 1 OF 2

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

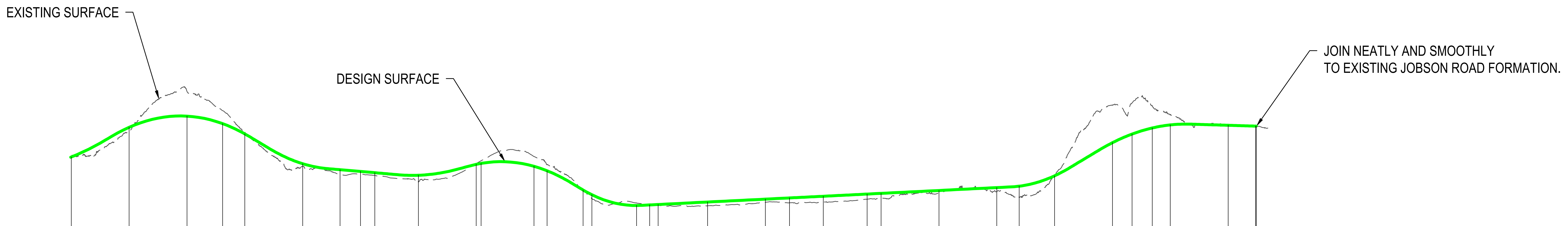
Drawing Number: R2018071-CI-021
Revision: 1

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE.



Vertical Curve Length (m) / Vertical Curve Radius (m): 100m R 3184.869m; 240m R 2000m; 100m R 1947.834m; 100m R 2844.35m; 172.993m R 2000m; 100m R 1538.802m; 100m R 1817.713m; 157.508m R 2500m

Vertical Geometry Grade (%) / Vertical Geometry Length (m): 2.86% 188.338m; 6% 175.921m; -6% 204.452m; -0.866% 222.207m; 2.65% 161.523m; -6% 156.562m; 0.499% 741.851m; 6% 180.445m; -0.3% 193.069m

Horizontal Curve Length (m) / Horizontal Curve Radius (m): 202.977m R 180m; 183.733m R -180m; 62.255m R 180m; 37.291m R 180m; 134.209m R -180m; 195.041m R -180m; 178.651m R 180m

DATUM RL -17.000

CONTROL LINE CHAINAGE ROAD CENTRELINE	DESIGN LEVELS ROAD CENTRELINE	EXISTING SURFACE LEVELS	CUT / FILL DEPTH TO EXISTING SURFACE
2900.000	32.195	32.230	-0.035
3000.000	37.332	36.543	0.789
3100.000	39.259	43.542	-4.282
3161.633	37.957	40.212	-2.255
3200.000	36.187	36.358	-0.172
3300.000	31.039	30.563	0.476
3364.611	30.005	29.200	0.805
3400.000	29.698	29.237	0.461
3424.694	29.485	29.006	0.479
3500.000	29.045	27.936	1.109
3600.000	30.924	31.049	-0.125
3608.427	31.088	31.551	-0.463
3700.000	30.585	32.285	-1.7
3722.532	29.818	30.894	-1.076
3784.788	26.498	26.448	0.05
3800.000	25.675	24.988	0.687
3877.345	23.818	24.252	-0.434
3900.000	23.919	23.950	-0.031
3914.636	23.992	23.820	0.172
4000.000	24.418	23.768	0.65
4100.000	24.917	24.374	0.542
4141.660	25.124	24.286	0.838
4200.000	25.415	24.357	1.058
4275.869	25.793	24.902	0.892
4300.000	25.914	25.021	0.893
4400.000	26.412	25.944	0.469
4500.000	26.911	26.229	0.682
4538.838	27.156	25.279	1.877
4600.000	28.951	29.092	-0.141
4700.000	34.670	41.134	-6.464
4733.879	36.159	41.540	-5.381
4768.727	37.212	41.022	-3.81
4800.000	37.743	39.512	-1.769
4900.000	37.679	37.839	-0.16
4947.378	37.536	37.586	-0.05
4948.653	37.532	37.532	0

SUPER ELEVATION: LHS and RHS -3%

MC01

SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500
@A1

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Drawn GDM Date 29/01/2019
Checked Date
Designed GDM Date 29/01/2019
Verified Date
Approved

Client GLADSTONE REGIONAL COUNCIL

Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

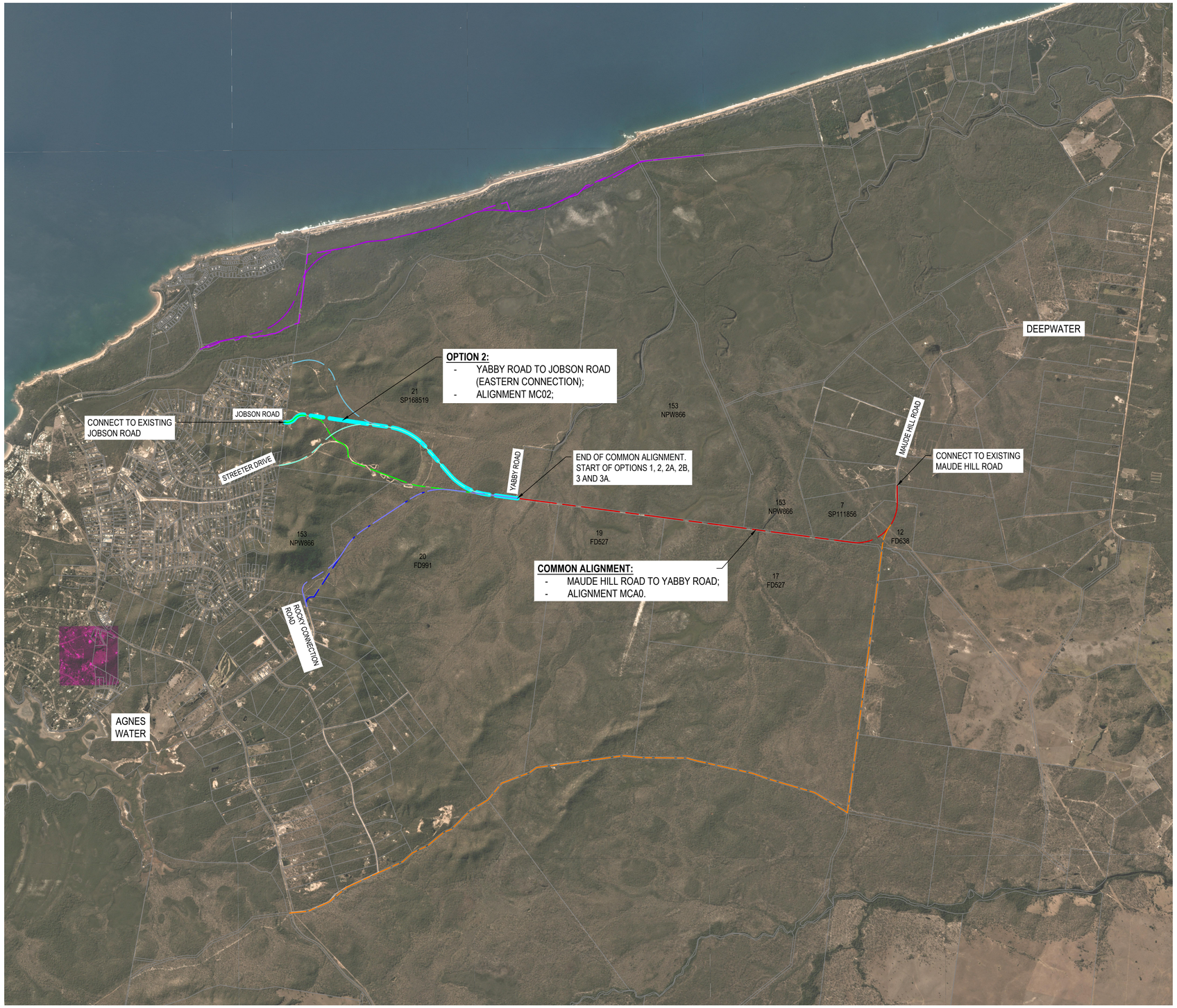
Title
LONGITUDINAL SECTION
ALIGNMENT MC01 SHEET 2 OF 2

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone: 56
Datum: AHD
Scale AS SHOWN
Size A1

Drawing Number R2018071-CI-022
Revision 0

DATE PLOTTED: 28 February 2019 8:15 AM BY : GERRY MOORE
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-022.dwg
XREFs: PLOT LS MC012



PLAN
SCALE 1:40,000

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

0 1 2 3 4km
SCALE 1:40,000 @A1

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		Date
Drawn	GDM	29/01/2019
Checked		Date
Designed	GDM	29/01/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title: YABBY ROAD TO JOBSON ROAD
EASTERN CONNECTION
OPTION 2 - ALIGNMENT MC02

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	1:20,000	A1

Drawing Number: R2018071-CI-030
Revision: 1

DATE PLOTTED: 28 February 2019 9:15 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
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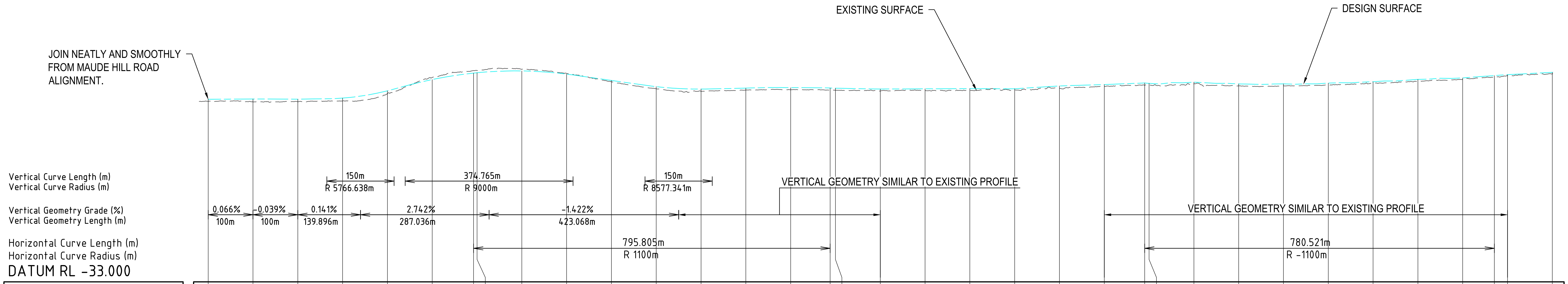
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE.



CUT / FILL DEPTH TO EXISTING SURFACE	0.45	0.677	0.576	0.639	0.583	-0.457	-0.553	-0.485	-0.354	-0.15	0.337	0.48	0.478	0.441	0.478	0.464	0.44	0.452
EXISTING SURFACE LEVELS	7.329	7.168	7.230	7.416	9.089	12.648	14.182	14.191	14.464	13.552	11.654	10.125	9.580	9.845	9.892	9.832	9.809	9.610
DESIGN LEVELS ROAD CENTRELINE	7.779	7.846	7.807	8.054	9.671	12.191	13.629	13.706	14.109	13.402	11.991	10.606	10.058	10.286	10.370	10.296	10.249	10.062
CONTROL LINE CHAINAGE ROAD CENTRELINE	0.000	100.000	200.000	300.000	400.000	500.000	592.326	600.000	700.000	800.000	900.000	1000.000	1100.000	1200.000	1300.000	1388.131	1400.000	1500.000
SUPER ELEVATION	LHS and RHS -3%																	

CUT / FILL DEPTH TO EXISTING SURFACE	0.364	0.415	0.271	0.541	0.421	0.483	0.409	0.378	0.446	0.419	0.425	0.382	0.421	0.349	0.358	0.227	0.331
EXISTING SURFACE LEVELS	9.764	9.739	9.856	10.224	10.636	10.945	10.930	11.226	10.764	10.815	10.977	11.316	11.801	12.201	12.715	13.055	13.463
DESIGN LEVELS ROAD CENTRELINE	10.129	10.154	10.126	10.766	11.057	11.428	11.339	11.604	11.210	11.234	11.403	11.698	12.222	12.550	13.073	13.282	13.794
CONTROL LINE CHAINAGE ROAD CENTRELINE	1600.000	1700.000	1800.000	1900.000	2000.000	2090.154	2100.000	2200.000	2300.000	2400.000	2500.000	2600.000	2700.000	2800.000	2870.675	2900.000	3000.000
SUPER ELEVATION																	

MC02

SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500
@A1

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Drawn GDM	Date 29/01/2019	
Checked	Date	
Designed GDM	Date 29/01/2019	
Verified	Date	
Approved		

Client GLADSTONE REGIONAL COUNCIL

Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title
LONGITUDINAL SECTION
ALIGNMENT MC02 SHEET 1 OF 2

Status
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number	Revision
R2018071-CI-031	1

XREFs: PLOT LS MC021; x_droa_12D_DESIGN; x_strm_DESIGN
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-031.dwg

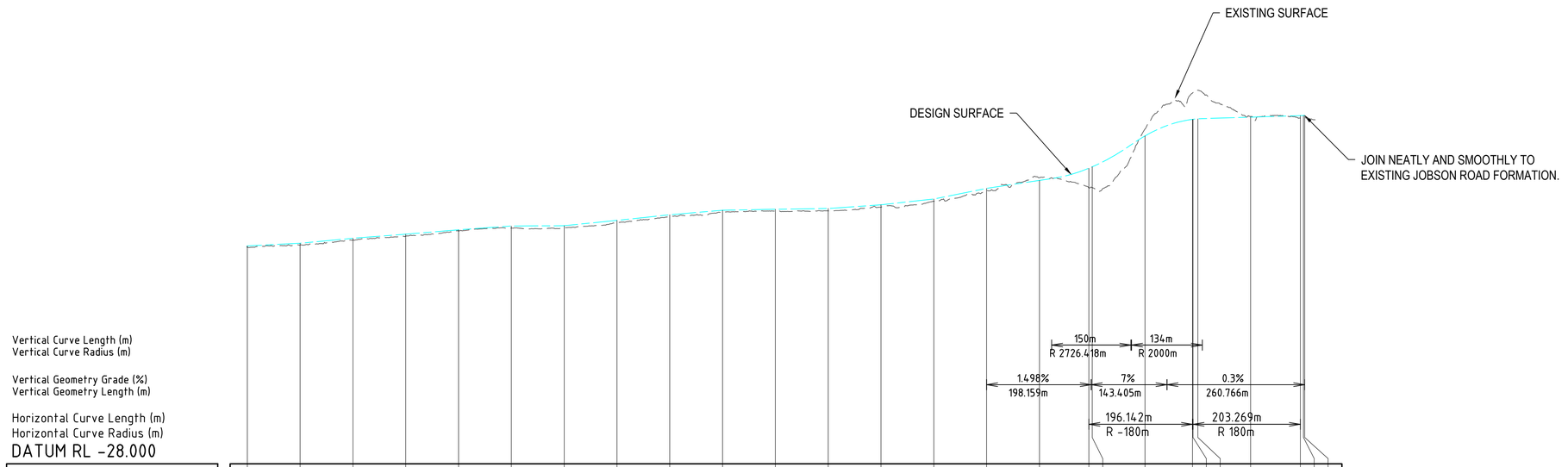
DATE PLOTTED: 28 February 2019 9:15 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE.



CUT / FILL DEPTH TO EXISTING SURFACE	0.227	0.331	0.348	0.363	0.206	0.389	0.402	0.431	0.357	0.347	0.327	0.456	0.44	0.425	0.614	-0.508	3.734	3.953	-1.291	-4.974	-5.08	-5.416	-0.12	0.459	0.289	0.363
EXISTING SURFACE LEVELS	13.055	13.463	14.388	15.144	16.137	16.669	16.716	17.692	18.826	19.698	19.898	19.922	20.633	21.742	23.579	26.200	24.273	24.319	35.420	42.231	42.350	42.774	37.796	37.499	37.687	37.620
DESIGN LEVELS ROAD CENTRELINE	13.282	13.794	14.736	15.508	16.343	17.058	17.118	18.123	19.182	20.045	20.225	20.378	21.073	22.167	24.193	25.691	28.007	28.272	34.129	37.257	37.270	37.357	37.676	37.958	37.976	37.982
CONTROL LINE CHAINAGE ROAD CENTRELINE	2900.000	3000.000	3100.000	3200.000	3300.000	3400.000	3500.000	3600.000	3700.000	3800.000	3900.000	4000.000	4100.000	4200.000	4300.000	4400.000	4493.684	4500.000	4600.000	4689.826	4690.850	4700.000	4800.000	4894.119	4900.000	4902.330
SUPER ELEVATION	LHS and RHS -3%																									

MC02

SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn GDM Date 29/01/2019
Checked Date
Designed GDM Date 29/01/2019
Verified Date
Approved

Client GLADSTONE REGIONAL COUNCIL

Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

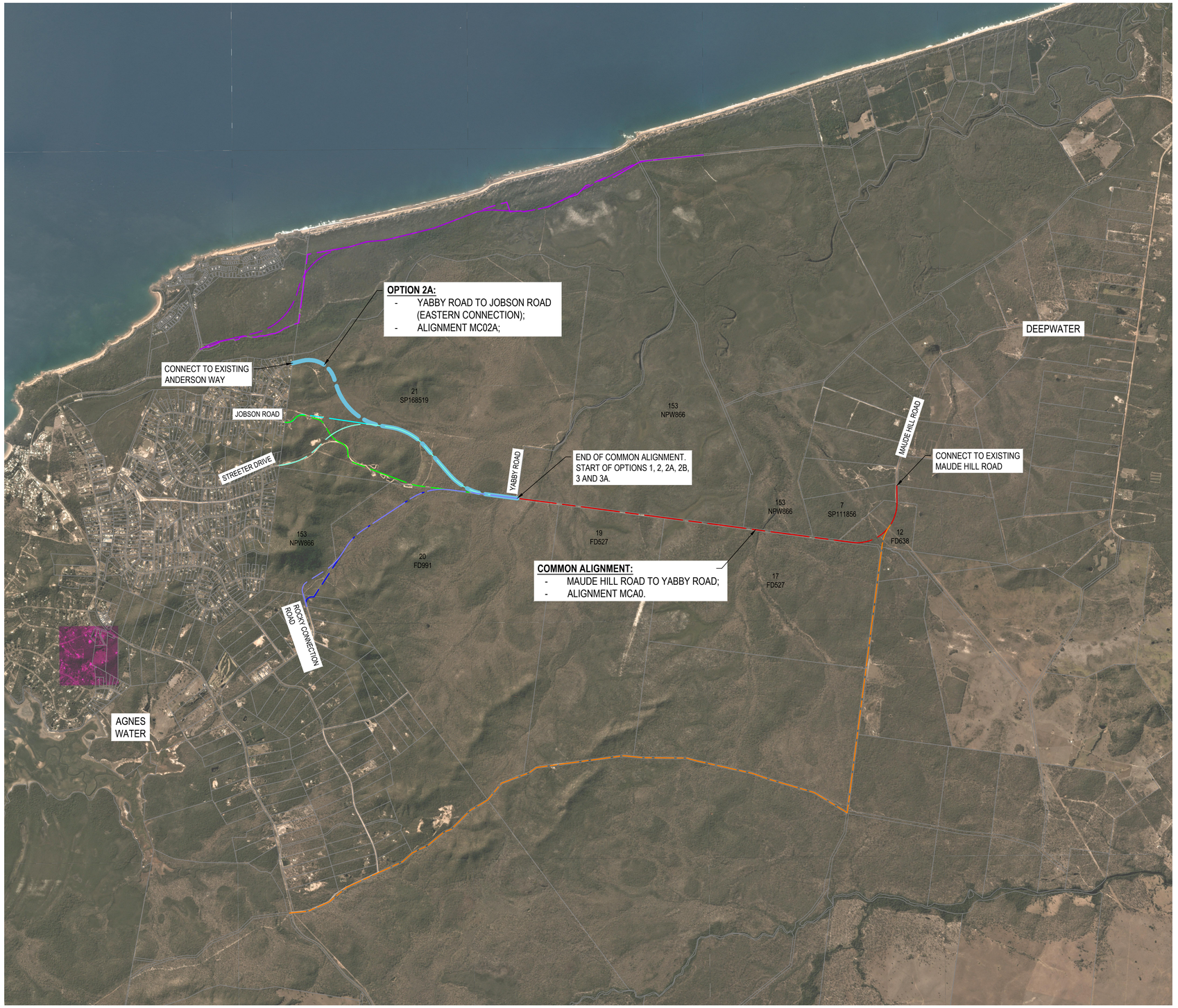
Title LONGITUDINAL SECTION
ALIGNMENT MC02 - SHEET 2 OF 2

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone: 56
Datum: AHD
Scale AS SHOWN
Size A1

Drawing Number R2018071-CI-032
Revision 1

CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-032.dwg
XREF's: PLOT LS MC022



PLAN
SCALE 1:40,000

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

0 1 2 3 4km
SCALE 1:40,000 @A1

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		Date
Drawn	GDM	1/03/2019
Checked		Date
Designed	GDM	1/03/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title: YABBY ROAD TO JOBSON ROAD
EASTERN CONNECTION
OPTION 2A - ALIGNMENT MC02A

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	1:40,000	A1

Drawing Number: R2018071-CI-033
Revision: 0

DATE PLOTTED: 28 February 2019 9:51 AM BY: GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
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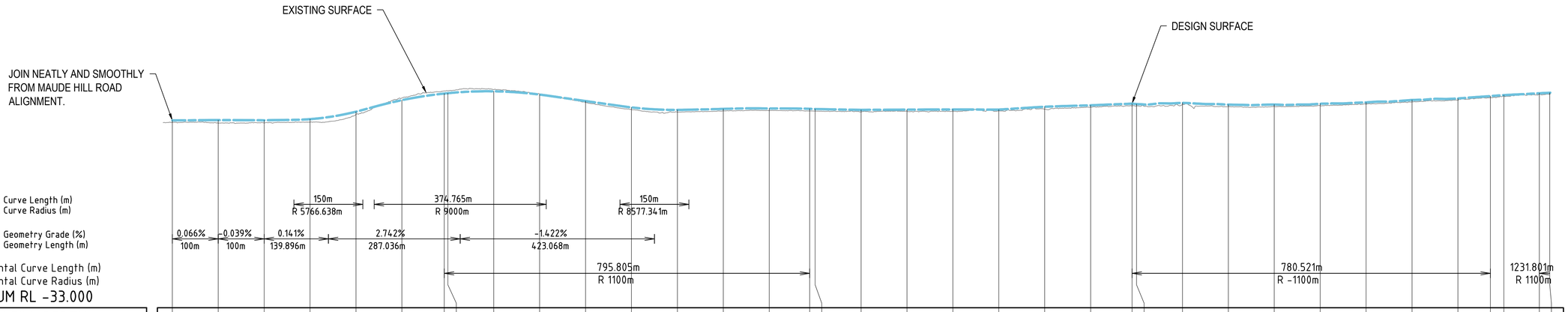

Vertical Curve Length (m) / Vertical Curve Radius (m): 150m R 5766.638m; 374.765m R 9000m; 150m R 8577.341m

Vertical Geometry Grade (%) / Vertical Geometry Length (m): 0.066% 100m; -0.039% 100m; 0.141% 139.896m; 2.742% 287.036m; -1.422% 423.068m

Horizontal Curve Length (m) / Horizontal Curve Radius (m): 795.805m R 1100m; 780.521m R -1100m; 1231.801m R 1100m

DATUM RL -33.000

CONTROL LINE CHAINAGE ROAD CENTRELINE	DESIGN LEVELS ROAD CENTRELINE	EXISTING SURFACE LEVELS	CUT / FILL DEPTH TO EXISTING SURFACE
0.000	7.779	7.329	0.45
100.000	7.846	7.168	0.677
200.000	7.807	7.230	0.576
300.000	8.054	7.416	0.639
400.000	9.671	9.089	0.583
500.000	12.191	12.648	-0.457
592.326	13.629	14.182	-0.553
600.000	13.706	14.191	-0.485
700.000	14.109	14.464	-0.354
800.000	13.402	13.552	-0.15
900.000	11.991	11.654	0.337
1000.000	10.606	10.125	0.48
1100.000	10.058	9.580	0.478
1200.000	10.286	9.845	0.441
1300.000	10.370	9.892	0.478
1388.131	10.296	9.832	0.464
1400.000	10.249	9.809	0.44
1500.000	10.062	9.610	0.452
1600.000	10.129	9.764	0.364
1700.000	10.154	9.739	0.415
1800.000	10.126	9.856	0.271
1900.000	10.766	10.224	0.541
2000.000	11.057	10.636	0.421
2090.154	11.428	10.945	0.483
2100.000	11.339	10.930	0.409
2200.000	11.604	11.226	0.378
2300.000	11.210	10.764	0.446
2400.000	11.234	10.815	0.419
2500.000	11.403	10.977	0.425
2600.000	11.698	11.316	0.382
2700.000	12.222	11.801	0.421
2800.000	12.550	12.201	0.349
2870.675	13.073	12.715	0.358
2900.000	13.282	13.055	0.227
2977.260	13.677	13.486	0.192
3000.000	13.794	13.473	0.321
SUPER ELEVATION	LHS and RHS -3%		

MC02A
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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		Date
Drawn	GDM	1/03/2019
Checked		Date
Designed	GDM	1/03/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL
Project: AGNES WATER AND BAFFLE CREEK INLAND LINK ROAD CONCEPT DESIGN
Title: LONGITUDINAL SECTION ALIGNMENT MC02A - SHEET 1 OF 2
Status: PRELIMINARY NOT TO BE USED FOR CONSTRUCTION PURPOSES
Zone: 56 | Datum: AHD | Scale: AS SHOWN | Size: A1
Drawing Number: R2018071-CI-034 | Revision: 0

XREFs: x_droa_12D_DESIGN; x_stim_DESIGN; PLOT LS MC02A1
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-034.dwg

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
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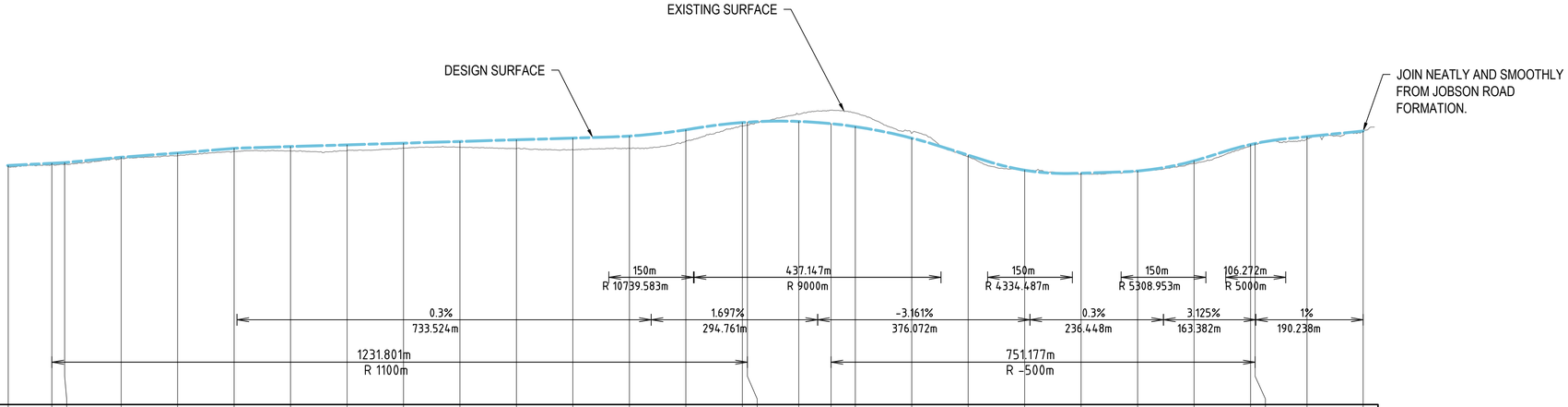

Vertical Curve Length (m) / Vertical Curve Radius (m)													150m R 10739.583m			437.147m R 9000m					150m R 4334.487m		150m R 5308.953m		106.272m R 5000m					
Vertical Geometry Grade (%) / Vertical Geometry Length (m)													0.3% 733.524m			1.697% 294.761m			-3.161% 376.072m		0.3% 236.448m		3.125% 163.382m		1% 190.238m					
Horizontal Curve Length (m) / Horizontal Curve Radius (m)													1231.801m R 1100m						751.177m R -500m											
DATUM RL -29.000																														
CUT / FILL DEPTH TO EXISTING SURFACE	0.227	0.192	0.321	0.178	0.482	0.558	0.758	1.01	0.88	1.005	1.552	2.061	2.171	2.029	0.632	0.543	-1.252	-2.349	-2.42	-0.832	0.283	-0.062	0.184	0.053	0.412	0.241	0.174	0.397	0.064	
EXISTING SURFACE LEVELS	13.055	13.486	13.473	14.556	15.013	15.744	15.870	15.918	16.348	16.522	16.276	16.066	16.318	17.565	20.246	20.399	22.324	23.034	22.575	18.959	14.833	12.513	11.745	12.256	13.689	16.751	16.996	17.984	19.312	
DESIGN LEVELS ROAD CENTRELINE	13.282	13.677	13.794	14.734	15.495	16.302	16.628	16.928	17.228	17.528	17.827	18.127	18.489	19.594	20.878	20.941	21.072	20.685	20.155	18.127	15.116	12.451	11.930	12.310	14.100	16.992	17.170	18.381	19.376	
CONTROL LINE CHAINAGE ROAD CENTRELINE	2900.000	2977.260	3000.000	3100.000	3200.000	3300.000	3400.000	3500.000	3600.000	3700.000	3800.000	3900.000	4000.000	4100.000	4200.000	4209.061	4300.000	4357.035	4400.000	4500.000	4600.000	4700.000	4800.000	4900.000	5000.000	5100.000	5108.211	5200.000	5299.474	
SUPER ELEVATION	LHS and RHS -3%																													

MC02A
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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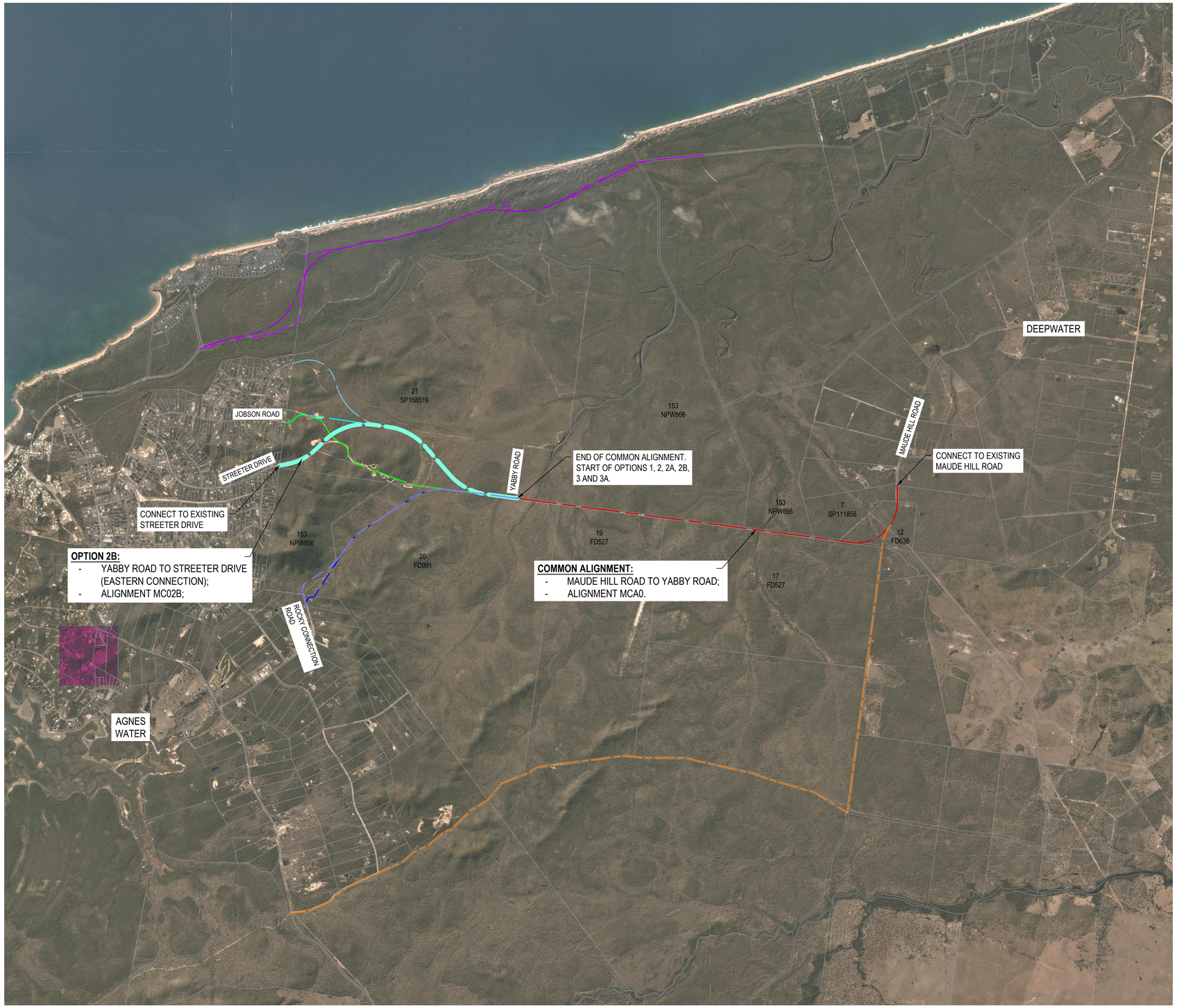
Drawn GDM	Date 1/03/2019
Checked	Date
Designed GDM	Date 1/03/2019
Verified	Date
Approved	

Client: GLADSTONE REGIONAL COUNCIL
Project: AGNES WATER AND BAFFLE CREEK INLAND LINK ROAD CONCEPT DESIGN
Title: LONGITUDINAL SECTION ALIGNMENT MC02A - SHEET 2 OF 2
Status: PRELIMINARY NOT TO BE USED FOR CONSTRUCTION PURPOSES
Zone: 56 | Datum: AHD | Scale: AS SHOWN | Size: A1
Drawing Number: R2018071-CI-035 | Revision: 0



PLAN
SCALE 1:40,000

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

0 1 2 3 4km
SCALE 1:40,000 @A1

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Drawn GDM	Date 1/03/2019	
Checked	Date	
Designed GDM	Date 1/03/2019	
Verified	Date	
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title: YABBY ROAD TO JOBSON ROAD
EASTERN CONNECTION
OPTION 2B - ALIGNMENT MC02B

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	1:40,000	A1

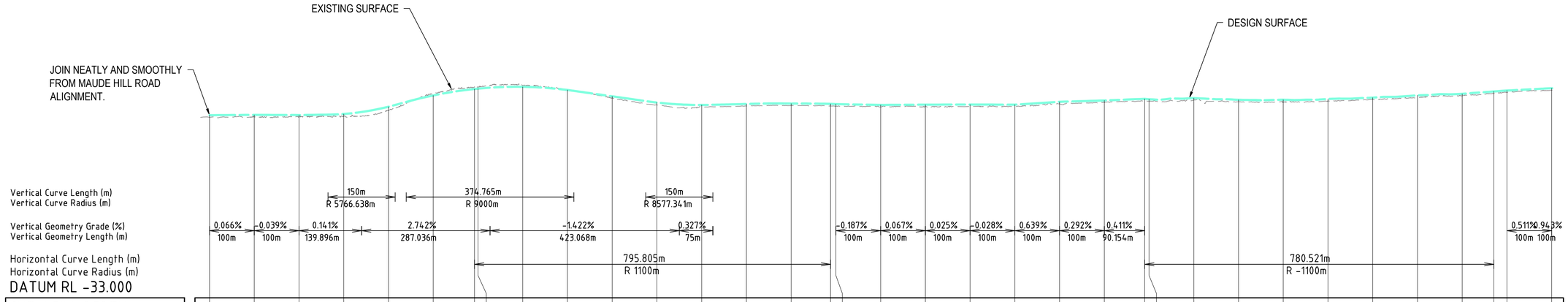
Drawing Number: R2018071-CI-036
Revision: 0

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE.



CONTROL LINE CHAINAGE ROAD CENTRELINE	0.000	100.000	200.000	300.000	400.000	500.000	592.326	600.000	700.000	800.000	900.000	1000.000
CUT / FILL DEPTH TO EXISTING SURFACE	0.45	0.45	0.45	0.557	0.834	-0.451	-0.496	-0.347	-0.276	-0.056	0.34	0.539
EXISTING SURFACE LEVELS	7.329	7.396	7.357	7.498	8.837	12.642	14.125	14.053	14.385	13.458	11.651	10.067
DESIGN LEVELS ROAD CENTRELINE	7.779	7.846	7.807	8.054	9.671	12.191	13.629	13.706	14.109	13.402	11.991	10.606

CONTROL LINE CHAINAGE ROAD CENTRELINE	1100.000	1200.000	1300.000	1388.131	1400.000	1500.000	1600.000	1700.000	1800.000	1900.000	2000.000	2090.154
CUT / FILL DEPTH TO EXISTING SURFACE	0.47	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
EXISTING SURFACE LEVELS	9.588	9.836	9.920	9.846	9.799	9.612	9.679	9.704	9.676	10.316	10.607	10.978
DESIGN LEVELS ROAD CENTRELINE	10.058	10.286	10.370	10.296	10.249	10.062	10.129	10.154	10.126	10.766	11.057	11.428

CONTROL LINE CHAINAGE ROAD CENTRELINE	2100.000	2200.000	2300.000	2400.000	2500.000	2600.000	2700.000	2800.000	2870.675	2900.000	3000.000
CUT / FILL DEPTH TO EXISTING SURFACE	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
EXISTING SURFACE LEVELS	10.889	11.154	10.760	10.784	10.953	11.247	11.772	12.100	12.623	12.832	13.344
DESIGN LEVELS ROAD CENTRELINE	11.339	11.604	11.210	11.234	11.403	11.698	12.222	12.550	13.073	13.282	13.794

SUPER ELEVATION: LHS and RHS -3%

MC02B
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn GDM Date 1/03/2019
Checked Date
Designed GDM Date 1/03/2019
Verified Date
Approved

Client: GLADSTONE REGIONAL COUNCIL
Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN
Title: LONGITUDINAL SECTION
ALIGNMENT MC02B - SHEET 1 OF 2

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
Zone: 56
Datum: AHD
Scale: AS SHOWN
Size: A1
Drawing Number: R2018071-CI-037
Revision: 0

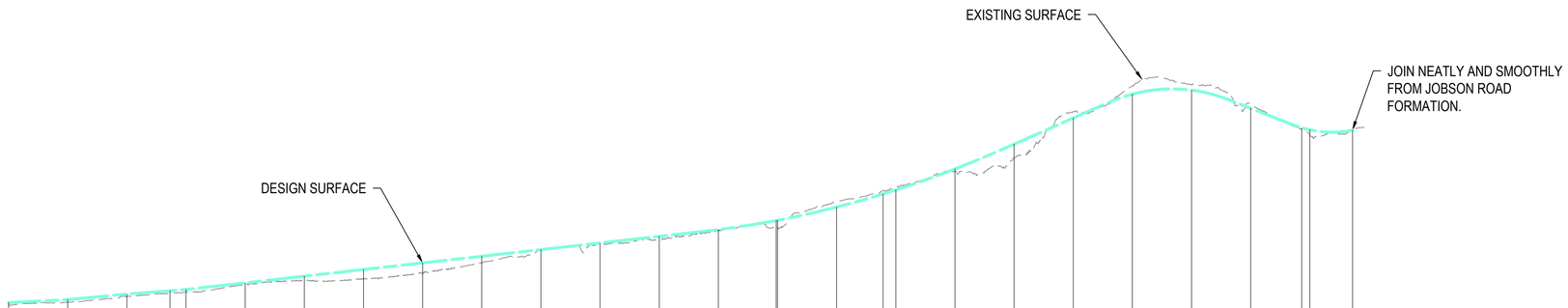
DATE PLOTTED: 28 February 2019 9:55 AM BY : GERRY MOORE
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-037.dwg
XREF's: x_droa_12D_DESIGN; x_strm_DESIGN; PLOT LS MC02B1

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE.



