



Carmichael Coal Mine and Rail Project Supplementary Environmental Impact Statement

Volume 4, Appendix C4c – Industrial Precinct Approval Application

Containing

- Planning Assessment Report
- Appendix A: Supporting Plans and Drawing
- Appendix B: Draft Community Management Statement
- Appendix C: Code Assessment
- Appendix D: Vegetation Removal Plan
- Appendix E: OPW Bulk Earthworks
- Appendix F: MCU Concrete Batching
- Appendix G: ERA Chemical Storage
- Appendix H: ERA Sewage Treatment
- Appendix I: Preliminary Services Report
- Appendix J: Stormwater Management
- Appendix K: Statutory Forms
 - IDAS Form 1: Application Details
 - IDAS Form 5: MCU assessable against a planning scheme
 - IDAS Form 6: Building or Ops Works assessable against a planning scheme
 - IDAS Form 7: Reconfiguring a lot
 - IDAS Form 8: Environmentally Relevant Activity
 - IDAS Form 11: Clearing Native Vegetation
 - Schedule 3 Assessable Development Checklist 1- Various aspects of development
 - Schedule 3 Assessable Development Checklist 2- MCU
 - Schedule 3 Assessable Development Checklist 3- Reconfiguring a lot
 - Schedule 3 Assessable Development Checklist 4- Ops Works
- Appendix L: SARA Code

Planning Assessment Report: Industry

17th July 2013



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Contents

CONTENTS.....	3
LIST OF FIGURES.....	6
LIST OF TABLES	7
1.0 EXECUTIVE SUMMARY.....	8
2.0 SITE AND APPLICATION SUMMARY.....	9
3.0 SITE INFORMATION	11
3.1 SITE LOCATION	11
3.2 SITE CHARACTERISTICS.....	13
3.3 SITE PHOTOS	14
4.0 THE PROPOSAL	16
4.1 OVERVIEW	16
4.1.1 ROL – Community Title Subdivision.....	16
4.1.2 MCU Concrete Batching Plant.....	17
4.1.3 MCU Chemical Storage.....	18
4.1.4 ERA On-Site Effluent Disposal.....	19
4.1.5 OPW Vegetation Clearing	19
4.1.6 OPW Bulk Earthworks.....	20
4.2 SUMMARY OF SUPPORTING SPECIALIST REPORTS / DOCUMENTATION	21
5.0 STATE GOVERNMENT PLANNING ASSESSMENT	22
5.1 STATE DEVELOPMENT AND PUBLIC WORKS ACT 1971	23
5.2 SUSTAINABLE PLANNING ACT 2009.....	23
5.3 ENVIRONMENTAL PROTECTION ACT 1994.....	24
5.4 VEGETATION MANAGEMENT ACT 1999	25
5.5 PUBLIC ADVERTISING	25
5.6 STATE PLANNING POLICIES.....	26
5.7 STATE PLANNING REGULATORY PROVISIONS.....	30
5.8 STATE REFERRAL TRIGGERS	30
5.8.1 Other Development Referral Triggers	31
5.8.2 Assessable Development under Planning Scheme Referral Triggers	34
5.9 CONSOLIDATED LIST OF STATE REFERRALS	36
6.0 REGIONAL PLANNING ASSESSMENT	37
6.1 MACKAY, ISAAC AND WHITSUNDAY REGIONAL PLAN.....	37

6.1.1	<i>Regional Framework</i>	38
6.1.2	<i>Regional Narratives</i>	39
6.1.3	<i>Desired Regional Outcomes</i>	39
6.1.4	<i>Implementation</i>	40
7.0	LOCAL GOVERNMENT PLANNING ASSESSMENT	42
7.1	DEFINITION OF DEVELOPMENT	42
7.2	ZONING.....	44
7.3	LEVEL OF ASSESSMENT	45
7.4	DESIRED ENVIRONMENTAL OUTCOMES.....	45
7.4.1	<i>The Natural Environment and Cultural Heritage</i>	45
7.4.2	<i>Economic Development</i>	46
7.4.3	<i>Community Wellbeing</i>	48
7.4.4	<i>DEO Summary</i>	50
7.5	PLANNING SCHEME OVERLAYS	51
7.5.1	<i>Land Characteristics Map – Features Map</i>	51
7.5.2	<i>Land Characteristics Map – Good Quality Agricultural Land</i>	51
7.6	ZONE CODE INTENT	53
7.7	APPLICABLE ASSESSMENT PROVISIONS.....	56
7.7.1	<i>Rural Zone Code</i>	56
7.7.2	<i>Subdivision Code</i>	60
7.8	SUMMARY OF CODE ASSESSMENT	62
8.0	KEY SITE BASED CONSIDERATIONS.....	63
8.1	APPLICATION CONTEXT.....	63
8.2	SITE SUITABILITY	64
8.3	STAGING AND DELIVERY STRATEGY	64
8.4	TITLING STRATEGY	65
8.5	VEGETATION CLEARING	66
8.6	PREPARATORY EARTHWORKS.....	66
8.7	CONCRETE BATCHING	67
8.8	ENVIRONMENTALLY RELEVANT ACTIVITIES.....	67
8.9	SITE SERVICING	67
8.10	STORMWATER	68
9.0	CONCLUSION	69
	APPENDIX A: PLANS AND DRAWING	70
	APPENDIX B: DRAFT CMS.....	71

APPENDIX C: CODE ASSESSMENT 72

APPENDIX D: OPW VEGETATION CLEARING 73

APPENDIX E: OPW BULK EARTHWORKS 74

APPENDIX F: MCU CONCRETE BATCHING 75

APPENDIX G: ERA CHEMICAL STORAGE 76

APPENDIX H: ERA SEWAGE TREATMENT 77

APPENDIX I: PRELIMINARY SERVICING 78

APPENDIX J: STORMWATER MANAGEMENT 79

APPENDIX K: STATUTORY FORMS 80

APPENDIX L: SARA CODE 81

List of Figures

Figure 1: Aerial imagery, Source: Adani Mining Pty Ltd	11
Figure 2: Site Context, Source: GDP, 2013	12
Figure 3: Arial View 1 of approximate Industrial Area Location, Source: GDP, 2012.....	14
Figure 4: Aerial View 2 of approximate of Industrial Area Location, Source: GDP, 2012.....	14
Figure 5: Ground View of approximate Industrial Area Location, Source: GDP, 2012	15
Figure 6: Hierarchy of Assessment - State, Source: GDP, 2013	22
Figure 7: Hierarchy of assessment – Region, Source: GDP, 2013.....	37
Figure 8: MIWRP Mapping, Source: Information Atlas 2013	41
Figure 9: Hierarchy of assessment – Local, Source: GDP, 2013	42
Figure 10: Planning Scheme Zone, Source: IRC Website.....	44
Figure 11: Planning Scheme MCU Table of Assessment, Source: IRC Website	45
Figure 12: Planning Scheme ROL Table of Assessment, Source: IRC Website	45
Figure 13: Land Characteristics Map - Key Features. Source: IRC Website.....	51
Figure 14: Land Characteristics Map - Good Quality Agricultural Land. Source: IRC Website..	52
Figure 15: Hierarchy of assessment – Key Site Based Considerations, Source: GDP, 2013	63

List of Tables

Table 1: Site Characteristics	9
Table 2: Application Characteristics.....	9
Table 3: Framework of Assessment.....	10
Table 4: Proposal Summary.....	10
Table 5: Site Characteristics	13
Table 6: Relevant reporting	21
Table 7: Relevant SPPs	26
Table 8: Relevant SPRPs.....	30
Table 9: Other Development Referral Triggers.....	31
Table 10: Assessable Development under a Planning Scheme Referral Triggers.....	34
Table 11: Rural Zone Code Relevant Considerations	56
Table 12: Subdivision Code Relevant Considerations.....	60

1.0 Executive Summary

Gassman Development Perspectives have been commissioned to complete and compile the necessary application material for inclusion within the Supplementary Environmental Impact Statement ('SEIS') for the Carmichael Coal Mine and Rail Project (the 'Project') for a number of off-site infrastructure items. The SEIS submission that is being prepared is to expand upon the original Environmental Impact Statement ('EIS') previously submitted for the Project. The aim of this approach is to minimise overall assessment timeframes following determination of the EIS.

This application material relates to a development permit for a reconfiguration of a lot, material change of use, environmentally relevant activities and operational works aspects to support the establishment of an industrial area. The location planned for the industrial area is located within the Moray Downs property, which is formally known as Lot 662 on PH1491. This form of development on the subject site has been defined as 'Impact Assessable Development' by the Isaac Regional Council Planning Scheme (the Planning Scheme for Belyando) and this application material has been prepared to reflect this impact assessable nature.

The proposal has been designed such that it comprises three (3) separate stages to ensure that unnecessary site preparatory and establishment works are not undertaken to meet the immediate requirements of the industrial area. In this regard, a more detailed and targeted design approach has been undertaken in relation to stage 1 such that it can be developed appropriately and independently of any subsequent future stages.

This report demonstrates how the proposal is considered generally consistent with the planning context for the State, region and the local area and ensures that no unreasonable environmental or cultural features are adversely impacted upon as result. Accordingly, the proposed development is considered a suitable and appropriate form of development ideally located within close proximity to the mine workers accommodation village ('MWAV') and planned mine whilst still being off-set to minimise potential adverse amenity impacts.

This application also forms part of a broader planning and approvals strategy in the sense that an overarching s242 Preliminary Approval application has also been prepared and is to be included within the SEIS submission. This s242 Preliminary Approval application has been drafted such that it authorises the current intent for the industrial area whilst also enabling sufficient flexibility and growth of the precinct over time. This intent is generally achieved through the inclusion of lower levels of assessment and specific design and siting controls to manage the ongoing development and operation of the industrial precinct.

2.0 Site and Application Summary

Table 1: Site Characteristics

Site Details	
Site Address:	5509 Elgin Road, Clermont QLD 4721
Real Property Description:	Part Lot 662 on PH1491
Real Property Area:	117,000 ha
Subject Site Area	978.1 ha
Local Authority:	Isaac Regional Council

Table 2: Application Characteristics

Application Details	
Approval Type	Development Permits for: Reconfiguration of a Lot: Community Title Subdivision Material Change of Use: - Industrial Activities – Concrete Batching Plant; - Industrial Activities – Chemical Storage; - ERA 8 - Chemical Storage; - ERA 63 - Sewage Treatment Operational Works: - Vegetation Clearing; and
Level of Assessment	Impact Assessable
Application Form(s)	IDAS Forms 1, 5, 6, 7, 8 & 11
Public Notification	To be advertised in conjunction with SEIS/EIS notification. No additional IDAS public notification is required
Applicant:	Adani Mining Pty Ltd c/o Gassman Development Perspectives GPO Box 999 Brisbane. Q. 4001
Contact Person(s):	Gary Savins
Application Reference:	5370

Table 3: Framework of Assessment

Planning Details	
Regional Plan:	Mackay, Isaac and Whitsunday Regional Plan 2012 2031
Regional Plan Land Use Designation:	Regional Landscape and Rural Production Area
Planning Scheme:	Belyando Planning Scheme 2008
Planning Scheme Zone:	Rural Zone
Assessment Level:	Impact Assessable

Table 4: Proposal Summary

Proposal Details	
Purpose / Description of Proposal:	The proposed development is to provide the appropriate land use permits to establish industrial facilities to service the planned mine and mine workers accommodation village.
Development Stages Proposed	The proposed development has been designed such that it can be constructed in a maximum of three (3) stages.
Assessment Process	The relevant reporting relating to this proposal will be incorporated within the SEIS which will be lodged with the Coordinator General as part of the broader consideration of the Project. Subject to the determination of the EIS, an accelerated form of SPA IDAS assessment is available.

3.0 Site Information

3.1 Site Location

The location identified for the entire industrial area has an area of approximately 978.1 ha, with Stage 1 representing approximately 184.9 ha. The area is located approximately 77km west of the Gregory Developmental Road and the existing Moray Carmichael currently intersects with the subject site in the south western corner. Access to the industrial area will be provided by the Moray Carmichael Road.

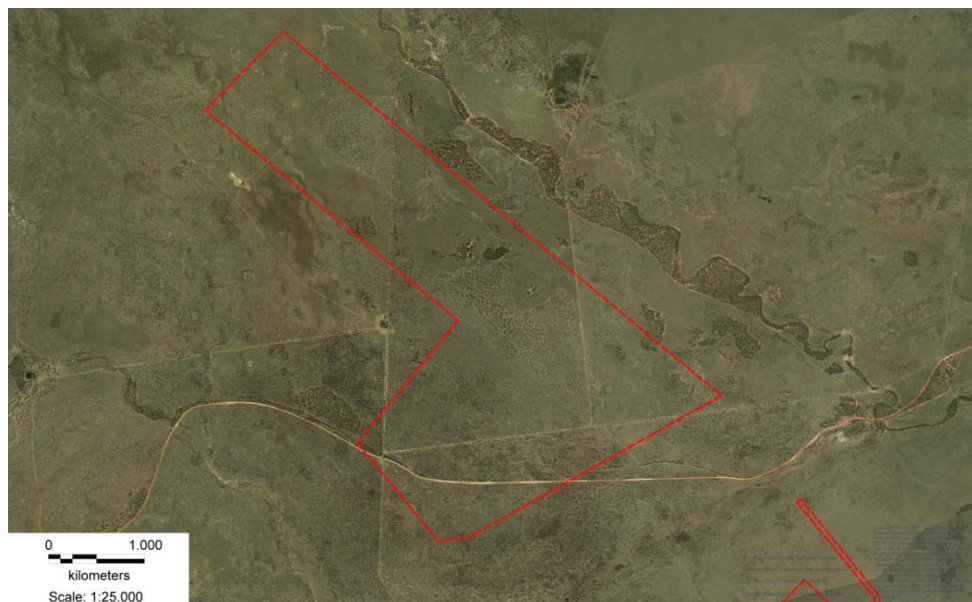


Figure 1: Aerial imagery, Source: Adani Mining Pty Ltd

The site is located approximately (all distances and times generated from Google):

- 77 km from the Gregory Developmental Road;
- 214 km (5 hrs 19 mins) to Clermont;
- 317 km (6 hrs 22 mins) to Emerald; and
- 335 km (6 hrs 39 mins) to Charters Towers; and
- 916 km (12 hrs) to Cairns (international airport)

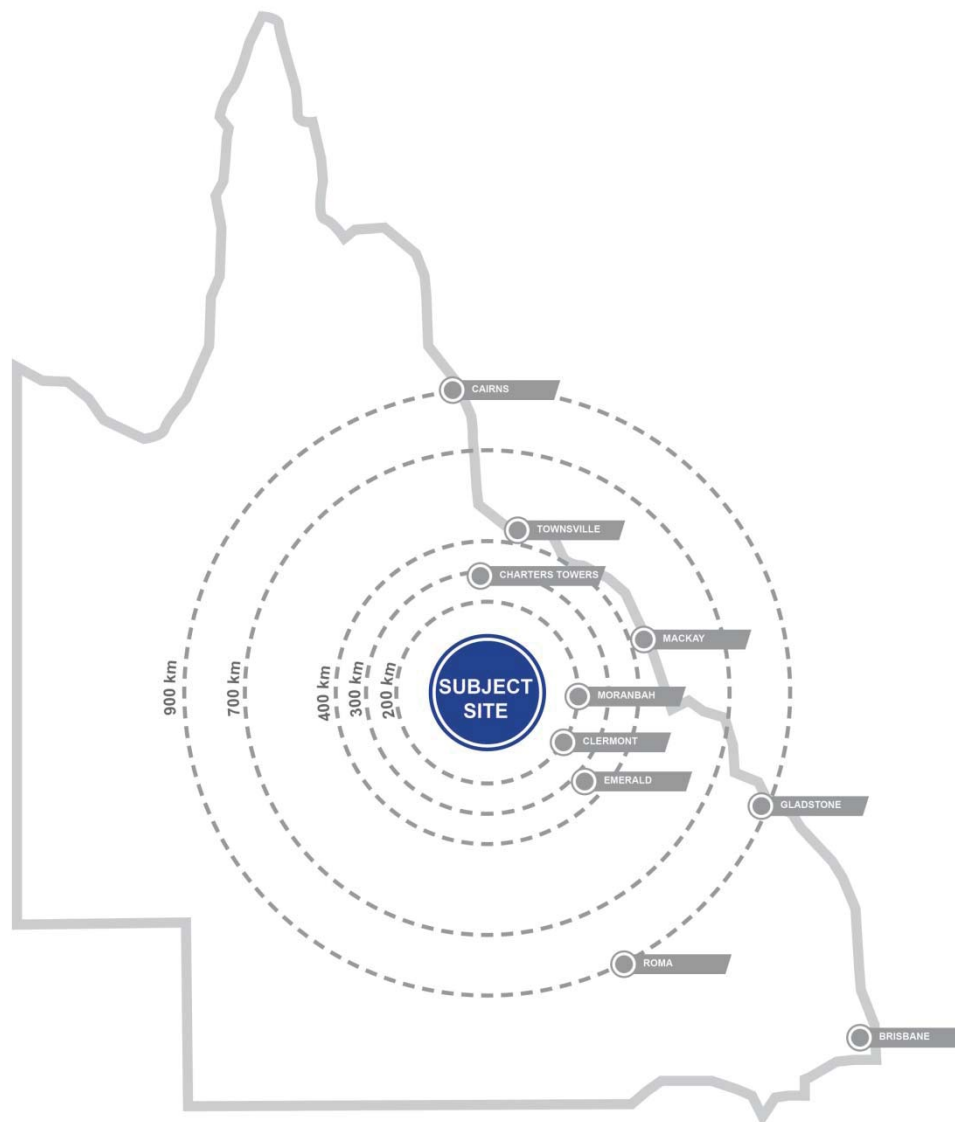


Figure 2: Site Context, Source: GDP, 2013

3.2 Site Characteristics

Table 5: Site Characteristics

Site Characteristic	Description
Land Use	The site is currently vacant reflective of its traditional use associated with agriculture.
Frontage & Access	The subject site will be accessed directly from the Moray Carmichael Road which will access the precinct from the west.
Topography & Views	The majority of the location site is relatively flat, with levels ranging from between RL 216 m AHD and 221 m AHD.
Existing Vegetation	The location is predominately void of significant vegetation; however there are some sporadic patches of existing vegetation around the fringes of the site.
Contaminated Land	The location is not known to be contaminated.
Wetlands	The location is not in close proximity to an identified wetland.
Heritage Areas	The location has not been identified as containing any significant heritage assets or is adjacent to any identified heritage areas.
Conservation Areas	The location has not been identified as subject to any known conservation status.

3.3 Site Photos



Figure 3: Arial View 1 of approximate Industrial Area Location, Source: GDP, 2012



Figure 4: Aerial View 2 of approximate of Industrial Area Location, Source: GDP, 2012



Figure 5: Ground View of approximate Industrial Area Location, Source: GDP, 2012

4.0 The Proposal

This application material has been prepared and relates to a development approval for the following aspects:

- Reconfiguration of a Lot: (Community Title Subdivision);
- Material Change of Use: Industrial Activities – Concrete Batching Plant, Industrial Activities – Chemical Storage, Environmentally Relevant Activity 8 Chemical Storage and Environmentally Relevant Activity 63 Sewage Treatment; and
- Operational Works: Vegetation Clearing and Bulk Earthworks.

4.1 Overview

The application relates to the establishment and operation of an Industrial Precinct that is to provide appropriate facilities and services to assist in servicing the planned mine and nearby workers accommodation village. The Precinct has been designed such that it comprises three (3) separate stages to ensure that unnecessary site preparatory and establishment works are not undertaken to meet the immediate requirements of the industrial area. In this regard, a more detailed and targeted design approach has been undertaken to stage 1 such that it can be developed appropriately and independently of any subsequent future stages.

There are six (6) application components based on three (3) aspects of development included within this application material, each application component has been prepared to support the delivery and operation of Stage 1 of the industrial precinct. Specifically, a number of core preliminary functions required to be established within the Precinct have been identified and included within this application material such that they could be 'brought forward' as part of the initial delivery of the first stage. Details on each of these aspects are outlined in the following sections:

4.1.1 ROL – Community Title Subdivision

Whilst the ROL has been designed to potentially incorporate three (3) distinct stages, stage one of this strategy includes a detailed preliminary lot layout with a range of lot sizes and dimensions to provide flexibility and accommodate a range of development types. Outside of this first stage is one large super lot to accommodate the remaining stages.

The design philosophy and key aspects of the planned ROL layout for the first stage can be characterised as follows:

- Fifteen lots ranging in size from 1.5 ha to 30 ha, including appropriately located and dimensioned allotments adjoining future rail corridor land;
- One (1) large super lot to cover the remaining potential future stages of some 100 hectares;
- Utilisation of existing Moray Carmichael Road connection point and road reserve where possible;
- Delivery of the majority of smaller allotments to the southern side of Moray Carmichael Road and as close as possible to its connection point to the Industrial Precinct to facilitate efficiency and speed of lot delivery;
- Provision of large allotments to the north of Moray Carmichael Road such that large low impact demand uses such as machinery lay down can occur more readily;
- Establishment of core connections links into remaining stages of the Industrial Precinct; and
- Acknowledgement of likely future electricity transmission line easement required to be accommodated through the entire Precinct.

A draft Community Management Statement (CMS) has also been prepared to accompany the community title subdivision proposed. Whilst this material is generally not required to be provided at this early stage of the assessment process, it is considered beneficial as it could enable a greater understanding and acknowledgement of the type and purpose of ROL application proposed.

It is also noted that the current design will likely require some form of closure of parts of Moray Carmichael Road. Where possible, the existing road reserve has been maintained and utilised to minimise the extent of any such closure. Notwithstanding, any considerations and application processes in this regard fall outside the scope of this current application.

4.1 2 MCU Concrete Batching Plant

A concrete batching plant has been identified as an essential component of the initial infrastructure to be provided within the industrial area and has been included within the application material. The proposed facility will enable concrete to be formed on site, to be used in the construction and maintenance of off site infrastructure.

The design philosophy and key aspects of the concrete batching plant can be characterised as follows:

- Two access points providing a distinction between material access and general access;
- Eleven car parking bays to service staff and visitors;
- Storage area to hold and manoeuvre materials prior to production;
- Two (2) cement silos of approximately eight (8) metres in height and a diameter of four (4) metres;
- Batch conveyor, water weigh hopper and concrete mixer;
- Wash out areas;
- Water storage areas;
- Amenities and administration buildings; and
- General parking for operation associated vehicles.

It is envisaged as part of this current design that a production output capacity of approximately 100,000m³ of concrete per annum.

4.1 3 MCU Chemical Storage

The storage of chemicals (diesel) on site was also deemed to be essential to the initial stages of development, in order to ensure that sufficient fuel supplies are maintained and readily available. In this respect, a chemical storage operation has been included within the application material with this material including both the relevant MCU and ERA components.

The design philosophy and key aspects of the chemical storage use can be characterised as follows:

- Dual access points to enable ease of manoeuvring and accessibility;
- Two (2) attached 'igloo style' drive through workshops with base level containers to be utilised for administration offices and storages;
- Large open areas for vehicle manoeuvring;
- Outdoor pad for fuel storage utilising tanks;
- Adjoining larger outdoor pad for storage of any associated materials; and
- Five (5) car parking bays in order to service any staff and visitors.

It is envisaged as part of this current design that approximately 200,000 litres of diesel fuel storage will be able to be accommodated.

4.1.4 ERA On-Site Effluent Disposal

The proposed sewer strategy for the industrial area will involve collection of waste effluent from Stage 1 Lots via low pressure sewer reticulation and conveyance to a package sewage treatment plant on site. The location of the sewage treatment plant is to be within the western corner of the Precinct, within proposed Lot 1. As on-site effluent disposal is proposed, an ERA component for such an activity has been included within the application material.