Vertical Curve Length (m) / Vertical Curve Radius (m): 500m R 15208.149m; 207.972m R 2500m; 100m R 1706.884m

Vertical Geometry Grade (%) / Vertical Geometry Length (m): 0.511% 100m; 0.943% 100m; 0.77% 100.157m; 1.123% 1130.97m; 4.411% 529.725m; -3.908% 259.47m; 1.951% 51.89m

Horizontal Curve Length (m) / Horizontal Curve Radius (m): 1024.75m R -1100m; 707.783m R 1100m

DATUM RL -28.000

CONTROL LINE CHAINAGE ROAD CENTRELINE	2900.000	3000.000	3100.000	3172.913	3200.000	3300.000	3400.000	3500.000	3600.000	3700.000	3800.000	3900.000	4000.000	4100.000	4197.663	4200.000	4300.000	4378.553	4400.000	4500.000	4600.000	4700.000	4800.000	4900.000	5000.000	5086.335	5100.000	5172.212
DESIGN LEVELS ROAD CENTRELINE	13.282	13.794	14.736	15.298	15.506	16.629	17.753	18.876	20.000	21.123	22.247	23.370	24.494	25.629	27.161	27.205	29.439	31.655	32.330	35.879	40.074	44.485	48.524	49.210	46.143	42.845	42.494	42.454
EXISTING SURFACE LEVELS	12.832	13.344	14.286	14.872	15.074	16.284	16.941	17.285	18.139	20.039	22.218	23.115	23.908	25.541	25.946	25.923	30.297	32.247	32.783	35.459	37.778	45.578	49.924	50.061	46.837	42.478	41.648	42.454
CUT / FILL DEPTH TO EXISTING SURFACE	0.45	0.45	0.45	0.425	0.433	0.345	0.812	1.591	1.86	1.085	0.029	0.255	0.586	0.088	1.215	1.282	-0.858	-0.592	-0.453	0.42	2.296	-1.093	-1.4	-0.851	-0.693	0.367	0.846	-0

SUPER ELEVATION: LHS and RHS -3%

MC02B

SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn	GDM	Date 1/03/2019
Checked		Date
Designed	GDM	Date 1/03/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

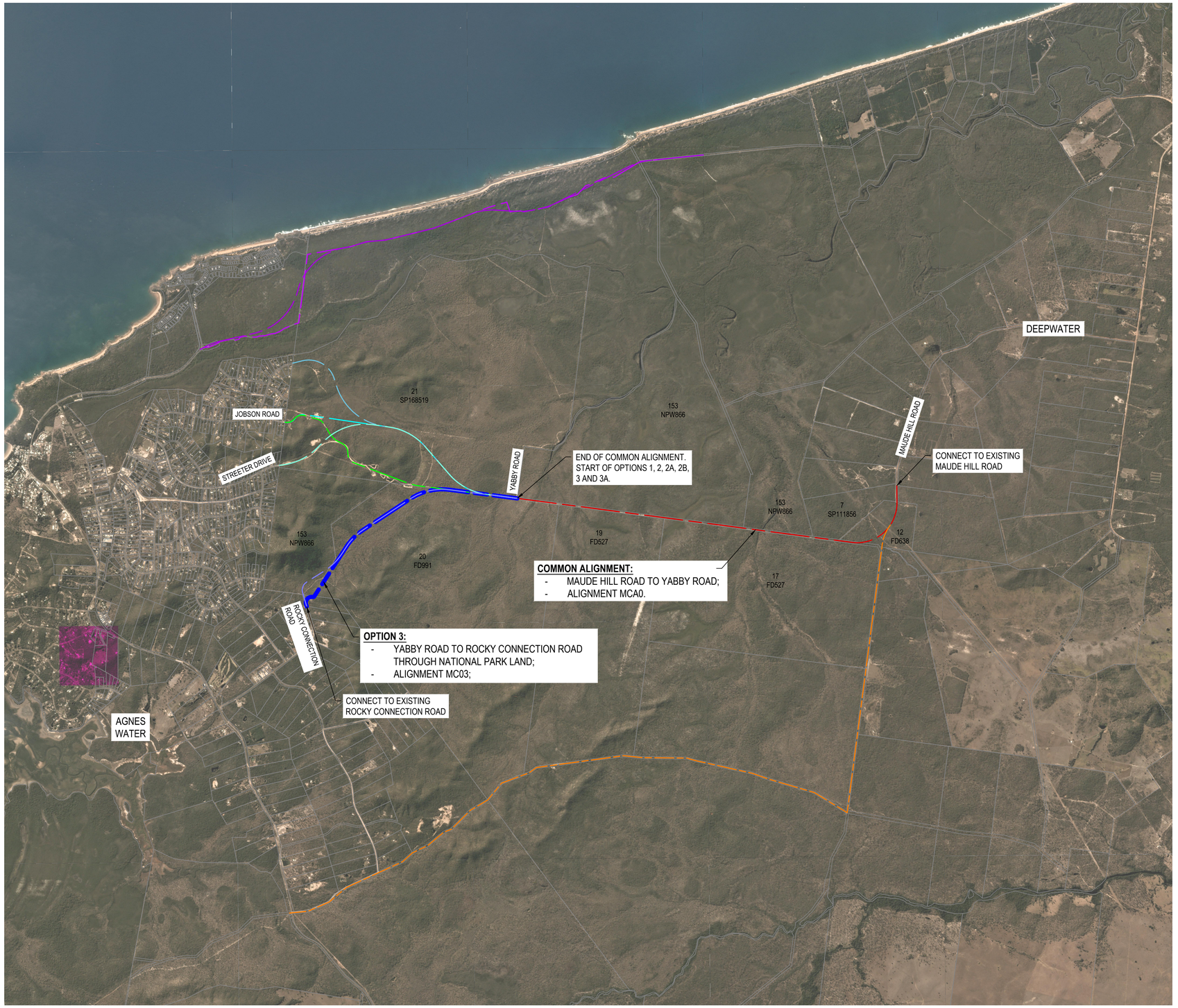
Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title: LONGITUDINAL SECTION
ALIGNMENT MC02B - SHEET 2 OF 2

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number: R2018071-CI-038
Revision: 0



PLAN
SCALE 1:40,000

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

0 1 2 3 4km
SCALE 1:40,000 @A1

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		Date
Drawn	GDM	29/01/2019
Checked		Date
Designed	GDM	29/01/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Title: YABBY ROAD TO ROCKY CONNECTION ROAD
OPTION 3 - ALIGNMENT MC03

Zone:	Datum:	Scale	Size
56	AHD	1:40,000	A1

Drawing Number: R2018071-CI-040
Revision: 1

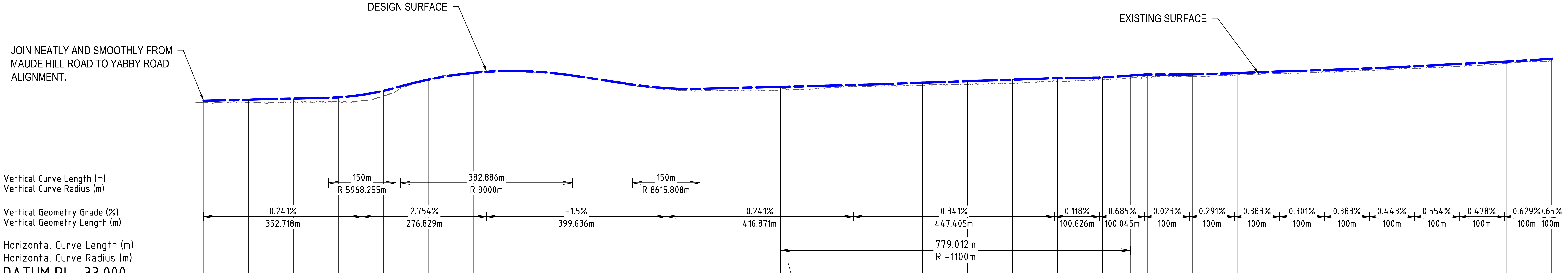
DATE PLOTTED: 28 February 2019 10:15 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE.



CONTROL LINE CHAINAGE ROAD CENTRELINE	DESIGN LEVELS ROAD CENTRELINE	EXISTING SURFACE LEVELS	CUT / FILL DEPTH TO EXISTING SURFACE
0.000	7.779	7.329	0.45
100.000	8.020	7.384	0.637
200.000	8.261	7.513	0.748
300.000	8.544	7.549	0.995
400.000	9.996	8.800	1.196
500.000	12.473	12.506	-0.033
600.000	13.984	14.017	-0.033
700.000	14.384	14.391	-0.008
800.000	13.673	13.682	-0.009
900.000	12.197	12.161	0.036
1000.000	10.819	10.723	0.096
1100.000	10.431	9.946	0.485
1200.000	10.671	10.031	0.639
1284.084	10.874	10.270	0.604
1300.000	10.912	10.339	0.573
1400.000	11.153	10.791	0.362
1500.000	11.448	11.049	0.399
1600.000	11.789	11.280	0.509
1700.000	12.131	11.464	0.667
1800.000	12.472	11.686	0.786
1900.000	12.799	12.098	0.701
2000.000	12.951	12.498	0.452
2063.096	13.383	12.825	0.558
2100.000	13.597	13.091	0.506
2200.000	13.635	13.207	0.429
2300.000	13.932	13.503	0.429
2400.000	14.310	13.891	0.418
2500.000	14.616	14.157	0.459
2600.000	15.002	14.446	0.556
2700.000	15.452	14.935	0.517
2800.000	16.001	15.510	0.491
2900.000	16.488	16.104	0.384
3000.000	17.119	16.661	0.458

SUPER ELEVATION: LHS and RHS -3%

MC03

SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

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Drawn GDM Date 29/01/2019
Checked Date
Designed GDM Date 29/01/2019
Verified Date
Approved

Client GLADSTONE REGIONAL COUNCIL

Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title LONGITUDINAL SECTION
ALIGNMENT MC03 - SHEET 1 OF 2

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone: 56
Datum: AHD
Scale AS SHOWN
Size A1

Drawing Number R2018071-CI-041
Revision 1

XREF's: PLOT LS MC031
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-041.dwg

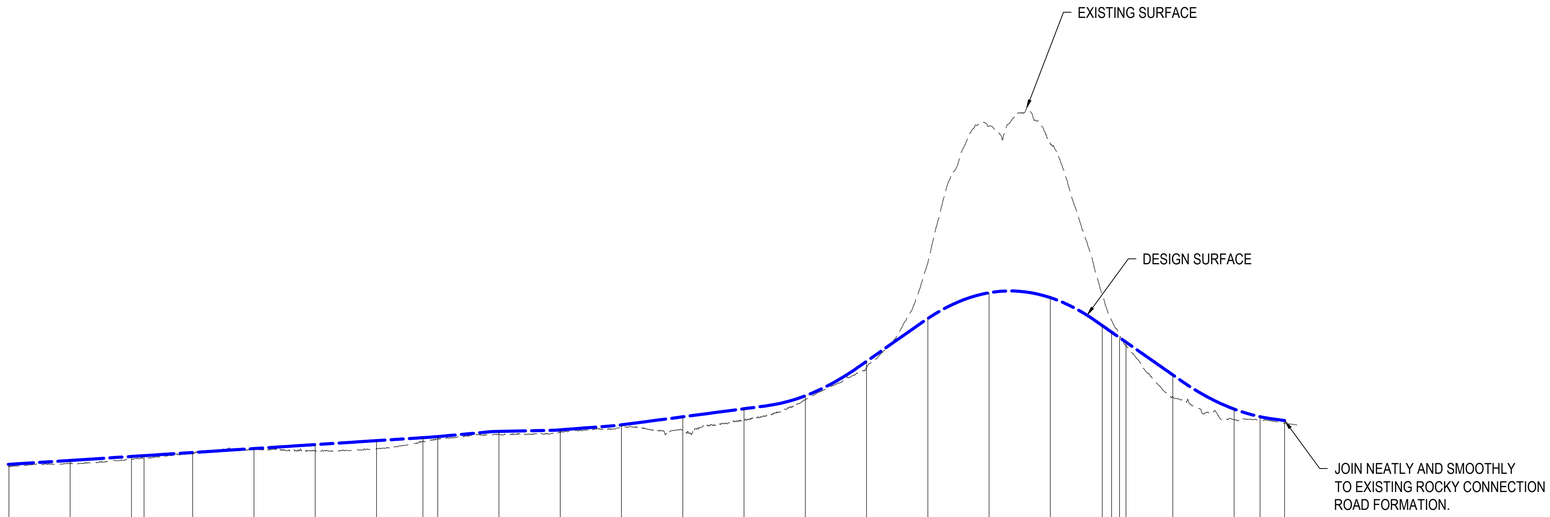
DATE PLOTTED: 28 February 2019 10:15 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE.



CUT / FILL DEPTH TO EXISTING SURFACE	0.384	0.458	0.37	0.373	0.105	-0.046	0.984	1.287	0.637	0.36	0.461	0.501	0.377	2.08
EXISTING SURFACE LEVELS	16.104	16.661	17.399	17.529	18.309	19.105	18.719	19.061	20.201	20.656	21.404	21.616	22.551	22.160
DESIGN LEVELS ROAD CENTRELINE	16.488	17.119	17.769	17.901	18.414	19.058	19.703	20.348	20.838	21.016	21.865	22.117	22.928	24.240
CONTROL LINE CHAINAGE ROAD CENTRELINE	2900.000	3000.000	3100.000	3120.551	3200.000	3300.000	3400.000	3500.000	3575.906	3600.000	3700.000	3800.000	3900.000	4000.000

CUT / FILL DEPTH TO EXISTING SURFACE	1.931	0.618	0.976	-9.064	-27.22	-25.129	-5.114	-1.877	-0.227	0.581	3.598	1.749	0.495	0.45
EXISTING SURFACE LEVELS	23.622	27.048	32.320	49.351	71.710	68.823	44.252	39.947	37.399	35.852	27.486	23.755	23.764	23.184
DESIGN LEVELS ROAD CENTRELINE	25.552	27.666	33.296	40.287	44.491	43.694	39.137	38.069	37.171	36.432	31.083	25.505	24.260	23.634
CONTROL LINE CHAINAGE ROAD CENTRELINE	4100.000	4200.000	4300.000	4400.000	4500.000	4600.000	4684.709	4700.000	4712.851	4723.432	4800.000	4900.000	4942.362	4982.489

SUPER ELEVATION: LHS and RHS -3%

MC03

SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn GDM Date 29/01/2019
Checked Date
Designed GDM Date 29/01/2019
Verified Date
Approved

Client GLADSTONE REGIONAL COUNCIL

Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title LONGITUDINAL SECTION
ALIGNMENT MC03 - SHEET 2 OF 2

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone: 56
Datum: AHD
Scale AS SHOWN
Size A1

Drawing Number R2018071-CI-042
Revision 1

CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-042.dwg
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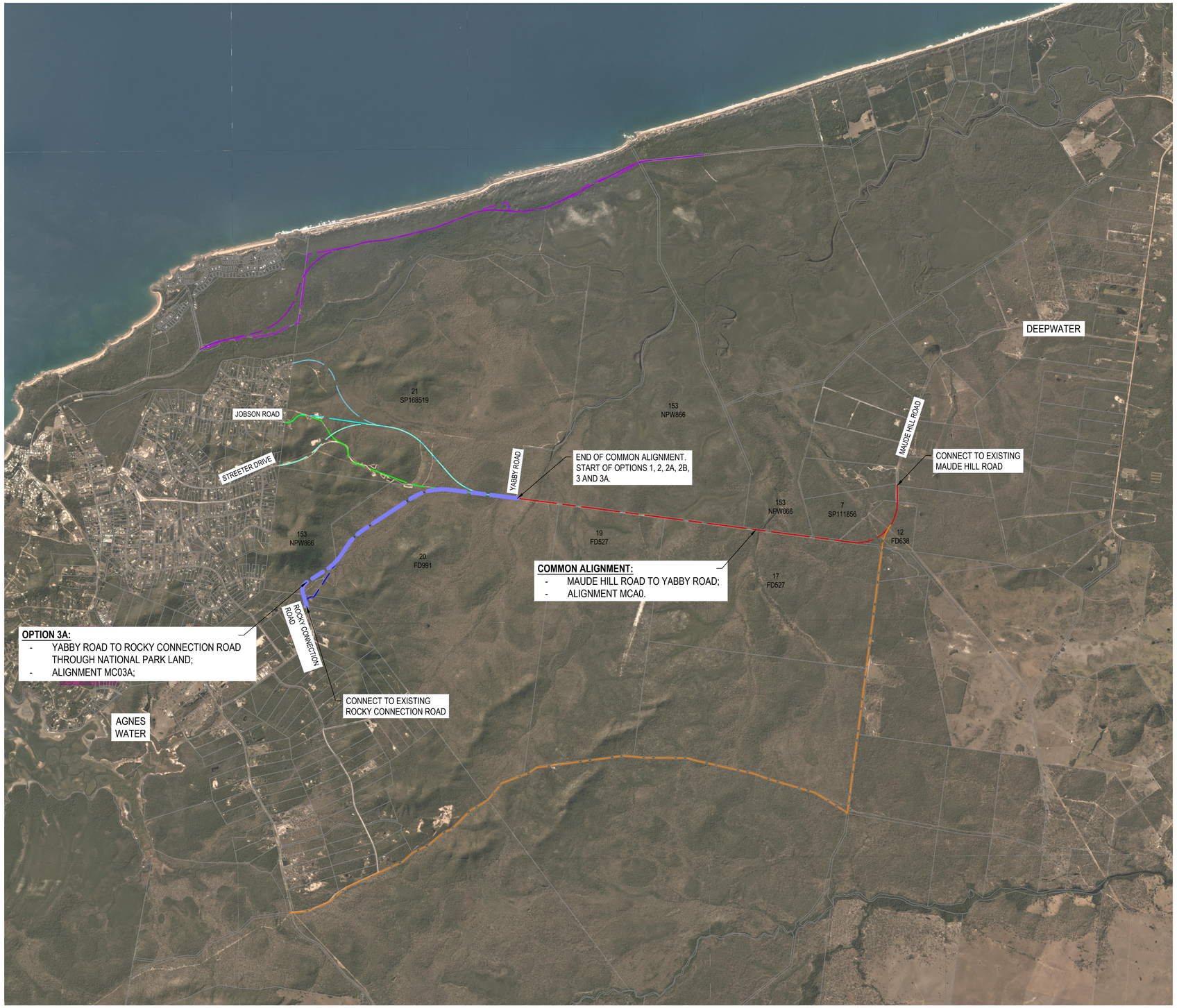

PLAN
SCALE 1:40,000

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

0 1 2 3 4km
SCALE 1:40,000 @A1

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Drawn	GDM	Date 1/03/2019
Checked		Date
Designed	GDM	Date 1/03/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	1:40,000	A1

Title: YABBY ROAD TO ROCKY CONNECTION ROAD
OPTION 3A - ALIGNMENT MC03A

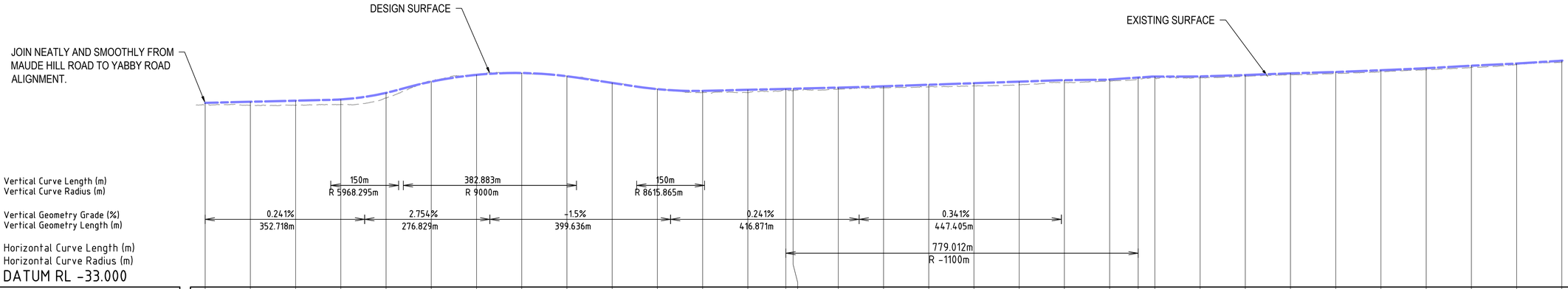
Drawing Number: R2018071-CI-043
Revision: 0

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE.



CONTROL LINE CHAINAGE ROAD CENTRELINE	0.000	100.000	200.000	300.000	400.000	500.000	600.000	700.000	800.000	900.000	1000.000	1100.000	1200.000	1284.084	1300.000	1400.000
CUT / FILL DEPTH TO EXISTING SURFACE	0.45	0.843	1.017	1.128	1.177	-0.141	-0.114	0.041	-0.067	-0.046	0.001	0.387	0.639	0.381	0.427	0.344
EXISTING SURFACE LEVELS	7.329	7.177	7.244	7.415	8.819	12.614	14.098	14.343	13.739	12.243	10.817	10.044	10.032	10.492	10.485	10.809
DESIGN LEVELS ROAD CENTRELINE	7.779	8.020	8.261	8.544	9.996	12.473	13.984	14.384	13.673	12.197	10.819	10.431	10.671	10.874	10.912	11.153

CONTROL LINE CHAINAGE ROAD CENTRELINE	1500.000	1600.000	1700.000	1800.000	1900.000	2000.000	2063.096	2100.000	2200.000	2300.000	2400.000	2500.000	2600.000	2700.000	2800.000	2900.000	3000.000
CUT / FILL DEPTH TO EXISTING SURFACE	0.396	0.488	0.577	0.664	0.51	0.324	0.481	0.419	0.308	0.273	0.299	0.365	0.37	0.398	0.378	0.255	0.37
EXISTING SURFACE LEVELS	11.053	11.302	11.554	11.808	12.289	12.626	12.902	13.177	13.328	13.659	14.011	14.251	14.632	15.054	15.623	16.233	16.749
DESIGN LEVELS ROAD CENTRELINE	11.448	11.789	12.131	12.472	12.799	12.951	13.383	13.597	13.635	13.932	14.310	14.616	15.002	15.452	16.001	16.488	17.119

SUPER ELEVATION: LHS and RHS -3%

MC03A
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn GDM Date 1/03/2019
Checked Date
Designed GDM Date 1/03/2019
Verified Date
Approved

Client GLADSTONE REGIONAL COUNCIL
Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN
Title LONGITUDINAL SECTION
ALIGNMENT MC03A - SHEET 1 OF 2

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
Zone: 56
Datum: AHD
Scale AS SHOWN
Size A1
Drawing Number R2018071-CI-044
Revision 0

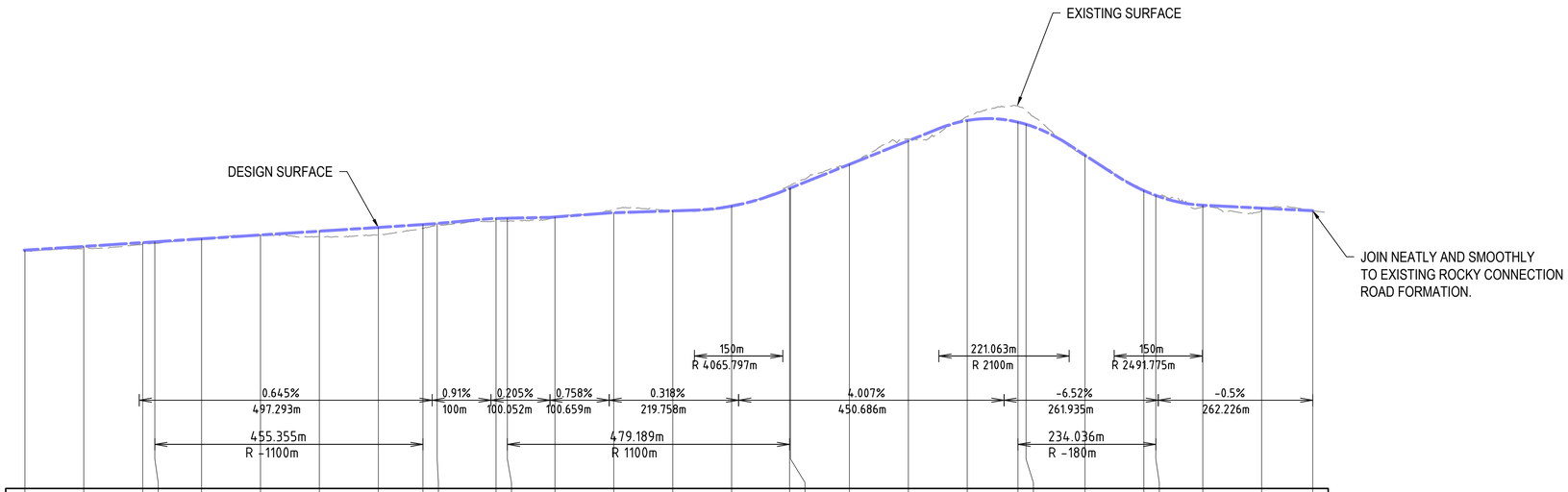
DATE PLOTTED: 28 February 2019 10:17 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE.



DATUM RL -24.000

CUT / FILL DEPTH TO EXISTING SURFACE	0.255	0.37	0.299	0.261	0.04	0.046	0.948	1.305	0.606	0.368	0.469	0.486	0.187	-0.548	-0.098
EXISTING SURFACE LEVELS	16.233	16.749	17.470	17.640	18.374	19.013	18.755	19.043	20.231	20.648	21.396	21.418	21.930	23.388	23.256
DESIGN LEVELS ROAD CENTRELINE	16.488	17.119	17.769	17.901	18.414	19.058	19.703	20.348	20.838	21.016	21.865	21.904	22.117	22.840	23.158
CONTROL LINE CHAINAGE ROAD CENTRELINE	2900.000	3000.000	3100.000	3120.551	3200.000	3300.000	3400.000	3500.000	3575.906	3600.000	3700.000	3719.261	3800.000	3900.000	4000.000
SUPER ELEVATION	LHS and RHS -3%														

CUT / FILL DEPTH TO EXISTING SURFACE	-0.183	-0.448	-0.454	-0.245	-0.294	-0.685	-2.746	-2.549	0.139	-0.015	0.121	0.337	0.433	-0.013
EXISTING SURFACE LEVELS	24.148	27.430	27.498	31.296	35.352	39.202	40.978	40.409	32.474	26.620	25.654	23.780	23.184	23.197
DESIGN LEVELS ROAD CENTRELINE	23.965	26.982	27.044	31.051	35.058	38.517	38.233	37.860	32.613	26.604	25.775	24.117	23.617	23.184
CONTROL LINE CHAINAGE ROAD CENTRELINE	4100.000	4198.450	4200.000	4300.000	4400.000	4500.000	4586.254	4600.000	4700.000	4800.000	4820.291	4900.000	5000.000	5086.740
SUPER ELEVATION														

MC03A

SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn GDM Date 1/03/2019
Checked Date
Designed GDM Date 1/03/2019
Verified Date
Approved

Client GLADSTONE REGIONAL COUNCIL

Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

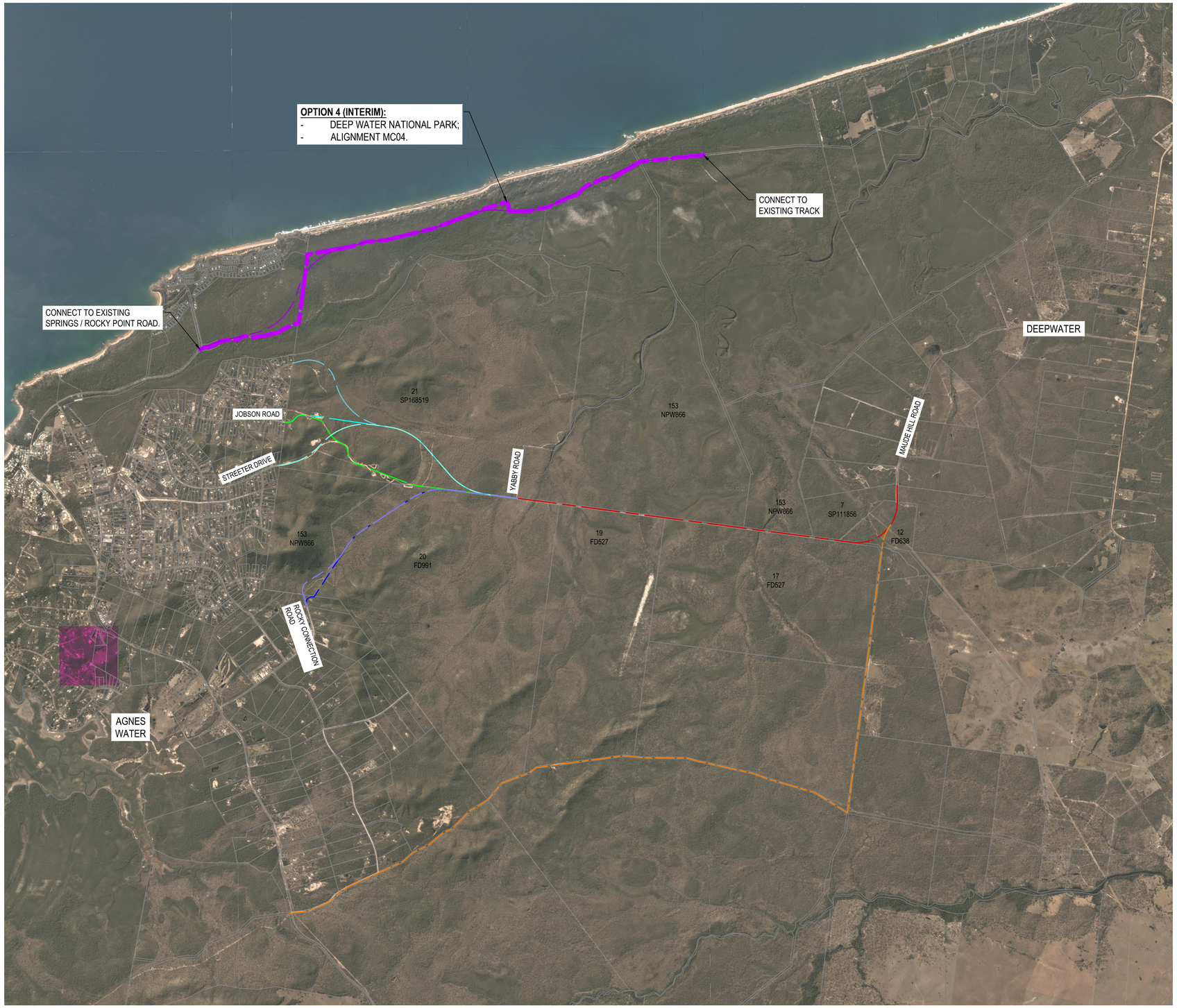
Title
LONGITUDINAL SECTION
ALIGNMENT MC03A - SHEET 2 OF 2

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone: 56
Datum: AHD
Scale AS SHOWN
Size A1

Drawing Number R2018071-CI-045
Revision 0

XREF's: PLOT LS MC03A2
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-045.dwg



PLAN
SCALE 1:40,000

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

0 1 2 3 4km
SCALE 1:40,000 @A1

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Web: www.cardno.com.au

Drawn	GDM	Date 29/01/2019
Checked		Date
Designed	GDM	Date 29/01/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Title: DEEP WATER THROUGH NATIONAL PARK
OPTION 4 - ALIGNMENT MC04

Zone:	Datum:	Scale	Size
56	AHD	1:40,000	A1

Drawing Number: R2018071-CI-050
Revision: 1

DATE PLOTTED: 28 February 2019 10:27 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
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    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
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  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

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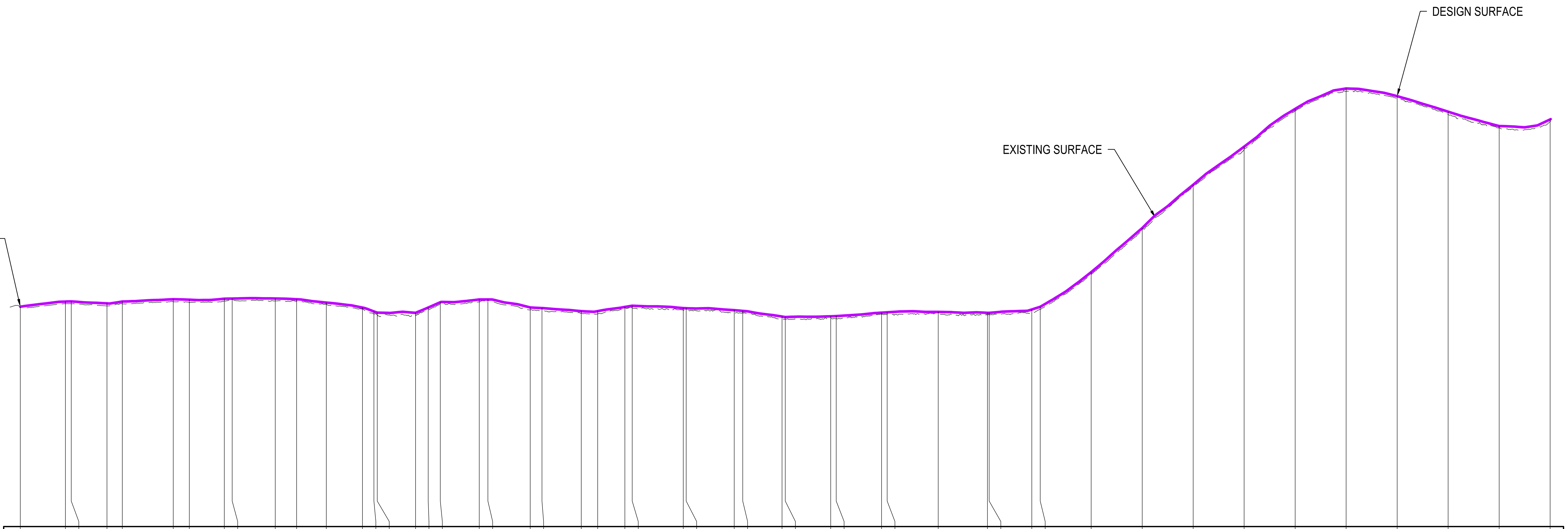

Vertical Curve Length (m)
Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

DATUM RL -25.000

CUT / FILL DEPTH TO EXISTING SURFACE	-0.026	0.424	0.473	0.496	0.423	0.501	0.568	0.437	0.298	0.482	0.379	0.35	0.297
EXISTING SURFACE LEVELS	18.143	18.687	18.680	18.260	18.695	19.071	18.913	19.228	19.402	19.236	19.183	18.569	17.643
DESIGN LEVELS ROAD CENTRELINE	18.117	19.111	19.153	18.756	19.118	19.572	19.481	19.665	19.700	19.718	19.562	18.920	17.939
CONTROL LINE CHAINAGE ROAD CENTRELINE	0.000	88.426	100.000	169.920	200.000	300.000	331.420	400.000	415.589	500.000	541.868	600.000	670.895
SUPER ELEVATION													

CUT / FILL DEPTH TO EXISTING SURFACE	0.51	0.459	0.536	0.428	0.464	0.462	0.171	0.444	0.592	0.45	0.533	0.297	0.451
EXISTING SURFACE LEVELS	16.674	16.490	16.364	17.510	18.517	19.052	19.354	17.510	17.239	16.784	16.707	17.761	17.855
DESIGN LEVELS ROAD CENTRELINE	17.185	16.949	16.900	17.939	18.981	19.514	19.525	17.954	17.831	17.235	17.240	18.058	18.306
CONTROL LINE CHAINAGE ROAD CENTRELINE	693.508	700.000	775.176	800.000	823.538	900.000	917.052	1000.000	1023.096	1100.000	1132.272	1185.524	1200.000
SUPER ELEVATION													

CUT / FILL DEPTH TO EXISTING SURFACE	0.407	0.427	0.497	0.324	0.475	0.441	0.572	0.505	0.295	0.406	0.459	0.399	0.316
EXISTING SURFACE LEVELS	17.420	17.383	16.925	16.961	15.702	15.637	15.657	15.767	16.643	16.605	16.628	16.507	16.575
DESIGN LEVELS ROAD CENTRELINE	17.828	17.810	17.422	17.285	16.177	16.077	16.229	16.272	16.938	17.010	17.087	16.906	16.891
CONTROL LINE CHAINAGE ROAD CENTRELINE	1300.000	1305.709	1400.000	1416.700	1493.644	1500.000	1589.241	1600.000	1688.810	1700.000	1800.000	1896.643	1900.000
SUPER ELEVATION			LHS and RHS -3%										

CUT / FILL DEPTH TO EXISTING SURFACE	0.792	0.49	0.427	0.487	0.377	0.502	0.427	0.558	0.487	0.545	0.407	0.45
EXISTING SURFACE LEVELS	16.767	17.586	24.443	33.032	41.626	48.972	56.466	60.321	58.887	55.795	53.117	54.370
DESIGN LEVELS ROAD CENTRELINE	17.559	18.075	24.870	33.519	42.003	49.474	56.893	60.879	59.374	56.340	53.524	54.820
CONTROL LINE CHAINAGE ROAD CENTRELINE	1983.450	2000.000	2100.000	2200.000	2300.000	2400.000	2500.000	2600.000	2700.000	2800.000	2900.000	3000.000
SUPER ELEVATION												

MC04

SCALE: HORIZONTAL - 1:5000

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500
@A1

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Drawn	GDM	Date 29/01/2019
Checked		Date
Designed	GDM	Date 29/01/2019
Verified		Date
Approved		

Client GLADSTONE REGIONAL COUNCIL

Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title
LONGITUDINAL SECTION
ALIGNMENT MC04 - SHEET 1 OF 5

Status
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number R2018071-CI-051
Revision 1

XREF's: PLOT LS MC041
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-051.dwg

DATE PLOTTED: 28 February 2019 10:28 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
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    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
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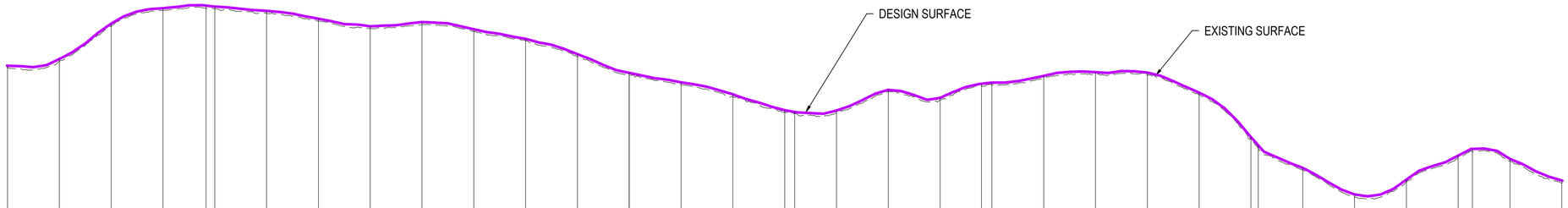