Due to site characteristics, it is proposed that a low pressure sewage system will be implemented to convey the effluent to the package treatment system. This will eliminate the need to construct deep sewer systems to convey the effluent as is the case with gravity systems and only requires shallow trenching. This approach therefore results in minimal earthworks fill quantities and has a positive effect on the overall bulk earthworks strategy. Current modelling indicates that the size of the system will be required to handle a demand of 2,180 EP's (Equivalent Person).

4.1.5 OPW Vegetation Clearing

The required vegetation clearing to facilitate the siting and construction of the entire Industrial Precinct has also been included within this application material. This material relates to the Vegetation Clearing Component of the proposed OPW Permits. The basis for this clearance has drawn from the extensive analysis prepared as part of the SEIS submission in relation to the identification and discussion of existing regional ecosystems present in the study area. Whilst a more targeted approach within this application material has been geared towards the first stage of the Industrial Precinct, as sufficient reporting was available and also to ensure a thorough assessment of vegetation clearing requirements were undertaken. Notwithstanding this, reporting and assessment of the entire Industrial Precinct has been undertaken.

In terms of the chosen location for the industrial area, current mapped vegetation within this area includes that of least concern regional ecosystems. As part of the broader SEIS submission (as outlined above), detailed re-categorisation and revised mapping has been undertaken that addresses, amongst other elements, clearing associated with the proposed industrial area. This revised mapping has been submitted in the form of a Property Map of Assessable Vegetation and in the case of the industrial area, it confirmed the location of a number of areas of least concern vegetation along the north-eastern boundary which will need to be cleared as part of the third stage of the development.

This vegetation clearing application also includes the applicable information that should facilitate appropriate permits for clearing under the Vegetation Management Act (VMA) to be granted as well as that under the SPA.

4.1.6 OPW Bulk Earthworks

The design of preparatory earthworks to support Stage 1 of the industrial area has also been undertaken and included within this application material. This material relates to the Bulk Earthworks Component of the proposed OPW Permits. As the Stage 1 area is located on a generally flat area of land with a minor slope falling towards the south-east of the site at grades of approximately 0.06%, it is to be constructed in fill. In order to incorporate the proposed stormwater catchment strategy, the earthworks will be split up such that a portion of the site falls towards the south-west and the remaining towards the south-east.

Due to the requirement for the Industrial Area Stage 1 to service the proposed rail siding within Lot 14, the above 100 year flood-immune level has been adopted in the proposed bulk earthworks strategy and grading layout at this location. Therefore, as a result of this and in order to accommodate the existing site topography and stormwater strategy, the entire site earthworks formation level within Stage 1 will sit above the 100 year Average Recurrence Interval (ARI) flood immunity level.

4.2 Summary of Supporting Specialist Reports / Documentation

In support of this development application, the following specialist reports have been commissioned and accompany this planning assessment report:

Table 6: Relevant reporting

Category	Consultant	Title of Documents	Location
Plans and Drawings	Gassman Development Perspectives	Site Analysis Plan Proposal Plan	Appendix A
Draft CMS	Clark Kann Lawyers	First/New Community Management Statement	Appendix B
Code Assessment	Gassman Development Perspectives	Code Assessment	Appendix C
OPW Vegetation Clearing	Gassman Development Perspectives	Vegetation Management Plan	Appendix D
OPW Bulk Earthworks	Hyder Consulting	Bulk Earthworks Drawings	Appendix E
MCU Concrete Batching Plant	Gassman Development Perspectives	Site Based Management Plan for Concrete Batching Plant	Appendix F
ERA Chemical Storage	Gassman Development Perspectives	Site Based Management Plan for Chemical Storage	Appendix G
ERA Sewage Treatment	Gassman Development Perspectives	Site Based Management Plan for Sewage Treatment	Appendix H
Preliminary Servicing	Hyder Consulting	Preliminary Servicing Reporting	Appendix I
Stormwater Management	Hyder Consulting	Site Based Stormwater Management Plan	Appendix J
Statutory Forms	Gassman Development Perspectives	Statutory Application Forms	Appendix K
SARA Code	Gassman Development Perspectives	SARA Code Responses	Appendix L

5.0 State Government Planning

Assessment

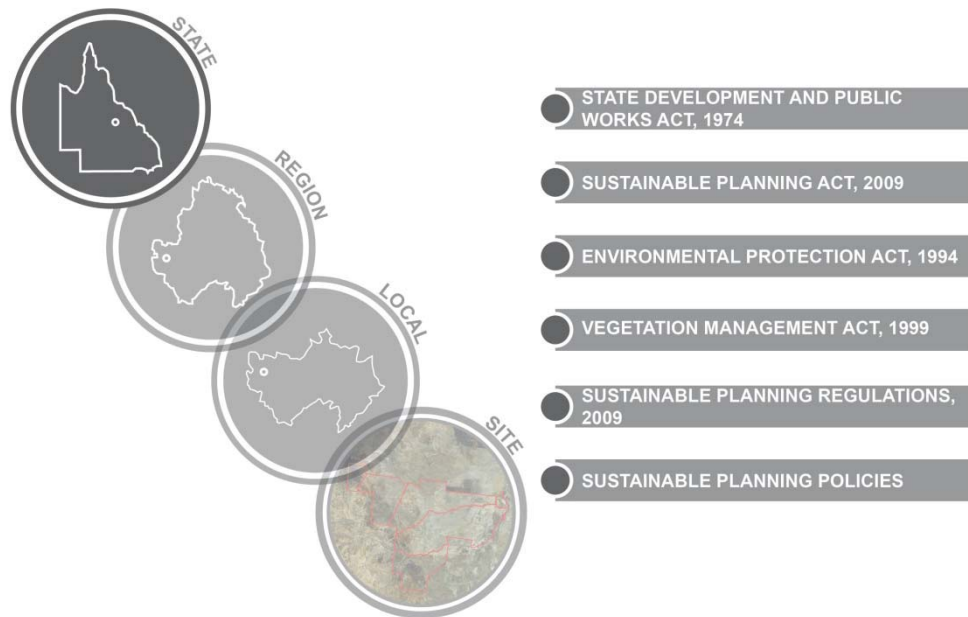


Figure 6: Hierarchy of Assessment - State, Source: GDP, 2013

State planning policy sits effectively at the top of the assessment hierarchy in relation to development proposals in Queensland, providing broad over arching policy that informs each of the subsequent lower levels of assessment. The following sections of this report provide discussion and comment on how the proposed development aligns with relevant state planning policies and provisions.

The proposed development requires development permits for:

- Reconfiguration of a Lot: Community Title Subdivision;
- Material Change of Use Permit: Concrete Batching Plant, ERA – Chemical Storage and ERA – Sewage Treatment; and
- Operational Works: Vegetation Clearing and Bulk Earthworks.

As this application material is to form part of the broader SEIS submission for the project, discussion in relation to both the State Development and Public Works Act 1971 (SDPWOA), the Sustainable Planning Act 2009 (SPA), the Environmental Protection Act 1994 (EPA) and the

Vegetation Management Act 1999 (VMA) are required. In essence the content and form of the application material is guided by the SPA, EPA and VMA requirements, with the SDPWOA enabling early consideration of the applications. This early consideration then flows onto an accelerated SPA assessment process once a SPA development application is lodged with the assessing authority (post EIS determination under the SDPWOA).

5.1 State Development and Public Works Act 1971

The broader mine and rail project (the Project) has been declared a 'significant project' under the SDPWOA and is currently undergoing the EIS assessment process by the Coordinator General. As this process is currently underway, alternative SPA assessment processes are applied in relation to development requiring a SPA development permit.

Part 4 Section 37 of the SDPWOA specifically deals with these forms of development where the application material is provided to the Coordinator General as part of the EIS/SEIS material. Importantly, accelerated forms of SPA processing and assessing stages are available due to the removal of the Information and Referral Stage, the Notification Stage and referral to any SPA referral agencies.

This application material has been prepared and submitted as part of the SEIS material in compliance with this ability for accelerated SPA assessment processes to be obtained.

5.2 Sustainable Planning Act 2009

SPA provides guidance in relation to the types of approvals required and the applicable assessment considerations. Specifically, a Material Change of Use (MCU) is defined as a number of different aspects, including that of:

- the start of a new use of the premises;

Reconfiguring a Lot means

- creating lots by subdividing another lot; or
- amalgamating two or more lots

Operational Work (OPW) includes a number of various activities, including those in relation to:

- excavating or filling that materially affects premises or their use; and
- clearing vegetation, including vegetation to which the Vegetation Management Act applies.

The chemical storage and concrete batching uses comply with this MCU aspect definition. The vegetation clearing and bulk earthworks proposed comply with the OPW aspect definition.

Part 5 Division 2 Section 314 of the SPA specifies those matters that must be addressed by the assessment manager as part of any **Impact Assessable** development application. Reference items raised within this section are summarised as follows:

- Relevant State Planning Regulatory Provisions;
- Relevant Regional Plans;
- Applicable codes under IDAS or the *SPA 2009*;
- Relevant State Planning Policies;
- Any codes within relevant structure plans, master plans, temporary local planning instruments, preliminary approvals or planning schemes;
- Any development approval for, or lawful use of, premises the subject of the application or adjacent premises; and
- Any referral agency's response.

5.3 Environmental Protection Act 1994

The EPA outlines a number of operations that require an MCU permit as defined by the SPA. These operations are referred to as an Environmentally Relevant Activity (ERA) and include:

- an activity prescribed under section 19 as an environmentally relevant activity.

Part 3 Subdivision 4 Section 19 activities include those in relation to on-site effluent disposal and chemical storage. The on-site effluent disposal and chemical storage proposed within the Industry Precinct complies with this MCU-ERA aspect definition.

Part 2 Division 3 Section 125 of the EPA specifies those matters that must be addressed as part of an Environmentally Relevant Activity application. These include that of accurate descriptions of site activities and details of site management plans and likely impacts.

5.4 Vegetation Management Act 1999

The VMA regulates the clearing of native vegetation within Queensland and provides guidance as to what clearing can occur and the manner in which it can be undertaken. It regulates primarily mapped remnant vegetation and high value regrowth vegetation. Any clearing under the VMA linked with a development application is generally undertaken in accordance with the SPA application and processes and the granting of relevant development permits.

Whilst there are some exemptions from requiring the appropriate permits to be obtained, all other clearing can only be performed under relevant permits. Any such applications are assessed against the regional vegetation management codes for the relevant bioregion in Queensland. These codes include performance requirements for each application type and relevant purpose for the clearing. For any permit issued, the performance requirements for the purpose applied for must be achieved.

5.5 Public Advertising

This application for industrial activities and supporting ERA and OPW aspects, if currently lodged with Isaac Regional Council under the requirements of the Belyando Planning Scheme, would be Impact Assessable. Notwithstanding, as this application material forms part of the SEIS submission for the Project (which is to be publicly advertised), if an application is lodged post EIS determination, no additional public advertising measures are required.

5.6 State Planning Policies

The table below lists each State Planning Policy (SPP) with comments on their respective relevance to this application.

Table 7: Relevant SPPs

State Planning Policies	Relevance
SPP 1/92: Development and the Conservation of Agricultural Land	Applicable –the subject site has traditionally been associated with grazing related agricultural operations and as such, any departure from this historical use requires careful consideration. On a project wide (macro scale), the land to be utilised for the mine and off-site infrastructure items is being considered as a whole and is to be dealt with on a project wide scale. This consideration includes aspects of varied land uses and applicable offsets/integration policies. It is also noted that as part of lease discussions with the State Government, similar considerations are also relevant. On a proposed use micro scale, the use of the identified location for an industrial use represents less than 1% of the existing land mass of the Moray Downs property. In this regard, it is not considered that the proposed industrial uses will compromise or degrade the remaining agricultural use of the site and surrounds.
SPP 1/02: Development in the Vicinity of Certain Airports and Aviation Facilities	Not Applicable – the proposal relates to the development of an industrial area and it is not within close proximity to any of the identified airports or aviation facilities. Notwithstanding, as the industrial area is within moderate proximity to the planned airport, appropriate design and siting measures are to be incorporated to ensure the operational safety of the airport is not compromised by the proposed use of the industrial area.
SPP 2/02: Planning and Managing Development Involving Acid Sulfate Soils	Not Applicable – the identified location of the industrial area is not highlighted as having the potential to contain acid sulfate soils.

SPP 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide	Applicable – Whilst the chosen location is not highlighted within a natural hazard management area, sufficient design measures have been incorporated into the industrial design such that sufficient flood immunity will be achieved. Importantly, due to the large range and type of allotments proposed to be created, sufficient capacity will be available on-site for any supplementary flood immunity measures to be incorporated above and beyond the strategy adopted as part of the bulk earthworks proposed as part of this application. Additionally, the chosen location for the industry is not considered to be at risk from landslide and appropriate measures can be incorporated / conditioned to ensure bushfire hazard measures are adopted.
SPP 1/07 Housing and Residential Development	Not Applicable – the applicant is not a local government.
SPP 2/07: Protection of Extractive Resources	Not Applicable – the subject site has not been identified as being subject to a Key Resource Area designation. Notwithstanding this point, the proposed development is directly related to a mining operation and therefore complements the intent of this policy provision.
SPP 2/10: South East Queensland Koala Conservation	Not Applicable – the subject lot has not been identified as being subject to koala conservation policies for south-east Queensland.
SPP 3/10: Acceleration of Compliance Assessment	Not Applicable – accelerated compliance assessment is not sought as part of this application.
SPP 4/10 Healthy Waters	Applicable – Development is to be constructed so that it complies with the provisions of this policy. Please refer to the Stormwater Management Plan submitted in support of this application for further detail in this regard. Detailed supporting engineering reporting has been prepared to support the proposed industrial uses. This reporting includes outlining the intended measures to be incorporated on-site to ensure that stormwater is appropriately conveyed, captured and treated on-site.

SPP 5/10 Air, Noise and Hazardous Materials	Not Applicable – the site is not located within a designated management area under the SPP and the proposal is not defined within the list of sensitive land uses.
SPP 4/11: Protecting Wetlands of High Ecological Significant in Great Barrier Reef Catchments	Not Applicable – the subject site is not identified as a wetland protection area as contained within the Great Barrier Reef Catchments.
SPP 1/12: Protection of Queensland's Strategic Cropping Land	Not Applicable – the subject site is not identified as being strategic cropping land or as potential strategic cropping land.
Temporary SPP 2/12 Planning for Prosperity	Applicable – this temporary Policy was introduced to assist in supporting economic growth within QLD and reducing red tape. It enables policy and decision makers to utilise additional 'tools' to overcome conflicting issues based on the State's economic growth. In terms of development assessment, there are a number of competing outcomes that can be considered to balance the appropriateness of development. One such outcome is <i>"mineral and extractive resources development which can be shown to be complementary to an area's primary intended land use"</i>. This application relates to key off-site infrastructure items required to support extractive mining activities. Whilst the current intent of the area is generally that of rural, the broader EIS assessment is seeking to facilitate a variation to this use to include extractive mining activities. It is also noted that the location and operation of similar extractive mining operations generally occurs within rural areas. In this regard, it is considered that this proposal will advance the purpose of this SPP through its' direct relationship to the planned extractive mining operations.

Draft State Planning Policy April 2013

Applicable – This draft Policy was released for consultation in April this year and is aimed at expressing state interests in a complete and comprehensive manner. It is hoped that this SPP will lead to greater certainty, streamlined assessment and improved planning outcomes for the wider community. This SPP applies in a number of circumstances, including those in relation to making or amending planning schemes and assessment of development applications.

Five (5) themes are identified within this SPP which are the basis for the formulation of 18 state interests. Of particular relevance to this application is the state interest related to 'mining and extractive resources'. Whilst this state interest acknowledges that SPA does not regulate mining activities, it does note that it is *"important to maximise opportunities for coexistence between resource extraction and other development types where possible"*. This current application relates to core off-site infrastructure items that are intended to be appropriately located and operated 'side by side' with the planned extractive mining operation.

In this regard, it is considered that this proposal will advance the purpose of this SPP through its' direct relationship to the planned extractive mining operations.

5.7 State Planning Regulatory Provisions

The table below lists each State Planning Regulatory Provisions (SPRP) with comments on their respective relevance to this application.

Table 8: Relevant SPRPs

State Regulatory Provisions	Relevance
State Planning Regulatory Provisions	
South East Queensland Regional Plan 2009-2031 (SEQRP)	Not Applicable – the subject site is not located within the SEQRP 2009-2031.
South East Queensland Koala Conservation State Planning Regulatory Provisions	Not Applicable – subject site not located in SEQ.
SPRP (Adult Stores)	Not Applicable – the proposal does not involve an adult store.
Off Road Motorcycling Facility on State Owned Land at Wyaralong	Not Applicable – the subject site is not located at Wyaralong.
State Planning Regulatory Provision (adopted charges)	Applicable - Due to the unique nature of this application and land tenure, matters in relation to infrastructure charges are considered likely to be subject to detailed and separate agreements outside the scope of any development approval.
Yeerongpilly transit Oriented Development State Planning Regulatory Provision	Not Applicable – the subject site is not located in the Yeerongpilly Area.
Coastal Protection State Planning Regulatory Provision	Not Applicable – the proposed development is not located in the coastal zone or coastal management district.

5.8 State Referral Triggers

The State Assessment and Referral Agency (SARA) was established on the 1st July 2013 and is the single assessment manager or referral agency for all development applications where the state has a jurisdiction. Prior to SARA being established, individual referrals had to be provided to any applicable state agency on a case by case basis.

Schedule 7 of the Sustainable Planning Regulation 2009 prescribes the applicable state agency referral triggers, with there being different triggers in relation to different 'types' of development. Due to the nature of this application and the proposed industrial uses, tables two (2) and three

(3) of the regulation apply as they relate to 'other development made assessable' and 'development made assessable under a planning scheme'. If any of the triggers within these tables are triggered, then referral to SARA of the application material would generally be required. The following sections provide an outline of the assessment undertaken against both these tables.

5.8.1 Other Development Referral Triggers

The below table provides a summary of the assessment of the application material against the triggers outlined in 'Table 2 – Other development made assessable under schedule 3' of the Sustainable Planning Regulation 2009:

Table 9: Other Development Referral Triggers

Part	Area	Test	Trigger Applies	Referral Type
1	Environmentally relevant activity	MCU for an ERA	Yes	Department of Environment and Heritage Protection (DEHP) as a Concurrence Agency
2	State-controlled road	ROL within proximity to State-controlled road	No	N/A
3	State-controlled road	OPW within proximity to State-controlled road	No	N/A
4	Clearing vegetation	ROL with associated native vegetation clearing	No	N/A
5	Clearing vegetation	OPW with associated native vegetation clearing	Yes	DNRM as a Concurrence Agency
6	Strategic port land	MCU on strategic port land	No	N/A
7	Airports	MCU on certain airport land	No	N/A
7A	Airports	ROL on certain airport land	No	N/A
8	Major hazard facilities	MCU for major hazard facility	No	N/A
9	Taking or	OPW for taking or	No	N/A

	interfering with water	interfering with water		
10	Interfering with water and embankment areas	OPW for taking or interfering with water	No	N/A
11	Particular dams	OPA for construction of a dam	No	N/A
12	Removal of quarry material	Development for removal of quarry material	No	N/A
13	Tidal works	OPW for certain tidal or related works	No	N/A
14	Tidal works	ROL within CMD or for canal construction	No	N/A
15	Tidal works	OPW for certain tidal or related works	No	N/A
15A	Tidal works	OPW for certain tidal work	No	N/A
15B	Tidal works	OPW for certain tidal works within Gold Coast	No	N/A
16	Tidal works	Certain development within the limits of a port	No	N/A
17	Tidal works	Other development within limits of a port	No	N/A
18	Tidal works	OPW for marina works	No	N/A
19	Queensland heritage place	Development on a heritage place	No	N/A
20	Declared catchment areas	ROL in a declared catchment area	No	N/A
21	Electricity infrastructure	ROL subject to electricity easement or substation	No	N/A
22	Contaminated land	ROL on contaminated land	No	N/A
23	Contaminated land	MCU on contaminated land	No	N/A
25	Adjoining a fish	Building work in a	No	N/A

	habitat area	declared fish habitat area		
26	Adjoining a fish habitat area	OPW in a declared fish habitat area	No	N/A
27	Adjoining a fish habitat area	Development adjoining a declared fish habitat area	No	N/A
28	Certain aquaculture	MCU for aquaculture	No	N/A
29	Waterway barrier works	OPW for waterway barrier works	No	N/A
30	Marine plants	OPW for removal, destruction or damage of marine plants	No	N/A
31	Marine plants	ROL that involves removal, destruction or damage of marine plants	No	N/A
32	Marine plants	MCU that involves removal, destruction or damage of marine plants	No	N/A
33	Public passenger transport	Certain ROL close to a public passenger corridor	No	N/A
33A	Public passenger transport	Other ROL close to a public passenger corridor	No	N/A
34	Railways	ROL close to railway land	No	N/A
34A	State-controlled transport tunnels	ROL close to State-controlled transport tunnel	No	N/A
35	Oil and gas infrastructure	ROL subject to oil/gas easement	No	N/A
39	Regional plans	Certain ROL with the SEQ Region	No	N/A
41	Wild river areas	MCU for certain activities within a wild river area	No	N/A
42	Wild river areas	OPW for certain activities within a wild river areas	No	N/A
43A	Wetland	ROL in a wetland	No	N/A

		protection area		
43B	Wetland	OPW in a wetland protection area	No	N/A
47	Distributor-retailers area	ROL within a distributor-general's geographic area	No	N/A

5.8.2 Assessable Development under Planning Scheme Referral Triggers

The below table provides a summary of the assessment of the application material against the triggers outlined in 'Table 3 – Development made assessable under a planning scheme' of the Sustainable Planning Regulation 2009:

Table 10: Assessable Development under a Planning Scheme Referral Triggers

Part	Area	Test	Trigger Applies	Referral Type
1	State-controlled road	MCU within proximity to State-controlled road	No	N/A
1A	State-controlled road	OPW within proximity to State-controlled road	No	N/A
2	State transport infrastructure	Development of a certain type and scale	Yes	TMR as a concurrence agency
4	Declared catchment areas	Certain development within a declared catchment are	No	N/A
5	Coastal management district	MCU within a coastal management district	No	N/A
6	Community infrastructure	Development on land designated for community infrastructure	No	N/A
7	Electricity infrastructure	MCU on a lot subject to electricity easement or substation	No	N/A
8	Electricity infrastructure	MCU within proximity to a substation site	No	N/A

9	Electricity infrastructure	OPW on a lot subject to an electricity easement or substation	No	N/A
10	Clearing vegetation	MCU for 242 on a lot containing native vegetation or involves clearing native vegetation	Yes	DNRM as a Concurrence Agency
11	Contaminated land	MCU within a management area for unexploded ordinance	No	N/A
12	Regional plans	Certain MCU with the SEQ Region	No	N/A
14	Public passenger transport	Certain MCU close to public passenger transport corridor	No	N/A
14A	Public passenger transport	Other MCU close to public passenger transport facility	No	N/A
15	Airports	MCU on certain airport land	No	N/A
15A	Railways	MCU close to a railway or future railway land	No	N/A
15B	Railways	OPW close to a railway or future railway land	No	N/A
15C	State-controlled transport tunnels	MCU close to a state-controlled transport tunnel	No	N/A
16	Oil and gas infrastructure	MCU subject to oil/gas easement	No	N/A
17	Oil and gas infrastructure	OPW subject to oil/gas easement	No	N/A
21A	Land in or near a wetland	MCU including OPW in a wetland protection area	No	N/A
25	Marine plants	MCU that involves removal, destruction or damage of marine plants	No	N/A

26	Distributor-retailers area	Development within a distributor-general's geographic area	No	N/A
27	Strategic cropping land	MCU wholly or partly on SCL	No	N/A
28	Strategic cropping land	ROL of a lot containing SCL	No	N/A
29	Strategic cropping land	MCU in a protection area for SCL	No	N/A

5.9 Consolidated List of State Referrals

This application for the industrial area and supporting ERA and OPW aspects, if currently lodged with Isaac Regional Council would require referral to SARA based on the above triggers that require referral to DEHP, DNRM and TMR as concurrence agencies. Notwithstanding, as this application material forms part of the SEIS submission for the Project, if an application is lodged post EIS determination, no subsequent referral of the application material to State agencies is required.