Vertical Curve Length (m)
Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

DATUM RL -13.000

CUT / FILL DEPTH TO EXISTING SURFACE	0.407	0.45	0.499	0.45	0.535	0.442	0.459	0.447	0.469	0.491	0.434	0.379	0.491	0.476	0.476	0.444	0.451	0.433	0.339	0.461	0.406	0.414	0.47	0.458	0.415	0.424	0.517	0.435	0.408	0.527	0.393	0.47	0.433	0.438	0.45	0.48	0.457
EXISTING SURFACE LEVELS	53.117	54.370	61.169	64.181	64.606	64.511	63.656	62.141	60.671	61.468	60.125	58.341	55.279	51.684	51.680	49.880	47.568	44.521	44.276	44.410	48.477	46.900	49.580	49.821	51.161	51.859	51.697	47.906	39.351	37.636	33.428	28.217	31.116	35.745	37.024	35.068	30.909
DESIGN LEVELS ROAD CENTRELINE	53.524	54.820	61.668	64.631	65.141	64.953	64.115	62.588	61.140	61.959	60.558	58.720	55.769	52.161	52.156	50.324	48.019	44.955	44.615	44.871	48.883	47.314	50.050	50.279	51.576	52.283	52.214	48.341	39.758	38.163	33.820	28.687	31.548	36.183	37.474	35.548	31.366
CONTROL LINE CHAINAGE ROAD CENTRELINE	2900.000	3000.000	3100.000	3200.000	3283.044	3300.000	3400.000	3500.000	3600.000	3700.000	3800.000	3900.000	4000.000	4099.774	4100.000	4200.000	4300.000	4400.000	4419.388	4500.000	4600.000	4700.000	4779.916	4800.000	4900.000	5000.000	5100.000	5200.000	5300.000	5314.138	5400.000	5500.000	5600.000	5700.000	5727.438	5800.000	5900.000
SUPER ELEVATION	LHS and RHS -3%																																				

MC04
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn	GDM	Date 29/01/2019
Checked		Date
Designed	GDM	Date 29/01/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title: LONGITUDINAL SECTION
ALIGNMENT MC04 - SHEET 2 OF 5

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number: R2018071-CI-052
Revision: 1

XREFs: PLOT LS MC042
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-1GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-052.dwg

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
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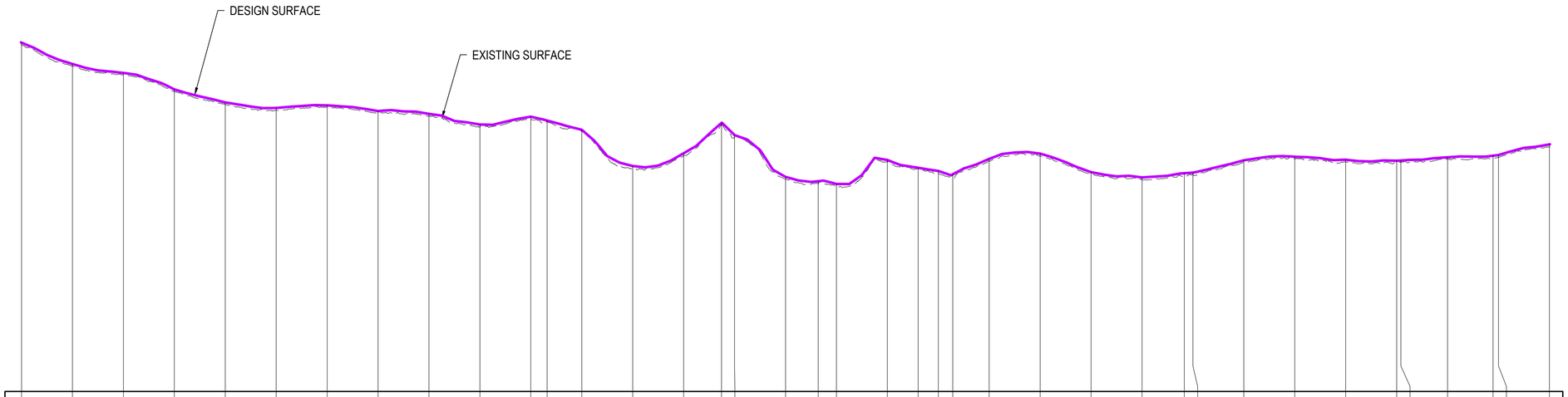

Vertical Curve Length (m)
Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

DATUM RL -33.000

CONTROL LINE CHAINAGE ROAD CENTRELINE	CUT / FILL DEPTH TO EXISTING SURFACE	EXISTING SURFACE LEVELS	DESIGN LEVELS ROAD CENTRELINE
5800.000	0.48	35.068	35.548
5900.000	0.457	30.909	31.366
6000.000	0.435	29.169	29.604
6100.000	0.403	25.965	26.368
6200.000	0.442	23.366	23.809
6300.000	0.435	22.287	22.722
6400.000	0.403	22.834	23.238
6500.000	0.423	21.694	22.117
6600.000	0.416	21.136	21.552
6700.000	0.485	18.969	19.453
6800.000	0.496	20.504	21.000
6831.984	0.204	20.040	20.244
6900.000	0.347	18.082	18.429
7000.000	0.373	10.950	11.323
7100.000	0.491	13.322	13.813
7174.470	0.354	19.423	19.777
7200.000	0.341	17.043	17.385
7300.000	0.448	8.724	9.172
7364.182	0.55	7.772	8.322
7400.000	0.466	7.316	7.782
7500.000	0.395	12.101	12.495
7560.513	0.203	10.752	10.956
7600.000	0.486	9.853	10.339
7628.365	0.751	8.926	9.677
7700.000	0.481	12.234	12.715
7800.000	0.429	13.324	13.753
7900.000	0.463	9.645	10.109
8000.000	0.432	8.630	9.062
8083.015	0.469	9.424	9.893
8100.000	0.381	9.623	10.004
8200.000	0.507	11.937	12.444
8300.000	0.397	12.733	13.131
8400.000	0.43	12.105	12.535
8500.000	0.404	11.942	12.346
8508.391	0.393	12.049	12.401
8600.000	0.422	12.600	13.022
8689.357	0.606	12.734	13.341
8700.000	0.437	13.046	13.482
8800.000	0.534	15.035	15.568
SUPER ELEVATION	LHS and RHS -3%		

MC04
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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		Date
Drawn	GDM	29/01/2019
Checked		Date
Designed	GDM	29/01/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL
Project: AGNES WATER AND BAFFLE CREEK INLAND LINK ROAD CONCEPT DESIGN
Title: LONGITUDINAL SECTION ALIGNMENT MC04 - SHEET 3 OF 5

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number: R2018071-CI-053
Revision: 1

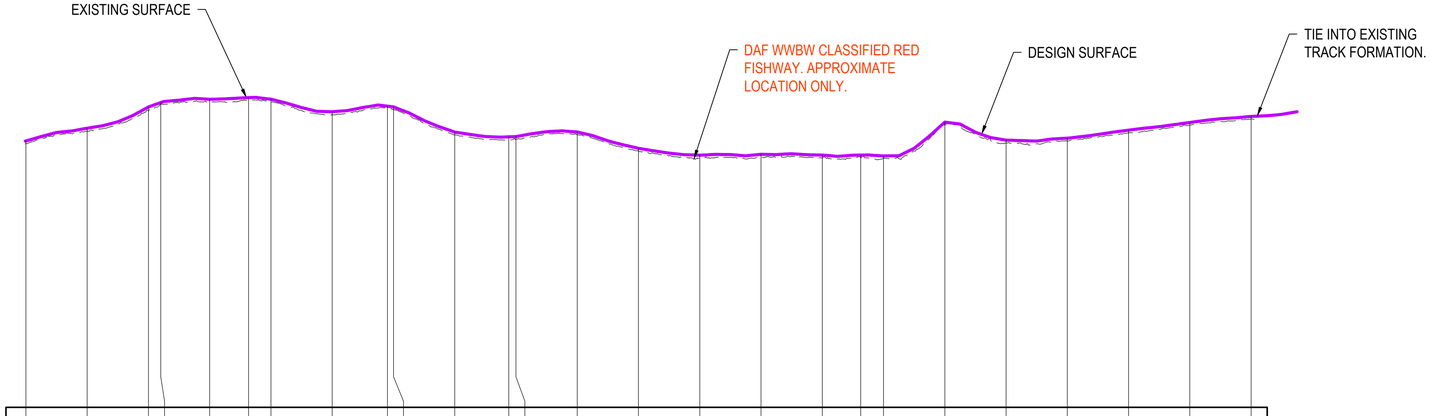
DATE PLOTTED: 28 February 2019 10:33 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

- THE DESIGN DETAILS SHOWN IN THIS PACKAGE ARE CONCEPTUAL IN NATURE ONLY AND ARE NOT FOR CONSTRUCTION; AND
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE.



Vertical Curve Length (m)
Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

DATUM RL -30.000

CUT / FILL DEPTH TO EXISTING SURFACE	0.437	0.534	0.617	0.231	0.42	0.449	0.472	0.455	0.3	0.427	0.474	0.575	0.45
EXISTING SURFACE LEVELS	13.046	15.035	18.425	19.517	19.858	20.099	19.823	17.792	18.868	18.618	14.463	13.579	13.743
DESIGN LEVELS ROAD CENTRELINE	13.482	15.568	19.043	19.748	20.278	20.547	20.295	18.248	19.168	19.045	14.937	14.155	14.193
CONTROL LINE CHAINAGE ROAD CENTRELINE	8700.000	8800.000	8900.000	8920.221	9000.000	9063.513	9100.000	9200.000	9290.153	9300.000	9400.000	9488.245	9500.000
SUPER ELEVATION	LHS and RHS -3%												

CUT / FILL DEPTH TO EXISTING SURFACE	0.462	0.444	0.441	0.486	0.488	0.454	0.368	0.46	0.494	0.443	0.427	0.453	0.425
EXISTING SURFACE LEVELS	14.478	11.832	10.722	10.812	10.694	10.722	10.664	16.102	13.111	13.493	14.808	16.039	17.067
DESIGN LEVELS ROAD CENTRELINE	14.940	12.276	11.163	11.298	11.182	11.176	11.032	16.562	13.604	13.937	15.235	16.492	17.492
CONTROL LINE CHAINAGE ROAD CENTRELINE	9600.000	9700.000	9800.000	9900.000	10000.000	10062.728	10100.000	10200.000	10300.000	10400.000	10500.000	10600.000	10700.000
SUPER ELEVATION													

MC04
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

XREF's: PLOT LS MC044
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-054.dwg

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500
@A1

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Drawn GDM	Date 29/01/2019
Checked	Date
Designed GDM	Date 29/01/2019
Verified	Date
Approved	

Client GLADSTONE REGIONAL COUNCIL

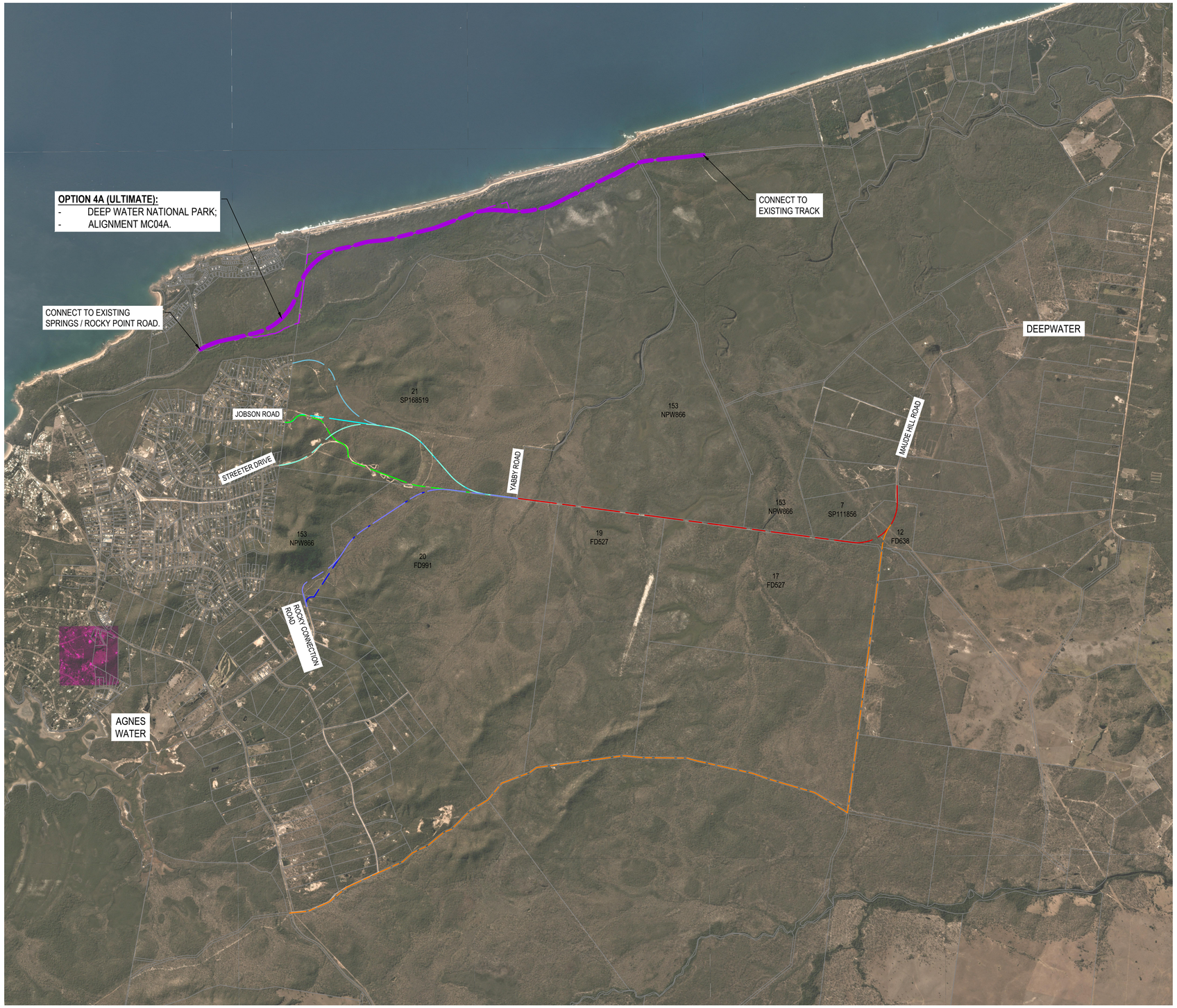
Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title
LONGITUDINAL SECTION
ALIGNMENT MC04 - SHEET 4 OF 5

Status
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number R2018071-CI-054
Revision 1



PLAN
SCALE 1:40,000

Rev.	Date	Description	Des.	Verif.	Appd.
1		CONCEPT ALIGNMENTS COMBINED			
0	31/01/2019	INITIAL ISSUE	GM	CF	CF

0 1 2 3 4km
SCALE 1:40,000 @A1

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Drawn	GDM	Date 29/01/2019
Checked		Date
Designed	GDM	Date 29/01/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title: LONGITUDINAL SECTION
ALIGNMENT MC04 - SHEET 5 OF 5

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number: R2018071-CI-055
Revision: 1

DATE PLOTTED: 28 February 2019 11:34 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

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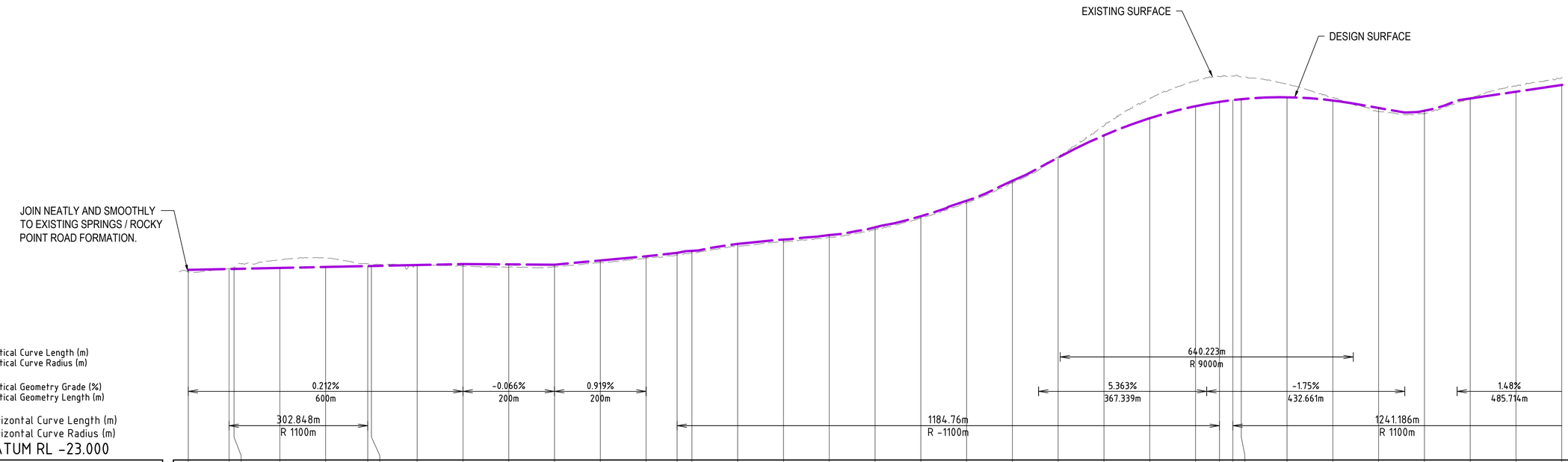

CUT / FILL DEPTH TO EXISTING SURFACE	0.45	-0.096	-0.379	-1.805	-2.031	-0.501	-0.379	-0.033	0.45	0.6	0.45	0.53	0.45	0.45	0.214	0.45	0.557	0.45	0.547	0.45	0.471	0.45	-0.075	-2.027	-4.176	-5.431	-5.507	-5.222	-4.833	-2.891	-0.554	0.762	0.682	-0.018	-1.211	-1.585
EXISTING SURFACE LEVELS	18.060	18.796	19.102	20.739	21.177	19.843	19.737	19.604	19.333	19.117	19.201	20.040	21.039	21.768	22.454	23.742	24.574	25.673	27.259	29.777	33.147	37.522	43.109	49.915	55.810	59.699	60.712	60.816	60.623	59.094	56.057	53.102	52.576	55.953	58.626	60.479
DESIGN LEVELS ROAD CENTRELINE	18.510	18.700	18.723	18.935	19.147	19.342	19.359	19.571	19.783	19.717	19.651	20.570	21.489	22.218	22.668	24.192	25.131	26.123	27.805	30.227	33.618	37.972	43.033	47.889	51.634	54.268	55.205	55.594	55.791	56.203	55.503	53.864	53.258	55.935	57.415	58.895
CONTROL LINE CHAINAGE ROAD CENTRELINE	0.000	89.175	100.000	200.000	300.000	392.022	400.000	500.000	600.000	700.000	800.000	900.000	1000.000	1067.693	1100.000	1200.000	1300.000	1400.000	1500.000	1600.000	1700.000	1800.000	1900.000	2000.000	2100.000	2200.000	2252.453	2281.604	2300.000	2400.000	2500.000	2600.000	2700.000	2800.000	2900.000	3000.000
SUPER ELEVATION	LHS and RHS -3%																																			

MC04A
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

XREF's: PLOT LS MC04A1
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-056.dwg

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500
@A1

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Drawn GDM Date 1/03/2019
Checked Date
Designed GDM Date 1/03/2019
Verified Date
Approved

Client GLADSTONE REGIONAL COUNCIL
Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN
Title LONGITUDINAL SECTION
ALIGNMENT MC04A - SHEET 1 OF 4

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number R2018071-CI-056
Revision 0

DATE PLOTTED: 28 February 2019 11:33 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
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- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
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    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
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  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

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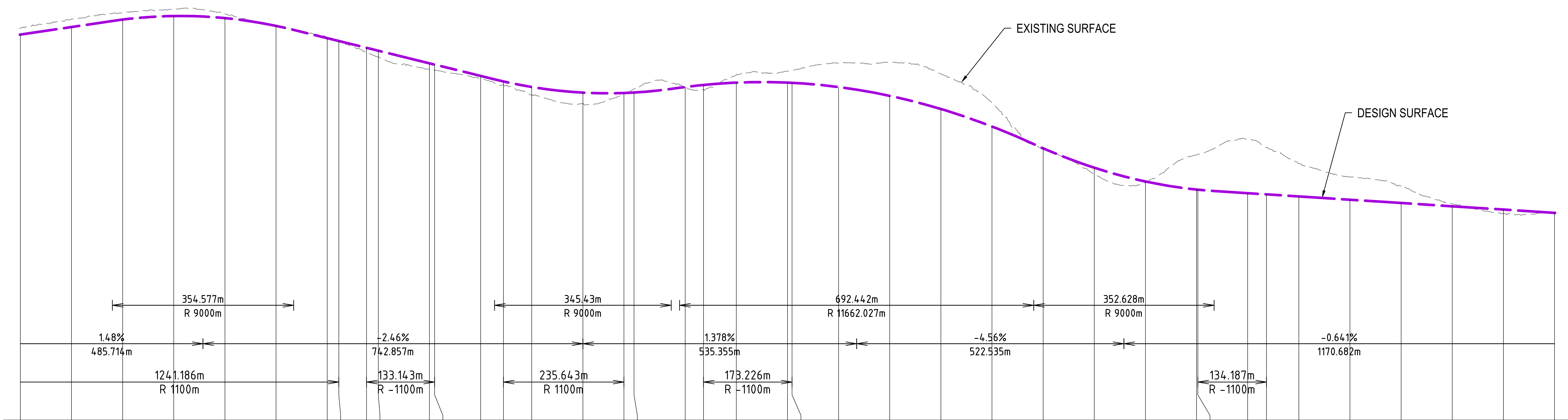

CUT / FILL DEPTH TO EXISTING SURFACE	-1.211	-1.585	-1.332	-1.368	-0.836	-0.002	-0.211	0.034	0.888	1.229	1.123	1.054	0.583	0.723	1.519	2.107	0.172	-0.695	0.018	0.882
EXISTING SURFACE LEVELS	58.626	60.479	61.684	62.420	61.478	59.121	56.936	56.131	53.947	53.036	50.683	50.506	48.762	47.541	45.660	43.975	45.834	46.792	47.159	46.699
DESIGN LEVELS ROAD CENTRELINE	57.415	58.895	60.352	61.052	60.641	59.119	56.725	56.165	54.835	54.265	51.805	51.560	49.345	48.263	47.179	46.082	46.006	46.097	47.176	47.581
CONTROL LINE CHAINAGE ROAD CENTRELINE	2900.000	3000.000	3100.000	3200.000	3300.000	3400.000	3500.000	3522.790	3576.831	3600.000	3700.000	3709.973	3800.000	3844.660	3900.000	4000.000	4080.304	4100.000	4200.000	4235.764
SUPER ELEVATION																				

CUT / FILL DEPTH TO EXISTING SURFACE	-1.509	-2.229	-2.455	-4.638	-6.524	-6.829	-4.674	0.194	1.236	0.128	-6.799	-6.943	-10.551	-9.23	-6.413	-4.486	-3.283	-0.447	0.782	-0.162
EXISTING SURFACE LEVELS	49.541	50.260	50.444	51.810	51.980	49.711	44.125	35.001	30.161	28.580	33.930	34.048	36.975	35.419	32.196	29.628	27.783	24.306	22.436	22.738
DESIGN LEVELS ROAD CENTRELINE	48.032	48.031	47.989	47.172	45.456	42.882	39.451	35.196	31.396	28.708	27.131	27.106	26.425	26.189	25.783	25.142	24.501	23.859	23.218	22.576
CONTROL LINE CHAINAGE ROAD CENTRELINE	4300.000	4400.000	4408.991	4500.000	4600.000	4700.000	4800.000	4900.000	5000.000	5100.000	5200.000	5202.543	5300.000	5336.729	5400.000	5500.000	5600.000	5700.000	5800.000	5900.000
SUPER ELEVATION	LHS and RHS -3%																			

MC04A
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500
@A1

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Drawn GDM Date 1/03/2019
Checked Date
Designed GDM Date 1/03/2019
Verified Date
Approved

Client GLADSTONE REGIONAL COUNCIL
Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN
Title
LONGITUDINAL SECTION
ALIGNMENT MC04A - SHEET 2 OF 4

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
Zone: 56
Datum: AHD
Scale AS SHOWN
Size A1
Drawing Number R2018071-CI-057
Revision 0

XREF's: PLOT LS MC04A2
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-057.dwg

DATE PLOTTED: 28 February 2019 11:33 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
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    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
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  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

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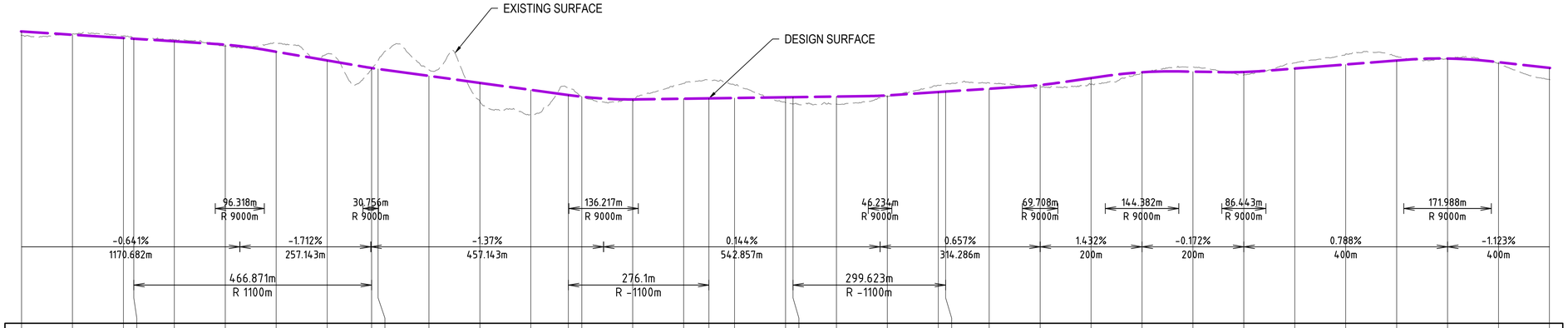

CUT / FILL DEPTH TO EXISTING SURFACE	0.782	-0.162	-0.429	-0.212	-0.289	0.257	-1.687	-1.282	0.281	-1.58	-1.181	3.608	4.87
EXISTING SURFACE LEVELS	22.436	22.738	22.364	22.017	21.582	20.374	20.934	18.816	15.777	17.452	15.683	9.524	6.892
DESIGN LEVELS ROAD CENTRELINE	23.218	22.576	21.935	21.805	21.293	20.631	19.246	17.535	16.058	15.872	14.502	13.132	11.762
CONTROL LINE CHAINAGE ROAD CENTRELINE	5800.000	5900.000	6000.000	6020.323	6100.000	6200.000	6300.000	6400.000	6487.194	6500.000	6600.000	6700.000	6800.000
SUPER ELEVATION													

CUT / FILL DEPTH TO EXISTING SURFACE	-1.305	-0.012	0.275	-3.018	-3.646	-2.56	1.035	1.333	1.49	0.296	-1.339	-1.528
EXISTING SURFACE LEVELS	12.059	10.440	9.619	13.049	13.748	12.735	9.283	9.007	8.971	10.387	12.676	12.959
DESIGN LEVELS ROAD CENTRELINE	10.755	10.428	9.894	10.031	10.102	10.175	10.318	10.339	10.462	10.683	11.336	11.431
CONTROL LINE CHAINAGE ROAD CENTRELINE	6873.537	6900.000	7000.000	7100.000	7149.637	7200.000	7300.000	7314.762	7400.000	7500.000	7600.000	7614.385
SUPER ELEVATION						LHS and RHS -3%						

CUT / FILL DEPTH TO EXISTING SURFACE	-1.143	0.517	1.233	0.161	-0.929	0.554	-1.108	-2.073	-0.73	0.039	0.263	2.262
EXISTING SURFACE LEVELS	13.136	12.201	12.850	15.065	16.272	14.720	17.066	18.819	18.264	17.873	16.937	13.815
DESIGN LEVELS ROAD CENTRELINE	11.994	12.718	14.083	15.225	15.342	15.274	15.958	16.746	17.534	17.912	17.200	16.077
CONTROL LINE CHAINAGE ROAD CENTRELINE	7700.000	7800.000	7900.000	8000.000	8100.000	8200.000	8300.000	8400.000	8500.000	8600.000	8700.000	8800.000
SUPER ELEVATION												

MC04A

SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn GDM Date 1/03/2019
Checked Date
Designed GDM Date 1/03/2019
Verified Date
Approved

Client GLADSTONE REGIONAL COUNCIL
Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN
Title LONGITUDINAL SECTION
ALIGNMENT MC04A - SHEET 3 OF 4

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
Zone: 56
Datum: AHD
Scale AS SHOWN
Size A1
Drawing Number R2018071-CI-058
Revision 0

XREF's: PLOT LS MC04A3
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-058.dwg

DATE PLOTTED: 28 February 2019 11:35 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

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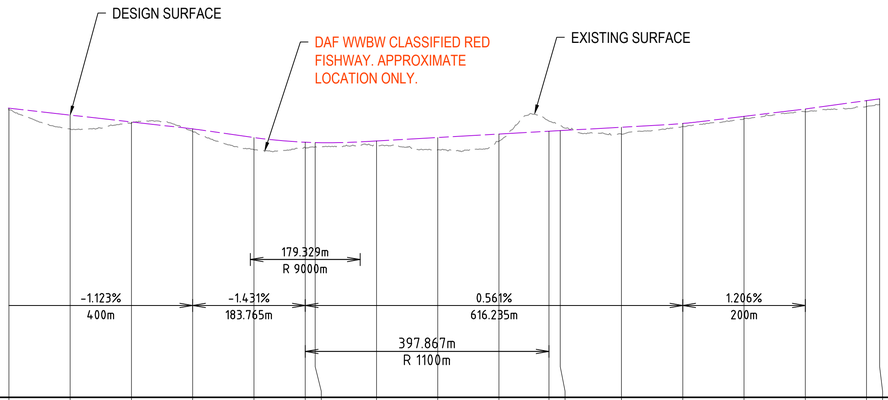
- EXISTING SERVICES HAVE BEEN IDENTIFIED TO BE IN THE VICINITY OF THESE CONCEPT ALIGNMENTS. SERVICES SUCH AS OVERHEAD POWER, TELSTRA AND WATER MAINS SHALL BE LOCATED PRIOR TO COMMENCEMENT OF THE DETAIL DESIGN PHASE.



Vertical Curve Length (m)
Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

DATUM RL -30.000

CUT / FILL DEPTH TO EXISTING SURFACE	EXISTING SURFACE LEVELS	DESIGN LEVELS ROAD CENTRELINE	CONTROL LINE CHAINAGE ROAD CENTRELINE
0.263	16.937	17.200	8700.000
2.262	13.815	16.077	8800.000
0.193	14.761	14.954	8900.000
0.439	13.381	13.820	9000.000
1.961	10.441	12.402	9100.000
0.897	10.751	11.647	9183.765
0.698	10.893	11.591	9200.000
0.749	11.104	11.853	9300.000
2.001	10.413	12.414	9400.000
1.157	11.818	12.975	9500.000
-1.659	15.092	13.433	9581.632
-0.834	14.370	13.537	9600.000
1.129	12.969	14.098	9700.000
0.497	14.209	14.706	9800.000
0.388	15.477	15.865	9900.000
0.453	16.621	17.074	10000.000
0.971	17.465	18.436	10100.000
0.946	17.782	18.727	10121.347

SUPER ELEVATION: LHS and RHS -3%

MC04A
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn GDM Date 1/03/2019
Checked Date
Designed GDM Date 1/03/2019
Verified Date
Approved

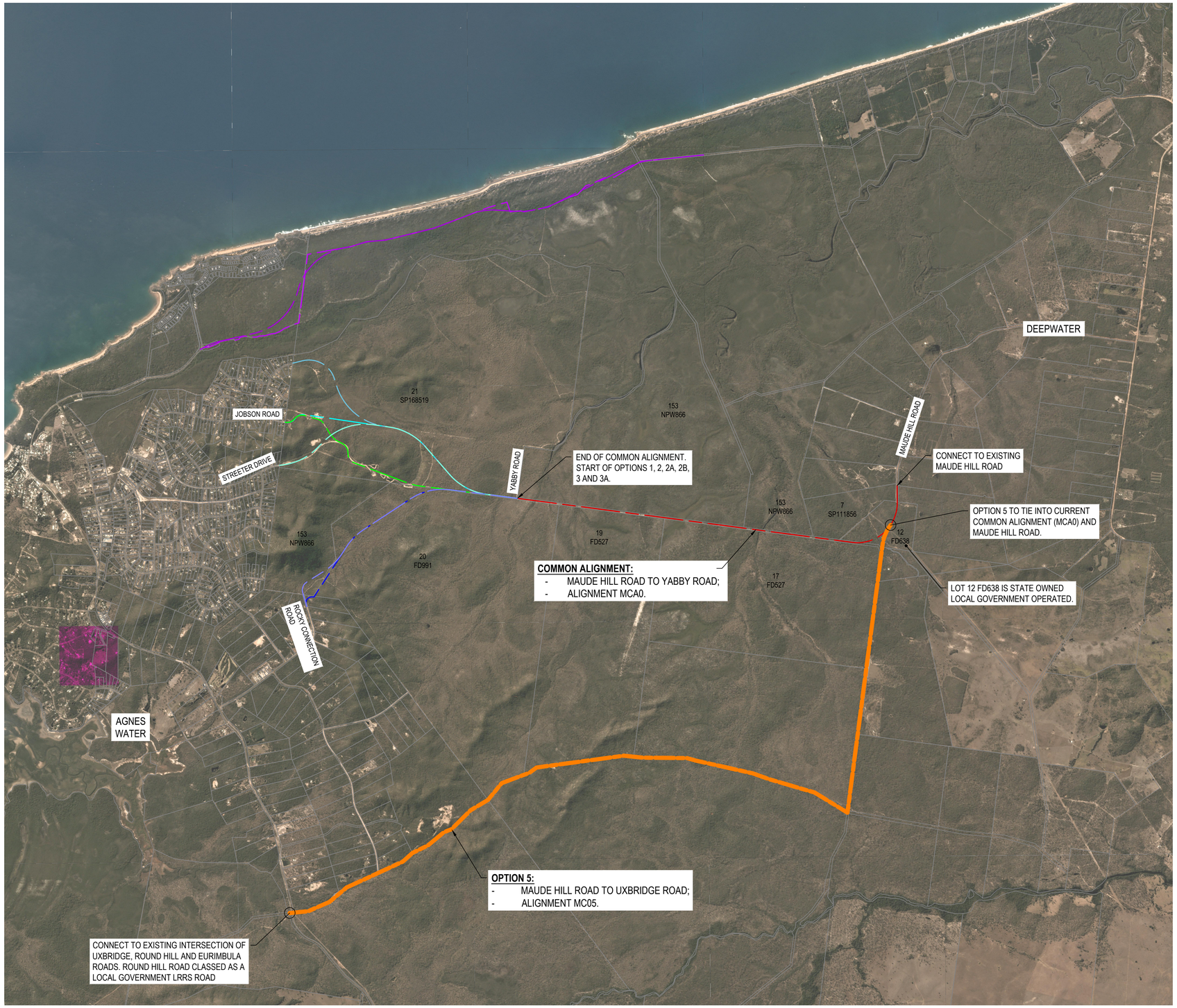
Client: GLADSTONE REGIONAL COUNCIL
Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN
Title: LONGITUDINAL SECTION
ALIGNMENT MC04A - SHEET 4 OF 4

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number: R2018071-CI-059
Revision: 0

XREF's: PLOT LS MC04A4
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-059.dwg



PLAN
SCALE 1:40,000

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

0 1 2 3 4km
SCALE 1:40,000 @A1

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		Date
Drawn	GDM	1/03/2019
Checked		Date
Designed	GDM	1/03/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Title: MAUDE HILL ROAD TO UXBRIDGE ROAD
OPTION 5 - ALIGNMENT MC05

Zone:	Datum:	Scale	Size
56	AHD	1:40,000	A1

Drawing Number: R2018071-CI-060
Revision: 0

DATE PLOTTED: 28 February 2019 3:22 PM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
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        - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
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DESIGNER COMMENTARY:

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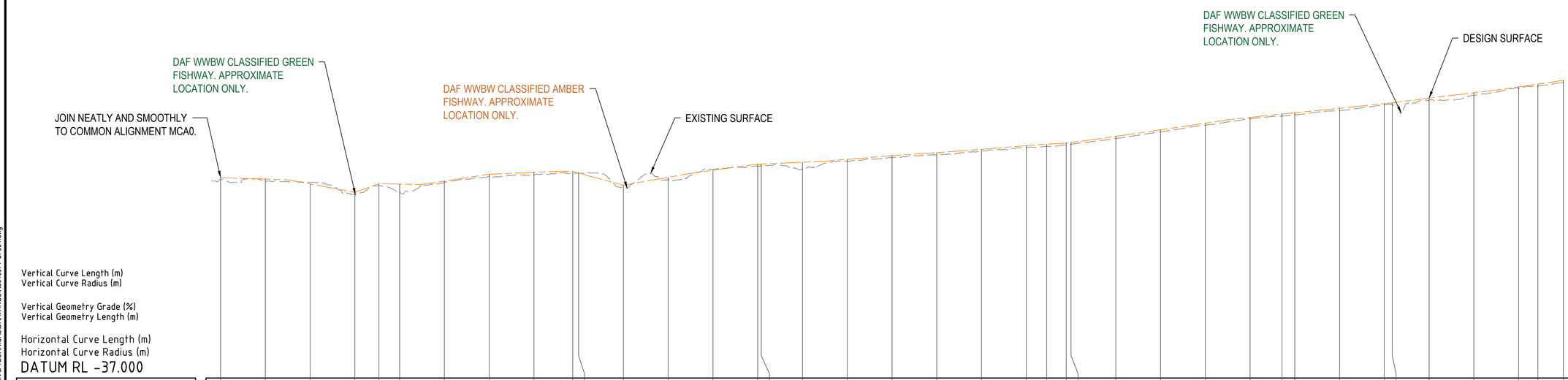

Vertical Curve Length (m)
Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

DATUM RL -37.000

CUT / FILL DEPTH TO EXISTING SURFACE	0.45	0.703	-0.371	0.45	0.45	1.74	0.293	0.45	0.61	0.45	-0.023	0.45	0.58	-0.199	0.45	0.45	1.594	0.377	0.45	0.486
EXISTING SURFACE LEVELS	7.320	6.753	6.732	4.035	5.955	4.584	6.708	8.083	8.344	8.684	8.798	5.620	7.269	9.626	10.357	10.361	9.620	11.473	12.235	12.876
DESIGN LEVELS ROAD CENTRELINE	7.770	7.456	6.361	4.485	6.405	6.323	7.001	8.533	8.954	9.134	8.775	6.070	7.848	9.427	10.807	10.811	11.214	11.850	12.685	13.361
CONTROL LINE CHAINAGE ROAD CENTRELINE	0.000	100.000	200.000	300.000	353.740	400.000	500.000	600.000	700.000	786.708	800.000	900.000	1000.000	1100.000	1200.000	1207.817	1300.000	1400.000	1500.000	1600.000
SUPER ELEVATION																		LHS and RHS -3%		

CUT / FILL DEPTH TO EXISTING SURFACE	0.371	0.45	0.45	0.45	0.376	0.547	0.45	0.428	0.291	0.45	0.45	0.562	0.29	0.45	0.45	0.596	0.347	0.45	0.45
EXISTING SURFACE LEVELS	13.729	14.453	14.800	15.061	15.268	16.448	17.996	19.498	20.927	21.558	21.790	22.709	24.002	24.021	25.089	26.131	27.686	28.196	29.055
DESIGN LEVELS ROAD CENTRELINE	14.101	14.903	15.250	15.511	15.644	16.994	18.446	19.925	21.218	22.008	22.240	23.272	24.293	24.471	25.539	26.727	28.033	28.646	29.505
CONTROL LINE CHAINAGE ROAD CENTRELINE	1700.000	1800.000	1845.444	1889.327	1900.000	2000.000	2100.000	2200.000	2300.000	2371.339	2400.000	2500.000	2600.000	2617.660	2700.000	2800.000	2900.000	2942.987	3000.000
SUPER ELEVATION																			