6.0 Regional Planning Assessment

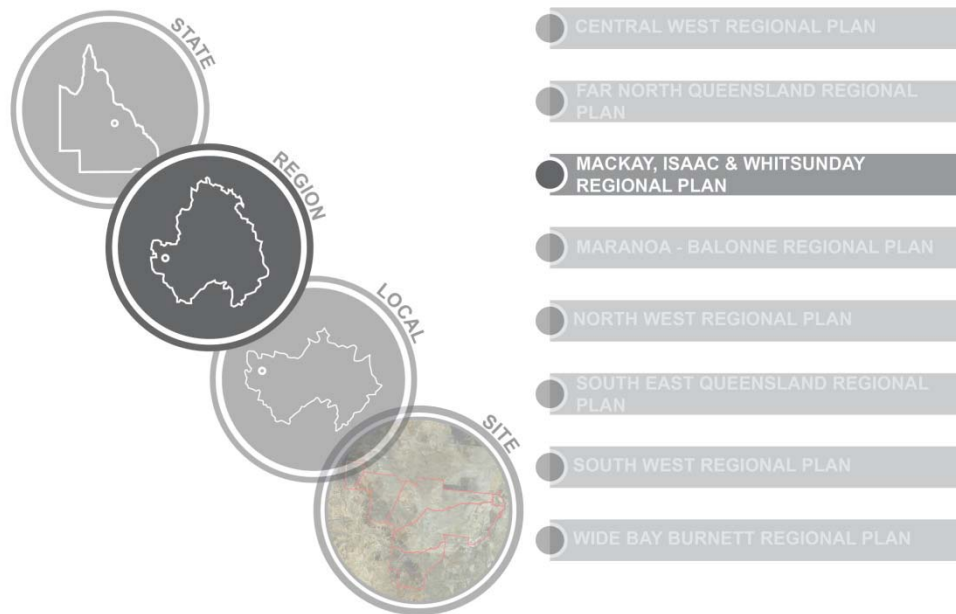


Figure 7: Hierarchy of assessment – Region, Source: GDP, 2013

Regional planning policy is positioned below state planning policy as effectively the second tier on the hierarchy of planning policy in relation to development proposals in Queensland. Regional planning policy provides region specific guidance in relation to the themes and issues that effect the region as a whole, it also provides an opportunity for the region and its constituent local authorities to work together to achieve common goals.

In this particular instance, the Mackay, Isaac and Whitsunday Regional Plan (MIW Regional Plan) applies to the subject site. Generally speaking, for applications to be favourably considered they need to be consistent and complimentary to the intent and purpose of any applicable regional plans.

6.1 Mackay, Isaac and Whitsunday Regional Plan

The MIW Regional Plan seeks to establish a vision and framework for the sustainable future of the Mackay, Isaac and Whitsunday Region from present day up until the year 2031. Given the

timeframes and size of the region, the document effectively provides strategic objectives to address future challenges and capitalise on opportunities.

The basic structure of the plan includes a 'Regional Framework' that provides location specific guidance; 'Regional Narratives' to provide more detail within specific areas; and 'Desired Regional Outcomes' that provides region wide policy objectives, finally a description of the core land use designations within the plan is provided to inform future development. The following sections assess the proposed development against the relevant sections.

6.1.1 Regional Framework

The Regional Vision for the MIW Regional Plan states:

"The Mackay, Isaac and Whitsunday region (the region) is a vibrant, progressive region where the values of the community and industry are respected and in balance with the natural environment. The region's natural assets and abundant resources will be responsibly managed for the benefit of residents, visitors and future generations. It achieves its potential with a range of industries, employment and learning opportunities for everyone. The region has a resilient and inclusive community that respects and offers diversity and choice, and where residents and visitors enjoy a healthy, active and safe lifestyle".

Significantly the vision identifies the importance of resource management with the region and encourages its sustainable exploitation to the benefit of the region.

Natural resource management is defined as a core strategic direction within the plan, as its presence underpins the regions economy at present and represents a major element of potential future growth. Further, the plan states that future planning will also need to ensure opportunities for exploration and development of new resources are located appropriately in order to reinforce the sector within the region.

Significantly in terms of economic development the regional framework references the need to provide economic growth and associated employment, in this respect the proposed development is consistent with the intent of the regional plan as it seeks to provide the appropriate framework and use permits to establish resource related industrial uses within the region.

6.1.2 Regional Narratives

Specific Regional Narratives have been prepared for the Isaac Regional Council area. These narratives acknowledge the presence of the coal reserves within the region and their contribution to the national economy. The narratives also reference the emerging proposals for future mine operations within the region and the preference for integrated infrastructure to encourage optimal outcomes. Significantly, the exploration and exploitation of reserves within the Galilee Basin is identified as providing more growth opportunities within the region.

This proposal is considered to be generally consistent with these Regional Narratives as the industry proposed is to support exploration activities within the Galilee Basin.

6.1.3 Desired Regional Outcomes

The MIW Regional Plan lists a number of Desired Regional Outcomes (DROs) underpinned by principle, policy and program statements all of which are categorised by themes. There are 10 identified DROs, with these covering matters from sustainability; regional landscapes; urban form and transport. Some of the core DEOs that it is considered this proposal will assist in promoting include those in relation to natural resource management, strong economy and transport. An outline on some of the DEO policy provisions and discussion in relation to the proposed industry follows below:

4.1.3 Natural resource management, planning, investment, monitoring and reporting is coordinated to improve the quality and contribution of the resource to the region'.

Comment: The proposed development relates to an industrial precinct that will service the needs and requirements of an extractive resource. In this regard, the proposed development is a demonstration of how appropriate planning and investment is being brought forward as part of the natural resource management strategy for the operation.

4.2.5 Natural resource management frameworks include assessment of multiple-use opportunities and associated benefit objectives for existing and future resource areas'.

Comment: The proposed development seeks to provide the appropriate framework for establishing industrial uses associated with off site infrastructure. The strategy proposed provides a significant area within balance lots that provide potential for future expansion of associated uses if such a need were to be generated in the future, in this regard the proposed development is consistent with the intent of this provision.

6.1.4 Identify and facilitate outcomes that remove growth constraints and impediments to business to encourage new business and investment attraction.

Comment: The proposed development effectively seeks to facilitate operational requirements of off site infrastructure related to the development of a Mine operation which has the potential to act as an economic driver that will positively impact upon the regional economy, in this regard the proposal is compliant with this provision.

6.2.6 Attract new rail, port and aviation service providers that support and facilitate existing and proposed industry and provide new services in the region.

Comment: The proposed development will provide the framework to establish a rail siding of the proposed rail line that will service the Mine operation. In this regard the proposal seeks to establish an appropriate framework that will allow adjacent land to benefit from increased accessibility in terms of bulk transport.

10.3.5 Cluster and co-locate complementary industries to minimise transport requirements and influence the development of efficient modal and intermodal links essential for the movement of freight.

Comment: The proposed development effectively seeks to establish an industrial area to service the initial operations of site infrastructure in close proximity to new rail infrastructure such that future operations can benefit from improved accessibility in terms of bulk transport.'

In this regard, the proposal is considered to promote a large number of the DEOs and DEO policies contained within the Regional Plan.

6.1.4 Implementation

Within the implementation provision of the Regional Plan, areas are divided into a number of land use categories. Whilst these categories are considered more generally related and linked to the repealed Regulatory Provisions, discussion against such themes is still considered warranted and necessary. Due to the sites remote location, it is located within the Regional Production and Rural Landscape Area as indicated below:

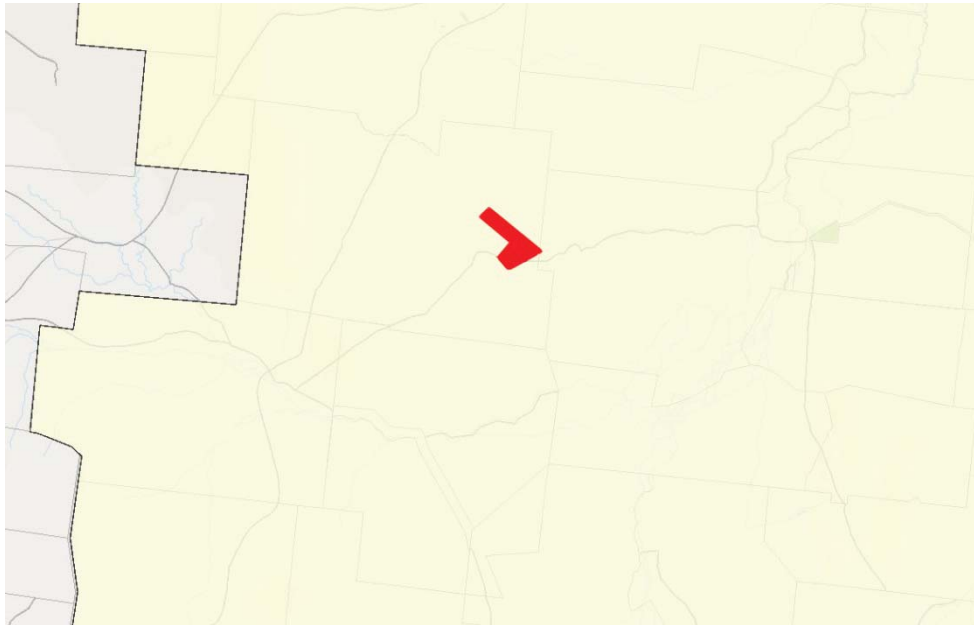


Figure 8: MIWRP Mapping, Source: Information Atlas 2013

Whilst the intent of this area is to generally identify and protect “*land with regional, rural production or other non-urban values*”, it is also noted that its purpose is not to impede significant activities including that of ‘mineral exploration’. In this regard, as the proposed industrial uses seek to support and compliment planned mineral exploration activities, they are considered to be compatible with the intent and purpose of the Regional Production and Rural Landscape Area.

7.0 Local Government Planning

Assessment



Figure 9: Hierarchy of assessment – Local, Source: GDP, 2013

As outlined earlier, the subject site is located within the jurisdictional boundaries of Isaac Regional Council. Currently there are three (3) separate planning schemes applicable within the Isaac Region, with these being that of the Belyando Scheme; Broadsound Planning Scheme and the Nebo Planning Scheme. The relevant planning scheme for the subject site is that of the Planning Scheme for Belyando Shire (the Planning Scheme).

7.1 Definition of Development

The core industrial uses proposed as part of this application of Concrete Batching and Chemical Storage are considered to be defined as “Industrial activities” within the Planning Scheme, defined as follows:

“Industrial activities” – means *“premises” used for activities involving the manufacture, production, servicing, storage and distribution of goods, articles, equipment or vehicles, including:*

- (1) ***“Extractive industry”***;
- (2) ***“Industry”***;
- (3) ***“Noxious industry”***;
- (4) ***“Service station”***;
- (5) ***“Storage facility”***; and
- (6) ***“Transport terminal”***.

This broader definition that covers both activities (as opposed to the distinct “Industry” and “Storage facilities” uses) is referenced with the tables of assessment and is considered to be more appropriate in this case.

The definitions in relation to the ERA and OPW aspects of the application are specified in alternate legislation as discussed in greater detailed previously in this report.

7.2 Zoning

The subject site is located within the 'Rural' Zone of the Planning Scheme. The zoning designation is illustrated in the following figure:

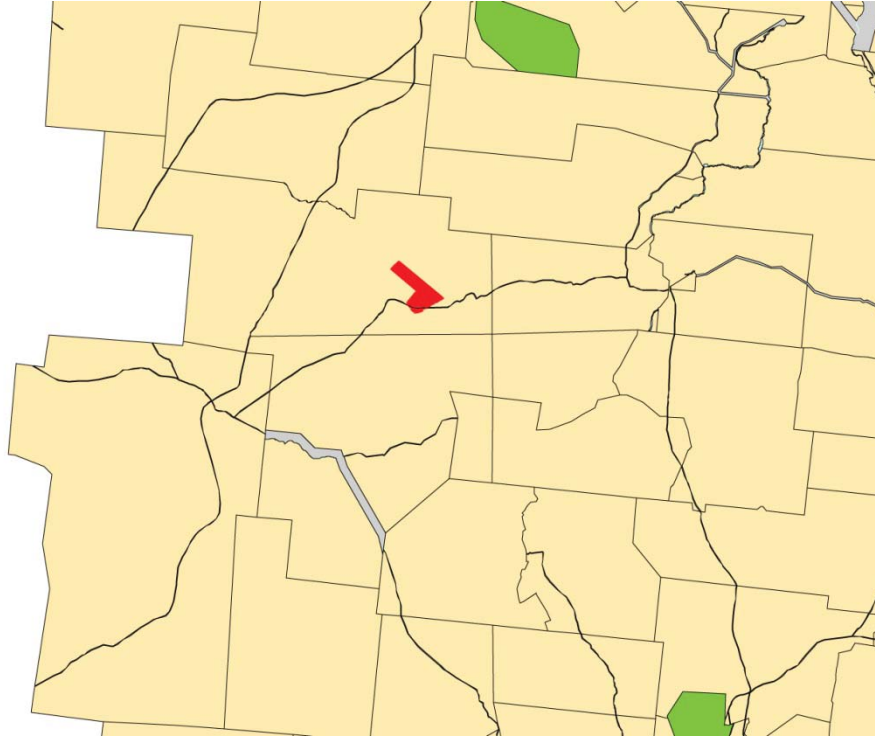


Figure 10: Planning Scheme Zone, Source: IRC Website

7.3 Level of Assessment

Within the Rural Zone, the industrial activities proposed are Impact Assessable and 'override' the code assessable nature of the reconfiguring a lot component of the application. The applicable levels of assessment for the "Industrial activities" and "Reconfiguring a lot" are outlined in the below table:

"Industrial activities"	Code assessment where having a "total use area" less than 150m ² Impact assessment otherwise	Rural "Zone" Code
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Figure 11: Planning Scheme MCU Table of Assessment, Source: IRC Website

(2) "Reconfiguring a lot"

Type	Assessment Category	Applicable Code
"Reconfiguring a lot"	Code Assessment	Reconfiguring a lot Code

Figure 12: Planning Scheme ROL Table of Assessment, Source: IRC Website

7.4 Desired Environmental Outcomes

At a more strategic level the Planning Scheme provides a number of Desired Environmental Outcomes (DEOs) to guide development in a strategic manner. They are communicated in a DEO statement followed by a number of strategies for achieving the outcome. Due to the impact assessable nature of the proposed industrial area, a detailed assessment against these DEOs and their strategies has been undertaken. Consistency with these DEOs will assist in determining the appropriateness of the proposed development and chosen location. The outcomes of this detailed assessment is discussed in greater detail below.

7.4.1 The Natural Environment and Cultural Heritage

Desired Environmental Outcome

In Belyando Shire, ecological systems, the natural environment (including natural features and unique habitats such as Peak Range National Park, Mazeppa National Park, Narrien Range National Park, Epping Forest National Park, Wilandspey Conservation Park, Doongmabulla Springs Important Wetland and the declared catchment), and items and places of cultural and heritage significance are protected such that biodiversity, cultural heritage values and existing or intended landscape character are maintained.

Strategies

- a) *Development is regulated to minimise any adverse impacts on air and water quality, to prevent land degradation, loss of unique habitat and biodiversity and to maintain the integrity of riparian areas, ridgelines and escarpments.*
- b) *Development is regulated to be compatible with the environmental, habitat, biodiversity and landscape values and historic significance of protected areas (including Peak Range National Park, Mazeppa National Park, Narrien Range National Park, Epping Forest National Park, Wilandspey Conservation Park, Doongmabulla Springs Important Wetland and the declared catchment) and areas, local items and places of cultural significance (including areas along water courses).*

Comment: The proposed development has been designed in a respectful manner to the key characteristics of the location. Every effort has been made to ensure that no unreasonable adverse impacts are generated as a result of the development and mitigation techniques are employed where adverse impacts are identified.

The proposed development will not have any unreasonable impact on air or water quality, will not lead to land degradation and extensive analysis has been undertaken to ensure that habitats and the existing biodiversity characteristics are not unreasonably impacted upon. Further the subject site is not in close proximity to any identified riparian area, ridgeline or escarpment. Finally the proposed development is not in close proximity to any identified protected area or place of cultural significance.

Accordingly, the proposed development is considered to be consistent with the intent of 'Natural Environment and Local Heritage DEO', as it is generally complies with the identified outcome and derived strategy statements.

7.4.2 Economic Development

Desired Environmental Outcome

The viability of the mining industry is protected, while the economy of Belyando Shire is diversified in a manner that supports the intended land use structure and character of the urban centres of Clermont and Moranbah and the rural parts of the Shire.

Activities that do not require a rural location are consolidated within the towns of Clermont and Moranbah, so that investment in the towns is maximised.

Moranbah's role as the primary service centre for the northern Bowen Basin mining industry is enhanced.

Town centres in each of the Shire's urban communities form vibrant and compact commercial and community cores. Industrial nodes in Clermont and Moranbah are consolidated.

Natural resources (including land, water and mineral resources) are used sustainably.

Strategies

- a) The planning scheme reinforces the roles of Clermont and Moranbah as the principal places for administrative services, business, industry, retail, education and community services and transport services within the Shire.*
- b) Sufficient and suitable areas are identified for urban development, and key transport infrastructure are identified and protected.*
- c) Residential activities (with minor exceptions) are required to be located within the towns of Moranbah and Clermont.*
- d) Commercial activities are limited (with minor exceptions) to identified centres in the towns of Clermont and Moranbah.*
- e) Confidence in investment in the Shire's towns and in its major industries is maintained by identifying clear development intentions.*
- f) Urban and other sensitive forms of development are regulated to avoid or minimise potential conflicts with existing or future mining operations.*
- g) Productive rural land, rural industries and unique natural features (including mineral and extractive resources and tourist resources such as national parks, conservation parks and wetlands) are protected to preserve their continued economic potential and viability.*
- h) Industrial activities are directed to identifiable industrial nodes in the towns of Moranbah and Clermont.*

Comment: The proposed development is consistent with the Economic Development DEO as it seeks to provide necessary facilities associated with a significant mine operation that will provide a significant contribution to the regional and state economy.

The proposed development has been strategically located in close proximity to the proposed rail line and in this regard benefits from improved accessibility that will reduce the isolation of the subject site. Notwithstanding this point, the role of Clermont or Moranbah will not be challenged as the principal locations for commerce. It is envisaged the centre of Clermont will retain its role as the service centre for the region.

The proposed development will provide improved access conditions for what is currently a relatively isolated location and in this regard complies with providing sufficient and suitable areas for key transport infrastructure.

The proposed development does not incorporate residential development.

The proposed development does not relate to commercial activities.

The proposed industrial facilities have been respectfully located in terms of surrounding land uses and the proposed mining operation to ensure that in the first instance adverse impacts are minimised and secondly resource extraction can proceed sustainably.

The proposed development relates to essential industrial uses that will contribute to the operation of the mine and specifically of mine infrastructure. Given the isolation from the principal centres of Clermont and Moranbah, it would be impractical to consider locating the necessary operations within such centres. Accordingly the proposed strategy has sought to cluster the proposed uses consistent with sustainable planning principles such that operational synergies can be produced and impacts on surrounding land uses managed and mitigated as part of one consolidated and holistic strategy.

Accordingly, the proposed development is considered to be consistent with the intent of 'Economic Development DEO', as it is generally complies with the identified outcome and derived strategy statements.

7.4.3 Community Wellbeing

Desired Environmental Outcome

Moranbah and Clermont provide a wide range of government and community services and employment opportunities. Moranbah continues to have a significant role as the primary service centre for the northern Bowen Basin mining industry. The towns of Moranbah and Clermont accommodate strong, connected and vibrant communities, well supported by recreational and other community facilities, highly accessible by walking and cycling. Town centres provide a clear community focal point. Moranbah and Clermont are characterised by a strong and growing permanent resident population. A wide range of affordable housing types is available and all housing is designed to contribute to the quality of the urban environment. Dwelling units providing for permanent accommodation are predominant, with a significantly smaller proportion of other forms of accommodation intended for temporary residents.

The rural amenity and productive capacity of other parts of the Shire is maintained.

Strategies

- a) *The planning scheme seeks to ensure that people are connected to public spaces (including recreational areas) and community services through an appropriate land use structure and the provision of infrastructure within the towns of Clermont and Moranbah.*
- b) *Increased opportunities are created for a larger proportion of the mining (and related) workforce and their families to permanently reside in the Shire's towns through:*
 - i. *the designation of sufficient urban land to accommodate expected population growth;*
 - ii. *the encouragement of medium density, small lot and other forms of permanent housing to increase housing choices available within the Shire's towns; and*
 - iii. *limitations on the size of accommodation facilities for non resident workers.*
- c) *The planning scheme seeks to ensure all residential activities (with minor exceptions) are located within the towns of Clermont and Moranbah.*
- d) *All forms of "residential activities" (including accommodation intended for visitors and temporary residents) are required to be designed to integrate with the surrounding urban environment and be of a high quality urban design.*
- e) *Development is regulated to protect the health and safety of people.*
- f) *Infrastructure reflects community expectations and needs, meets appropriate engineering and environmental standards and is provided in an orderly and logical sequence to ensure cost effectiveness.*
- g) *Rural communities are protected from incompatible forms of development, and rural residential development is not supported by the planning scheme.*

Comment: The proposed development is consistent with the Community Wellbeing DEO as it seeks to provide crucial infrastructure related to a significant Mine Operation. As the proposal relates to industrial development Item (f) is particularly relevant to the proposal, as it relates to the timing of significant infrastructure. As discussed previously the proposed industrial area is part of a much wider strategy that seeks to establish a significant mining operation, it is considered that the proposed facility is crucial in the staging strategy of the proposed operation in order to reduce isolation in terms of workforce and key materials.

7.4.4 DEO Summary

The DEOs contained within the Planning Scheme seek to provide a strategic framework to guide the implementation of planning policies and subsequently development. Given the level assessment associated with the proposed development an assessment against the relevant policy statements was conducted. The assessment demonstrates how the proposed Industrial Precinct is generally consistent with the intent of the defined DEOs and in many ways further the achievement of several strategy statements.

7.5 Planning Scheme Overlays

The following section captures the overlays contained within the Planning Scheme and their relevance to the proposed application.

7.5.1 Land Characteristics Map – Features Map

The subject site is not identified specifically on the 'Land Characteristics Map', the only relevant features identified in relatively close proximity to the chosen location would be watercourses. Consideration and mitigation/management from any watercourses has been dealt with specifically in the engineering reporting that has been submitted as part of this proposal.

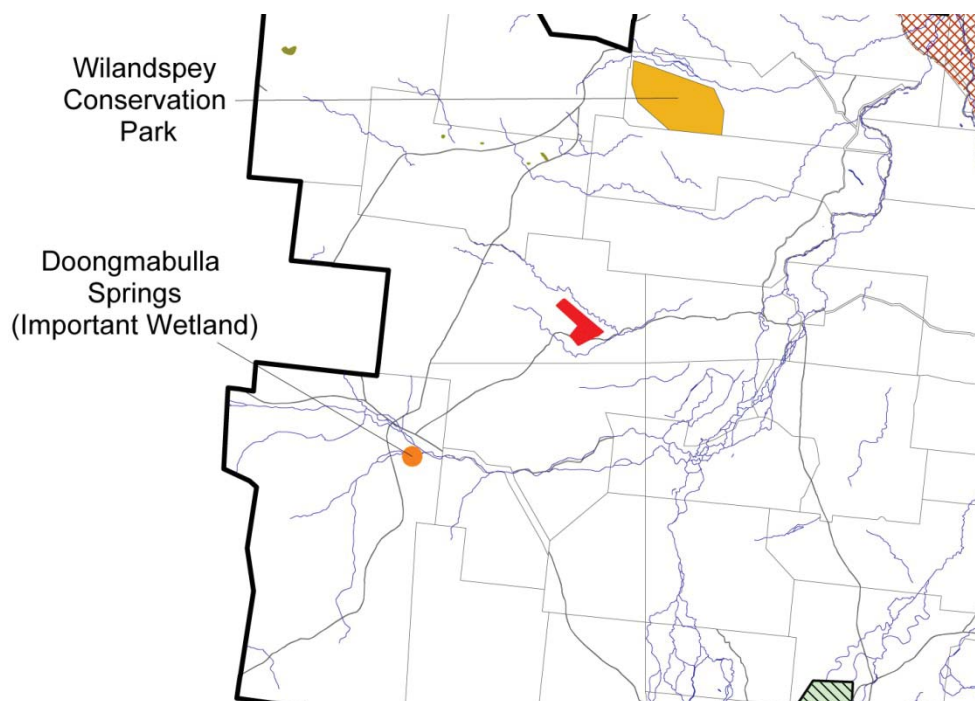


Figure 13: Land Characteristics Map - Key Features. Source: IRC Website

7.5.2 Land Characteristics Map – Good Quality Agricultural Land

The subject site does not contain portions of Class B and Class A Agricultural Land. It is also acknowledged that the subject site has traditionally been utilised for land extensive broad hectare grazing practices.