MC05

SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

XREF's: PLOT LS MC051
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-061.dwg

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500
@A1

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Drawn GDM Date 1/03/2019
Checked Date
Designed GDM Date 1/03/2019
Verified Date
Approved

Client: GLADSTONE REGIONAL COUNCIL
Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN
Title: LONGITUDINAL SECTION
ALIGNMENT MC05 - SHEET 1 OF 6

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
Zone: 56
Datum: AHD
Scale: AS SHOWN
Size: A1
Drawing Number: R2018071-CI-061
Revision: 0

DATE PLOTTED: 28 February 2019 11:16 AM BY : GERRY MOORE

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
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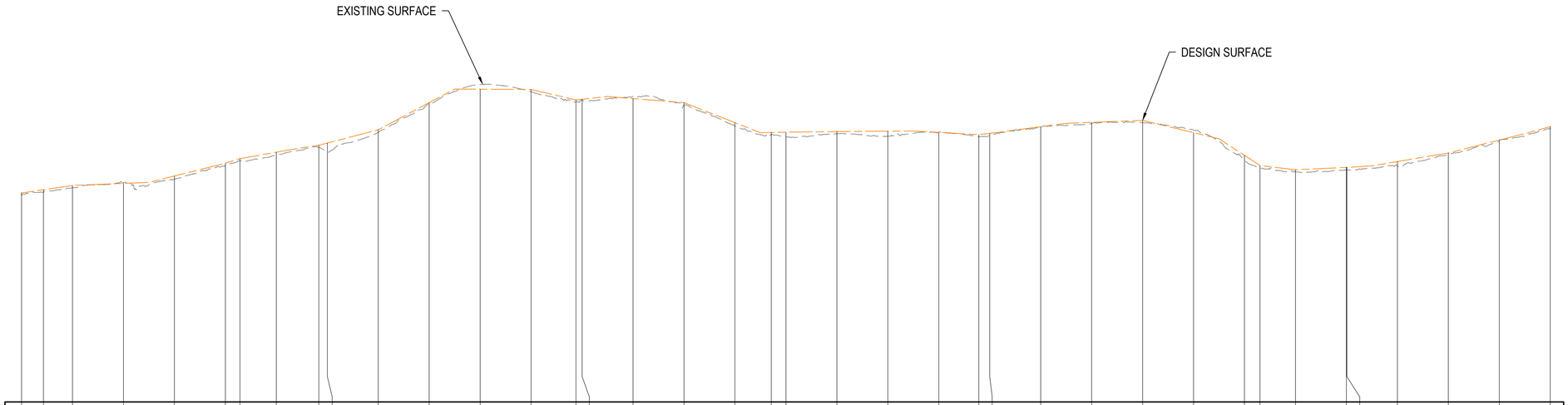

Vertical Curve Length (m)
Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

DATUM RL -13.000

CONTROL LINE CHAINAGE ROAD CENTRELINE	DESIGN LEVELS ROAD CENTRELINE	EXISTING SURFACE LEVELS	CUT / FILL DEPTH TO EXISTING SURFACE
2900.000	28.033	27.686	0.347
2942.987	28.646	28.196	0.45
3000.000	29.505	29.055	0.45
3100.000	29.899	30.032	-0.132
3200.000	31.349	30.739	0.611
3300.000	33.855	33.405	0.45
3328.551	34.763	34.313	0.45
3400.000	36.014	35.465	0.549
3483.432	37.385	36.935	0.45
3500.000	37.818	36.224	1.593
3600.000	40.432	39.982	0.45
3700.000	45.752	45.502	0.25
3800.000	48.389	49.281	-0.892
3900.000	48.341	47.891	0.45
3987.982	46.282	45.832	0.45
4000.000	46.411	46.253	0.158
4100.000	46.548	46.949	-0.401
4200.000	45.746	45.296	0.45
4300.000	41.817	41.190	0.627
4371.300	39.909	39.459	0.45
4400.000	39.944	39.064	0.88
4500.000	40.067	39.617	0.45
4600.000	40.141	39.147	0.993
4700.000	39.903	39.916	-0.013
4778.653	39.470	39.020	0.45
4800.000	39.710	39.260	0.45
4900.000	41.028	40.947	0.082
5000.000	41.884	41.661	0.223
5100.000	42.277	41.827	0.45
5200.000	39.865	40.388	-0.523
5300.000	35.391	34.509	0.882
5330.365	33.407	32.957	0.45
5400.000	32.581	32.131	0.45
5500.000	33.038	32.578	0.461
5500.769	33.042	32.592	0.45
5600.000	34.188	33.360	0.827
5700.000	35.864	35.414	0.45
5800.000	38.407	38.424	-0.017
5900.000	41.044	40.727	0.317

SUPER ELEVATION: LHS and RHS -3%

MC05

SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn GDM	Date 1/03/2019
Checked	Date
Designed GDM	Date 1/03/2019
Verified	Date
Approved	

Client: GLADSTONE REGIONAL COUNCIL

Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title: LONGITUDINAL SECTION
ALIGNMENT MC05 - SHEET 2 OF 6

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number: R2018071-CI-062
Revision: 0

CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-062.dwg
XREF's: PLOT LS MC052

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
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  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
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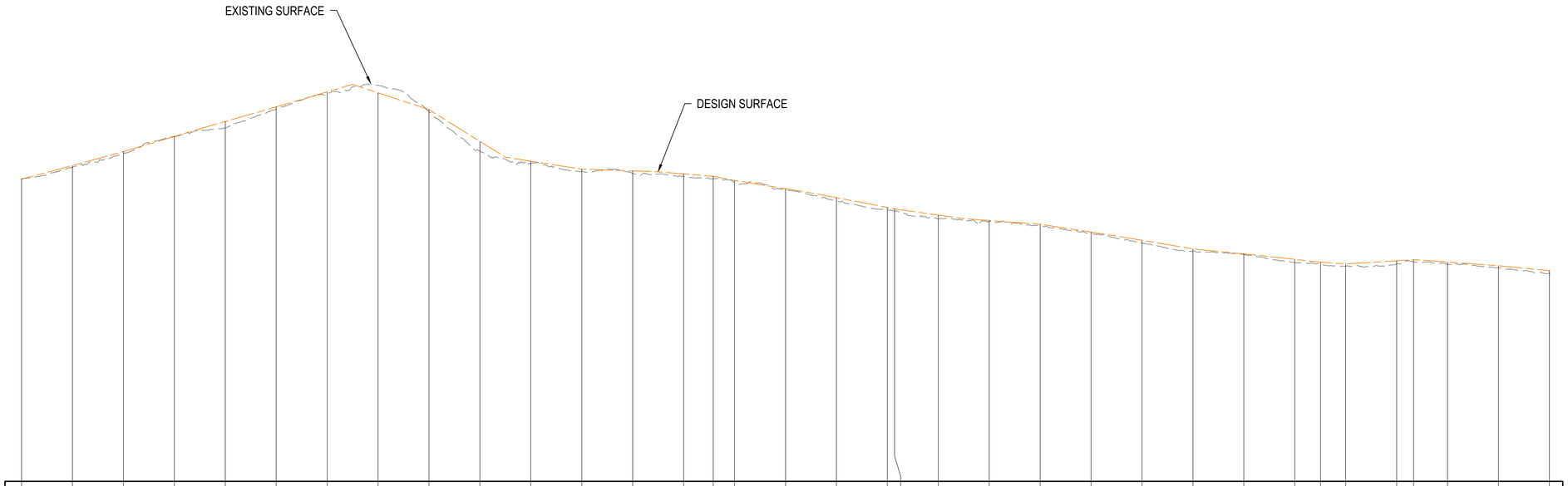

Vertical Curve Length (m)
Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Horizontal Curve Length (m)
Horizontal Curve Radius (m)
DATUM RL -21.000

CUT / FILL DEPTH TO EXISTING SURFACE	-0.017	0.317	0.45	0.082	1.246	0.45	0.138	-1.499	0.45	1.914	0.484	0.45
EXISTING SURFACE LEVELS	38.424	40.727	43.323	46.677	48.443	52.111	55.372	56.831	51.577	43.887	41.419	39.886
DESIGN LEVELS ROAD CENTRELINE	38.407	41.044	43.773	46.759	49.689	52.561	55.510	55.332	52.027	45.801	41.904	40.336
CONTROL LINE CHAINAGE ROAD CENTRELINE	5800.000	5900.000	6000.000	6100.000	6200.000	6300.000	6400.000	6500.000	6600.000	6700.000	6800.000	6900.000
SUPER ELEVATION	LHS and RHS -3%											

CUT / FILL DEPTH TO EXISTING SURFACE	0.544	0.497	0.45	0.45	0.068	0.607	0.45	0.45	0.727	0.184	0.45	0.305
EXISTING SURFACE LEVELS	39.442	38.905	38.479	37.651	36.417	34.120	32.377	32.060	30.583	30.058	29.055	27.657
DESIGN LEVELS ROAD CENTRELINE	39.985	39.402	38.929	38.101	36.485	34.727	32.827	32.510	31.309	30.242	29.505	27.961
CONTROL LINE CHAINAGE ROAD CENTRELINE	7000.000	7100.000	7158.045	7200.000	7300.000	7400.000	7500.000	7514.148	7600.000	7700.000	7800.000	7900.000
SUPER ELEVATION												

CUT / FILL DEPTH TO EXISTING SURFACE	0.529	0.45	0.171	0.652	0.45	0.45	0.62	0.45	0.456	0.45	0.565
EXISTING SURFACE LEVELS	25.821	24.222	23.496	21.961	21.607	21.254	21.708	22.085	21.630	20.905	19.824
DESIGN LEVELS ROAD CENTRELINE	26.350	24.672	23.666	22.614	22.057	21.704	22.327	22.535	22.086	21.355	20.389
CONTROL LINE CHAINAGE ROAD CENTRELINE	8000.000	8100.000	8200.000	8300.000	8350.573	8400.000	8500.000	8533.321	8600.000	8700.000	8800.000
SUPER ELEVATION											

MC05
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn GDM	Date 1/03/2019
Checked	Date
Designed GDM	Date 1/03/2019
Verified	Date
Approved	

Client GLADSTONE REGIONAL COUNCIL

Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title
LONGITUDINAL SECTION
ALIGNMENT MC05 - SHEET 3 OF 6

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number R2018071-CI-063
Revision 0

DESIGN DETAILS:

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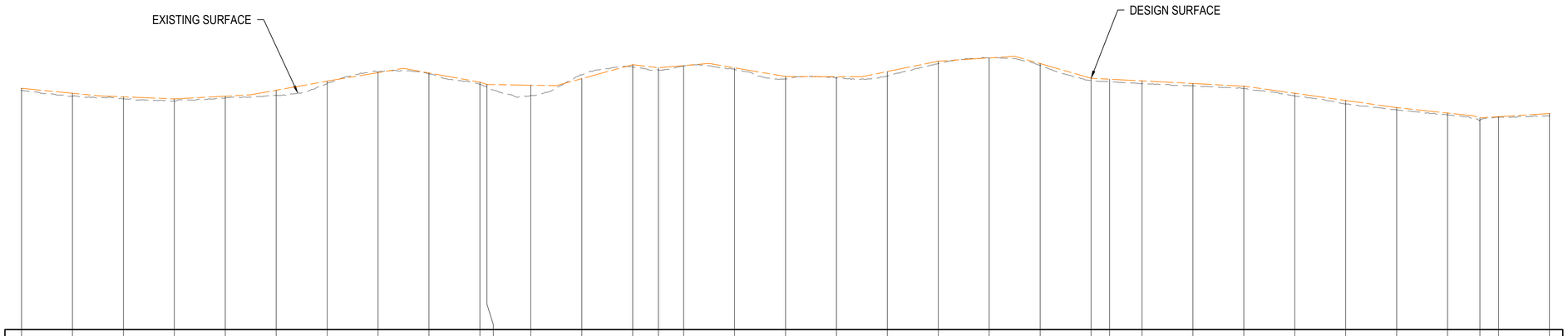

Vertical Curve Length (m)
Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

DATUM RL -26.000

CONTROL LINE CHAINAGE ROAD CENTRELINE	CUT / FILL DEPTH TO EXISTING SURFACE	EXISTING SURFACE LEVELS	DESIGN LEVELS ROAD CENTRELINE
8700.000	0.45	20.905	21.355
8800.000	0.565	19.824	20.389
8900.000	0.385	19.312	19.697
9000.000	0.45	18.828	19.278
9100.000	0.337	19.482	19.819
9200.000	0.984	19.998	20.982
9300.000	0.45	22.319	22.769
9400.000	-0.18	24.625	24.445
9500.000	0.223	24.155	24.378
9600.000	0.45	22.118	22.568
9613.843	0.45	21.666	22.116
9700.000	2.033	19.938	21.972
9800.000	-0.716	23.977	23.261
9900.000	0.45	25.556	26.006
9950.580	0.45	24.943	25.393
10000.000	0.004	25.811	25.815
10100.000	0.345	25.044	25.389
10200.000	0.45	23.232	23.682
10300.000	0.332	23.321	23.653
10400.000	0.873	23.780	24.652
10500.000	0.45	26.231	26.681
10600.000	0.003	27.320	27.323
10700.000	0.419	25.789	26.209
10800.000	0.45	22.888	23.338
10836.336	0.45	22.699	23.149
10900.000	0.54	22.287	22.826
11000.000	0.449	21.860	22.309
11100.000	0.45	21.332	21.782
11200.000	0.553	19.831	20.384
11300.000	0.68	18.299	18.979
11400.000	0.45	17.117	17.567
11500.000	0.359	16.147	16.506
11563.352	0.45	15.121	15.571
11600.000	0.108	15.689	15.797
11700.000	0.45	15.963	16.413
SUPER ELEVATION	LHS and RHS -3%		

MC05
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m @A1
SCALE: H:1:5000 V:1:500

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Web: www.cardno.com.au

		Date
Drawn	GDM	1/03/2019
Checked		Date
Designed	GDM	1/03/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL
Project: AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN
Title: LONGITUDINAL SECTION
ALIGNMENT MC05 - SHEET 4 OF 6

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number: R2018071-CI-064
Revision: 0

DESIGN DETAILS:

- DESIGN SPEED = 110KPH WITH EXCEPTION TO TIE IN GEOMETRY TO EXISTING ROAD FORMATIONS OR OTHERWISE NOTED;
- POSTED SPEED = TBC IF REQUIRED AS A RURAL ROAD;
- OPERATIONAL SPEEDS: TBC;
- DESIGN DETAILS ARE IN ACCORDANCE WITH THE FOLLOWING GUIDELINES:
  - GLADSTONE REGIONAL COUNCIL ROAD HIERARCHY POLICY (P-2014-31):
    - TABLE 4 - PERFORMANCE CRITERIA - RURAL AREAS (ROAD) - DISTRIBUTOR; AND
    - TABLE 7 - ACCEPTABLE SOLUTIONS - RURAL AREAS (ROAD) - DISTRIBUTOR
  - AUSTROADS GUIDE TO ROAD DESIGN PART 3 - GEOMETRIC DESIGN, 2017;
  - IPWEA LOWER ORDER ROADS DESIGN MANUAL (APPLIED TO INTERIM CROSS SECTION DETAILS ONLY);
  - DEPARTMENT OF AGRICULTURE AND FISHERIES GUIDELINES FOR WATERWAY BARRIER WORKS ('DAF WWBW'); AND
  - APPLICABLE CAPRICORN MUNICIPAL DEVELOPMENT GUIDELINE STANDARD DRAWINGS SHALL BE APPLIED SUCH AS CMDG-R-094 AND 095 FOR FLOODWAY REQUIREMENTS.

DESIGNER COMMENTARY:

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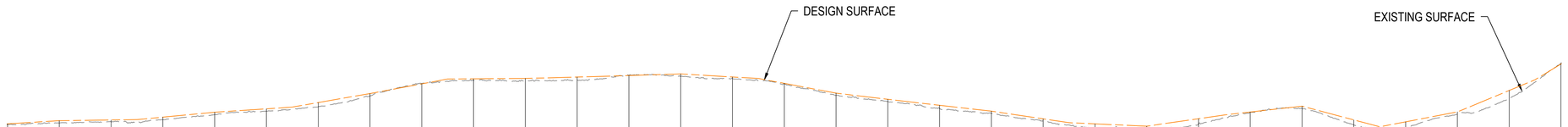

Vertical Curve Length (m)
Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

DATUM RL -26.000

CUT / FILL DEPTH TO EXISTING SURFACE	0.108	0.45	0.373	0.497	0.45	0.451	0.824	0.45	-0.079	0.322	0.45	0.614	-0.097	0.45	0.288	0.1	0.45	0.445	0.643	0.45	0.407	0.806	0.45	1.029	0.042	0.45	0.996	1.346	0.45	1.524	-0.205
EXISTING SURFACE LEVELS	15.689	15.963	16.172	16.589	17.585	18.246	19.076	21.196	23.589	24.156	24.103	24.214	25.212	24.966	24.550	23.503	21.260	20.093	18.740	17.793	16.357	14.992	14.896	15.761	18.034	18.754	15.562	14.844	17.650	20.705	27.540
DESIGN LEVELS ROAD CENTRELINE	15.797	16.413	16.545	17.086	18.035	18.696	19.900	21.646	23.510	24.479	24.553	24.828	25.115	25.416	24.837	23.602	21.710	20.538	19.382	18.243	16.764	15.798	15.346	16.790	18.076	19.204	16.558	16.190	18.100	22.229	27.335
CONTROL LINE CHAINAGE ROAD CENTRELINE	11600.000	11700.000	11800.000	11900.000	12000.00018.035	12100.000	12200.00019.900	12300.00021.646	12400.00023.510	12500.00024.479	12600.00024.553	12700.00024.828	12800.00025.115	12900.00025.416	13000.00024.837	13100.000	13200.00021.710	13300.00020.538	13400.00019.382	13500.00018.243	13600.00016.764	13700.00015.798	13800.00015.346	13900.00016.790	14000.00018.076	14100.00019.204	14200.00016.558	14300.00016.190	14400.00018.100	14500.00022.229	14600.00027.335
SUPER ELEVATION	LHS and RHS -3%																														

MC05
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

H: 0 100 200 300 400 500m
V: 0 10 20 30 40 50m
SCALE: H:1:5000 V:1:500 @A1

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Drawn	GDM	Date 1/03/2019
Checked		Date
Designed	GDM	Date 1/03/2019
Verified		Date
Approved		

Client: GLADSTONE REGIONAL COUNCIL
Project: AGNES WATER AND BAFFLE CREEK INLAND LINK ROAD CONCEPT DESIGN
Title: LONGITUDINAL SECTION ALIGNMENT MC05 - SHEET 5 OF 6

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone:	Datum:	Scale	Size
56	AHD	AS SHOWN	A1

Drawing Number: R2018071-CI-065
Revision: 0

DATE PLOTTED: 28 February 2019 3:21 PM BY : GERRY MOORE

DESIGN DETAILS:

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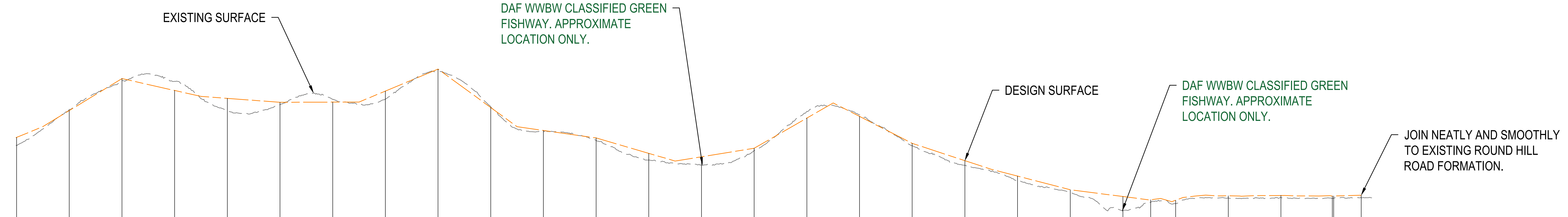

Vertical Curve Length (m)
Vertical Curve Radius (m)

Vertical Geometry Grade (%)
Vertical Geometry Length (m)

Vertical Geometry Grade (%)	Vertical Geometry Length (m)
4.129%	150m
6.082%	150m
-2.26%	150m
-0.745%	150m
0.033%	150m
4.174%	150m
-7.3%	150m
-1.43%	150m
-2.926%	150m
1.617%	150m
5.751%	150m
-5.123%	150m
-3.29%	150m
-2.593%	150m
-1.289%	150m

Horizontal Curve Length (m)
Horizontal Curve Radius (m)

344.813m
R 749.999m

DATUM RL -32.000

CONTROL LINE CHAINAGE ROAD CENTRELINE	CUT / FILL DEPTH TO EXISTING SURFACE	EXISTING SURFACE LEVELS	DESIGN LEVELS ROAD CENTRELINE
14500.000	1.524	20.705	22.229
14600.000	-0.205	27.540	27.335
14700.000	0.45	32.967	33.417
14800.000	-1.733	32.890	31.157
14900.000	2.331	27.323	29.655
15000.000	0.45	28.460	28.910
15100.000	-0.532	29.475	28.943
15200.000	1.559	29.488	31.046
15300.000	0.45	34.770	35.220
15400.000	-0.141	28.061	27.920
15500.000	0.227	23.328	23.555
15600.000	0.45	21.675	22.125
15700.000	1.267	17.931	19.199
15800.000	1.566	16.978	18.544
15900.000	0.45	19.711	20.161
16000.000	-1.258	27.169	25.912
16100.000	-0.303	26.528	26.225
16200.000	0.45	20.652	21.102
16300.000	0.887	16.925	17.811
16400.000	0.908	13.962	14.870
16500.000	0.45	11.827	12.277
16600.000	2.691	8.296	10.987
16652.655	0.45	9.906	10.356
16700.000	0.653	9.626	10.279
16800.000	0.45	10.685	11.135
16900.000	0.398	10.783	11.181
16997.468	0.45	10.622	11.072
17000.000	0.414	10.666	11.080
17052.250	0.45	10.787	11.237

SUPER ELEVATION

LHS and RHS -3%

MC05
SCALE: HORIZONTAL - 1:5000
VERTICAL - 1:500

Rev.	Date	Description	Des.	Verif.	Appd.
0		INITIAL ISSUE	GM		

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V: 0 10 20 30 40 50m
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Drawn GDM Date 1/03/2019
Checked Date
Designed GDM Date 1/03/2019
Verified Date
Approved

Client GLADSTONE REGIONAL COUNCIL

Project AGNES WATER AND BAFFLE CREEK
INLAND LINK ROAD
CONCEPT DESIGN

Title
LONGITUDINAL SECTION
ALIGNMENT MC05 - SHEET 6 OF 6

Status PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

Zone: 56
Datum: AHD
Scale AS SHOWN
Size A1

Drawing Number R2018071-CI-066
Revision 0

XREFs: PLOT LS MC056
CAD File: Q:\Projects\Central Queensland\Rockhampton\Projects prior\R2018071-GRC-Inland Link Road - Agnes Water Baffle Creek\DESIGN & TECHNICAL\DRAWINGS\R2018071-CI-066.dwg

APPENDIX

B

PRELIMINARY OPINION OF COST

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Inland Road
Location: Gladstone Regional Council

Revision 1
Date: 11-Mar-19

Summary sheet (Engineering and Construction)

Item Number	New construction length per option (km): (Excludes existing roads used to complete this option)	General contractor setup costs($):	New construction costs ($): (Including drainage and retaining structures)	MCA0 new construction cost used to complete this option ($):	Engineering Consultancy and investigations ($): (approx.1.5% of new construction cost)	Contingency ($): (approx.25% of setup, new construction and design costs)	Total Option Cost ($) Ex. GST:	Cost per km ($):	Anticipated annual maintenance costs:
MC0A - INTERIM	7.7	$ 392,500.00	$ 8,387,521.81		$ 125,812.83	$ 2,226,458.66	$ 11,132,293.29	$ 1,445,752.38	$ 167,750.44
Upgrade to MC0A - ULTIMATE UNSEALED		$ 392,500.00	$ 10,736,225.11		$ 161,043.38	$ 2,822,442.12	$ 14,112,210.61	$ 1,832,754.62	$ 214,724.50
Upgrade to MC0A - ULTIMATE and seal		$ 392,500.00	$ 11,796,028.61		$ 176,940.43	$ 3,091,367.26	$ 15,456,836.30	$ 2,007,381.34	$ 235,920.57
MC02 - INTERIM	5.0	**$ 392,500.00**	**$ 8,436,120.10**	**$ 8,387,521.81**	$ 252,354.63	$ 4,367,124.13	**$ 21,835,620.67**	**$ 1,719,340.21**	$ 336,472.84
Upgrade to MC02 - ULTIMATE UNSEALED		$ 392,500.00	$ 6,221,300.10	$ 10,736,225.11	$ 254,362.88	$ 4,401,097.02	$ 22,005,485.12	**$ 2,857,855.21**	$ 339,150.50
Upgrade to MC02 - ULTIMATE and seal		$ 392,500.00	$ 6,899,287.60	$ 11,796,028.61	$ 280,429.74	$ 4,842,061.49	$ 24,210,307.45	**$ 3,144,195.77**	$ 747,812.65
MC02A - INTERIM	5.3	**$ 392,500.00**	**$ 4,976,087.23**	**$ 8,387,521.81**	$ 200,454.14	$ 3,489,140.79	**$ 17,445,703.97**	**$ 1,341,977.23**	$ 267,272.18
Upgrade to MC02A - ULTIMATE UNSEALED		$ 392,500.00	$ 6,701,724.99	$ 10,736,225.11	$ 261,569.25	$ 4,523,004.84	$ 22,615,024.19	**$ 2,937,016.13**	$ 348,759.00
Upgrade to MC02A - ULTIMATE and seal		$ 392,500.00	$ 7,435,792.99	$ 11,796,028.61	$ 288,477.32	$ 4,978,199.73	$ 24,890,998.66	**$ 3,232,597.23**	$ 769,272.86
MC03A - INTERIM	5.1	**$ 392,500.00**	**$ 4,810,150.43**	**$ 8,387,521.81**	$ 197,965.08	$ 3,447,034.33	**$ 17,235,171.65**	**$ 1,346,497.79**	$ 263,953.44
Upgrade to MC03A - ULTIMATE UNSEALED		$ 392,500.00	$ 6,570,313.59	$ 10,736,225.11	$ 259,598.08	$ 4,489,659.20	$ 22,448,295.98	**$ 2,915,363.11**	$ 346,130.77
Upgrade to MC03A - ULTIMATE and seal		$ 392,500.00	$ 7,276,139.59	$ 11,796,028.61	$ 286,082.52	$ 4,937,687.68	$ 24,688,438.40	**$ 3,206,290.70**	$ 762,886.73
MC04 - INTERIM	10.8	**$ 392,500.00**	**$ 9,972,586.26**		$ 149,588.79	$ 2,628,668.76	**$ 13,143,343.81**	**$ 1,216,976.28**	$ 199,451.73
Realign to MC04A - ULTIMATE UNSEALED	10.2	$ 392,500.00	$ 34,234,403.05		$ 513,516.05	$ 8,785,104.77	$ 43,925,523.87	**$ 4,306,423.91**	$ 684,688.06
Realign to MC04A - ULTIMATE and seal		$ 392,500.00	$ 35,634,640.05		$ 534,519.60	$ 9,140,414.91	$ 45,702,074.56	**$ 4,480,595.55**	$ 1,425,385.60
MC05 - INTERIM	17.1	**$ 392,500.00**	**$ 16,825,454.16**		$ 252,381.81	$ 4,367,583.99	**$ 21,837,919.96**	**$ 1,277,071.34**	$ 336,509.08
Upgrade to MC05 - ULTIMATE UNSEALED		$ 392,500.00	$ 21,460,600.60		$ 321,909.01	$ 5,543,752.40	$ 27,718,762.01	**$ 1,620,980.23**	$ 429,212.01
Upgrade to MC05 - ULTIMATE and seal		$ 392,500.00	$ 23,817,172.10		$ 357,257.58	$ 6,141,732.42	$ 30,708,662.10	**$ 1,795,828.19**	$ 952,686.88

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Inland Road
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: General Contractor Setup Costs

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
MRS02 Oct 14					
	PROVISION FOR TRAFFIC				
1201.01	Provision for traffic (MRS02 Oct 14)	lump sum	1	$ 25,000.00	$ 25,000.00
1202.01	Traffic Management Plan	lump sum	1	$ 12,500.00	$ 12,500.00
	SURVEY				
	DTM survey (Start of project)	lump sum	1	$ 75,000.00	$ 75,000.00
	DTM survey (End of project)	lump sum	1	$ 75,000.00	$ 75,000.00
MRS28 Jun 09					
	CONTRACTOR'S SITE FACILITIES AND CAMP				
1101.01	Contractor's site facilities (MRS28 Jun 09)	lump sum	1	$ 20,000.00	$ 20,000.00
MRS51 Jan 15					
	ENVIRONMENTAL MANAGEMENT				
1330.01	Environmental Inspections (MRS51 Jan 15)	lump sum	1	$ 25,000.00	$ 25,000.00
1331.01	Develop Environmental Management Plan (Construction) (MRS51 Jan 15)	lump sum	1	$ 20,000.00	$ 20,000.00
1332.01	Implement Environmental Management Plan (Construction) (MRS51 Jan 15)	lump sum	1	$ 30,000.00	$ 30,000.00
1333.01	Environmental Licences, Permits and Approvals	lump sum	1	$ 20,000.00	$ 20,000.00
1375.01P	Fauna Management, if ordered (Provisional Quantity)	each	1	$ 20,000.00	$ 20,000.00
1381.01P	Pest Control, if ordered (Provisional Quantity)	each	1	$ 20,000.00	$ 20,000.00
	MISCELLANEOUS				
9190.01S	Preparation and submission of As Constructed drawings and asset information (ADAC submission)	lump sum	1	$ 50,000.00	$ 50,000.00

Total for Civil Works (ex GST): **$392,500**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 2 (MC02) - Interim unsealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	500	$ 216.00	$ 108,000.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	10000	$ 10.87	$ 108,700.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	10	$ 15,000.00	$ 150,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	86100	$ 1.87	$ 161,007.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	8610	$ 6.65	$ 57,256.50
3.3	Ground surface treatment under embankment, standard	m2	25830	$ 1.20	$ 30,996.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	2000	$ 16.65	$ 33,300.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	39700	$ 11.25	$ 446,625.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	2000	$ 60.50	$ 121,000.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	16500	$ 6.95	$ 114,675.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	295	$ 450.00	$ 132,750.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	25830	$ 1.75	$ 45,202.50
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	51660	$ 70.25	$ 3,629,115.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	6505.06	$ 122.50	$ 796,869.48
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	8219.55	$ 97.50	$ 801,406.52
8.3	Geotextile under sub-base pavement	m2	39500	$ 1.50	$ 59,250.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	33100		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	51480		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	340		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	25740		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	190		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	14710		$ -
12.2	Linemarking (white paint complete)	m	14710		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	100	$ 60.00	$ 6,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	86100	$ 3.20	$ 275,520.00
13.2	Hydromulch grass seeding.	m2	86100	$ 0.91	$ 78,351.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	2022.1	$ 550.00	$ 1,112,156.10
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	390	$ 110.00	$ 42,900.00
14.4	Construction of stockpile site	Each	10	$ 2,500.00	$ 25,000.00
14.5	W-beam guard rail, ezy-guard posts	m	490	$ 110.00	$ 53,900.00
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	4	$ 3,910.00	$ 15,640.00

Total for Civil Works (ex GST): **$8,436,120**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 2 (MC02) - Ultimate sealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	500	$ 216.00	$ 108,000.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	10000	$ 10.87	$ 108,700.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	10	$ 15,000.00	$ 150,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	34400	$ 1.87	$ 64,328.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	17200	$ 6.65	$ 114,380.00
3.3	Ground surface treatment under embankment, standard	m2	10320	$ 1.20	$ 12,384.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	3000	$ 16.65	$ 49,950.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	58500	$ 11.25	$ 658,125.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	3000	$ 60.50	$ 181,500.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	8000	$ 6.95	$ 55,600.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	295	$ 450.00	$ 132,750.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	10320	$ 1.75	$ 18,060.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	3000	$ 70.25	$ 210,750.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	13924	$ 122.50	$ 1,705,690.00
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	23925.1	$ 97.50	$ 2,332,699.10
8.3	Geotextile under sub-base pavement	m2	77000	$ 1.50	$ 115,500.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	66190		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	102950		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	670		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	51480		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	370		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	14710		$ -
12.2	Linemarking (white paint complete)	m	14710		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	100	$ 60.00	$ 6,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	34400	$ 3.20	$ 110,080.00
13.2	Hydromulch grass seeding.	m2	34400	$ 0.91	$ 31,304.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	0		$ -
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	400		$ -
14.4	Construction of stockpile site	Each	10	$ 2,500.00	$ 25,000.00
14.5	W-beam guard rail, ezy-guard posts	m	490		$ -
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	4		$ -

Total for Civil Works (ex GST): **$6,221,300**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 2 (MC02) - Ultimate sealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	500	$ 216.00	$ 108,000.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	10000	$ 10.87	$ 108,700.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	10	$ 15,000.00	$ 150,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	34400	$ 1.87	$ 64,328.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	17200	$ 6.65	$ 114,380.00
3.3	Ground surface treatment under embankment, standard	m2	10320	$ 1.20	$ 12,384.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	3000	$ 16.65	$ 49,950.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	58500	$ 11.25	$ 658,125.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	3000	$ 60.50	$ 181,500.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	8000	$ 6.95	$ 55,600.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	295	$ 450.00	$ 132,750.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	10320	$ 1.75	$ 18,060.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	3000	$ 70.25	$ 210,750.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	13924	$ 122.50	$ 1,705,690.00
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	23925.1	$ 97.50	$ 2,332,699.10
8.3	Geotextile under sub-base pavement	m2	77000	$ 1.50	$ 115,500.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	66190	$ 1.95	$ 129,070.50
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	102950	$ 1.95	$ 200,752.50
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	670	$ 202.50	$ 135,675.00
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	51480	$ 2.00	$ 102,960.00
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	370	$ 218.50	$ 80,845.00
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	14710	$ 0.50	$ 7,355.00
12.2	Linemarking (white paint complete)	m	14710	$ 1.45	$ 21,329.50
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	100	$ 60.00	$ 6,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	34400	$ 3.20	$ 110,080.00
13.2	Hydromulch grass seeding.	m2	34400	$ 0.91	$ 31,304.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	0		$ -
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	400		$ -
14.4	Construction of stockpile site	Each	10	$ 2,500.00	$ 25,000.00
14.5	W-beam guard rail, ezy-guard posts	m	490		$ -
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	4		$ -

Total for Civil Works (ex GST): **$6,899,288**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 2a (MC02a) - Interim unsealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	530	$ 216.00	$ 114,480.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	10600	$ 10.87	$ 115,222.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	11	$ 15,000.00	$ 165,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	92200	$ 1.87	$ 172,414.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	9220	$ 6.65	$ 61,313.00
3.3	Ground surface treatment under embankment, standard	m2	27660	$ 1.20	$ 33,192.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	1700	$ 16.65	$ 28,305.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	33600	$ 11.25	$ 378,000.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	1700	$ 60.50	$ 102,850.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	20700	$ 6.95	$ 143,865.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	318	$ 450.00	$ 143,100.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	55320	$ 1.75	$ 96,810.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	1700	$ 70.25	$ 119,425.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	7080.39	$ 122.50	$ 867,348.27
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	14187.4	$ 97.50	$ 1,383,267.02
8.3	Geotextile under sub-base pavement	m2	41870	$ 1.50	$ 62,805.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	35780		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	55650		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	370		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	27830		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	200		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	15900		$ -
12.2	Linemarking (white paint complete)	m	15900		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	200	$ 60.00	$ 12,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	92200	$ 3.20	$ 295,040.00
13.2	Hydromulch grass seeding.	m2	92200	$ 0.91	$ 83,902.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	694.489	$ 550.00	$ 381,968.95
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	300	$ 110.00	$ 33,000.00
14.4	Construction of stockpile site	Each	11	$ 2,500.00	$ 27,500.00
14.5	W-beam guard rail, ezy-guard posts	m	850	$ 110.00	$ 93,500.00
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	8	$ 3,910.00	$ 31,280.00

Total for Civil Works (ex GST): **$4,976,087**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 2a (MC02a) - Ultimate unsealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	530	$ 216.00	$ 114,480.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	10600	$ 10.87	$ 115,222.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	11	$ 15,000.00	$ 165,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	42400	$ 1.87	$ 79,288.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	21200	$ 6.65	$ 140,980.00
3.3	Ground surface treatment under embankment, standard	m2	12720	$ 1.20	$ 15,264.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	2800	$ 16.65	$ 46,620.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	55600	$ 11.25	$ 625,500.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	2800	$ 60.50	$ 169,400.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	16200	$ 6.95	$ 112,590.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	318	$ 450.00	$ 143,100.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	25440	$ 1.75	$ 44,520.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	2800	$ 70.25	$ 196,700.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	15067.4	$ 122.50	$ 1,845,751.85
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	25852.5	$ 97.50	$ 2,520,615.14
8.3	Geotextile under sub-base pavement	m2	81620	$ 1.50	$ 122,430.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	71550		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	111290		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	730		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	55650		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	400		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	15900		$ -
12.2	Linemarking (white paint complete)	m	15900		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	200	$ 60.00	$ 12,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	42400	$ 3.20	$ 135,680.00
13.2	Hydromulch grass seeding.	m2	42400	$ 0.91	$ 38,584.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	0		$ -
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	240		$ -
14.4	Construction of stockpile site	Each	11	$ 2,500.00	$ 27,500.00
14.5	W-beam guard rail, ezy-guard posts	m	620		$ -
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	6		$ -

Total for Civil Works (ex GST): **$6,701,725**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 2a (MC02a) - Ultimate sealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	530	$ 216.00	$ 114,480.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	10600	$ 10.87	$ 115,222.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	11	$ 15,000.00	$ 165,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	42400	$ 1.87	$ 79,288.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	21200	$ 6.65	$ 140,980.00
3.3	Ground surface treatment under embankment, standard	m2	12720	$ 1.20	$ 15,264.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	2800	$ 16.65	$ 46,620.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	55600	$ 11.25	$ 625,500.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	2800	$ 60.50	$ 169,400.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	16200	$ 6.95	$ 112,590.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	318	$ 450.00	$ 143,100.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	25440	$ 1.75	$ 44,520.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	2800	$ 70.25	$ 196,700.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	15067.4	$ 122.50	$ 1,845,751.85
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	25852.5	$ 97.50	$ 2,520,615.14
8.3	Geotextile under sub-base pavement	m2	81620	$ 1.50	$ 122,430.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	71550	$ 1.95	$ 139,522.50
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	111290	$ 1.95	$ 217,015.50
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	730	$ 202.50	$ 147,825.00
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	55650	$ 2.00	$ 111,300.00
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	400	$ 218.50	$ 87,400.00
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	15900	$ 0.50	$ 7,950.00
12.2	Linemarking (white paint complete)	m	15900	$ 1.45	$ 23,055.00
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	200	$ 60.00	$ 12,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	42400	$ 3.20	$ 135,680.00
13.2	Hydromulch grass seeding.	m2	42400	$ 0.91	$ 38,584.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	0		$ -
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	240		$ -
14.4	Construction of stockpile site	Each	11	$ 2,500.00	$ 27,500.00
14.5	W-beam guard rail, ezy-guard posts	m	620		$ -
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	6		$ -

Total for Civil Works (ex GST): **$7,435,793**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 3a (MC03a) - Interim unsealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	510	$ 216.00	$ 110,160.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	10200	$ 10.87	$ 110,874.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	11	$ 15,000.00	$ 165,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	90200	$ 1.87	$ 168,674.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	45100	$ 6.65	$ 299,915.00
3.3	Ground surface treatment under embankment, standard	m2	27060	$ 1.20	$ 32,472.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	1900	$ 16.65	$ 31,635.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	37400	$ 11.25	$ 420,750.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	1900	$ 60.50	$ 114,950.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	10100	$ 6.95	$ 70,195.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	306	$ 450.00	$ 137,700.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	54120	$ 1.75	$ 94,710.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	1900	$ 70.25	$ 133,475.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	6520.41	$ 122.50	$ 798,750.59
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	13248.7	$ 97.50	$ 1,291,744.74
8.3	Geotextile under sub-base pavement	m2	40290	$ 1.50	$ 60,435.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	34340		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	53420		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	350		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	26710		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	200		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	15270		$ -
12.2	Linemarking (white paint complete)	m	15270		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	200	$ 60.00	$ 12,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	90200	$ 3.20	$ 288,640.00
13.2	Hydromulch grass seeding.	m2	90200	$ 0.91	$ 82,082.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	570.342	$ 550.00	$ 313,688.10
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	130	$ 110.00	$ 14,300.00
14.4	Construction of stockpile site	Each	11	$ 2,500.00	$ 27,500.00
14.5	W-beam guard rail, ezy-guard posts	m	0	$ 110.00	$ -
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	0	$ 3,910.00	$ -

Total for Civil Works (ex GST): **$4,810,150**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 3a (MC3a) - Ultimate unsealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	510	$ 216.00	$ 110,160.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	10200	$ 10.87	$ 110,874.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	11	$ 15,000.00	$ 165,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	41100	$ 1.87	$ 76,857.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	20550	$ 6.65	$ 136,657.50
3.3	Ground surface treatment under embankment, standard	m2	12330	$ 1.20	$ 14,796.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	3200	$ 16.65	$ 53,280.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	63200	$ 11.25	$ 711,000.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	3200	$ 60.50	$ 193,600.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	8100	$ 6.95	$ 56,295.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	306	$ 450.00	$ 137,700.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	24660	$ 1.75	$ 43,155.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	3200	$ 70.25	$ 224,800.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	14442.8	$ 122.50	$ 1,769,241.53
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	24719.7	$ 97.50	$ 2,410,166.56
8.3	Geotextile under sub-base pavement	m2	78540	$ 1.50	$ 117,810.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	68680		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	106830		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	700		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	53420		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	390		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	15270		$ -
12.2	Linemarking (white paint complete)	m	15270		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	200	$ 60.00	$ 12,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	41100	$ 3.20	$ 131,520.00
13.2	Hydromulch grass seeding.	m2	41100	$ 0.91	$ 37,401.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2			$ -
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	140		$ -
14.4	Construction of stockpile site	Each	11	$ 2,500.00	$ 27,500.00
14.5	W-beam guard rail, ezy-guard posts	m	0		$ -
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	0		$ -

Total for Civil Works (ex GST): **$6,570,314**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 3a (MC3a) - Ultimate sealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	510	$ 216.00	$ 110,160.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	10200	$ 10.87	$ 110,874.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	11	$ 15,000.00	$ 165,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	41100	$ 1.87	$ 76,857.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	20550	$ 6.65	$ 136,657.50
3.3	Ground surface treatment under embankment, standard	m2	12330	$ 1.20	$ 14,796.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	3200	$ 16.65	$ 53,280.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	63200	$ 11.25	$ 711,000.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	3200	$ 60.50	$ 193,600.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	8100	$ 6.95	$ 56,295.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	306	$ 450.00	$ 137,700.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	24660	$ 1.75	$ 43,155.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	3200	$ 70.25	$ 224,800.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	14442.8	$ 122.50	$ 1,769,241.53
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	24719.7	$ 97.50	$ 2,410,166.56
8.3	Geotextile under sub-base pavement	m2	78540	$ 1.50	$ 117,810.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	68680	$ 1.95	$ 133,926.00
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	106830	$ 1.95	$ 208,318.50
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	700	$ 202.50	$ 141,750.00
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	53420	$ 2.00	$ 106,840.00
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	390	$ 218.50	$ 85,215.00
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	15270	$ 0.50	$ 7,635.00
12.2	Linemarking (white paint complete)	m	15270	$ 1.45	$ 22,141.50
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	200	$ 60.00	$ 12,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	41100	$ 3.20	$ 131,520.00
13.2	Hydromulch grass seeding.	m2	41100	$ 0.91	$ 37,401.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2			$ -
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	140		$ -
14.4	Construction of stockpile site	Each	11	$ 2,500.00	$ 27,500.00
14.5	W-beam guard rail, ezy-guard posts	m	0		$ -
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	0		$ -

Total for Civil Works (ex GST): **$7,276,140**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 4 (MC04) - Interim unsealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	1080	$ 216.00	$ 233,280.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	21600	$ 10.87	$ 234,792.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	22	$ 15,000.00	$ 330,000.00
	Other:				
2.2	DAF Red classification floodway crossings	Each	1	$ 400,000.00	$ 400,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	179500	$ 1.87	$ 335,665.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	89750	$ 6.65	$ 596,837.50
3.3	Ground surface treatment under embankment, standard	m2	53850	$ 1.20	$ 64,620.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	2000	$ 16.65	$ 33,300.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	39900	$ 11.25	$ 448,875.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	2000	$ 60.50	$ 121,000.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	31700	$ 6.95	$ 220,315.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	647	$ 450.00	$ 291,150.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	107700	$ 1.75	$ 188,475.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	2000	$ 70.25	$ 140,500.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	14304.4	$ 122.50	$ 1,752,294.64
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	28578.7	$ 97.50	$ 2,786,418.57
8.3	Geotextile under sub-base pavement	m2	85320	$ 1.50	$ 127,980.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	72740		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	113140		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	740		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	56570		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	410		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	32330		$ -
12.2	Linemarking (white paint complete)	m	32330		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	300	$ 60.00	$ 18,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	179500	$ 3.20	$ 574,400.00
13.2	Hydromulch grass seeding.	m2	179500	$ 0.91	$ 163,345.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	961.561	$ 550.00	$ 528,858.55
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	360	$ 110.00	$ 39,600.00
14.4	Construction of stockpile site	Each	22	$ 2,500.00	$ 55,000.00
14.5	W-beam guard rail, ezy-guard posts	m	1700	$ 110.00	$ 187,000.00
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	18	$ 3,910.00	$ 70,380.00

Total for Civil Works (ex GST): **$9,972,586**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 4A (MC04A) - Ultimate unsealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	1020	$ 216.00	$ 220,320.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	20400	$ 10.87	$ 221,748.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	21	$ 15,000.00	$ 315,000.00
	Other:				
2.2	DAF Red classification floodway crossings	Each	1	$ 400,000.00	$ 400,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	78100	$ 1.87	$ 146,047.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	39050	$ 6.65	$ 259,682.50
3.3	Ground surface treatment under embankment, standard	m2	23430	$ 1.20	$ 28,116.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	20600	$ 16.65	$ 342,990.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	411700	$ 11.25	$ 4,631,625.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	20600	$ 60.50	$ 1,246,300.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	65000	$ 6.95	$ 451,750.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	608	$ 450.00	$ 273,600.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	46860	$ 1.75	$ 82,005.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	20600	$ 70.25	$ 1,447,150.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	29192.8	$ 122.50	$ 3,576,115.06
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	49389	$ 97.50	$ 4,815,429.94
8.3	Geotextile under sub-base pavement	m2	157080	$ 1.50	$ 235,620.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	136640		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	212550		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	1390		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	106280		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	760		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	30370		$ -
12.2	Linemarking (white paint complete)	m	30370		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	300	$ 60.00	$ 18,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	78100	$ 3.20	$ 249,920.00
13.2	Hydromulch grass seeding.	m2	78100	$ 0.91	$ 71,071.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	25915.7	$ 550.00	$ 14,253,613.55
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	3680	$ 110.00	$ 404,800.00
14.4	Construction of stockpile site	Each	21	$ 2,500.00	$ 52,500.00
14.5	W-beam guard rail, ezy-guard posts	m	3120	$ 110.00	$ 343,200.00
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	30	$ 3,910.00	$ 117,300.00

Total for Civil Works (ex GST): **$34,234,403**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 4A (MC04A) - Ultimate sealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	1020	$ 216.00	$ 220,320.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	20400	$ 10.87	$ 221,748.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	21	$ 15,000.00	$ 315,000.00
	Other:				
2.2	DAF Red classification floodway crossings	Each	1	$ 400,000.00	$ 400,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	78100	$ 1.87	$ 146,047.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	39050	$ 6.65	$ 259,682.50
3.3	Ground surface treatment under embankment, standard	m2	23430	$ 1.20	$ 28,116.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	20600	$ 16.65	$ 342,990.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	411700	$ 11.25	$ 4,631,625.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	20600	$ 60.50	$ 1,246,300.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	65000	$ 6.95	$ 451,750.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	608	$ 450.00	$ 273,600.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	46860	$ 1.75	$ 82,005.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	20600	$ 70.25	$ 1,447,150.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	29192.8	$ 122.50	$ 3,576,115.06
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	49389	$ 97.50	$ 4,815,429.94
8.3	Geotextile under sub-base pavement	m2	157080	$ 1.50	$ 235,620.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	136640	$ 1.95	$ 266,448.00
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	212550	$ 1.95	$ 414,472.50
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	1390	$ 202.50	$ 281,475.00
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	106280	$ 2.00	$ 212,560.00
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	760	$ 218.50	$ 166,060.00
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	30370	$ 0.50	$ 15,185.00
12.2	Linemarking (white paint complete)	m	30370	$ 1.45	$ 44,036.50
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	300	$ 60.00	$ 18,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	78100	$ 3.20	$ 249,920.00
13.2	Hydromulch grass seeding.	m2	78100	$ 0.91	$ 71,071.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	25915.7	$ 550.00	$ 14,253,613.55
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	3680	$ 110.00	$ 404,800.00
14.4	Construction of stockpile site	Each	21	$ 2,500.00	$ 52,500.00
14.5	W-beam guard rail, ezy-guard posts	m	3120	$ 110.00	$ 343,200.00
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	30	$ 3,910.00	$ 117,300.00

Total for Civil Works (ex GST): **$35,634,640**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 5 (MC05) - Interim unsealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	1710	$ 216.00	$ 369,360.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	34200	$ 10.87	$ 371,754.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	35	$ 15,000.00	$ 525,000.00
	Other:				
2.2	DAF Green classification floodway crossings	Each	5	$ 100,000.00	$ 500,000.00
2.3	DAF Amber classification floodway crossings	Each	1	$ 250,000.00	$ 250,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	295300	$ 1.87	$ 552,211.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	147650	$ 6.65	$ 981,872.50
3.3	Ground surface treatment under embankment, standard	m2	88590	$ 1.20	$ 106,308.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	4400	$ 16.65	$ 73,260.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	86500	$ 11.25	$ 973,125.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	4400	$ 60.50	$ 266,200.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	57000	$ 6.95	$ 396,150.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	1024	$ 450.00	$ 460,800.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	177180	$ 1.75	$ 310,065.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	4400	$ 70.25	$ 309,100.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	25374.8	$ 122.50	$ 3,108,418.39
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	47477.9	$ 97.50	$ 4,629,096.62
8.3	Geotextile under sub-base pavement	m2	135090	$ 1.50	$ 202,635.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	115110		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	179050		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	1170		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	89530		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	640		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	51160		$ -
12.2	Linemarking (white paint complete)	m	51160		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	400	$ 60.00	$ 24,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	295300	$ 3.20	$ 944,960.00
13.2	Hydromulch grass seeding.	m2	295300	$ 0.91	$ 268,723.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	1331.48	$ 550.00	$ 732,315.65
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	530	$ 110.00	$ 58,300.00
14.4	Construction of stockpile site	Each	35	$ 2,500.00	$ 87,500.00
14.5	W-beam guard rail, ezy-guard posts	m	1960	$ 110.00	$ 215,600.00
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	20	$ 3,910.00	$ 78,200.00

Total for Civil Works (ex GST): **$16,825,454.16**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 5 (MC05) - Ultimate sealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	1710	$ 216.00	$ 369,360.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	34200	$ 10.87	$ 371,754.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	35	$ 15,000.00	$ 525,000.00
	Other:				
2.2	DAF Green classification floodway crossings	Each	5	$ 100,000.00	$ 500,000.00
2.3	DAF Amber classification floodway crossings	Each	1	$ 250,000.00	$ 250,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	120100	$ 1.87	$ 224,587.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	60050	$ 6.65	$ 399,332.50
3.3	Ground surface treatment under embankment, standard	m2	36030	$ 1.20	$ 43,236.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	7600	$ 16.65	$ 126,540.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	150100	$ 11.25	$ 1,688,625.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	7600	$ 60.50	$ 459,800.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	42900	$ 6.95	$ 298,155.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	1024	$ 450.00	$ 460,800.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	72060	$ 1.75	$ 126,105.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	7600	$ 70.25	$ 533,900.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	48943.1	$ 122.50	$ 5,995,532.32
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	82638.5	$ 97.50	$ 8,057,252.78
8.3	Geotextile under sub-base pavement	m2	263340	$ 1.50	$ 395,010.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	230210		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	358100		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	2330		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	179050		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	1280		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	51160		$ -
12.2	Linemarking (white paint complete)	m	51160		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	400	$ 60.00	$ 24,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	120100	$ 3.20	$ 384,320.00
13.2	Hydromulch grass seeding.	m2	120100	$ 0.91	$ 109,291.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	0		$ -
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	520		$ -
14.4	Construction of stockpile site	Each	35	$ 2,500.00	$ 87,500.00
14.5	W-beam guard rail, ezy-guard posts	m	1640		$ -
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	16		$ -

Total for Civil Works (ex GST): **$21,460,601**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option 5 (MC05) - Ultimate sealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	1710	$ 216.00	$ 369,360.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	34200	$ 10.87	$ 371,754.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	35	$ 15,000.00	$ 525,000.00
	Other:				
2.2	DAF Green classification floodway crossings	Each	5	$ 100,000.00	$ 500,000.00
2.3	DAF Amber classification floodway crossings	Each	1	$ 250,000.00	$ 250,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	120100	$ 1.87	$ 224,587.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	60050	$ 6.65	$ 399,332.50
3.3	Ground surface treatment under embankment, standard	m2	36030	$ 1.20	$ 43,236.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	7600	$ 16.65	$ 126,540.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	150100	$ 11.25	$ 1,688,625.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	7600	$ 60.50	$ 459,800.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	42900	$ 6.95	$ 298,155.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	1024	$ 450.00	$ 460,800.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	72060	$ 1.75	$ 126,105.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	7600	$ 70.25	$ 533,900.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	48943.1	$ 122.50	$ 5,995,532.32
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	82638.5	$ 97.50	$ 8,057,252.78
8.3	Geotextile under sub-base pavement	m2	263340	$ 1.50	$ 395,010.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	230210	$ 1.95	$ 448,909.50
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	358100	$ 1.95	$ 698,295.00
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	2330	$ 202.50	$ 471,825.00
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	179050	$ 2.00	$ 358,100.00
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	1280	$ 218.50	$ 279,680.00
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	51160	$ 0.50	$ 25,580.00
12.2	Linemarking (white paint complete)	m	51160	$ 1.45	$ 74,182.00
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	400	$ 60.00	$ 24,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	120100	$ 3.20	$ 384,320.00
13.2	Hydromulch grass seeding.	m2	120100	$ 0.91	$ 109,291.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	0		$ -
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	520		$ -
14.4	Construction of stockpile site	Each	35	$ 2,500.00	$ 87,500.00
14.5	W-beam guard rail, ezy-guard posts	m	1640		$ -
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	16		$ -

Total for Civil Works (ex GST): **$23,817,172**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option A (MCA0) - Interim unsealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	770	$ 216.00	$ 166,320.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	15400	$ 10.87	$ 167,398.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	16	$ 15,000.00	$ 240,000.00
	Other:				
2.2	DAF Green classification floodway crossings	Each	4	$ 100,000.00	$ 400,000.00
2.3	DAF Amber classification floodway crossings	Each	2	$ 250,000.00	$ 500,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	142100	$ 1.87	$ 265,727.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	71050	$ 6.65	$ 472,482.50
3.3	Ground surface treatment under embankment, standard	m2	42630	$ 1.20	$ 51,156.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	2900	$ 16.65	$ 48,285.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	57400	$ 11.25	$ 645,750.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	2900	$ 60.50	$ 175,450.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	22510.4	$ 6.95	$ 156,447.31
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	460	$ 450.00	$ 207,000.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	85260	$ 1.75	$ 149,205.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	2900	$ 70.25	$ 203,725.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	10000	$ 122.50	$ 1,225,000.00
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	20160	$ 97.50	$ 1,965,600.00
8.3	Geotextile under sub-base pavement	m2	60830	$ 1.50	$ 91,245.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	51670		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	80370		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	530		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	40190		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	290		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	22970		$ -
12.2	Linemarking (white paint complete)	m	22970		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	200	$ 60.00	$ 12,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	142100	$ 3.20	$ 454,720.00
13.2	Hydromulch grass seeding.	m2	142100	$ 0.91	$ 129,311.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	780	$ 550.00	$ 429,000.00
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	230	$ 110.00	$ 25,300.00
14.4	Construction of stockpile site	Each	16	$ 2,500.00	$ 40,000.00
14.5	W-beam guard rail, ezy-guard posts	m	880	$ 110.00	$ 96,800.00
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	10	$ 3,910.00	$ 39,100.00

Total for Civil Works (ex GST): **$8,387,522**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option A (MCA0) - Ultimate unsealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	770	$ 216.00	$ 166,320.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	15400	$ 10.87	$ 167,398.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	16	$ 15,000.00	$ 240,000.00
	Other:				
2.2	DAF Green classification floodway crossings	Each	4	$ 100,000.00	$ 400,000.00
2.3	DAF Amber classification floodway crossings	Each	2	$ 250,000.00	$ 500,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	67100	$ 1.87	$ 125,477.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	33550	$ 6.65	$ 223,107.50
3.3	Ground surface treatment under embankment, standard	m2	20130	$ 1.20	$ 24,156.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	4500	$ 16.65	$ 74,925.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	89400	$ 11.25	$ 1,005,750.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	4500	$ 60.50	$ 272,250.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	13900	$ 6.95	$ 96,605.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	460	$ 450.00	$ 207,000.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	40260	$ 1.75	$ 70,455.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	4500	$ 70.25	$ 316,125.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	21855.364	$ 122.50	$ 2,677,282.09
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	37263.831	$ 97.50	$ 3,633,223.52
8.3	Geotextile under sub-base pavement	m2	118580	$ 1.50	$ 177,870.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	103330		$ -
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	160730		$ -
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	1050		$ -
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	80370		$ -
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	580		$ -
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	22970		$ -
12.2	Linemarking (white paint complete)	m	22970		$ -
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	200	$ 60.00	$ 12,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	67100	$ 3.20	$ 214,720.00
13.2	Hydromulch grass seeding.	m2	67100	$ 0.91	$ 61,061.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	0		$ -
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	240		$ -
14.4	Construction of stockpile site	Each	16	$ 2,500.00	$ 40,000.00
14.5	W-beam guard rail, ezy-guard posts	m	890		$ -
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	10		$ -

Total for Civil Works (ex GST): **$10,736,225**

Project Number: R2018071
Project Name: Agnes Water to Baffle Creek
Road Name: Option A (MCA0) - Ultimate sealed
Location: Gladstone Regional Council

Revision 0
Date: 11-Mar-19

Work Package: Civil Works (Including drainage and retaining Structures):

Item Number	Description	Unit of Measure	Quantity	Unit Rate ($)	Amount ex GST($)
1	**EROSION AND SEDIMENT CONTROL:**				
1.1	Check Dams, rock (Provisional Quantity)	lump sum	770	$ 216.00	$ 166,320.00
1.2	Silt / Sediment Fence (Provisional Quantity)	m	15400	$ 10.87	$ 167,398.00
2	**DRAINAGE STRUCTURES:**				
	Culverts (complete):				
2.1	Supply and installation of concrete pipe culvert components, Class 3, 600mm diameter flush joint with external bands to AS4058 including excavation, bedding and backfill (complete). Cross drainage located every 500m spacing along alignment.	m	16	$ 15,000.00	$ 240,000.00
	Other:				
2.2	DAF Green classification floodway crossings	Each	4	$ 100,000.00	$ 400,000.00
2.3	DAF Amber classification floodway crossings	Each	2	$ 250,000.00	$ 500,000.00
3	**EARTHWORKS, PREPARATION:**				
3.1	Clearing and grubbing, including removal of building structures, retaining structures, vegetation including mulching to stockpile, concrete structures, water tanks, septic tanks and capping and removal of bore equipment (Provisional Quantity as directed)	m2	67100	$ 1.87	$ 125,477.00
3.2	Stripping of topsoil (Provisional Quantity as directed)	m3	33550	$ 6.65	$ 223,107.50
3.3	Ground surface treatment under embankment, standard	m2	20130	$ 1.20	$ 24,156.00
3.4	Excavation and disposal of Unsuitable Material with individual excavation < 10 m3 (Provisional Quantity as directed)	m3	10	$ 50.00	$ 500.00
3.5	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed)	m3	4500	$ 16.65	$ 74,925.00
4	**EARTHWORKS, EXCAVATION:**				
4.1	Road excavation, all materials	m3	89400	$ 11.25	$ 1,005,750.00
4.2	Excavation of non-rippable material in road excavation, rate additional to rate for Work Item 3201 (Provisional Quantity)	m3	4500	$ 60.50	$ 272,250.00
5	**EARTHWORKS, EMBANKMENT:**				
5.1	Road embankment	m3	13900	$ 6.95	$ 96,605.00
6	**EARTHWORKS, SUBGRADE:**				
6.1	Testing of existing material below subgrade level in cuttings (Provisional Quantity if ordered)	per set	460	$ 450.00	$ 207,000.00
6.2	Subgrade treatment Type A in cuttings (Provisional Quantity if ordered)	m2	40260	$ 1.75	$ 70,455.00
7	**EARTHWORKS, BACKFILL:**				
7.1	Backfill with general backfill material to areas of unsuitable	m3	4500	$ 70.25	$ 316,125.00
8	**UNBOUND PAVEMENTS:**				
8.1	Base Course Type 2.1 200mm (CBR 80)	m3	21855.364	$ 122.50	$ 2,677,282.09
8.2	Sub-base Course Type 2.3 300mm (CBR45)	m3	37263.831	$ 97.50	$ 3,633,223.52
8.3	Geotextile under sub-base pavement	m2	118580	$ 1.50	$ 177,870.00
9	**SPRAYED BITUMINOUS SURFACING (EXCLUDING EMULSION):**				
9.1	Primer seal - AMC00 @ 0.9L/m2	litre	103330	$ 1.95	$ 201,493.50
9.2	Seal (1st Coat) - PMB (S0.7S) @ 1.4L/m2	litre	160730	$ 1.95	$ 313,423.50
9.3	Supply and spreading cover aggregate 14mm, 110 m2/m3, on job site	m3	1050	$ 202.50	$ 212,625.00
10	**REMOVAL, DEMOLITION AND RE-ERECTION:**				
10.1	Removal and re-erection of road furniture	lump sum	1	$ 5,000.00	$ 5,000.00
11	**SUPPLY OF COVER AGGREGATE:**				
11.1	Seal (2nd Coat) - PMB (S0.7S) @ 0.7L/m2	litre	80370	$ 2.00	$ 160,740.00
11.2	Supply and spreading cover aggregate 10mm, 200 m2/m3, on job site	m3	580	$ 218.50	$ 126,730.00
12	**LINE MARKING AND SIGNAGE:**				
12.1	Spotting only for longitudinal lines	m	22970	$ 0.50	$ 11,485.00
12.2	Linemarking (white paint complete)	m	22970	$ 1.45	$ 33,306.50
12.3	New signs and posts (Complete)	lump sum	1	$ 25,000.00	$ 25,000.00
12.4	New road edge guid posts (Complete)	No.	200	$ 60.00	$ 12,000.00
13	**LANDSCAPING:**				
13.1	Re-spreading of stockpiled topsoil to depth of 100mm	m2	67100	$ 3.20	$ 214,720.00
13.2	Hydromulch grass seeding.	m2	67100	$ 0.91	$ 61,061.00
14	**MISCELLANEOUS:**				
14.1	Retaining structure - Keppel Block including excavation, footing and backfill	m2	0		$ -
14.3	Concrete lined invert / barrier kerb to top of retaining walls	m	240		$ -
14.4	Construction of stockpile site	Each	16	$ 2,500.00	$ 40,000.00
14.5	W-beam guard rail, ezy-guard posts	m	890		$ -
14.6	Steel beam guard rail terminal, ET2000 PLUS TL2 terminal	Each	10		$ -

Total for Civil Works (ex GST): **$11,796,029**

APPENDIX

C

GEOTECHNICAL REPORT

Our Ref: 2128E.P.959
Contact: Poka Kilaverave

7th February 2019

Cardno QLD Pty Ltd
Locked Bag 4006
Fortitude Valley 4006

Attention: Gerry Moore
Email: gerry.moore@cardno.com.au

Dear Gerry,

2128E.P.958 – Proposed Inland Link Road Connecting
Agnes Water and Baffle Creek – Geotechnical Investigation and Factual Report

Introduction

Construction Sciences Pty Ltd (CS) was commissioned by Cardno QLD Pty Ltd to undertake ground investigations for the proposed link road connecting Agnes Water and Baffle Creek. Approximate locations for the boreholes were provided by Cardno QLD Pty Ltd. Figure 1 below shows the actual locations undertaken as part of this investigation.

Figure 1 Overall Site Location Plan

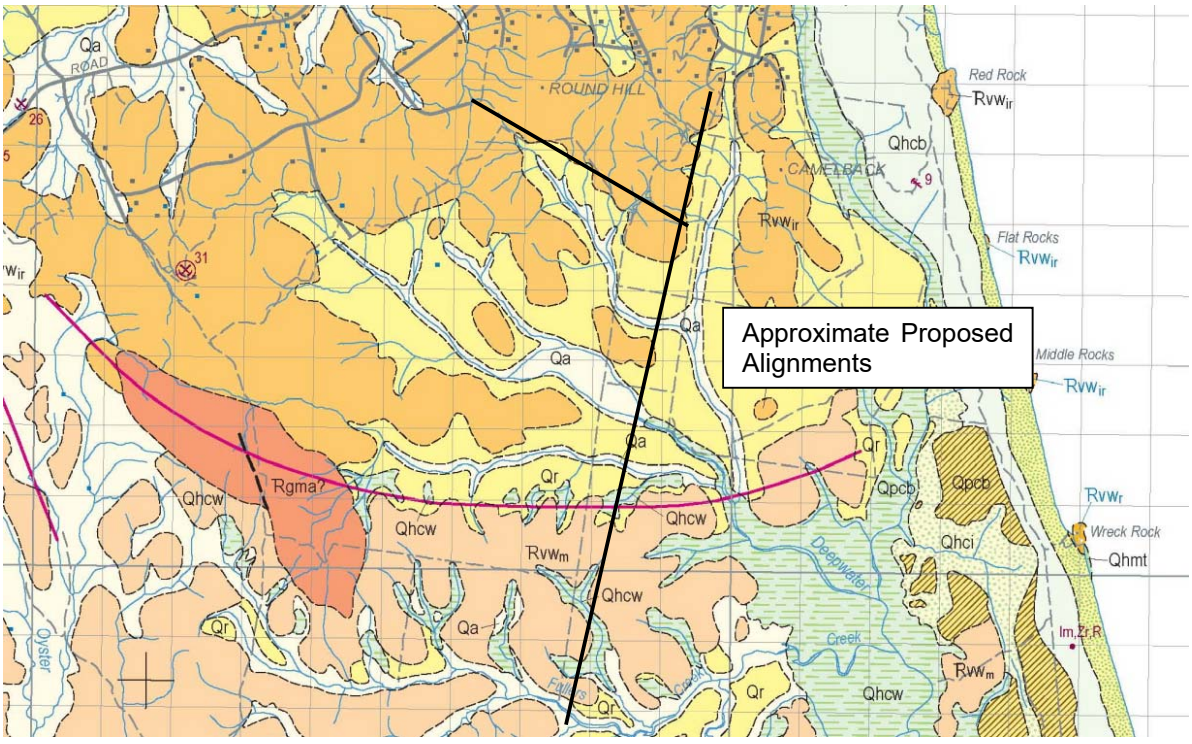
Based on the scope of works as provided in our proposal with Ref No. 2128E.Q.114 dated 13th December 2018, the following was undertaken as part of the fieldwork from the 23rd to 25th January 2019, for general geotechnical assessment purposes;

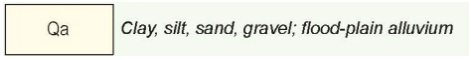
- 23 No. boreholes utilising a Landcruiser Mounter Drill Rig with 100mm auger to a depth of 1.0m below the existing surface or prior auger refusal on competent rock. Borehole BHA19 was omitted due to access issues.
- Logging of the encountered soil profile was in accordance with AS1726:2017 “Geotechnical Site Investigations” with sampling of each subgrade materials at generally between 0.3m to 1m intervals.
- Dynamic Cone Penetrometer Soundings (DCPs) at each borehole location to a maximum depth of 1.0m below subgrade level to determine the consistency of subsurface strata and determine Insitu CBR by DCP (Q114B).

Ground and Groundwater Conditions

The ground surface conditions varied across the proposed alignments with alluvial and residual soils encountered. In areas of low relief, colluvium and alluvial soils comprising of sands silts and clays were encountered, while areas of high relief comprised predominantly of gravel composition trending onto rock. The borehole logs provides a detailed description of the strata encountered at each test location and are considered to be consistent with the geological mapping.

An extract of the “Miriam Vale Special Sheet 9249 and Part 9250 & 9349” of the 1:100 000 geological series published by the Geological Survey of Queensland (GSQ), Department of Mines and Energy, Queensland is provided for information purposes only.





No groundwater was encountered in any of the boreholes during the investigation. However, it is possible that seepage could occur through the alluvial soils and along the soil/rock interface during and after periods of wet weather. In areas where soils of high silt composition were encountered (ML), these subsoils would have potential to become swampy under saturated conditions.

For details of the strata encountered at each test location, the logs are included at the end of this letter report.

In Situ Test Results

Dynamic Cone Penetrometer soundings (DCPs) we conducted at the location of each borehole to a maximum depth of 1.0m below subgrade level to determine the consistency of subsurface strata and determine Insitu CBR by DCP (Q114B). The test reports are available for review at the rear of this letter report.

We trust this satisfies your present requirements. Should you have any further enquiries regarding this please do not hesitate to contact us to discuss.

Poka Kilaverave
Geotechnical Engineer

For and on behalf of
Construction Sciences Pty Ltd
Enclosed: Site Plans, Borehole Logs, Insitu CBR Test Results

Agnes Water to Baffle Creek (Northern Section)

Agnes Water to Baffle Creek (Southern Section)

BOREHOLE NUMBER BH1

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 387375,N: 7306726

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.5		GC	Clayey Sandy GRAVEL (FILL) fine to medium grained angular gravel, brown, low plasticity fines, fine to coarse grained sand, dry, very dense.		
			1.0		CI	Sandy CLAY (RESIDUAL) medium plasticity, red/brown, fine to coarse grained sand, dry, very stiff. ..... red/brown mottle yellow/brown.		
			1.5			BOREHOLE TERMINATED AT 1.0m		
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

Construction Sciences Pty Ltd
ABN: 74 128 806 735

Address:
101 High Street,
North Rockhampton QLD 4701

Laboratory: Rockhampton Laboratory
Phone: 07 4928 0044
Fax: 07 4926 1286
Email: Rockhampton@constructionsciences.net

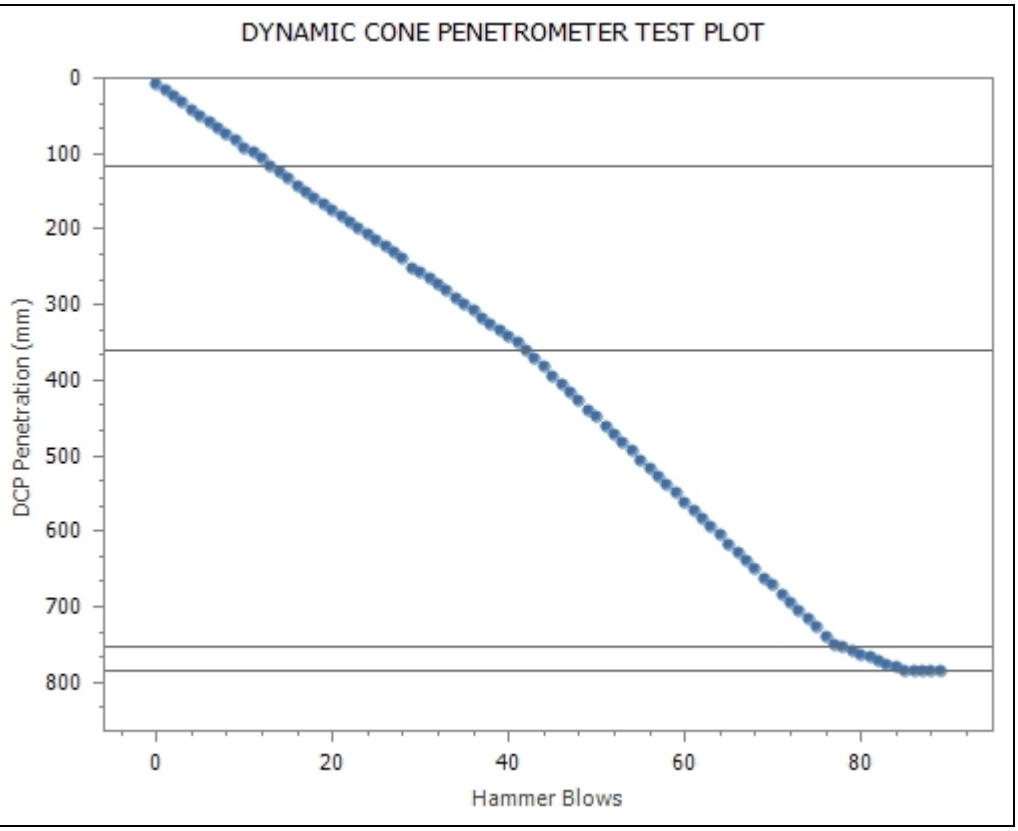
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 1 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78949	Bore Hole No.	1
Sampling Method		Depth (m)	Seated @ 0.5m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry	Material Type	-
Material Description	Clayey Sandy Gravel - Sandy Clay		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
8 - 117 mm	25
117 - 361 mm	25
361 - 754 mm	20
754 - 785 mm	>60
785 - 786 mm	>60



Remarks

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.
Accredited for compliance with ISO/IEC 17025 - Testing

Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH2

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 387439,N: 7307187

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.5		SP	SAND (ALLUVIUM) fine to coarse grained sand, brown/grey, trace of fine to coarse grained gravel, negligible to low plasticity fines, dry, dense.		
			1.0			..... moist.		
						BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

Construction Sciences Pty Ltd
ABN: 74 128 806 735

Address:
101 High Street,
North Rockhampton QLD 4701

Laboratory: Rockhampton Laboratory
Phone: 07 4928 0044
Fax: 07 4926 1286
Email: Rockhampton@constructionsciences.net

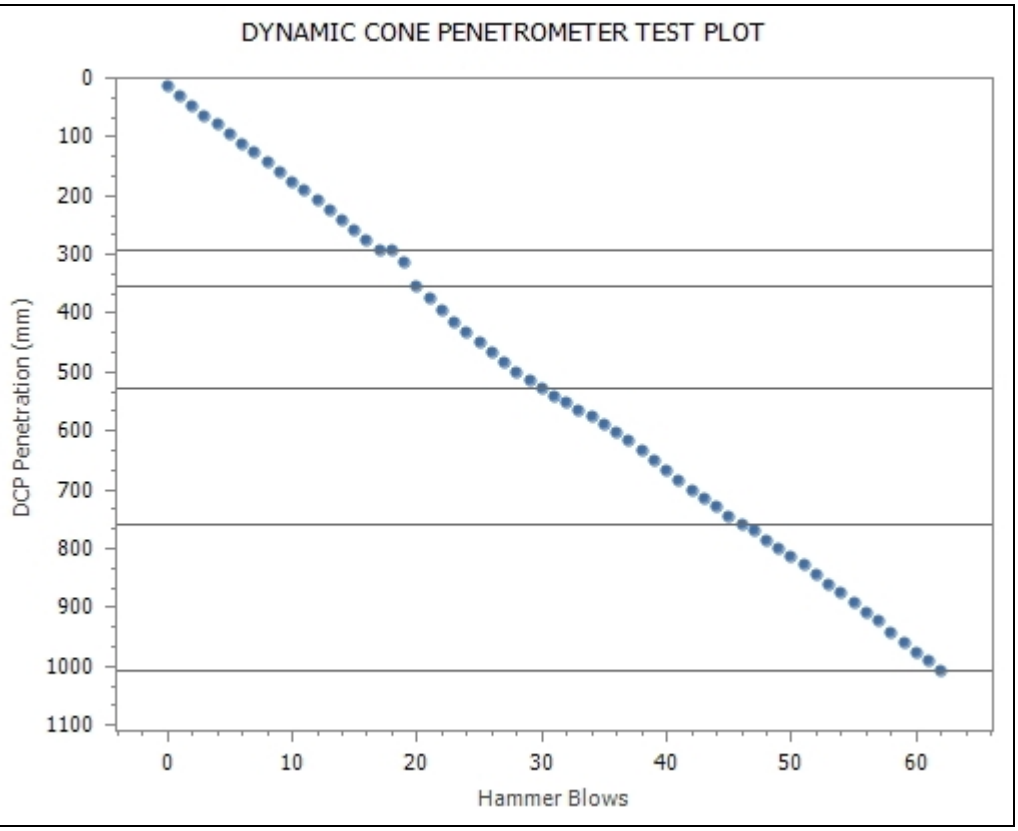
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 2 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78950	Bore Hole No.	2
Sampling Method		Depth (m)	Seated @ 0.45m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry to Moist	Material Type	-
Material Description	Sand		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
15 - 293 mm	13
293 - 353 mm	6
353 - 527 mm	12
527 - 758 mm	14
758 - 1009 mm	13



Remarks

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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH3

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 387687,N: 7309039

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER					SC	Clayey SAND (ALLUVIUM) fine to coarse grained sand, brown, low plasticity fines, dry, very dense.		
			0.5		CL/CI	Gravelly Sandy CLAY (RESIDUAL) low to medium plasticity, red/brown, fine to medium grained sub-angular gravel, fine to coarse grained sand, dry to moist, very stiff to hard.		
			1.0			..... dry, hard.		
						BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

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Laboratory: Rockhampton Laboratory
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Fax: 07 4926 1286
Email: Rockhampton@constructionsciences.net