Importantly, the chosen location represents less than a 1% area of the current property (Moray Downs) and in this regard is not considered likely to have any meaningful impact on the agricultural (or other) use of the property as a whole.

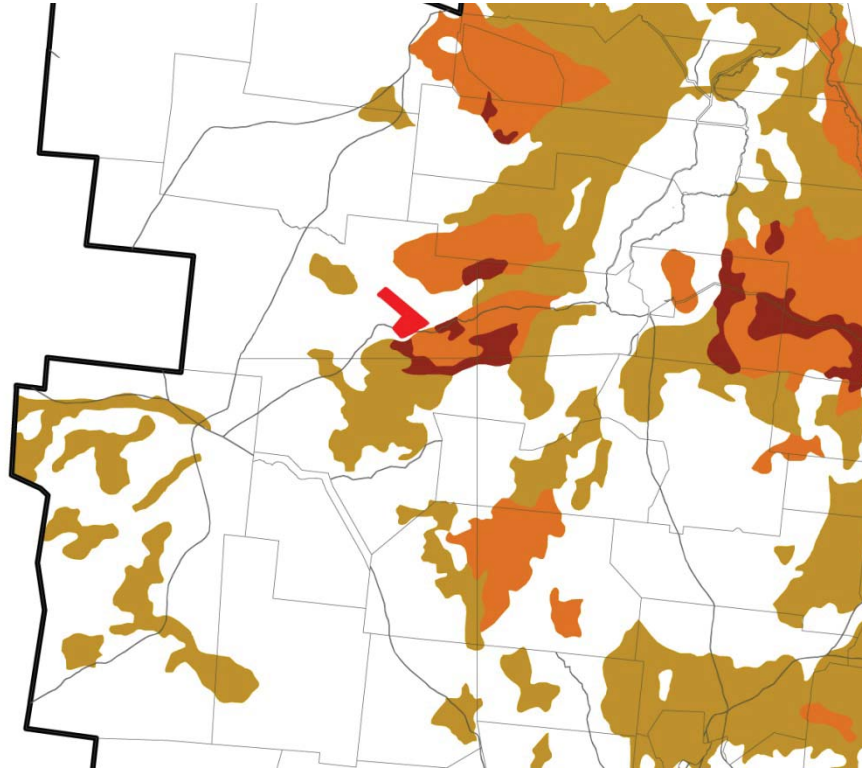


Figure 14: Land Characteristics Map - Good Quality Agricultural Land. Source: IRC Website

7.6 Zone Code Intent

The 'Rural Zone' of the Planning Scheme seeks to provide the framework for development assessment in the old Belyando Shire. The purpose of the code is defined under four key objectives; each one is detailed below in addition to an assessment of how this proposal will impact on the objective.

- 1) *The Rural "Zone" retains its viability as an area of primary production and natural resource use, including mining.*

Comment: The proposed industrial area is being constructed as part of a larger strategy for the operation of a large scale mining operation and in this regard is consistent with the intent of this provision.

- 2) *"Rural activities" and mining are appropriately located within the Rural "Zone" and are not prejudiced by inappropriate development.*

Comment: The proposed industrial area has been sited on the basis of detailed studies seeking the appropriate location for such infrastructure. In this regard, it is considered that the proposed location is the optimal location in terms of the existing context and proposed future operations for such infrastructure and will efficiently and sustainably contribute to the operation of the mine. Further it is considered that the proposed location will not adversely impact upon existing rural activities.

- 3) *Within the Rural "Zone", "development":*
 - a. *maintains the environment, including soil, air and water, compatible with healthy natural systems and ensures public health and safety;*
 - b. *protects good quality agricultural land (GQAL) from fragmentation, alienation or encroachment of incompatible land "uses" in accordance with State Planning Policy 1/92 – Development and Conservation of Agricultural Land;*
 - c. *is located, designed and operated in a manner that protects and enhances the predominant rural scale, intensity, form and character;*
 - d. *maintains the rural amenity;*
 - e. *does not prejudice or impact adversely on other "uses", particularly "sensitive land uses", including those within other "zones";*
 - f. *does not prejudice or unduly impact on mineral resources or their extraction;*
 - g. *has an appropriately designed access to the road network, and traffic generated by the development does not impact adversely on the local road network;*

- h. does not adversely impact on areas and sites of conservation importance, including cultural and high landscape values;*
- i. is located and designed in ways that minimise the need for flood and landslide mitigation, and to protect people and premises from such natural events;*
- j. has water supply, stormwater disposal, sustainable effluent and waste disposal and power, to appropriate standards, adequate for the “use”; and*
- k. does not impact adversely on infrastructure.*

Comment: The proposed development has been designed to integrate and respect the existing context of the receiving environment.

The proposed design has been informed by the environmental features of the subject site in order to ensure no unreasonable impacts are experienced. Due to the nature of the proposed development, being industry, public health and safety has been a crucial element of the proposed design ensuring the necessary standards are incorporated within the final design iteration.

The subject site has not been identified as containing ‘Good Quality Agricultural Land’ as defined by the Planning Scheme.

The proposed industrial area will be operated in isolation from surrounding land uses, which is consistent with rural development. The proposed strategy has been pursued in order to ensure that the proposed industrial uses will be sufficiently buffered from surrounding land uses in order to ensure potential negative impacts on adjoining amenity is avoided.

The proposed development is part of a wider strategy to develop a mining operation of significant size and scope, in this regard the proposal is helping to facilitate sustainable resource extraction.

The proposed development will be accessed directly via the existing Moray Carmichael Road entering the subject area from the west. The overarching strategy for the Moray Carmichael Road is to close the existing public reserve and turn it into a private road, which will then provide access to the proposed development. The ROL proposed as part of this application seeks to reconfigure the existing lots and reserve to ensure the new configuration provides safe and efficient access to each of the new proposed lots.

The subject site is not located on or adjacent to a site of cultural or high landscape value.

The proposed development has been designed to be above any flood level in the local area.

The proposed development has been designed in an appropriate manner in terms of stormwater and servicing as demonstrated by the reports submitted in support of this proposal.

- 4) *Within the Rural "Zone", the following are appropriate "uses":*
- a. *"agriculture" and "grazing";*
 - b. *"intensive animal industries" and "extractive industries", where they are located and operated so as to ensure no unacceptable detrimental impact on surrounding "uses" or on the environment;*
 - c. *limited industrial "uses", where it can be demonstrated those "uses" are associated with rural production or natural resource use and cannot reasonably be established in the Industrial "Zone";*
 - d. *"bed and breakfast premises" and "home business" where they are of a small scale and are compatible with surrounding "uses";*
 - e. *"caravan or relocatable home park" for the purposes of tourist accommodation where it is: of a small scale; compatible with the amenity and character of surrounding uses; and directly and primarily associated with rural production, the natural environment or cultural resources in the surrounding area; and*
 - f. *"caravan or relocatable home park" or "accommodation building" for the purposes of accommodating workers, where the use is: directly and primarily associated with rural production or a natural resource related industry on the same site or on an immediately adjoining site; compatible with the amenity and character of the surrounding uses; intended to be established only for a defined period; and cannot reasonably be located in the Urban "Zone".*

Comment: The proposed use is considered to be appropriate within the 'Rural Zone' as it will contribute to the viability of a significant resource extraction project. It is our considered opinion that point 4c specifically caters for the requirements of isolated mining operations to establish associated industries in close proximity the core operation. Accordingly it is our considered opinion that the proposed development complies with the intent of this provision.

7.7 Applicable Assessment Provisions

As the proposed development is defined as Impact Assessable under the Planning Scheme, it is also required to demonstrate compliance (where applicable) with the relevant codes contained within the Planning Scheme. In relation to this specific proposal the 'Rural Zone' Code is the only code that has been triggered. The outcomes of the assessment against this Code is discussed in detail below.

7.7.1 Rural Zone Code

As outlined above, the subject site is located within the 'Rural Zone' and therefore the 'Rural Zone' code has been triggered for assessment. Accordingly an assessment has been undertaken of the proposed development against the 'Rural Zone' Code.

Whilst the proposal is considered to be generally in accord with the outcomes and purpose of the relevant code, the following key responses are considered significant to the assessment of this proposal:

Table 11: Rural Zone Code Relevant Considerations

Performance Criteria	Acceptable Solution	Performance Based Solution
PC1 Non-“Rural Activities” - Locational Criteria Non-“rural activities” are located in the Rural “Zone” only where those activities: (a) do not unduly impact on the character and amenity of the locality; (b) are directly and primarily associated with rural activities, a natural resource related industry or natural or cultural resources; (c) cannot reasonably be located in another more appropriate zone; (d) do not prejudice the existing or future productive capacity of rural land or other natural resources;	No acceptable solution is prescribed.	PC1 – Performance Solution The proposed development is for industrial operations to support a planned natural resource related industry (mine). The industrial uses have been strategically located within close proximity to the mine, the mine workers accommodation village, and the airport that are intended to service the mine. The immediate area surrounding the proposed industrial uses is currently used for a mix of cattle grazing and mining exploration activities. The industrial uses are seen as a supporting form of supplementary infrastructure to support the expanded mining activities. Importantly, the remoteness of the area should assist in minimising any potential adverse amenity and/or character impacts associated with the industrial

and (e) do not adversely affect the landscape values and scenic qualities of the locality.		uses. Due to the direct relationship between the industrial uses and the mine, the location is considered ideal. The site for the industrial uses has been chosen to sit outside the planned mining area such that the productive capacity of natural resources is not compromised. Where required, appropriate landscaping could be implemented to assist in reducing any potential loss of landscape value, however given the remoteness of the area any such inclusion is not considered necessary and has not been included as part of the current design. Accordingly, it is considered that the proposed industrial area is appropriately located within the rural zone to support a natural resource related industry.
PC2 Non-“Rural Activities” - Scale Non-“rural activities” are of a scale that is consistent with the amenity and character of the locality and do not prejudice the operation and viability of other “uses” or activities in the Rural “Zone” or other “zones”.	AS2 The “total use area” is less than 150m².	PC2 – Performance Solution The scale of the proposed industrial uses is a direct correlation to the scale and form of mining operations proposed on the site. Once operational, the mine will set the character of the immediate area and this industrial area will complement such character. The areas included within the EIS/SEIS for the mine and mine support aspects (off-site infrastructure) are clearly identified and outlined. The proposed industrial area is located in one such area and as such it is not considered that it will prejudice the operation and/or viability of other uses within the Rural zone.
PC3 Non-“Rural Activities” - Operating Hours Non-“rural activities” are operated so as to ensure that the activities and the operation of equipment occur at appropriate times to protect the amenity of the locality.	AS3 Non-“rural activities” are operated only between the hours of 7:00am and 6:00pm.	PC3 – Performance Solution The Industrial Area will service the industrial and infrastructure support needs associated with the Carmichael coal mine, and will need to ‘operate’ in accordance with the mine imperatives. In this regard, and given that workers will work in shifts that could extend outside of the