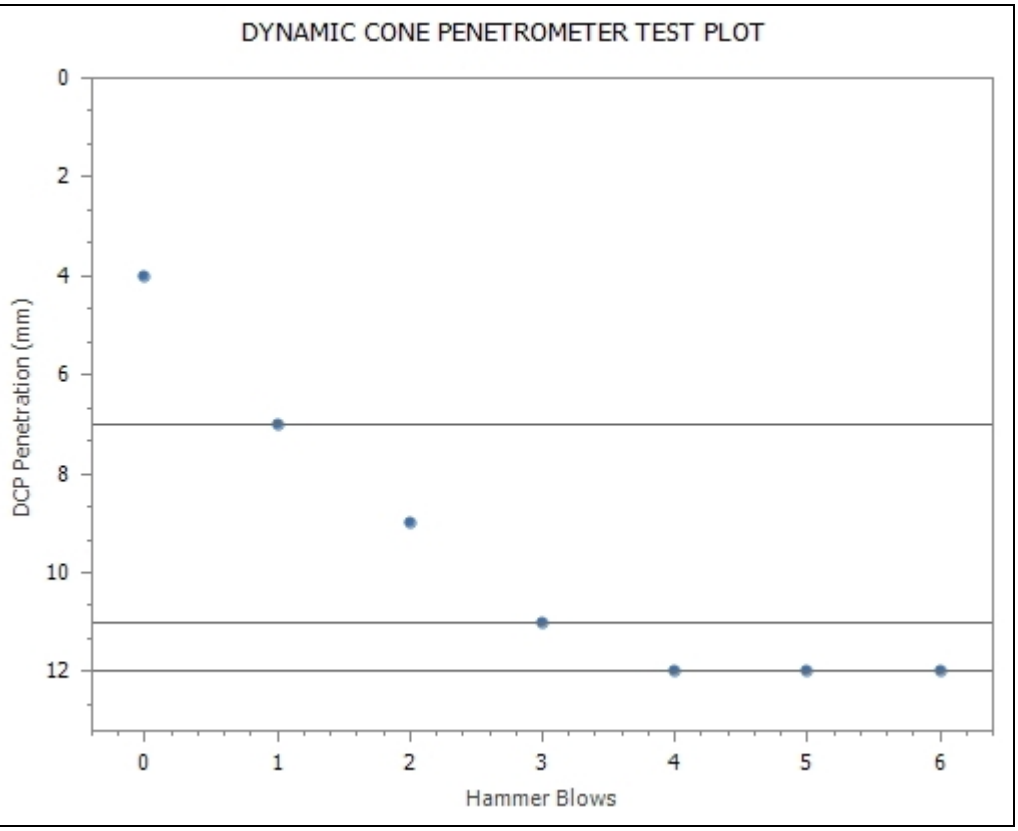
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 3 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78951	Bore Hole No.	3
Sampling Method		Depth (m)	-
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry	Material Type	-
Material Description	Clayey Sand		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
4 - 7 mm	>60
7 - 11 mm	>60
11 - 12 mm	>60
12 - 12 mm	



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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH4

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 387957,N: 7311080

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER					GC	Clayey Sandy GRAVEL (FILL) fine to coarse grained angular gravel, pale brown/grey, low plasticity fines, fine to coarse grained sand, cobbles present, dry, very dense.		
					SM	Silty SAND (RESIDUAL) fine to medium grained sand, dark grey, negligible to low plasticity fines, dry, very dense.		
			0.5			..... becoming fine to coarse grained sand.		
			1.0			BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

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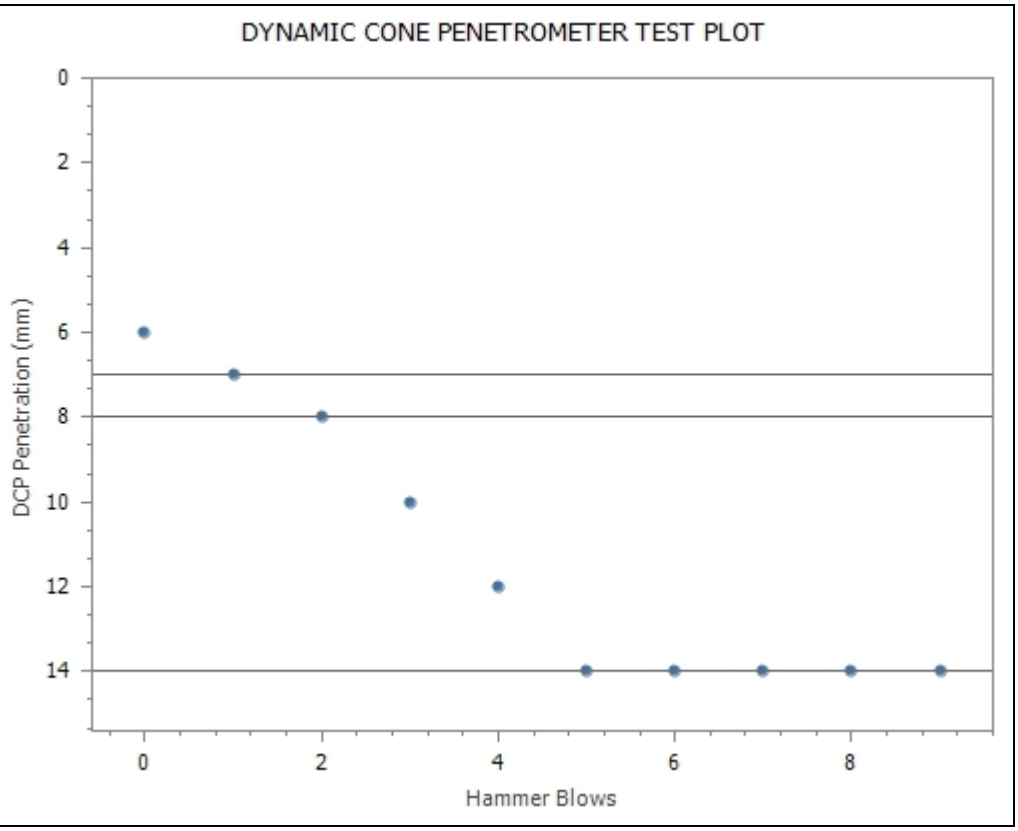
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 4 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78952	Bore Hole No.	4
Sampling Method		Depth (m)	Seated @ 0.2m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry	Material Type	-
Material Description	Silty Sand		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
6 - 7 mm	>60
7 - 8 mm	>60
8 - 14 mm	>60
14 - 14 mm	



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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH5

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 387799,N: 7309933

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER					GC	Clayey Sandy GRAVEL (FILL) fine to coarse grained angular gravel, pale brown/grey, low plasticity fines, fine to coarse grained sand, cobbles present, dry, very dense.		
			0.5		SP	SAND (RESIDUAL) fine to coarse grained sand, pale brown, with fine to medium grained angular gravel, dry to moist, very dense. ..... becoming moist.		
			1.0			BOREHOLE TERMINATED AT 0.9m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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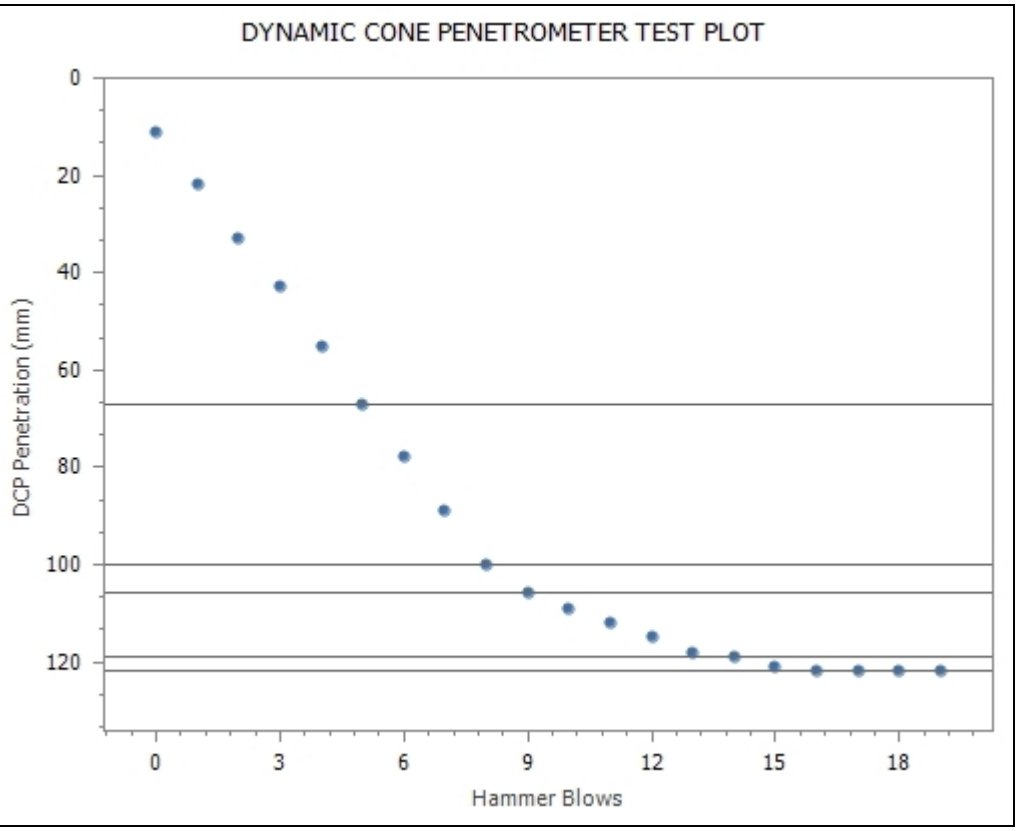
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 5 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78953	Bore Hole No.	5
Sampling Method		Depth (m)	Seated @ 0.3m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry to Moist	Material Type	-
Material Description	Sand		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
11 - 67 mm	19
67 - 100 mm	20
100 - 106 mm	40
106 - 119 mm	>60
119 - 122 mm	>60



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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH6

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 388237,N: 7313238

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER					SM	Silty SAND (ALLUVIUM) fine to medium grained sand, pale brown, negligible to low plasticity fines, dry to moist, very dense.		
			0.5		CI	Sandy CLAY (RESIDUAL) medium plasticity, orange mottle pale brown, fine to coarse grained sand, dry to moist, stiff.		
			1.0			BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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Email: Rockhampton@constructionsciences.net

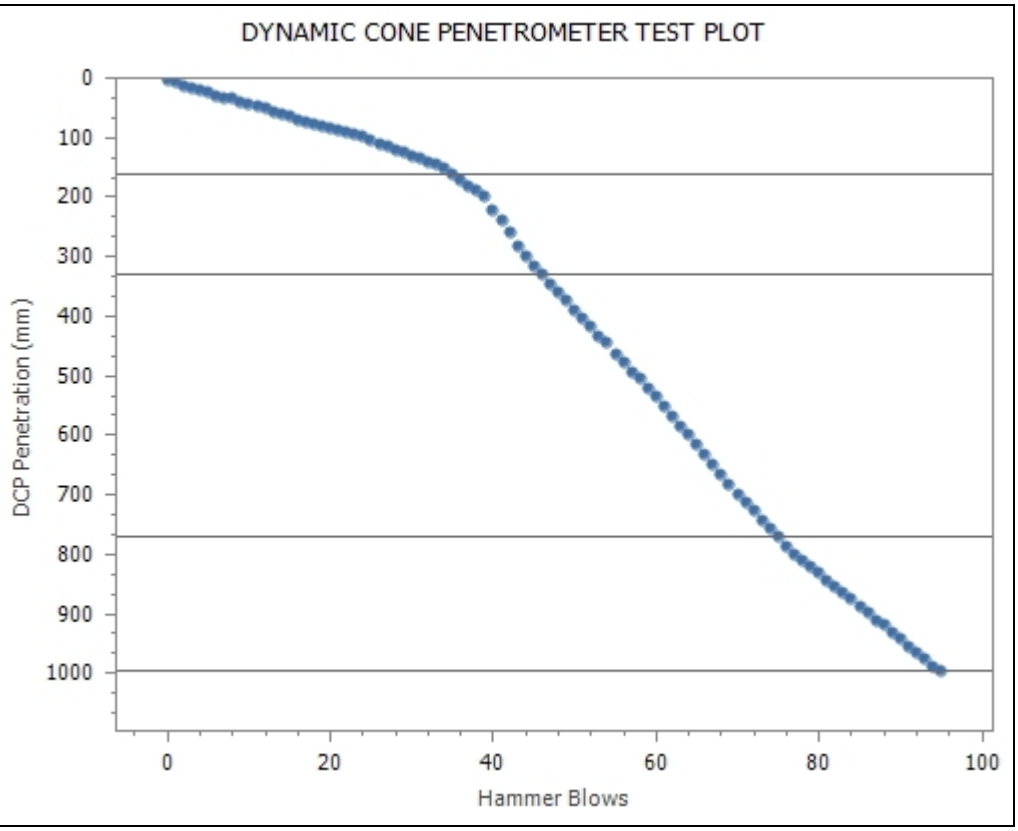
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 6 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78954	Bore Hole No.	6
Sampling Method		Depth (m)	-
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry to Moist	Material Type	-
Material Description	Silty Sand - Sandy Clay		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
4 - 161 mm	60
161 - 329 mm	13
329 - 771 mm	14
771 - 997 mm	19



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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH7

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 24/1/19 **COMPLETED** 24/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 388540,N: 7314024

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.5		ML/MI	Sandy Clayey SILT (COLLUVIUM) low to medium plasticity, pale grey, fine to medium grained sand, dry to moist, dense.		
			1.0		CI	Sandy CLAY (ALLUVIUM) medium plasticity, pale grey mottle brown, fine to medium grained sand, dry to moist, very stiff.		
						BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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Email: Rockhampton@constructionsciences.net

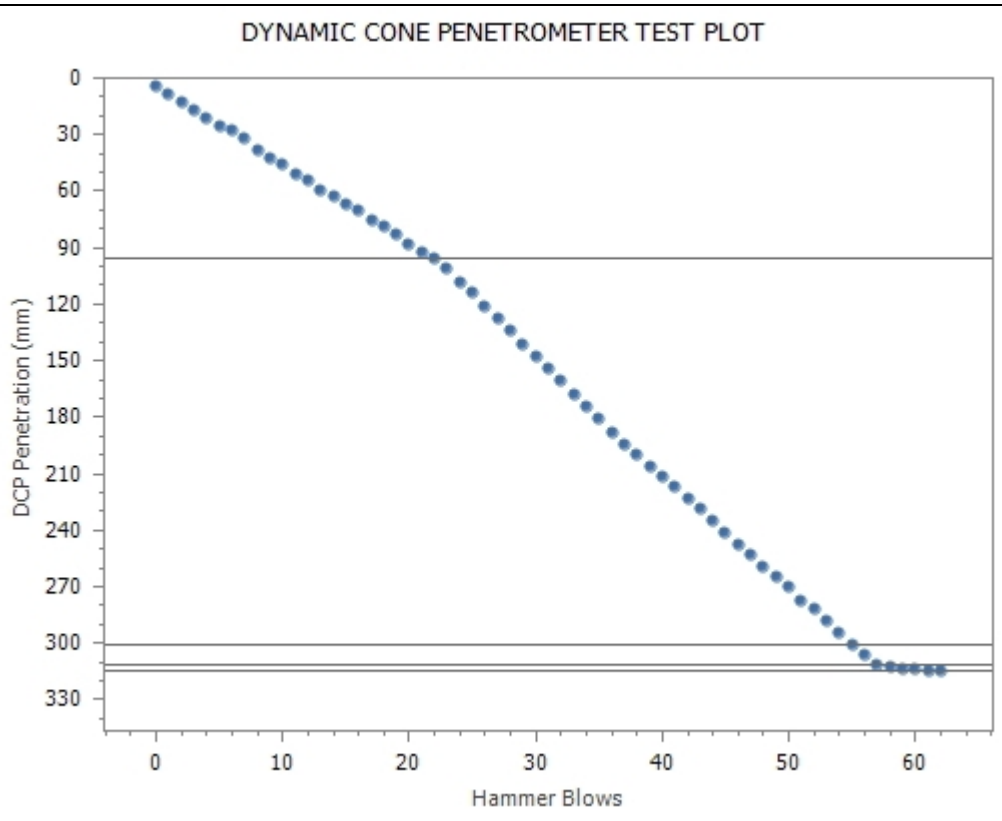
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 7 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78955	Bore Hole No.	7
Sampling Method		Depth (m)	-
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry to Moist	Material Type	-
Material Description	Sandy Clayey Silt - Sandy Clay		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
4 - 96 mm	60
96 - 301 mm	40
301 - 311 mm	50
311 - 315 mm	>60



Remarks

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Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH8

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 24/1/19 **COMPLETED** 24/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 388409,N: 7314457

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.0		CL	Gravelly Sandy CLAY (FILL) low plasticity, pale grey/brown, fine to medium grained saub-angular gravel, fine to coarse grained sand, dry, very stiff.		
					ML	Sandy SILT (COLLUVIUM) low plasticity, grey, fine to medium grained sand, dry to moist, dense.		
			0.5		ML	Clayey SILT (COLLUVIUM) low plasticity, grey, trace fine to medium grained sand, dry to moist, stiff.		
			1.0			BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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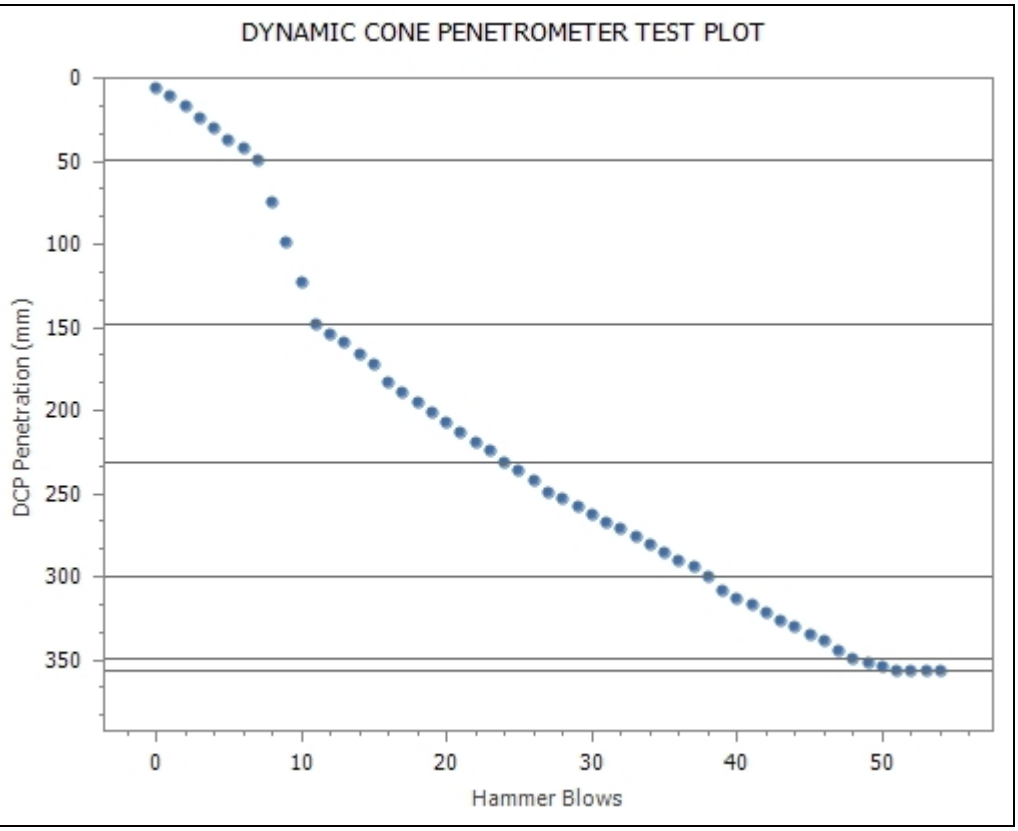
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 8 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78956	Bore Hole No.	8
Sampling Method		Depth (m)	-
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry - Dry to Moist	Material Type	-
Material Description	Gravelly Sandy Clay - Sandy Silt - Clayey Silt		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
6 - 49 mm	40
49 - 148 mm	8
148 - 231 mm	35
231 - 300 mm	50
300 - 349 mm	50
349 - 357 mm	>60



Remarks

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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH9

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 24/1/19 **COMPLETED** 24/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 388850,N: 7314257

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.5		ML	Sandy SILT (COLLUVIUM) low plasticity, grey, fine to medium grained sand, moist, very dense.		
			1.0		CI	Sandy CLAY (ALLUVIUM) medium plasticity, grey mottle brown, fine to medium grained sand, moist (at plastic limit), stiff, trace of fine to medium subround gravel.		
						BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

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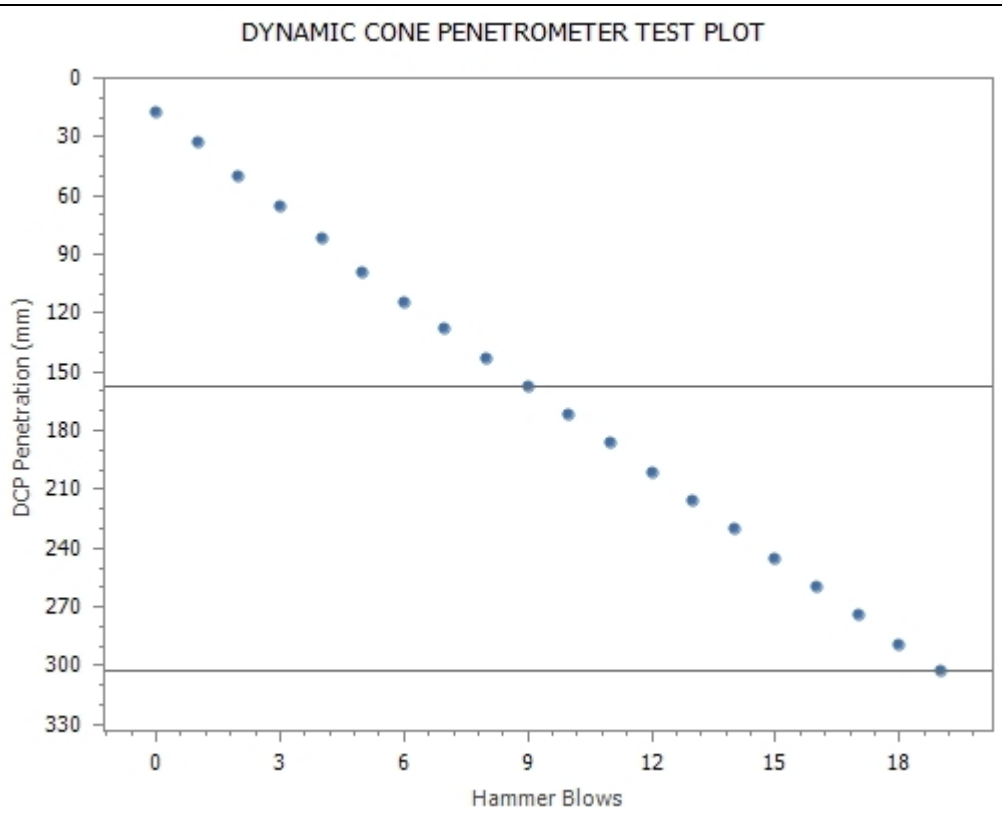
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 9 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78957	Bore Hole No.	9
Sampling Method		Depth (m)	Seated @ 0.5m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Moist	Material Type	-
Material Description	Sandy Clay		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
17 - 157 mm	13
157 - 303 mm	14



Remarks

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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH10

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 24/1/19 **COMPLETED** 24/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 389340,N: 7313827

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.5		ML	Sandy Clayey SILT (COLLUVIUM) low plasticity, pale grey, fine to medium grained sand, dry to moist, dense.		
						..... moist (below plastic limit), medium dense to dense.		
			1.0			..... very dense.		
						BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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Laboratory: Rockhampton Laboratory
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Email: Rockhampton@constructionsciences.net

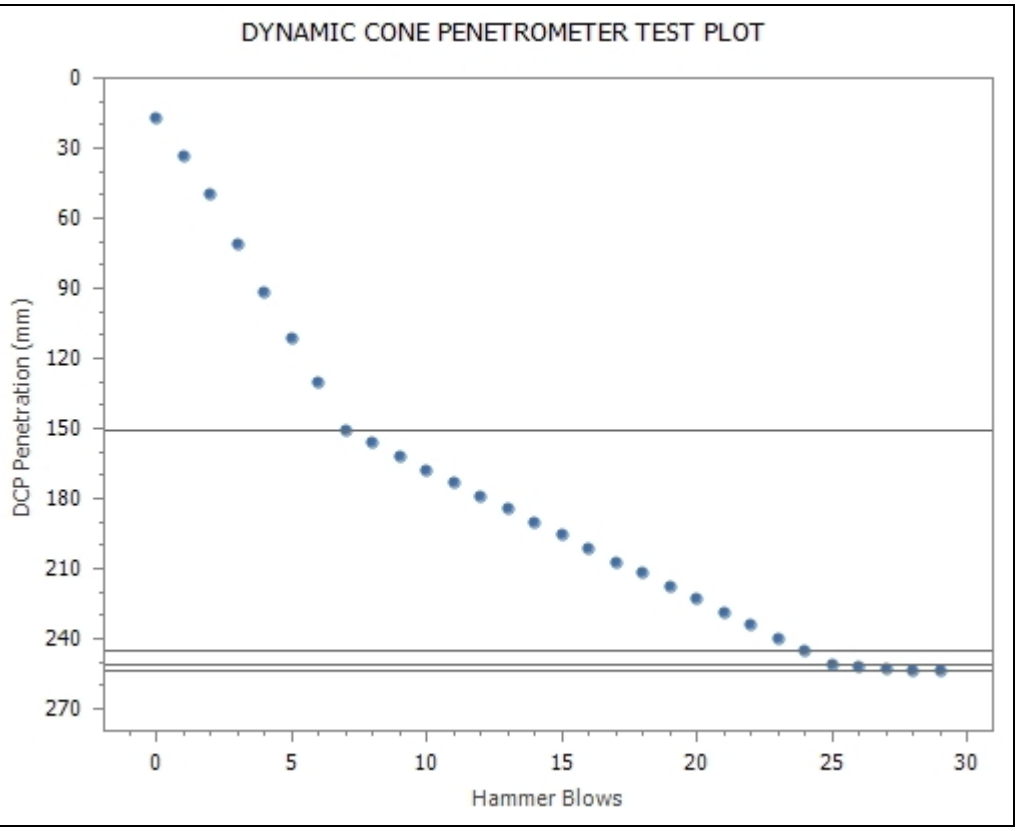
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 10 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78958	Bore Hole No.	10
Sampling Method		Depth (m)	Seated @ 0.45m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry to Moist	Material Type	-
Material Description	Sandy Clayey Silt		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
17 - 151 mm	10
151 - 245 mm	45
245 - 251 mm	40
251 - 254 mm	>60



Remarks

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH11

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 24/1/19 **COMPLETED** 24/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 389401,N: 7314341

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.5		ML	Sandy SILT (COLLUVIUM) low plasticity, grey, fine to medium grained sand, moist, dense.		
			1.0			BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

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Email: Rockhampton@constructionsciences.net

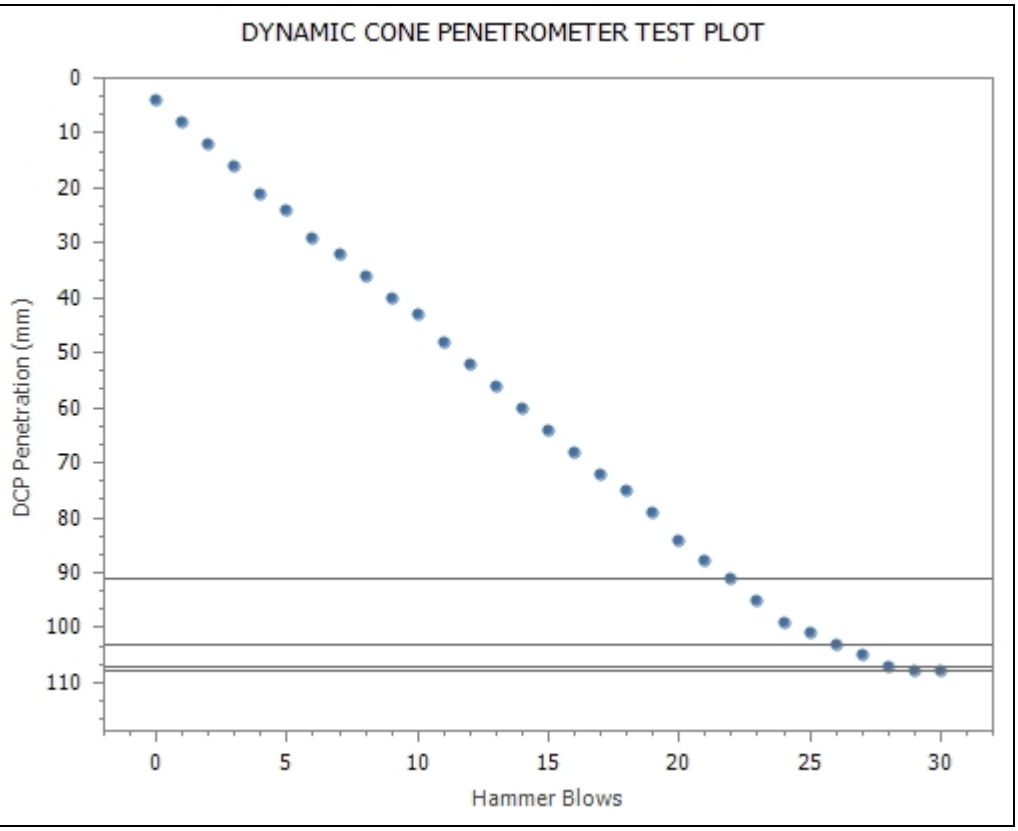
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 11 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78959	Bore Hole No.	11
Sampling Method		Depth (m)	-
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Moist	Material Type	-
Material Description	Sandy Silt		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
4 - 91 mm	60
91 - 103 mm	>60
103 - 107 mm	>60
107 - 108 mm	>60



Remarks

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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH12

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 389486,N: 7314942

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER					ML	Sandy SILT (COLLUVIUM) low plasticity, pale grey, fine to medium grained sand,dry, very dense.		
			0.5		ML	Sandy SILT (COLLUVIUM) low plasticity, pale grey, fine to coarse grained sand, dry to moist, very dense.		
			1.0			BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

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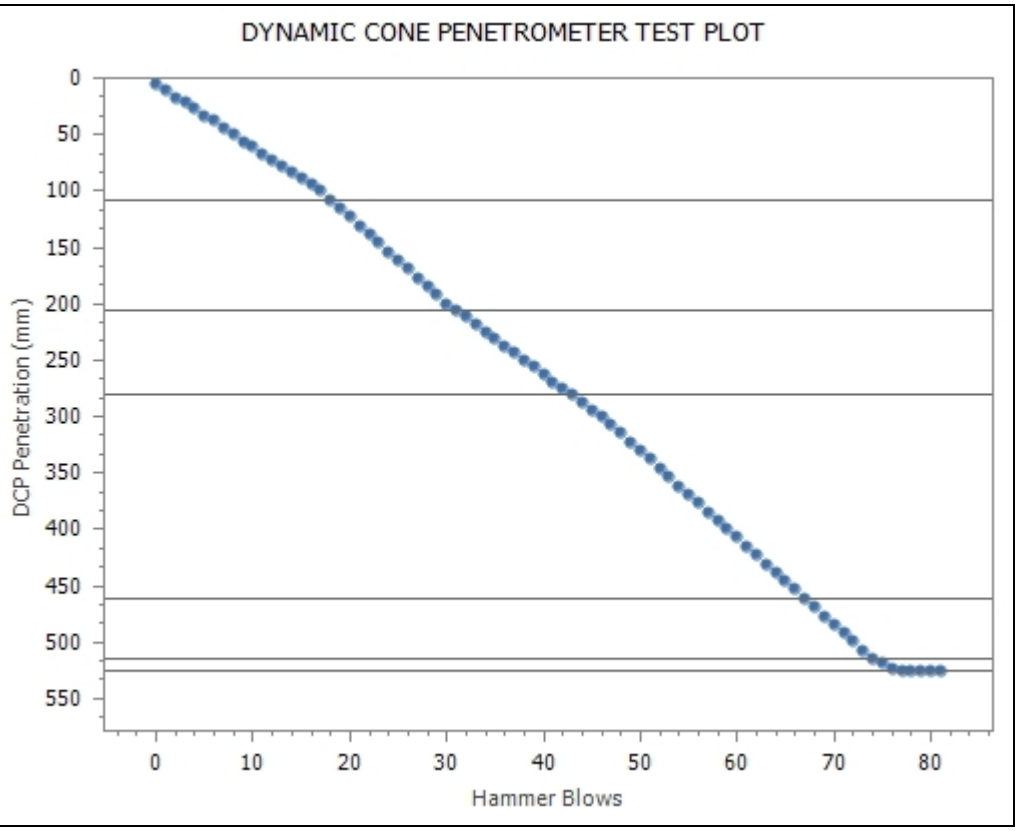
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 12 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78960	Bore Hole No.	12
Sampling Method		Depth (m)	-
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Moist	Material Type	-
Material Description	Sandy Silt		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
5 - 108 mm	40
108 - 206 mm	30
206 - 281 mm	40
281 - 462 mm	30
462 - 514 mm	30
514 - 526 mm	>60



Remarks

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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH13

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 389679,N: 7316050

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER					ML	Sandy SILT (COLLUVIUM) low plasticity, pale grey, fine to coarse grained sand, trace of fine grained sub-angular gravel, dry, dense.		
			0.5		ML	Sandy SILT (COLLUVIUM) low plasticity, pale grey, fine to coarse grained sand, dry to moist, very dense.		
			1.0			BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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Email: Rockhampton@constructionsciences.net

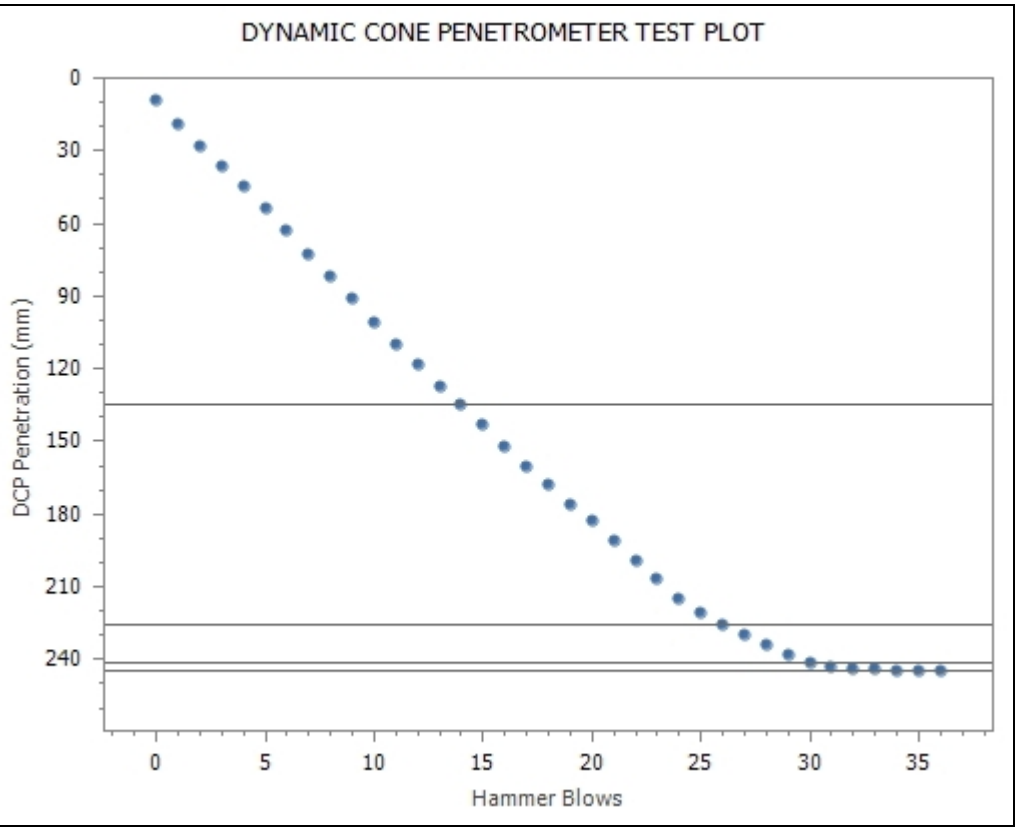
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 13 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78961	Bore Hole No.	13
Sampling Method		Depth (m)	-
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry - Moist	Material Type	-
Material Description	Sandy Silt		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
9 - 135 mm	25
135 - 226 mm	30
226 - 241 mm	>60
241 - 245 mm	>60



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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH14

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 24/1/19 **COMPLETED** 24/1/19 **R.L. SURFACE** --- **DATUM** ---

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 389300,N: 7316126

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
			0.0		GC	Sandy Clayey GRAVEL (FILL) fine to coarse grained sub-angular gravel, pale grey, fine to coarse grained sand, with cobbles, dry, very dense.		
					GC	Clayey Sandy GRAVEL (RESIDUAL) fine to medium grained sub-angular gravel, pale grey, low plasticity fines, fine to coarse grained sand, dry, very dense.		
					SM	Silty SAND (RESIDUAL) fine to coarse grained sand, pale grey, negligible to low plasticity fines, with fine to medium grained sub-angular gravel, moist, very dense.		
			0.5					
					CL	Sandy CLAY (RESIDUAL) low plasticity, pale grey, fine to coarse grained sand, dry to moist, hard.		
			1.0			BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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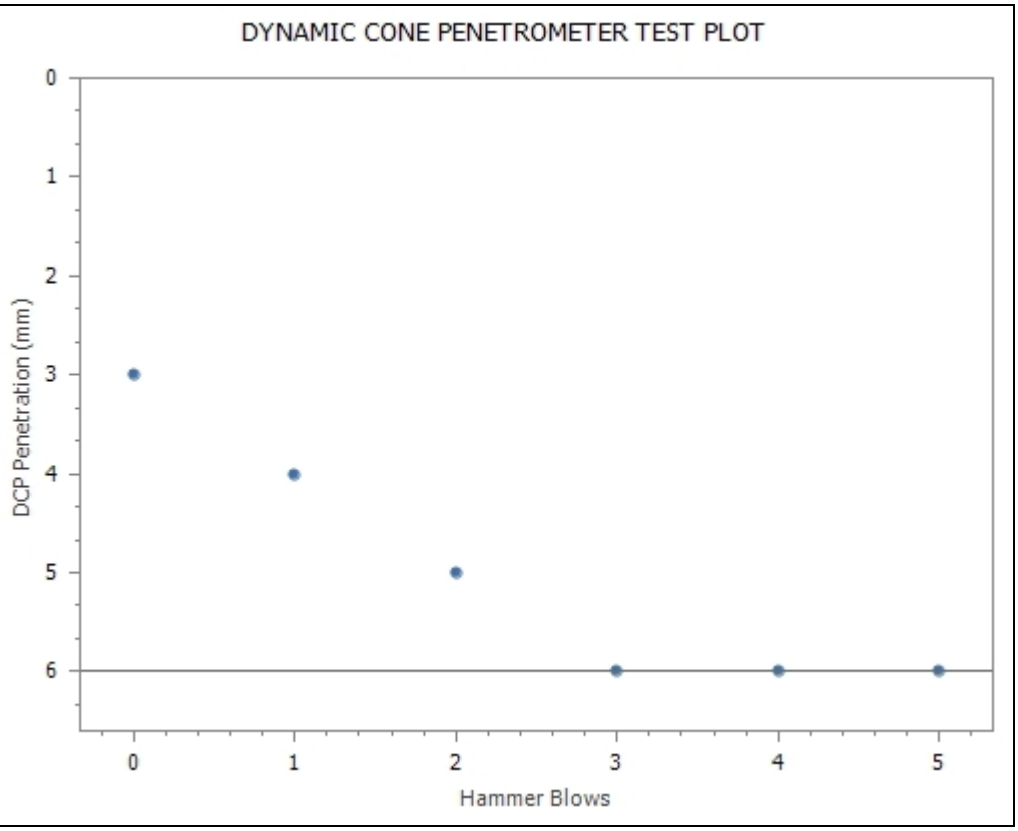
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 14 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78962	Bore Hole No.	14
Sampling Method		Depth (m)	Seated @ 0.35m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Moist	Material Type	-
Material Description	Silty Sand		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
3 - 6 mm	>60
6 - 6 mm	



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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH15

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 24/1/19 **COMPLETED** 24/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 389661,N: 7316421

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER					GC	Sandy Clayey GRAVEL (FILL) fine to coarse grained sub-angular gravel, pale brown, fine to coarse grained sand, low plasticity fines, with cobbles, dry.		
					ML	Gravelly Sandy SILT (RESIDUAL) low plasticity, pale grey, fine to coarse grained gravel, fine to medium grained sand, dry, dense.		
			0.5			BOREHOLE TERMINATED AT 0.35m - AUGER REFUSAL ON BEDROCK		
			1.0					
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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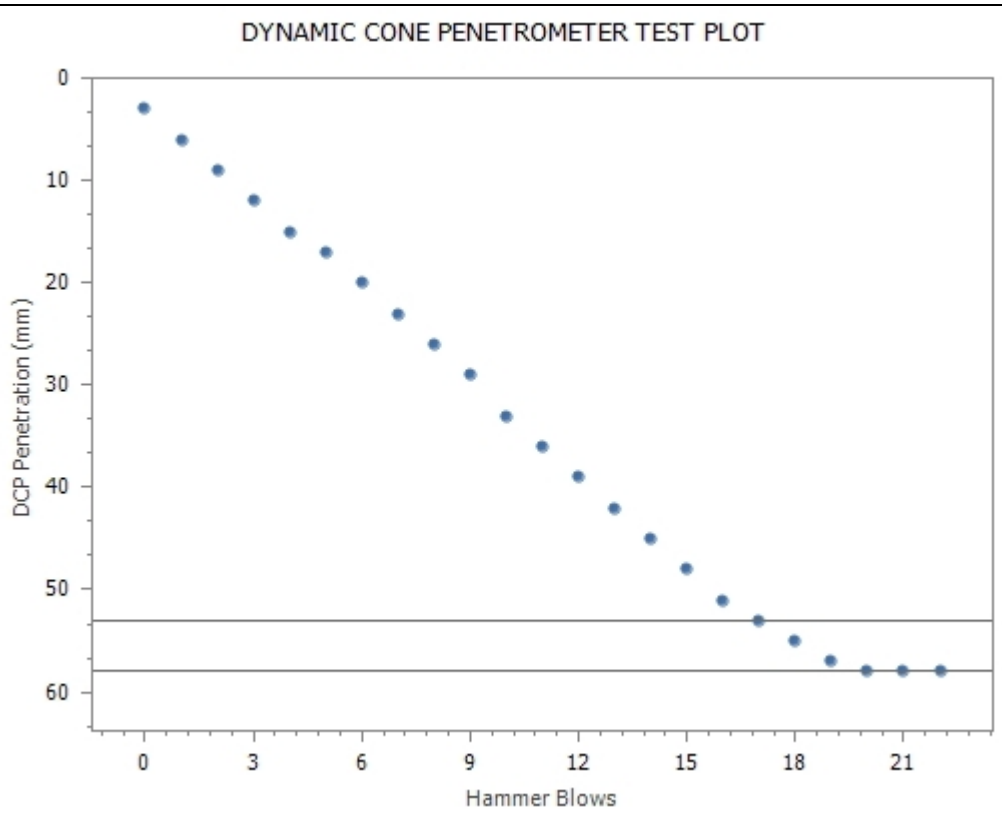
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 15 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78963	Bore Hole No.	15
Sampling Method		Depth (m)	Seated @ 0.15m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry	Material Type	-
Material Description	Gravelly Sandy Silt		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
3 - 53 mm	>60
53 - 58 mm	>60
58 - 58 mm	



Remarks

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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH16

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 24/1/19 **COMPLETED** 24/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 389786,N: 7316804

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.0		GW	Sandy GRAVEL (FILL) fine to coarse grained gravel, brown, fine to coarse grained sand, with cobbles, trace of negligible plasticity clay, dry, dense.		
					CL	Sandy CLAY trace Gravel (RESIDUAL) low plasticity, brown, fine to coarse grained sand, trace fine grained sub-angular gravel, moist, stiff.		
			0.5		SC	Gravelly Clayey SAND (RESIDUAL) fine to coarse grained sand, brown, fine to medium grained sub-angular gravel, low plasticity fines, dry to moist, very dense.		
			1.0			BOREHOLE TERMINATED AT 0.8m - AUGER REFUSAL ON BEDROCK		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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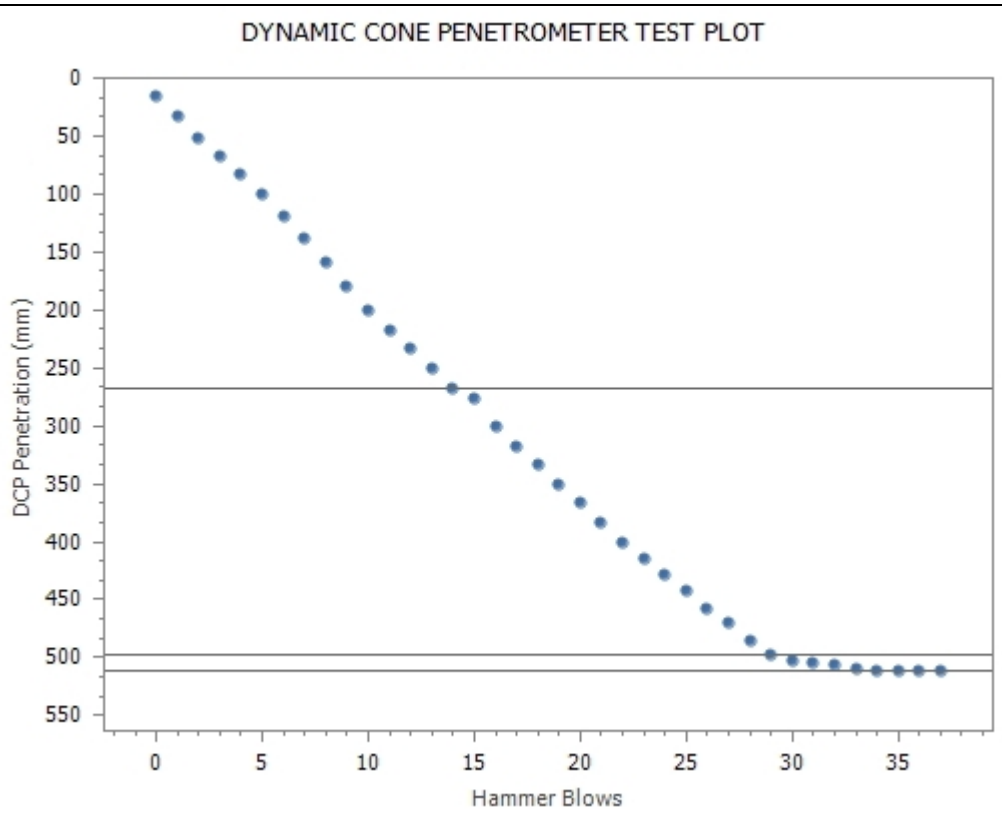
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 16 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78964	Bore Hole No.	16
Sampling Method		Depth (m)	Seated @ 0.2m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry to Moist	Material Type	-
Material Description	Sandy Clay - Gravelly Clayey Sand		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
16 - 268 mm	11
268 - 498 mm	13
498 - 512 mm	>60



Remarks

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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH17

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 24/1/19 **COMPLETED** 24/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 389595,N: 7317023

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.5		SM	Gravelly Silty SAND (RESIDUAL) fine to coarse grained sand, grey, fine to coarse grained gravel, low plasticity fines, dry, very dense.		
						BOREHOLE TERMINATED AT 0.5m - AUGER REFUSAL ON BEDROCK		
			1.0					
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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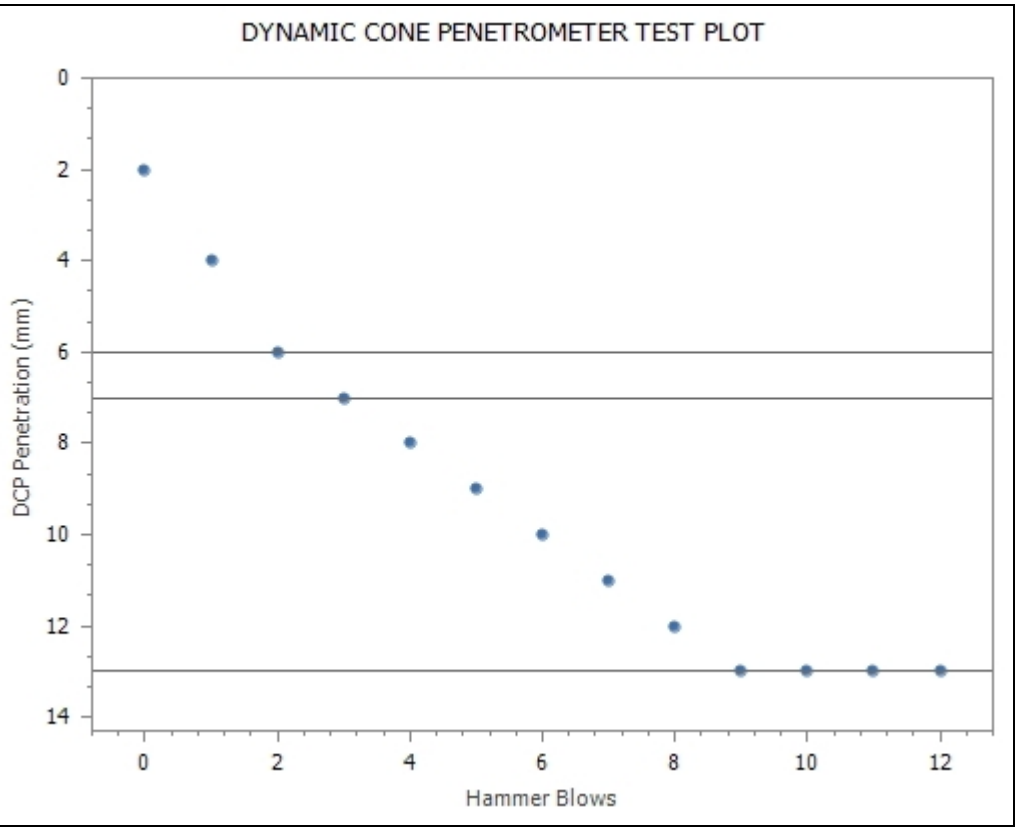
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 17 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78965	Bore Hole No.	17
Sampling Method		Depth (m)	-
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry	Material Type	-
Material Description	Gravelly Silty Sand		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
2 - 6 mm	>60
6 - 7 mm	>60
7 - 13 mm	>60
13 - 13 mm	



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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH18

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 386595,N: 7316235

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.5		ML	Gravelly Sandy SILT (RESIDUAL) low plasticity, grey, fine to medium grained sand, dry, dense.		
					GC	Clayey Sandy GRAVEL (RESIDUAL) fine to medium grained sub-angular gravel, pale yellow/grey, fine to coarse grained sand, dry, very dense.		
			1.0			BOREHOLE TERMINATED AT 0.7m - AUGER REFUSAL ON BEDROCK		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

Construction Sciences Pty Ltd
ABN: 74 128 806 735

Address:
101 High Street,
North Rockhampton QLD 4701

Laboratory: Rockhampton Laboratory
Phone: 07 4928 0044
Fax: 07 4926 1286
Email: Rockhampton@constructionsciences.net

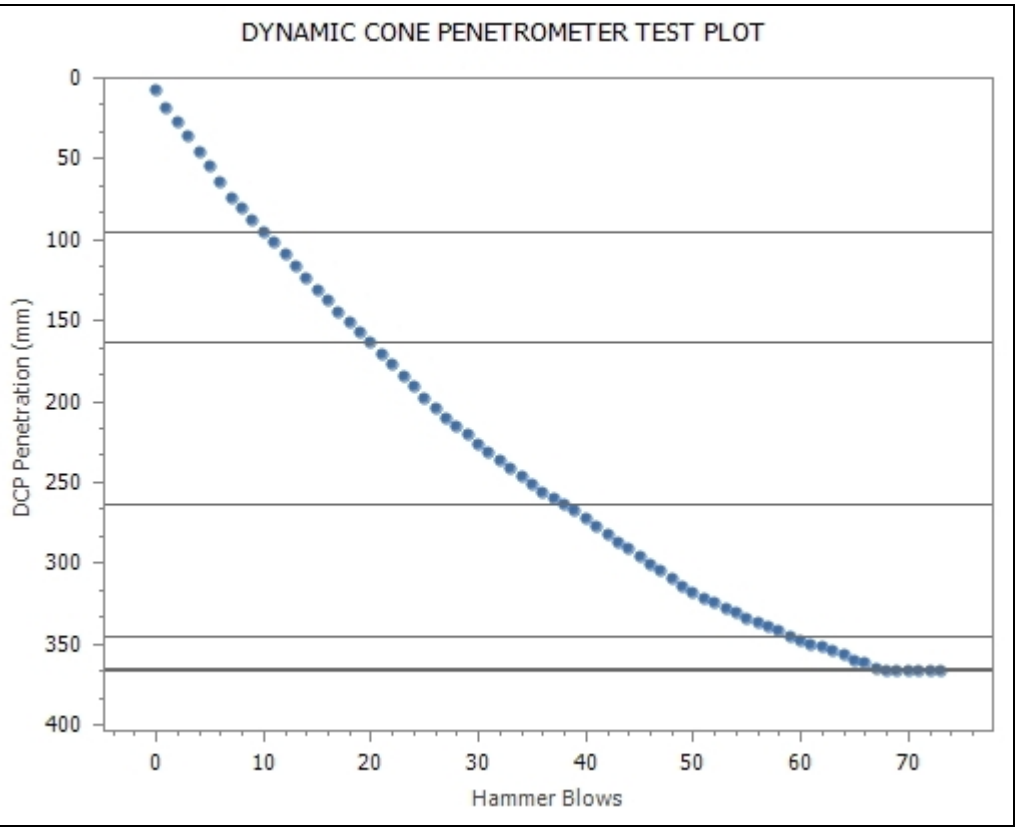
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 18 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78966	Bore Hole No.	18
Sampling Method		Depth (m)	-
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry	Material Type	-
Material Description	Clayey Sandy Gravel		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
8 - 95 mm	25
95 - 164 mm	35
164 - 264 mm	45
264 - 345 mm	>60
345 - 365 mm	>60
365 - 367 mm	>60



Remarks

NATA

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.
Accredited for compliance with ISO/IEC 17025 - Testing

Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH19

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES N/A

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
			0.5			BOREHOLE 19 CANCELLED.		
			1.0					
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

BOREHOLE NUMBER BH20

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 389574,N: 7315517

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.0		ML	Sandy SILT (COLLUVIUM) low plasticity, pale grey, fine to medium grained sand, dry, very dense.		
			0.5		MI	Sandy Clayey SILT (COLLUVIUM) low plasticity, pale grey, dry, very dense.		
			1.0			BOREHOLE TERMINATED AT 1.0m		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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ABN: 74 128 806 735

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Laboratory: Rockhampton Laboratory
Phone: 07 4928 0044
Fax: 07 4926 1286
Email: Rockhampton@constructionsciences.net

INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 19 of 23

Test Procedures	Q114B
Sample Number	2128/S/78967
Sampling Method	
Date Sampled	24/01/2019
Sampled By	Nicole Bella & Mark Walters
Date Tested	24/01/2019
Moisture Condition	Dry

Sample Location

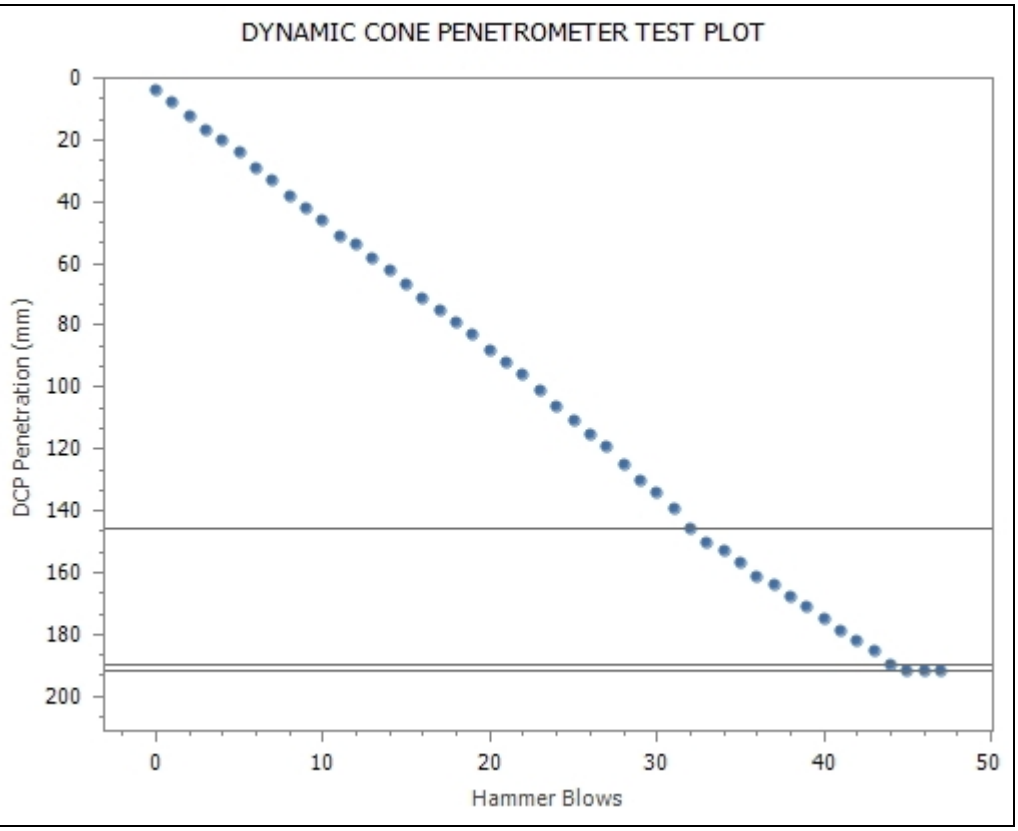
Bore Hole No.	20
Depth (m)	-

Material Source	-
Material Type	-

Material Description: Sandy Silt - Sandy Clayey Silt

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
4 - 146 mm	60
146 - 190 mm	>60
190 - 192 mm	>60



Remarks

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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH21

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 387542,N: 7307877

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.0		ML	Sandy SILT (ALLUVIUM) low plasticity, brown, fine to medium grained sand, dry, dense.		
					SC	Clayey SAND (ALLUVIUM) fine to coarse grained sand, brown, low plasticity fines, dry to moist, dense.		
			0.5		CI	Sandy CLAY (RESIDUAL) medium plasticity, brown, fine to coarse grained sand, dry to moist, stiff to very stiff.		
						..... hard.		
			1.0			BOREHOLE TERMINATED AT 1.0m - AUGER EFUSAL ON HARD CLAY		
			1.5					
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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Fax: 07 4926 1286
Email: Rockhampton@constructionsciences.net

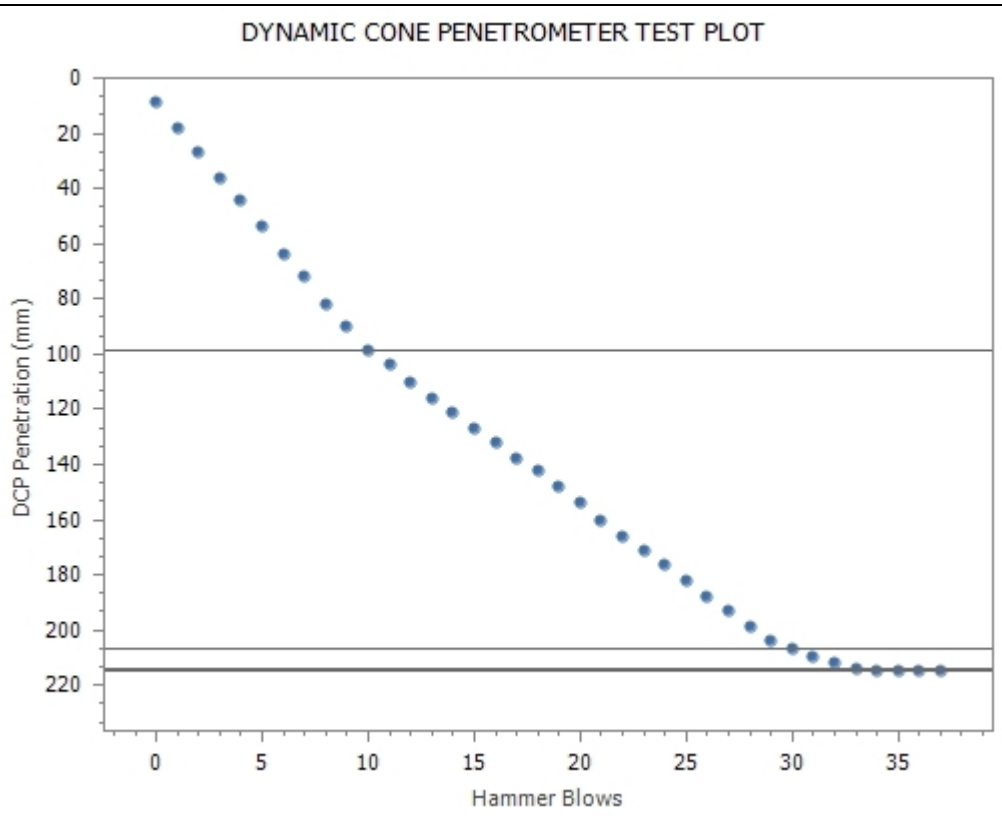
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 20 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78968	Bore Hole No.	21
Sampling Method		Depth (m)	Seated @ 0.3m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry to Moist	Material Type	-
Material Description	Clayey Sand - Sandy Clay		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
9 - 99 mm	25
99 - 207 mm	45
207 - 214 mm	>60
214 - 215 mm	>60



Remarks

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Accredited for compliance with ISO/IEC 17025 - Testing

Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH22

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 387584,N: 7308254

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.0		GC	Clayey Sandy GRAVEL (FILL) fine to coarse grained angular gravel, pale brown/grey, low plasticity fines, fine to coarse grained sand, cobbles present, dry, very dense.		
			0.5		SP	SAND (ALLUVIUM) fine to coarse grained sand, grey, negligible plastic fines, dry to moist, dense.		
			1.0			..... moist, dense to very dense.		
					SP	SAND trace Clay (ALLUVIUM) fine to coarse grained sand, brown, negligible to low plasticity fines, trace of fine grained angular gravels, moist, very dense.		
			1.5		SC	Clayey SAND (RESIDUAL) fine to coarse grained sand, red/brown, low plasticity, very dense.		
			2.0		CL	Gravelly Sandy CLAY (RESIDUAL) low plasticity, pale grey mottle yellow, fine to medium grained sub-angular gravel, fine to coarse grained sand, dry to moist, very stiff to hard.		
						BOREHOLE TERMINATED AT 2.0m		
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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Laboratory: Rockhampton Laboratory
Phone: 07 4928 0044
Fax: 07 4926 1286
Email: Rockhampton@constructionsciences.net

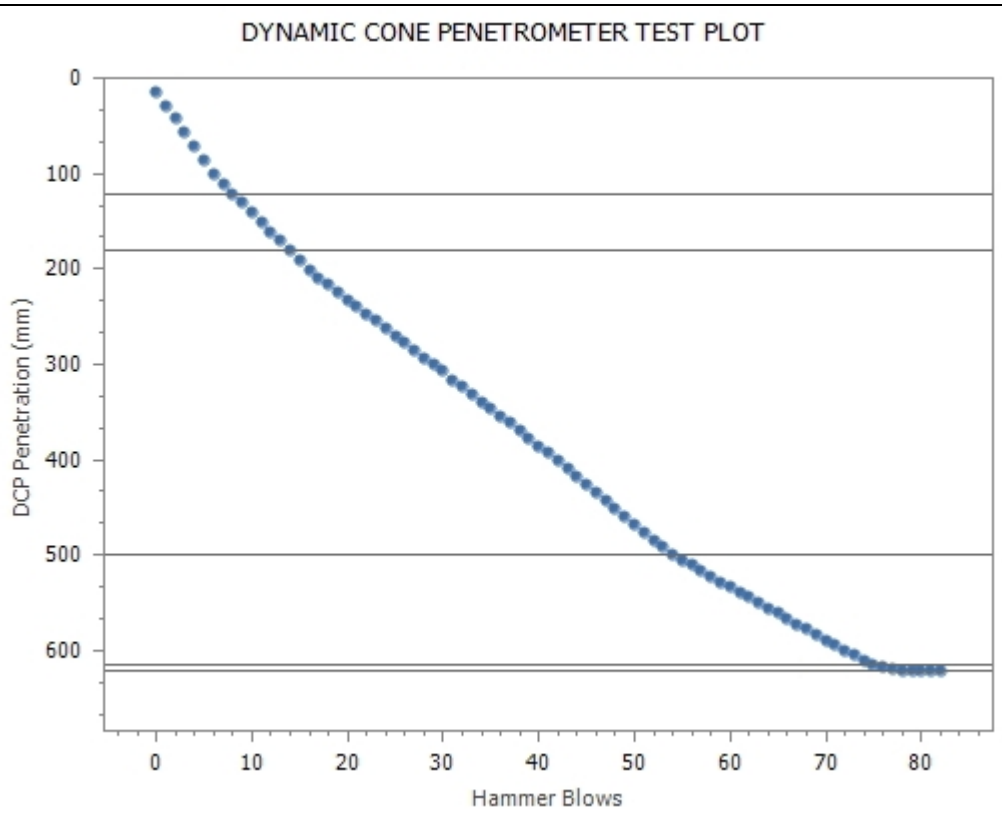
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 21 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78969	Bore Hole No.	22
Sampling Method		Depth (m)	Seated @ 0.5m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry to Moist	Material Type	-
Material Description	Sand - Clayey Sand - Gravelly Sandy Clay		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
14 - 121 mm	16
121 - 180 mm	20
180 - 500 mm	30
500 - 615 mm	45
615 - 622 mm	>60



Remarks

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Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH23

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** **DATUM**

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 388092,N: 7312148

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.5		GC	Clayey Sandy GRAVEL (FILL) fine to coarse grained angular gravel, pale brown/grey, low plasticity fines, fine to coarse grained sand, cobbles present, dry, very dense.		
					SM	Silty SAND (ALLUVIUM) fine to medium grained sand, pale grey, low plasticity fines, dry to moist, dense.		
			1.0		CL/CI	Sandy CLAY (RESIDUAL) low to medium plasticity, brown, fine to coarse grained sand, dry to moist, stiff to very stiff.		
					SC	Clayey Gravelly SAND (RESIDUAL) fine to coarse grained sand, pale brown, negligible to low plasticity fines, fine to medium grained angular gravel, dry, very dense.		
			1.5			BOREHOLE TERMINATED AT 1.3m - AUGER REFUSAL ON BEDROCK		
			2.0					
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

Construction Sciences Pty Ltd
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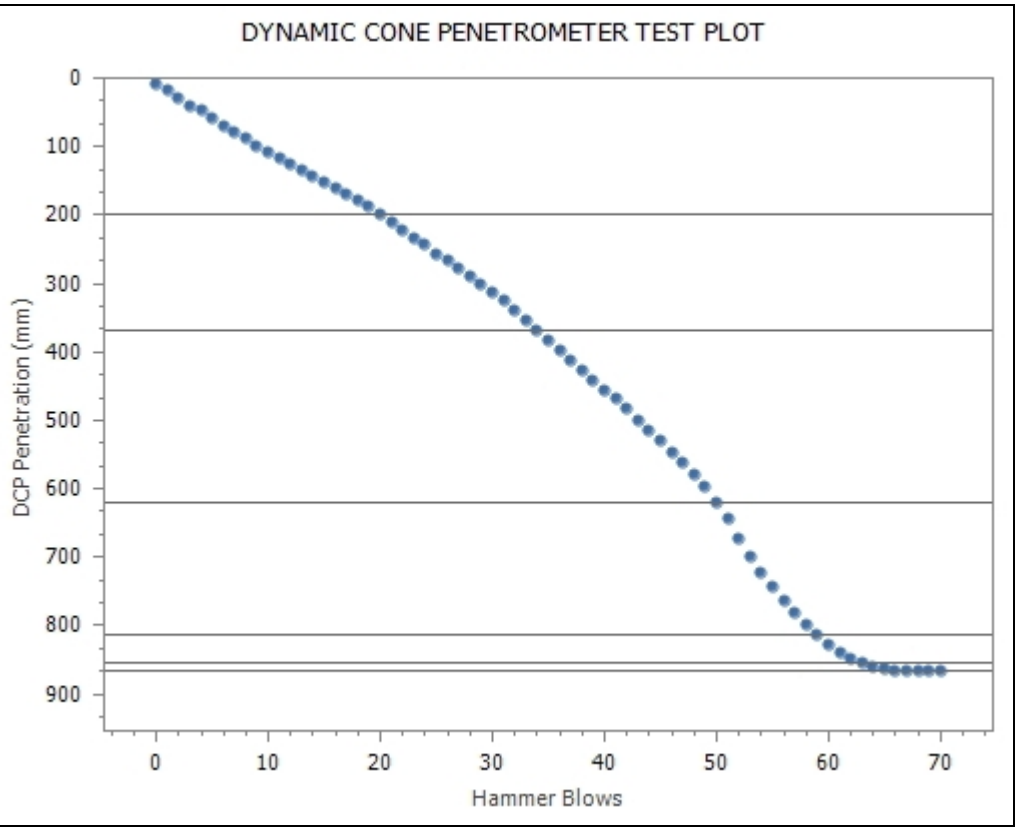
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 22 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78970	Bore Hole No.	23
Sampling Method		Depth (m)	Seated @ 0.4m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry to Moist	Material Type	-
Material Description	Sandy Clay - Clayey Gravelly Sand		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
9 - 199 mm	25
199 - 369 mm	18
369 - 619 mm	13
619 - 814 mm	9
814 - 855 mm	20
855 - 867 mm	>60



Remarks

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Accredited for compliance with ISO/IEC 17025 - Testing

Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

BOREHOLE NUMBER BH24

Construction Sciences

CLIENT Cardno QLD Pty Ltd **PROJECT NAME** Proposaed Inland Link Road

PROJECT NUMBER 2128E.P.959 **PROJECT LOCATION** COnnecting Agnes Water to Baffle Creek

DATE STARTED 23/1/19 **COMPLETED** 23/1/19 **R.L. SURFACE** _____ **DATUM** _____

DRILLING CONTRACTOR Construction Sciences Pty Ltd **SLOPE** 90° **BEARING** ---

EQUIPMENT Quickdrill **HOLE LOCATION** As Marked on Site Plan in Appendix A

HOLE SIZE 100mm **LOGGED BY** M.Walters **CHECKED BY** P.Kilaverave

NOTES GPS Co-ordinates: 56J, E: 388134,N: 7312518

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Additional Observations
AUGER			0.5		GC	Clayey Sandy GRAVEL (FILL) fine to coarse grained angular gravel, pale brown/grey, low plasticity fines, fine to coarse grained sand, cobbles present, dry, very dense.		
					SC	Gravelly Clayey SAND (ALLUVIUM) fine to coarse grained sand, fine to medium grained gravel, low plasticity fines, dry to moist, dense.		
			1.0		CI	Silty CLAY (ALLUVIUM) medium plasticity, grey, trace of fine to medium grained sand, moist (below plastic limit), soft.		
			1.5			...very stiff to hard		
			2.0			BOREHOLE TERMINATED AT 2.0m		
			2.5					
			3.0					
			3.5					
			4.0					
			4.5					
			5.0					

Construction Sciences

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Laboratory: Rockhampton Laboratory
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Fax: 07 4926 1286
Email: Rockhampton@constructionsciences.net

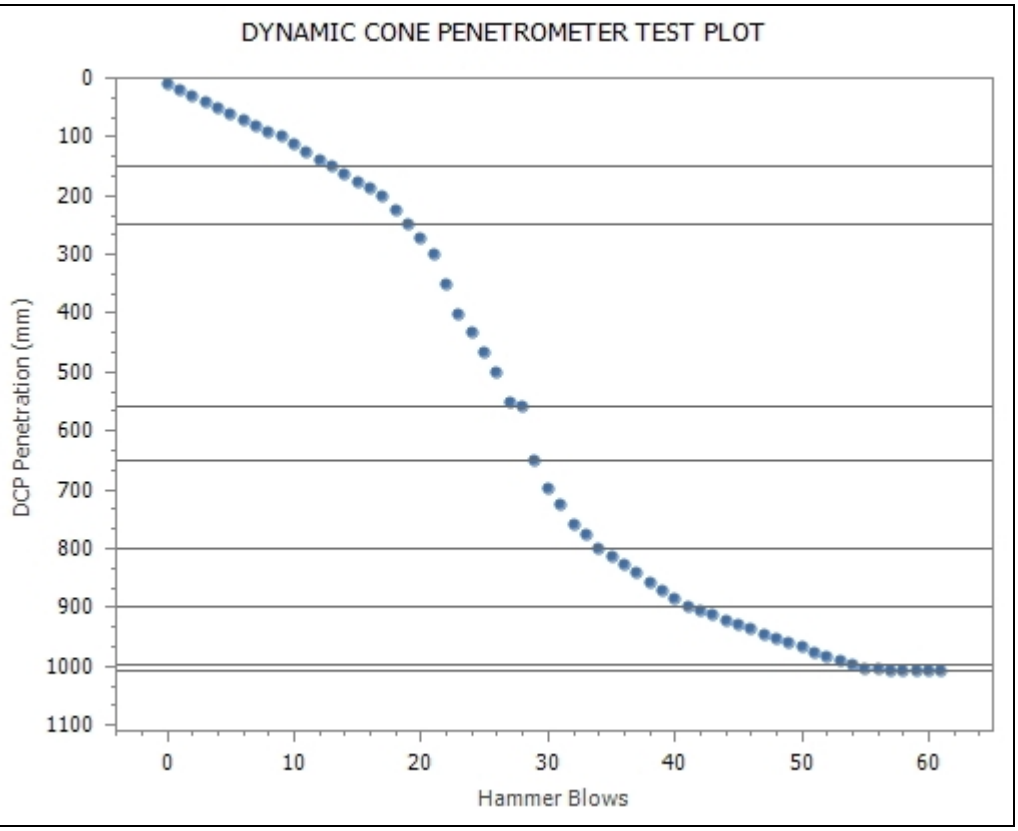
INSITU CBR REPORT

Client:	CONSTRUCTION SCIENCES - RTON	Report Number:	2128/R/44313-1
Client Address:	ROCKHAMPTON, 101 High Street, North Rockhampton	Project Number:	2135/P/415
Project:	General Testing - Engineering	Lot Number:	
Location:	North Rockhampton	Internal Test Request:	2128/T/18827
Supplied To:	n/a	Client Reference/s:	2128E/P/959
Area Description:		Report Date / Page:	5/02/2019 Page 23 of 23

Test Procedures	Q114B	Sample Location	
Sample Number	2128/S/78971	Bore Hole No.	24
Sampling Method		Depth (m)	Seated @ 0.3m
Date Sampled	24/01/2019		
Sampled By	Nicole Bella & Mark Walters		
Date Tested	24/01/2019	Material Source	-
Moisture Condition	Dry to Moist	Material Type	-
Material Description	Gravelly Sandy Clay - Clayey Silt / Silty Clay		

Equivalent California Bearing Ratio Layer Breakdown and Results

Layer Limits (mm)	Equivalent CBR
10 - 150 mm	20
150 - 250 mm	12
250 - 559 mm	5
559 - 649 mm	1.5
649 - 800 mm	6
800 - 899 mm	15
899 - 999 mm	30
999 - 1009 mm	>60



Remarks

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Accredited for compliance with ISO/IEC 17025 - Testing

Accreditation Number: 1986
Corporate Site Number: 2128

Approved Signatory: Nicole Bella
Form ID: W17Rep Rev 1

APPENDIX

D

CERTIFICATES OF TITLE

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30673046
Search Date: 26/02/2019 11:21 **Title Reference: 50497906**
Date Created: 02/06/2004

Previous Title: 50497850

REGISTERED OWNER

Dealing No: 707765998 31/05/2004

BODY CORPORATE FOR SUNRISE AT 1770 COMMUNITY TITLES
SCHEME 32536
PO BOX 1191
MOOLOOLABA QLD 4557

LAND DESCRIPTION

COMMON PROPERTY OF SUNRISE AT 1770 COMMUNITY TITLES SCHEME 32536
COMMUNITY MANAGEMENT STATEMENT 32536
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 30401002 (POR 11)
   Deed of Grant No. 30401003 (POR 11)
   Deed of Grant No. 30401004 (POR 11)

2. EASEMENT No 706434854 13/03/2003 at 12:32
   burdening the land to
   LOT 2 ON SP150900 OVER
   EASEMENT A ON SP150900

3. EASEMENT No 706434860 13/03/2003 at 12:32
   burdening the land to
   LOT 4 ON SP150900 OVER
   EASEMENT B ON SP150900

4. EASEMENT No 706434862 13/03/2003 at 12:33
   benefiting the land over
   EASEMENT C ON SP150900

5. EASEMENT No 707535431 05/03/2004 at 15:07
   burdening the land to
   LOT 1 ON SP150900 OVER
   EASEMENT H ON SP160548

6. EASEMENT IN GROSS No 707631830 08/04/2004 at 12:38
   burdening the land
   ERGON ENERGY CORPORATION LIMITED A.C.N. 087 646 062
   over
   EASEMENTS J TO P ON SP164525

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30673046
Search Date: 26/02/2019 11:21 **Title Reference: 50497906**
Date Created: 02/06/2004

EASEMENTS, ENCUMBRANCES AND INTERESTS

7. EASEMENT No 707689879 04/05/2004 at 14:48
   benefiting the land over
   EASEMENT Q ON SP168968

8. EASEMENT No 708792753 01/07/2005 at 15:26
   burdening the land to
   LOT 2 ON SP165533 OVER
   EASEMENT H ON SP160548

9. EASEMENT IN GROSS No 708973764 13/09/2005 at 15:45
   burdening the land
   ERGON ENERGY CORPORATION LIMITED
   over
   EASEMENTS D,E AND F ON SP182674

10. REQUEST FOR NEW CMS No 713555181 05/11/2010 at 12:47
    New COMMUNITY MANAGEMENT STATEMENT 32536
    ACCOMMODATION MODULE

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30655263
Search Date: 22/02/2019 14:16 **Title Reference: 30586141**
Date Created: 11/01/1989

Previous Title: 30577228

REGISTERED OWNER

TRAYWAR PTY LTD

ESTATE AND LAND

Estate in Fee Simple

LOT 1 REGISTERED PLAN 620278
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 30401002 (POR 11)
   Deed of Grant No. 30401003 (POR 11)
   Deed of Grant No. 30401004 (POR 11)

2. LEASE No 709385987 22/02/2006 at 15:29
   AGNES QUARRIES PTY LTD A.C.N. 094 776 619
   THE WHOLE OF THE LAND
   TERM: 01/04/2005 TO 31/03/2008 OPTION 3 YEARS

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - Yes 08/03/2006 709385990 Certificate No. 2

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30672855
Search Date: 26/02/2019 11:14 **Title Reference: 50432519**
Date Created: 19/03/2003

Previous Title: 50423384

REGISTERED OWNER

Dealing No: 707885410 13/07/2004

AUSTRALIAN BUSH HERITAGE FUND A.C.N. 053 639 115

ESTATE AND LAND

Estate in Fee Simple

LOT 1 SURVEY PLAN 150900
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 30401002 (POR 11)
   Deed of Grant No. 30401003 (POR 11)
   Deed of Grant No. 30401004 (POR 11)

2. EASEMENT IN GROSS No 706434867 13/03/2003 at 12:33
   burdening the land
   MIRIAM VALE SHIRE COUNCIL
   over
   EASEMENT E ON SP150900

3. EASEMENT No 707535420 05/03/2004 at 15:06
   burdening the land to
   LOT 2 ON SP150900 OVER
   EASEMENT G ON SP160548

4. EASEMENT No 707535431 05/03/2004 at 15:07
   benefiting the land over
   EASEMENT H ON SP160548

5. EASEMENT No 707689879 04/05/2004 at 14:48
   burdening the land to
   LOTS 2 TO 4 ON SP150900 OVER
   EASEMENT Q ON SP168968

6. NATURE REFUGE NOTING No 707757505 27/05/2004 at 15:24
   all or part of the within land has been declared a Nature
   Refuge under the Nature Conservation Act 1992

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30672855
Search Date: 26/02/2019 11:14 **Title Reference: 50432519**
Date Created: 19/03/2003

CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30655274
Search Date: 22/02/2019 14:17 **Title Reference: 50832362**
Date Created: 03/12/2010

Previous Title: 30635147

REGISTERED OWNER

Dealing No: 713594640 29/11/2010

CBS CORPORATION PTY LTD A.C.N. 010 350 937
TRUSTEE
UNDER INSTRUMENT 707097829

ESTATE AND LAND

Estate in Fee Simple

LOT 1 SURVEY PLAN 236012
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 30635147 (Lot 8 on CP FD461)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - Yes 08/12/2015 716934956 Certificate No. 1

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30655278
Search Date: 22/02/2019 14:17 **Title Reference: 50832363**
Date Created: 03/12/2010

Previous Title: 30635147

REGISTERED OWNER

Dealing No: 713594640 29/11/2010

CBS CORPORATION PTY LTD A.C.N. 010 350 937
TRUSTEE
UNDER INSTRUMENT 707097829

ESTATE AND LAND

Estate in Fee Simple

LOT 2 SURVEY PLAN 236012
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 30635147 (Lot 8 on CP FD461)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - Yes 08/12/2015 716934956 Certificate No. 1

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30378988
Search Date: 15/01/2019 08:31 **Title Reference: 50248743**
Date Created: 14/12/1998

Previous Title: 30520241

REGISTERED OWNER

Dealing No: 718640239 16/03/2018

THOMAS BALTO PERSONAL REPRESENTATIVE
UNDER INSTRUMENT 718640239

ESTATE AND LAND

Estate in Fee Simple

LOT 7 SURVEY PLAN 111856
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 30520241 (POR 24)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30655272
Search Date: 22/02/2019 14:17 **Title Reference: 30574156**
Date Created: 16/11/1987

REGISTERED OWNER

Dealing No: 717444432 15/08/2016

STEVEN GARY CZERWONKA TRUSTEE
UNDER INSTRUMENT 716714610

ESTATE AND LAND

Estate in Fee Simple

LOT 10 CROWN PLAN FD469
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 30574156 (Lot 10 on CP FD469)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT RESERVE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30378986
Search Date: 15/01/2019 08:30

Title Reference: 49005373
Date GAZETTED: 07/07/1945
PAGE: 5

Opening Ref: BDG 45-9174
Purpose: WATER
Sub-Purpose:
Local Name:
Address: BULLOCK CREEK
County (R) No: R203
File Ref: RES 7489

TRUSTEES

GLADSTONE REGIONAL COUNCIL GAZETTED ON 07/07/1945 PAGE 5

LAND DESCRIPTION

LOT 12 CROWN PLAN FD638 GAZETTED ON 07/07/1945 PAGE 5
Local Government: GLADSTONE

Area: 87.632000 Ha. (SURVEYED)

EASEMENTS AND ENCUMBRANCES

1. EASEMENT IN GROSS No 710831879 20/07/2007 at 14:47
burdening the land
ERGON ENERGY CORPORATION LIMITED A.C.N. 087 646 062
over
EASEMENT X ON SP189311

ADMINISTRATIVE ADVICES

Dealing	Type	Lodgement Date	Status
718775841	NT DETERM NATIVE TITLE ACT 1993 (CTH)	29/05/2018 16:28	CURRENT

UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Reserve Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30655261
Search Date: 22/02/2019 14:16 **Title Reference: 50308306**
Date Created: 17/04/2000

Previous Title: 40023784

REGISTERED OWNER

Dealing No: 703997409 14/04/2000

SUZANNE LEE TURNER

ESTATE AND LAND

Estate in Fee Simple

LOT 13 SURVEY PLAN 120832
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 30627123 (Lot 13 on CP FD1067)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30655258
Search Date: 22/02/2019 14:16 **Title Reference: 30635148**
Date Created: 16/03/1993

REGISTERED OWNER

Dealing No: 707097829 17/10/2003

CBS CORPORATION PTY LTD A.C.N. 010 350 937
TRUSTEE
UNDER INSTRUMENT 707097829

ESTATE AND LAND

Estate in Fee Simple

LOT 14 CROWN PLAN FD784
Local Government: GLADSTONE

For exclusions / reservations for public purposes refer to
Plan CP FD784

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 30635148 (Lot 14 on CP FD784)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - Yes 11/11/2003 707165327 Certificate No. 2

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30655270
Search Date: 22/02/2019 14:16 **Title Reference: 30496175**
Date Created: 24/06/1982

REGISTERED OWNER

Dealing No: 708501502 14/03/2005

ROBERT JOHN ANSTEY
ANNETTE MAREE ANSTEY JOINT TENANTS

ESTATE AND LAND

Estate in Fee Simple

LOT 15 CROWN PLAN FD526
Local Government: GLADSTONE

For exclusions / reservations for public purposes refer to
Plan CP FD526

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 30496175 (POR 15)

2. MORTGAGE No 708501503 14/03/2005 at 08:21
   NATIONAL AUSTRALIA BANK LIMITED A.B.N. 12 004 044 937

3. EASEMENT IN GROSS No 709868546 21/08/2006 at 15:35
   burdening the land
   ERGON ENERGY CORPORATION LIMITED A.C.N. 087 646 062
   over
   EASEMENT V ON SP189309

ADMINISTRATIVE ADVICES

Dealing	Type	Lodgement Date	Status
710740296	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	22/06/2007 14:14	CURRENT

UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30655266
Search Date: 22/02/2019 14:16 **Title Reference: 30574155**
Date Created: 16/11/1987

REGISTERED OWNER

Dealing No: 710933138 24/08/2007

KENNITH ALAN D'ARCY
RITA LUCIA D'ARCY JOINT TENANTS

ESTATE AND LAND

Estate in Fee Simple

LOT 16 CROWN PLAN FD526
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 30574155 (Lot 16 on CP FD526)

2. MORTGAGE No 710933139 24/08/2007 at 12:05
   NATIONAL AUSTRALIA BANK LIMITED A.B.N. 12 004 044 937

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30378991
Search Date: 15/01/2019 08:31 **Title Reference: 30627046**
Date Created: 14/08/1992

REGISTERED OWNER

Dealing No: 708101434 01/10/2004

JOAN PAMELA HILLS

ESTATE AND LAND

Estate in Fee Simple

LOT 17 CROWN PLAN FD527
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 30627046 (Lot 17 on CP FD527)

2. EASEMENT IN GROSS No 709822098 02/08/2006 at 14:41
   burdening the land
   ERGON ENERGY CORPORATION LIMITED A.C.N. 087 646 062
   over
   EASEMENT Y ON SP189312

ADMINISTRATIVE ADVICES

Dealing	Type	Lodgement Date	Status
710740253	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	22/06/2007 14:12	CURRENT
711812195	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	23/07/2008 13:11	CURRENT
711813134	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	23/07/2008 15:28	CURRENT

UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30655255
Search Date: 22/02/2019 14:16 **Title Reference: 30635154**
Date Created: 26/03/1993

REGISTERED OWNER

Dealing No: 707097829 17/10/2003

CBS CORPORATION PTY LTD A.C.N. 010 350 937
TRUSTEE
UNDER INSTRUMENT 707097829

ESTATE AND LAND

Estate in Fee Simple

LOT 18 CROWN PLAN FD527
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 30635154 (Lot 18 on CP FD527)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - Yes 11/11/2003 707165347 Certificate No. 2

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30378992
Search Date: 15/01/2019 08:32 **Title Reference: 30507176**
Date Created: 01/03/1983

REGISTERED OWNER

Dealing No: 711336743 11/01/2008

WOODKEL PTY LTD A.C.N. 127 765 799

ESTATE AND LAND

Estate in Fee Simple

LOT 19 CROWN PLAN FD527
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 30507176 (POR 19)

2. EASEMENT IN GROSS No 709773076 14/07/2006 at 11:54
   burdening the land
   ERGON ENERGY CORPORATION LIMITED
   over
   EASEMENT Z ON SP189313

ADMINISTRATIVE ADVICES

Dealing	Type	Lodgement Date	Status
710740197	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	22/06/2007 14:06	CURRENT

UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30379000
Search Date: 15/01/2019 08:33 **Title Reference: 30507129**
Date Created: 18/02/1983

REGISTERED OWNER

Dealing No: 702138767 05/08/1997

GLADSTONE REGIONAL COUNCIL

ESTATE AND LAND

Estate in Fee Simple

LOT 20 CROWN PLAN FD991
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 30507129 (POR 20)

2. SEC 147A NOTATION No 601083730 (147A) 31/12/1984
   THE PROVISIONS OF SECTION 147A OF THE LAND ACT 1962-1990
   REFER TO SECTION 174 OF THE LAND ACT 1994
   APPLY TO A TRANSFER OF THE WHOLE OR PART OF THE LAND

3. EASEMENT IN GROSS No 710537892 27/04/2007 at 13:55
   burdening the land
   ERGON ENERGY CORPORATION LIMITED A.C.N. 087 646 062
   over
   EASEMENT AA ON SP189314

ADMINISTRATIVE ADVICES

Dealing	Type	Lodgement Date	Status
710740225	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	22/06/2007 14:10	CURRENT

UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Corrections have occurred - Refer to Historical Search

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30379011
Search Date: 15/01/2019 08:33 **Title Reference: 50594339**
Date Created: 02/02/2006

Previous Title: 30507130
50081353

REGISTERED OWNER

Dealing No: 709198831 07/12/2005

GLADSTONE REGIONAL COUNCIL

ESTATE AND LAND

Estate in Fee Simple

LOT 21 SURVEY PLAN 168519
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 30401002 (POR 11)
   Deed of Grant No. 30401003 (POR 11)
   Deed of Grant No. 30401004 (POR 11)
   Deed of Grant No. 30507130 (POR 21)

2. EASEMENT IN GROSS No 710537892 27/04/2007 at 13:55
   burdening the land
   ERGON ENERGY CORPORATION LIMITED A.C.N. 087 646 062
   over
   EASEMENT AB ON SP189314

ADMINISTRATIVE ADVICES

Dealing	Type	Lodgement Date	Status
710740225	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	22/06/2007 14:10	CURRENT
711303331	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	24/12/2007 11:53	CURRENT
711414989	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	11/02/2008 16:01	CURRENT
711589251	VEG NOTICE VEGETATION MANAGEMENT ACT 1999	18/04/2008 12:35	CURRENT

UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT TITLE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30379020
Search Date: 15/01/2019 08:34 **Title Reference: 30577133**
Date Created: 08/01/1988

Previous Title: 30574198

REGISTERED OWNER

Dealing No: 701245679 04/04/1996

JOHN HARGREAVES
JUNE ANNE HARGREAVES JOINT TENANTS

ESTATE AND LAND

Estate in Fee Simple

LOT 28 REGISTERED PLAN 619598
Local Government: GLADSTONE

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
   Deed of Grant No. 30401002 (POR 11)
   Deed of Grant No. 30401003 (POR 11)
   Deed of Grant No. 30401004 (POR 11)

ADMINISTRATIVE ADVICES - NIL
UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - Yes 19/04/1996 701262703 Certificate No. 2

** End of Current Title Search **

Requested By: D-ENQ GLOBALX TERRAIN

CURRENT STATE TENURE SEARCH

NATURAL RESOURCES, MINES AND ENERGY, QUEENSLAND

Request No: 30378995
Search Date: 15/01/2019 08:32 **Title Reference: 47502040**
Date Created: 28/02/2007

Opening Ref:
Purpose: NATIONAL PARK
Local Name: DEEPWATER NATIONAL PARK

OWNER

THE STATE OF QUEENSLAND
(REPRESENTED BY
DEPARTMENT OF NATIONAL PARKS, SPORT AND RACING)

ESTATE

Estate in Protected Area Estate

LOT 153 CROWN PLAN NPW866
Local Government: GLADSTONE

Area: 4730.000000 Ha. (ABOUT)

EASEMENTS AND ENCUMBRANCES

ADMINISTRATIVE ADVICES

Dealing	Type	Lodgement Date	Status
718782245	NT DETERM NATIVE TITLE ACT 1993 (CTH)	01/06/2018 10:29	CURRENT

UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Corrections have occurred - Refer to Historical Search

** End of Current State Tenure Search **

Information provided under section 34 Land Title Act(1994) or
section 281 Land Act(1994)

Requested By: D-ENQ GLOBALX TERRAIN

APPENDIX

E

MEETING MINUTES

20190116 - Project Initiation:

Wednesday, 16 January 2019 9:33 PM

Meeting Details

- Date and Time: 16/01/2019 11:00 AM
- Location: GRC office, Calliope
- Attendees:

Participants

- Gerry Moore (Meeting Organizer)
- Jessica Dennien (Accepted in Outlook)
- Anna Scott (Accepted in Outlook)
- Don Dickson (Accepted in Outlook)
- Brent Tangey (Accepted in Outlook)

Agenda

1. Meet key project team members;
2. Discuss project goals;
3. GRC's preferences'; and
4. Other details.

Action Items

- [x] GM to re-issue signed licence agreement to JD;
- [ ] JD to issue existing hydraulic model data to GM;
- [ ] GM to provide GRC alignment options for review and acceptance;
- [x] JD to issue Deep Water fire trail route to GM;
- [x] JD to issue GM GRC's road hierarchy details;
- [ ] JD to confirm AADT with GRC's Planning team;

Important Dates

- TBC

Announcements

- N/A

Discussion

- Brief discussion around the issues driving the project and public opinion;
- Project to include 4no alignment options shown in project brief plus 1no option through the Deep Water Creek fire trail. Card no to be guided by indicative alignments shown within the project brief and issue to GRC for review;
- Discussion of applicable design guidelines to be applied both interim and ultimate cross sections:
  - Austroads part 6 for ultimate design; and
  - IPWEA - Lower Order Roads Manual ('LORM') for the interim design.
    - Noting the formation width nominated in the project brief would be compliant with the LORM 'formed track' requirements rather than a Austroads rural road. This should be made clear when communicating project outcomes to Councilor's and other stakeholders;
    - Hierarchy details to be provided to confirm road classification and road reserve width requirements;
- Desirable design speed shall be 90kph;
- Posted speed to be 60-80kph;
- Expected usage of road to be low. Unlikely to be more than 150 vehicles per day. GRC's planning team to confirm;
- Soil and flooding conditions of the site are not expected to be great. Possibility of acid sulphate soils in low lying areas. Design options to address this shall be discussed following geotechnical investigations;
- Cardno to consider life-cycle costs for the alignments; and
- Cardno to consider the following pavement types for the interim and ultimate cross section:
  - Interim:
    - Gravel; and
    - Low cost seal.
  - Ultimate:
    - Sealed only.

  Details to be confirmed.
- Noted the presence of endangered flora / fauna in the area. Further review and detailed assessment on site to be conducted in following phases of the project i.e. detail design phase;
- Cardno to assess the operational speed particularly the long straight alignment shown in option 1;
- Discussion around the fire track through Deep Water National Park. GM to discuss the possibility / implications of this align ment with Cardno's town planners for a better understanding of issues. Possibly gazettal change with National Parks and GRC?
- GM to confirm whether Cardno have access to additional lidar information and notify JD if not required.

Summary

- As above.

Next Meeting

- Date and Time: tbc
- Location: tbc
- Agenda: tbc
- Notes: tbc

20190206 - Project Workshop

Wednesday, 6 February 2019 2:00 PM

Meeting Details

- Date and Time: Wednesday 6 February 2019, 2:00pm
- Location: GRC office, Calliope
- Attendees:
  - Jessica Dennien (Gladstone Regional Council)
  - Don Dickson (Gladstone Regional Council)
  - Brent Tangey (Gladstone Regional Council)
  - Gerry Moore (Cardno)
  - Stephen Whitaker (Cardno)

Agenda

1. Presentation of GRC design options
2. Identification and discussion of design matters relating to GRC design options
3. Presentation of Cardno alternative design options
4. Agreement on path forward for project

Action Items

- [ ] Cardno to amend Option 4 to be a 2WD accessible road based on existing alignment
- [ ] Cardno to confirm catchment size and applicability of rational method
- [x] Council to provide Cardno with protected plant reporting associated with Yabby Road works
- [ ] Council and Cardno to agree on criteria for Multi-Criteria Analysis

Important Dates

- TBC

Announcements

- N/A

Discussion

- Council advised that Option 4 is to be a 2WD accessible road based on existing alignment (rather than a 110km/h design speed as currently shown). Cardno will amend Option 4 to reflect this
- Council requested that Cardno include discussion in reporting of power pole alignment including potential width issues
- Discussion in relation to the availability of the rational method for use in this instance. Cardno will check the applicable catchment size and confirm approach
- Discussion of culvert sizing - agreement between Council and Cardno that culverts should be designed to ultimate width
- Discussion in relation to the potential for speeding, particularly on large straight section of road
  - Acknowledgement that reserve width prevents substantial variation in geometry
  - Potential to consider speed control devices, such as associated with culverts
  - Agreement that this would be less of an issue with the initial road construction noting reduced width
  - Cardno will include discussion of speed control in project reporting for further consideration by Council
  - No dedicated speed control devices will be included in project designs
- Council requested that Cardno ensure that safety and potential liability issues associated with Option 4 be clearly documented in reporting
- Council identified existing knowledge of potential for protected plant species to occur near sewerage treatment plant access on the basis of recent works on Yabby Road
  - Council will provide Cardno with relevant reporting
  - Cardno will note potential constraint in project reporting
- Discussion between Council and Cardno as to the presentation of the various options. It was agreed that the assessment of the options should be presented in two stages:
  - Stage 1 – Initial assessment of all options (Council preferred and Cardno alternatives) and selection of three options for further asse ssment in Stage 2. It was suggested that Options 2, 2A and 4 be taken forward to Stage 2.
  - Stage 2 – Detailed assessment of three options selected in Stage 1
- Multi Criteria Analysis (MCA)
  - Cardno suggested it might be suitable for a MCA to form part of the project
  - Cardno confirmed this can be undertaken as part of existing engagement (no variation)
  - Council agreed a MCA would be appropriate and useful for Council to take forward the road concept
  - Council and Cardno are to agree on criteria for the MCA
- Council discussed process moving forward with project.
  - Discussion with Councillors
  - Public consultation
  - Cardno is able to assist with consultation activities moving forward
  - Cardno noted that there may be some benefit in consultation involvement noting the knowledge Cardno will hold as part of the current work

Summary

- Cardno to progress project deliverables in accordance with discussion and key actions and provide to Council for review.

Next Meeting

- No further meetings planned

20190306 - Project Workshop

Wednesday, 6 March 2019 12:30 PM

Meeting Details

- Date and Time: Wednesday 6 March 2019, 12:30pm
- Location: GRC office, Calliope
- Attendees:
  - Jessica Dennien (Gladstone Regional Council)
  - Anna Scott (Gladstone Regional Council)
  - Brent Tangey (Gladstone Regional Council)
  - Gerry Moore (Cardno)
  - Stephen Whitaker (Cardno)

Agenda

1. Presentation of design report, options analysis and design options to Council
2. Identification of project direction and next steps

Action Items

- [ ] Council to provide comments to Cardno on draft report
- [ ] Council to provide advice in relation to maintenance costs methodology / calculation
- [ ] Council to provide advice in relation to flood immunity for crossings.
- [ ] Cardno to update report and issue in final to Council
- [x] Council to issue purchase order for variation to scope of work
- [x] Cardno to organise survey of Ergon Energy assets on receipt of purchase order

Important Dates

- Final Design Report to be provided to Council on 19 March to make Council meeting agenda.

Announcements

- N/A

Discussion

- Cardno presented design report and design options.
- Council requested that further explanation be provided in relation to the use of survey / LIDAR data. Cardno confirmed the report would be amended to clarify the relationship between the two datasets.
- The survey of the existing Ergon assets was discussed - Cardno identified that this can be completed once a purchase order is issued by Council.
- Cardno outlined findings in relation to drainage assessment:
  - 20 year ARI used, as per Council instructions.
  - Large catchment consisting primarily of Deepwater Creek.
  - In order to achieve immunity for crossings, additional works would be required to widen existing waterways (beyond waterway barrier works requirements).
  - One example exists where 19 box culverts may be required.
  - Allowance has been made in opinion of cost for crossing works, subject to detailed investigations.
  - Cardno identified that the road as designed is not elevated and may be subject to inundation.
  - It is recommended that a detailed hydraulic assessment be undertaken in relation the selected design option, using a flood model.
  - There is the potential for a low level crossing that is inundated to result in sediment being discharged into the Great Barrier Reef (which may result in environmental approval requirements). Possible solution would be to apply a cement stabilised pavement in high risk areas.
- Cardno explained options analysis process, including Multiple Criteria Analysis (MCA).
- Council asked that further explanation be provided in relation to the scoring used in the MCA.
- Cardno and Council agreed to include an explanatory table that provides commentary on the methodology and reasoning for the scoring in the MCA - likely as an appendix to the design report.
- Council suggested using metrics, where possible, to inform the MCA.
- Council identified that Councillor input is currently being sought to inform the final design report.
- Council requested that cost breakdowns be provided for each design option - Cardno identified these have already been prepared and will be included as part of Appendix B of the final design report.
- Council reviewed the opinion of cost summary - an error was identified in the formula applied for Option 4 - Cardno will correct this error.
- Cardno confirmed that the MCA is based on a spreadsheet that can be amended to alter the methodology for select criteria, as required. A final version of this spreadsheet can be provided as part of the final design report.
- Council and Cardno discussed operating costs - Council to provide advice to Cardno in relation to methodology for costing of maintenance.
- Council requested that additional criteria be included in the MCA covering:
  - Travel time
  - Maintenance cost; and
  - Flooding.
- Council confirmed that it was beneficial for the design report to provide a recommended design option.
- Cardno and Council discussed a 3D model.
- Cardno confirmed that it currently has a 3D model and this can be provided in a format suitable for viewing by Councillors / Council staff.
- Council expressed interest in a 3D model, even if this required a variation to the scope of work.

- Cardno identified that a purchase order is yet to be issued by Council for the variation provided by Cardno - Council will follow up and issue the purchase order as soon as possible.

Summary

- Council to review draft report and provide complete comments to Cardno for incorporation into final design report.

Next Meeting

- No further meetings planned

APPENDIX

F

MCA EXPLANATORY TABLE

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Opinion of Cost (Construction) – Interim	10%	The score applied to each design option is directly linked to the opinion of cost provided in **Appendix B**. The following scoring ranges have been used. These are based on the limits of the data set: ▪ 1: $22,000,000 - $23,000,000 ▪ 2: $21,000,000 - $22,000,000 ▪ 3: $20,000,000 - $21,000,000 ▪ 4: $19,000,000 - $20,000,000 ▪ 5: $18,000,000 - $19,000,000 ▪ 6: $17,000,000 - $18,000,000 ▪ 7: $16,000,000 - $17,000,000 ▪ 8: $15,000,000 - $16,000,000 ▪ 9: $14,000,000 - $15,000,000 ▪ 10: $13,000,000 - $14,000,000	2 ($21,835,620.67)	6 ($17,445,703.97)	6 ($17,235,171.65)	10 ($13,143,343.81)	2 ($21,837,919.96)
Opinion of Cost (Construction) – Ultimate	10%	The score applied to each design option is directly linked to the opinion of cost provided in **Appendix B**. The following scoring ranges have been used. These are based on the limits of the data set: ▪ 1: $47,000,000 - $50,000,000 ▪ 2: $44,000,000 - $47,000,000 ▪ 3: $41,000,000 - $44,000,000 ▪ 4: $38,000,000 - $41,000,000 ▪ 5: $35,000,000 - $38,000,000 ▪ 6: $32,000,000 - $35,000,000 ▪ 7: $29,000,000 - $32,000,000 ▪ 8: $26,000,000 - $29,000,000 ▪ 9: $23,000,000 - $26,000,000 ▪ 10: $20,000,000 - $23,000,000	9 ($24,210,307.45)	9 ($24,890,998.66)	9 ($24,688,438.40)	2 ($45,702,074.56)	7 ($30,708,662.10)

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Opinion of Cost (Maintenance) – Interim	2.5%	The score applied to each design option is directly linked to the opinion of cost provided in **Appendix B**. The following scoring ranges have been used. These are based on the limits of the data set: ▪ 1: $100,000 - $240,000 ▪ 2: $240,000 - $380,000 ▪ 3: $380,000 - $520,000 ▪ 4: $520,000 - $660,000 ▪ 5: $660,000 - $800,000 ▪ 6: $800,000 - $940,000 ▪ 7: $940,000 - $1,080,000 ▪ 8: $1,080,000 - $1,220,000 ▪ 9: $1,220,000 - $1,360,000 ▪ 10: $1,360,000 - $1,500,000	9 ($336,472.84)	9 ($267,272.18)	9 ($263,953.44)	9 ($199,451.73)	10 ($336,509.08)
Opinion of Cost (Maintenance) – Ultimate	2.5%	The score applied to each design option is directly linked to the opinion of cost provided in **Appendix B**. The following scoring ranges have been used. These are based on the limits of the data set: ▪ 1: $100,000 - $240,000 ▪ 2: $240,000 - $380,000 ▪ 3: $380,000 - $520,000 ▪ 4: $520,000 - $660,000 ▪ 5: $660,000 - $800,000 ▪ 6: $800,000 - $940,000 ▪ 7: $940,000 - $1,080,000 ▪ 8: $1,080,000 - $1,220,000 ▪ 9: $1,220,000 - $1,360,000 ▪ 10: $1,360,000 - $1,500,000	6 ($747,812.65)	6 ($769,272.86)	6 ($762,886.73)	1 ($1,425,385.60)	4 ($952,686.88)

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Ownership	10%	A quantitative measurement is not available in relation to land ownership noting the complexity of multiple land holdings, road reserves and varying tenures and therefore a qualitative assessment has been used to inform the scoring for this criterion. The following guidance is provided in relation to the scores given for each design option: ▪ 2: This option is partly within road reserves, Council owned freehold land and Council controlled reserve land. The land is wholly controlled by Council in varying forms, although some work would be required to create road reserves. ▪ 2A: This option is partly within road reserves, Council owned freehold land and Council controlled reserve land. The land is wholly controlled by Council in varying forms, although some work would be required to create road reserves. ▪ 3A: This option partly traverses Deepwater National Park, which is not owned or controlled by Council. The score allocated acknowledges the potential difficulty in securing a road reserve through a National Park. The balance of the option is within Council controlled land (in varying forms). ▪ 4: This option is almost wholly within Deepwater National Park, which is not owned or controlled by Council. The score allocated acknowledges the potential difficulty in securing a road reserve through a National Park. ▪ 5: This option is wholly within road reserves, with the exception of a small area of Council controlled reserve land. This ownership situation is therefore highly suited to a road.	8	8	3	0	9

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Environment - Regulated Vegetation	2%	The score applied to each design option is based on the land area of regulated vegetation impacted by the design option, as documented in Table 5-1. Multipliers of 2 and 3 have been applied to “of concern” and “endangered” vegetation respectively, noting their greater environmental; significance. The following scoring ranges applied: ▪ 1: 0-30 hectares impacted ▪ 2: 30-60 hectares impacted ▪ 3: 60-90 hectares impacted ▪ 4: 90-120 hectares impacted ▪ 5: 120-150 hectares impacted ▪ 6: 150-180 hectares impacted ▪ 7: 180-210 hectares impacted ▪ 8: 210-240 hectares impacted ▪ 9: 240-270 hectares impacted ▪ 10: 270-300 hectares impacted	7 (106.04)	7 (109.23)	7 (114.77)	7 (94.27)	1 (286.1)
Environment - Protected Areas	3%	A quantitative measure is unable to be used for protected areas noting the need for the criterion to cover location within and proximity to, protected areas. A qualitative assessment has therefore been used to inform the scoring for this criterion. The following guidance is provided in relation to the scores given for each design option: ▪ 2: This option partly adjoins a National Park. ▪ 2A: This option partly adjoins a National Park. ▪ 3A: This option is partly located in a National Park and also partly adjoins a National Park. ▪ 4: This option is almost wholly within a National Park. ▪ 5: This option is not proximate to any protected areas.	8	8	3	0	10

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Environment - Waterways	3%	This score has been applied based on the number of mapped waterways crossed by each design option. The following methodology has been employed: ▪ 1 point for each green waterway crossed ▪ 2 points for each amber waterway crossed ▪ 3 points for each red waterway crossed The above points for each design option have been deducted from a score of 10 to give a score for the criterion.	2 (8)	2 (8)	2 (8)	7 (3)	3 (7)
Environment - Wetlands	2%	The scoring of the design options has been informed by the assessment undertaken as part of the Environmental Assessment documented in Section 5.3. The following guidance is provided in relation to the scores given for each design option: ▪ 2: This option traverses notable areas of wetland. ▪ 2A: This option traverses notable areas of wetland. ▪ 3A: This option traverses notable areas of wetland. ▪ 4: This option traverses small areas of wetland and is also proximate to a number of other areas. ▪ 5: This option traverses small areas of wetland.	3	3	3	6	8

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Environment - Other	2%	This criteria is intended to cover any environmental matters considered in the Environmental Assessment documented in Section 5.3 of the design report and not otherwise assessed as part of a dedicated criterion. On this basis it is difficult to establish a quantitative measure and therefore a qualitative assessment has been used to inform the scoring for this criterion. The following guidance is provided in relation to the scores given for each design option: ▪ 2: This option includes areas, in the north, that will require a protected plants flora survey. The option is also proximate to an ERA. ▪ 2A: This option includes areas, in the north, that will require a protected plants flora survey. The option is also proximate to an ERA. ▪ 3A: This option includes areas, in the north, that will require a protected plants flora survey. The option is also proximate to an ERA. ▪ 4: This option includes some areas where a protected plants flora survey will be required. ▪ 5: This option is located in small areas where a protected plants flora survey is required. The option is also proximate to an ERA.	5	5	5	6	7

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Connection (North)	3%	A quantitative measurement is not available in relation to connectivity noting the varying nature of existing road environments and therefore a qualitative assessment has been used to inform the scoring for this criterion. The following guidance is provided in relation to the scores given for each design option: ▪ 2: This option connects to Jobson Road, which presently supports local access to residential properties. The connection point is not considered desirable given the existing function of the road and its resultant construction standard. ▪ 2A: This option connects to Anderson Way, which performs a collector function in the local area and is suitable to provide a connection to the new road. ▪ 3A: This option connects to Rocky Crossing Road, part of which is presently of a lower order gravel construction. ▪ 4: This option connects to Springs Road, which is of a suitable existing standard and is well located to service the proposed new road. ▪ 5: This option connects to Uxbridge Road at its intersection with Round Hill Road. The connection point is suitable although it is noted it is located to the west of Agnes Water and may require additional works to facilitate.	4	7	3	8	5

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Connection (South)	3%	A quantitative measurement is not available in relation to connectivity noting the varying nature of existing road environments and therefore a qualitative assessment has been used to inform the scoring for this criterion. The following guidance is provided in relation to the scores given for each design option: ▪ Maude Hill Road (2, 2A, 3A and 5): Maude Hill Road is well located to connect with the new road, although it is noted that the road is presently of gravel construction and does not provide direct connection to Baffle Creek. ▪ Wreck Rock Road (4): Wreck Rock Road provides a gravel access track which may not be suited to connection with the ultimate road, although does provide a more direct route to Baffle Creek.	7	7	7	5	7
Serviceability	5%	A binary scoring system has been used for this criterion noting its simplicity: ▪ 10: The design option meets Council's objective for the project. ▪ 0: The design option does not meet Council's objective for the project.	10	10	10	10	10

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Travel Time (Interim)	5%	The score applied to each design option is based on the estimated travel time using the design option between Agnes Water and Baffle Creek. The following assumptions have been applied for this assessment: ▪ "Agnes Water" is defined as the intersection of Round Hill Road, Springs Road and Captain Cook Drive. ▪ "Baffle Creek" is defined as the intersection of Coast Road and Fernfield Road. ▪ Travel time on the existing road network is based on data obtained from Google Maps without traffic or any potential external road upgrades. ▪ Travel time on the design options is based on an average speed of 70km/h for Design Options 2, 2A and 3A, 40km/h for Design Option 4 and 50km/h for Design Option 5. The following scoring ranges have been used. These are based on the limits of the data set: ▪ 1: 55-57 minutes ▪ 2: 53-55 minutes ▪ 3: 51-53 minutes ▪ 4: 49-51 minutes ▪ 5: 47-49 minutes ▪ 6: 45-47 minutes ▪ 7: 43-45 minutes ▪ 8: 41-43 minutes ▪ 9: 39-41 minutes ▪ 10: 37-39 minutes	6 (45 minutes)	6 (45 minutes)	6 (45 minutes)	6 (46 minutes)	2 (54 minutes)

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Travel Time (Ultimate)	5%	The score applied to each design option is based on the estimated travel time using the design option between Agnes Water and Baffle Creek. The following assumptions have been applied for this assessment: ▪ "Agnes Water" is defined as the intersection of Round Hill Road, Springs Road and Captain Cook Drive. ▪ "Baffle Creek" is defined as the intersection of Coast Road and Fernfield Road. ▪ Travel time on the existing road network is based on data obtained from Google Maps without traffic or any potential external road upgrades. ▪ Travel time on the design options is based on an average speed of 70km/h for Design Options 2, 2A, 3A and 4 and 60km/h for Design Option 5. The following scoring ranges have been used. These are based on the limits of the data set: ▪ 1: 55-57 minutes ▪ 2: 53-55 minutes ▪ 3: 51-53 minutes ▪ 4: 49-51 minutes ▪ 5: 47-49 minutes ▪ 6: 45-47 minutes ▪ 7: 43-45 minutes ▪ 8: 41-43 minutes ▪ 9: 39-41 minutes ▪ 10: 37-39 minutes	6 (45 minutes)	6 (45 minutes)	6 (45 minutes)	9 (39 minutes)	4 (50 minutes)

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Potential Flood Impact	5%	The flood mapping used by the Department of State Development, Manufacturing, Infrastructure and Planning (Flood Hazard Area – Level 1 – Queensland Floodplain Assessment Overlay) has been used to inform the assessment of the design options for this criterion. A detailed hydraulic assessment will need to be undertaken in relation to the project in order to confirm the potential flood impacts. The following guidance is provided in relation to the scoring of each of the design options: ▪ 2: This option is located within a number of areas that are subject to flooding. ▪ 2A: This option is located within a number of areas that are subject to flooding. ▪ 3A: This option is located within a number of areas that are subject to flooding. ▪ 4: This option is largely outside floodable areas. ▪ 5: This option is largely outside floodable areas.	4	4	4	8	8

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Additional Works	4%	The requirement for additional works is based on a variety of factors and is therefore unable to be quantified as part of this assessment. A qualitative assessment has been undertaken and the following guidance is provided in relation to the scoring of each of the design options: ▪ 2: This option will likely require the upgrading of Jobson Road to accommodate future traffic volumes in a safe manner. This option also may necessitate the sealing / upgrading of Maude Hill Road and Matchbox Road for the ultimate design. ▪ 2A: This option may necessitate the sealing / upgrading of Maude Hill Road and Matchbox Road for the ultimate design. This option also may necessitate the sealing / upgrading of Maude Hill Road and Matchbox Road for the ultimate design. ▪ 3A: This option will likely require the upgrading of Rocky Crossing Road. This option also may necessitate the sealing / upgrading of Maude Hill Road and Matchbox Road for the ultimate design. ▪ 4: This option will require the upgrading of Wreck Rock Road and Deepwater Road and potentially also the Deepwater Causeway. ▪ 5: It is anticipated that this option will require the upgrading of the intersection of Uxbridge Road, Round Hill Road and Eurimbula Road. This option also may necessitate the sealing / upgrading of Maude Hill Road and Matchbox Road for the ultimate design.	5	7	4	3	2

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Social Impacts	8%	Social impacts associated with each of the design options are unable to be quantified and therefore a qualitative assessment has been undertaken to inform the scoring of each of the design options. ▪ 2: This option's connection to Jobson Road may reduce the amenity of local residents, noting its current function as a local access. Some amenity impacts may also occur on Maude Hill Road in the south of the option. ▪ 2A: This option's connection to Anderson Way will introduce additional traffic to the local area with potential amenity impacts, although it is acknowledged that Anderson Way currently provides a collector function. Some amenity impacts may also occur on Maude Hill Road in the south of the option. ▪ 3A: This option's connection to Rocky Crossing Road may cause amenity impacts to local residents. Some amenity impacts may also occur on Maude Hill Road in the south of the option. ▪ 4: This option has the potential, particularly as part of the interim design, to result in the loss of existing recreational opportunities associated with the existing 4WD trail through Deepwater National Park. ▪ 5: Some amenity impacts may occur on Maude Hill Road in the south of the option.	5	7	7	3	8

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Safety	12%	Scoring for the safety criterion is based on the compliance of the design options with Council's desired standard for the road (refer to Table 3-1 of the design report). The following guidance is provided in relation to the scoring of the design options: ▪ 2: In order to connect to Jobson Road, a section of road which does not meet the desired standard is required. The connection to Maude Hill Road also includes a curve radius which is less than the desired standard (although is compliant with other common standards for this type of road). ▪ 2A: The connection to Maude Hill Road includes a curve radius which is less than the desired standard (although is compliant with other common standards for this type of road). ▪ 3A: The connection to Maude Hill Road includes a curve radius which is less than the desired standard (although is compliant with other common standards for this type of road). ▪ 4: The interim design for this option is wholly non-compliant with relevant standards and has the potential to create significant safety issues. ▪ 5: The constraints of the road reserve associated with this option mean it includes several areas of non-compliance with the desired standard	6	8	8	3	4

Criteria	Weighting	Methodology Explanation	Design Options[1]				
			2	2A	3A	4	5
Existing Utilities Interface	3%	Scoring is based on the proximity of the design options to existing utilities infrastructure such as Ergon Energy assets and Council's sewerage treatment plant. The following guidance is provided in relation to the scoring of the design options: ▪ 2: This option runs parallel to existing Ergon Energy assets in the south. The interface with these assets is subject to further investigations. This option also increases the proximity of public vehicles to Council's sewerage treatment plant. ▪ 2A: This option runs parallel to existing Ergon Energy assets in the south. The interface with these assets is subject to further investigations. ▪ 3A: This option runs parallel to existing Ergon Energy assets in the south. The interface with these assets is subject to further investigations. ▪ 4: There is limited interface between this option and existing utilities. ▪ 5: This option is proximate to Ergon Energy assets near the southern connection point. The interface with these assets is subject to further investigations.	4	6	6	9	8

Notes:

1. Numbers in brackets are the quantitative data used to inform the scoring of each design option, where available. Some criteria are unable to be linked to a quantitative measure and this is explained in the methodology for these criteria.