		hours nominated in AS3, the Industrial uses will need to be accessible and operational, at least in a reduced capacity, between the hours of 6pm and 7am. Given, however, that the functions of the Industrial uses are largely internalised, it is to be located as close as practical to the mine itself, and there are no sensitive receivers located between the Industrial uses and the mine, any potential impacts on the amenity of others will be entirely mitigated.
PC4 Non-“Rural Activities” - Delivery of Goods The loading and unloading of goods in connection with non-“rural activities” occurs at appropriate times to protect the amenity of the locality.	AS4.1 Loading and unloading occurs only between the hours of: (a) 7:00am and 6:00pm, Monday to Friday; and (b) 7:00am and 12:00 (noon) on Saturdays. AS4.2 No loading and unloading occurs on Sundays and public holidays.	PC4 – Performance Solution Due to the rural and remote setting of the Industrial area, typical considerations in relation to loading and unloading hours are not considered relevant in this particular instance. The proposed Industrial uses are to support a 24 hour mining operation and as such it is considered likely that a similar 24 hour loading/unloading schedule may also occur. As there are no nearby sensitive land uses, any loading/unloading that occurs is not considered likely to result in adverse amenity impacts on the surrounding locale.
PC6 Height The height of “buildings” and “structures” does not impact adversely on the amenity of the locality and is consistent with the predominant rural form.	AS6 “Buildings” and “structures” other than those within 100 metres of the boundary of an “airport”¹⁵ are not more than: (a) 8.5 metres; and (b) 2 (two) storeys, at any point above natural ground level. (Except where establishing in an existing “building” and no “building works” are being undertaken for that existing “building”, and excluding windmills, silos and other rural operational equipment).	PC6 – Performance Solution The maximum height of Industrial uses proposed is 15 metres. This is the result of the fact that the uses are designed to support coal mine operations and the equipment and operations related to the mine cannot be accommodated within a smaller built form. In justification of this increased height, the Industrial uses will be internalised within a consolidated industrial estate in order to prevent them appearing ad-hoc and highly visible from public roads.

PC19 Vehicle Parking and Service Vehicle Provision Vehicle parking and service vehicle provision is adequate for the “use” and ensures safe and functional operation for motorists and pedestrians.	AS19.1 All “uses” provide vehicle parking in accordance with Schedule 1, Division 2: Standards for Roads, Carparking, Maneuvering Areas and Access, Section 2.2(1) (a). AS19.2 Car parking, service vehicle parking and maneuvering areas are designed and constructed in accordance with Schedule 1, Division 2: Standards for Roads, Carparking, Maneuvering Areas and Access, Section 2.2(1) (b).	PC19 – Performance Solution The Concept Plans contained in Appendix A of this report illustrate the location of proposed vehicle parking and maneuvering areas associated with the proposed Industrial uses. Given that the industrial activities will service the needs of the Carmichael Coal Mine and other related off-site infrastructure, the amount of car parking required may be less than that which would need to be dedicated at a traditional industrial facility located in an urban area, and instead will cater only for the functional car parking load required.
PC33 Good Quality Agricultural Land Areas Good quality agricultural land areas as identified on the Land Characteristics Map – Good Quality Agricultural Land are conserved and managed for the longer term and protected from development that may lead to its alienation or diminished productivity.²¹	No acceptable solution is prescribed.	PC33 – Performance Solution The subject site has traditionally been associated with grazing related agricultural operations and as such, any departure from this historical use requires careful consideration. On a project wide (macro scale), the land to be used for the mine and off-site infrastructure items is being considered as a whole and is to be dealt with on a project wide scale. This consideration includes aspects of varied land uses and applicable offsets/integration policies. At the level of the proposed use (micro scale), the use of the identified location for Industrial uses represents a negligible portion of the existing land mass of the Moray Downs property. In this regard, it is not considered that these Industrial uses will compromise or fragment the remaining agricultural use of the site and surrounds.

As can be seen from the above table, this proposal is considered to be compliant with the relevant Zone Code. Notwithstanding, any performance solutions proposed are clearly outlined and discussed in the detailed assessment of this proposal against the relevant codes submitted in support of this application.

7.7.2 Subdivision Code

As outlined above, the proposed development incorporates the intent to reconfigure the land and therefore the 'Subdivision' code has been triggered for assessment. Accordingly an assessment has been undertaken of the proposed development against the 'Subdivision' Code.

Whilst the proposal is considered to be generally in accord with the outcomes and purpose of the relevant code, the following key responses are considered significant to the assessment of this proposal:

Table 12: Subdivision Code Relevant Considerations

Performance Criteria	Acceptable Solution	Performance Based Solution
PC1 Rural "Zone" – Minimum Lot Size The reconfiguring of lots ensures the Rural "Zone" retains its viability as an area of primary production and that development is consistent with the local character⁷⁶.	For land in Classes A and B Good Quality Agricultural Land Area, as shown on the Land Characteristics Map – Good Quality Agricultural Land: AS1.1 All lots have a minimum area of 500 hectares. For land in Class C1 Good Quality Agricultural Land Area, as shown on the Land Characteristics Map – Good Quality Agricultural Land: AS1.2 All lots have a minimum area of 1000 hectares. For land not in the Good Quality Agricultural Land Area, as show on the Land Characteristics Map – Good Quality Agricultural Land: AS1.3 All lots have a minimum	PC1 – Performance Solution The proposed Community Title Subdivision (illustrated on the ROL Concept Plan contained in Appendix A of this report) is intended to create allotments which will contain industrial and infrastructure facilities that have a direct link to the Applicant's Carmichael Coal Mine, located immediately to the West. It is expected that this Industrial area will be authorised under the approval conditions for the Carmichael Coal Mine and Rail Project, which is proceeding as a Significant Project under the control of the Queensland Coordinator General. The EIS for this Project nominates the Industrial area as critical off-site infrastructure. On that basis, the minimum allotment sizes which normally apply to land subdivisions within the Rural zone should not be applied in this instance.

	area of 5000 hectares. AS1.4 All lots have a minimum width to depth ratio of 1:5.	Furthermore, a s242 Preliminary Approval Affecting the Local Planning Scheme is being sought (by way of a separate development application) which seeks to establish a new land use precinct over the area of the Community Title Subdivision. This new precinct, known as the Carmichael Off-Site Industrial Zone, will authorise new allotment sizes down to the size proposed in the ROL Concept Plan contained in Appendix A of this Report. A range of industrial land uses linked to the establishment and operation of the Carmichael Coal Mine will then be facilitated on the allotments created.
PC7 Layout and Design The reconfiguring of lots: (a) ensures safe and livable communities; (b) ensures safe and legible vehicle and pedestrian movement areas and roads; (c) integrates with adjoining land; and (d) optimises the protection of environmental values, significant features, open space areas and high conservation or landscape values.	No acceptable solution is prescribed.	PC7 – Complies Allotments within the proposed industrial area (Stage 1) will range from a minimum size of 1.003 ha up to a maximum of 30.383 ha. These sizes have been determined by the uses proposed to be established on them, most of which are underpinned by a functional layout plan in order to ensure that they are fit for purpose. No Regional Ecosystem vegetation is required to be cleared to facilitate construction of the Stage One area. The subdivision design is based on a bulk earthworks design (see Appendix E of this Report) and stormwater management strategy (see Appendix J of this Report) which confirms that it integrates with the adjoining land and proposed infrastructure.
PC10 Street Lighting Street lighting is provided: (a) to ensure safety for vehicles, cyclists and pedestrians; and (b) to an appropriate engineering standard.	AS10 Street lighting is designed and constructed in accordance with Schedule 1, Division 2: Standards for Roads, Carparking, Manoeuvring Areas and Access, Section 2.1(1).	PC10 – Performance Solution The isolated nature of the industrial area, combined with the fact that roads within it will be private ('Common Property' under a Community Title Scheme) suggests that there will not be the need for street lighting, and instead suitable

		lighting will be installed on each proposed allotment as part of the proposed industrial activities.
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As can be seen from the above table, this proposal is considered to be compliant with the relevant Development Code. Notwithstanding, any performance solutions proposed are clearly outlined and discussed in the detailed assessment of this proposal against the relevant codes submitted in support of this application.

7.8 Summary of Code Assessment

Based on the detailed assessment of the proposed application against the relevant code it has been determined that the proposal is generally compliant with the provisions and criteria of the 'Rural Zone' code and the 'Subdivision' code. The Table above demonstrates the provisions / criteria that were deemed significant to the assessment of this proposal. For further information in relation to this assessment, please refer to the complete analysis contained within **Appendix C - Code Assessment**.

8.0 Key Site Based Considerations

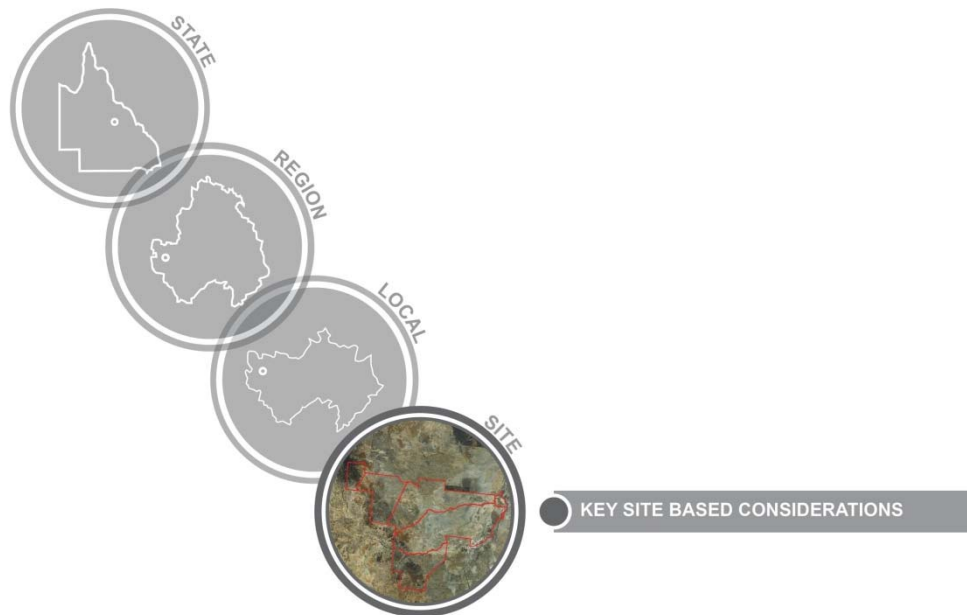


Figure 15: Hierarchy of assessment – Key Site Based Considerations, Source: GDP, 2013

The following key matters are considered relevant to the consideration and determination of this development application.

8.1 Application Context

The industrial area proposed is one of the critical off-site infrastructure items identified as being required to support the broader Carmichael Coal Mine and Rail project proposed. Through the inclusion of the application material as part of the SEIS submission, it will not only enable a greater understanding of the wider project to be understood by decision makers it also has the potential to lead to decreased SPA IDAS assessment processes when a subsequent application is lodged. This industrial area forms one (1) element of the core off-site infrastructure items currently identified as being required to support the broader project, with other aspects including that of an airport and mine workers accommodation village.

The key function of the industrial area will be to enable 'non-operational mine related' industries to be established within close proximity to the planned mine, airport and mine workers accommodation village. It is envisaged that initial uses placed on the industrial area will be to

support the broader project during the construction phase and also activities directly linked to the planned new rail line.

It is considered appropriate and beneficial that this core off-site infrastructure item is brought forward and included within the coordinator general's consideration and determination of the project.

8.2 Site Suitability

The location for the industrial area has been strategically chosen following an earlier detailed land use assessment that was undertaken on the subject site to determine appropriate locations for off-site infrastructure items. Key matters that were taken in determining the chosen location include that of:

- Proximity and interconnectivity with planned rail line, including the ability for a rail siding to be incorporated;
- Proximity to the planned mine whilst being located off-site so as to not impact on mining operations and activities;
- Appropriate contextual relationship with the mine workers accommodation village to reduce potential land use conflicts whilst not resulting in large commuting and transit times;
- Sufficient land budget to enable potential staged growth to occur;
- Appropriate setbacks from existing creeks and waterways to increase inherent flood immunity and decrease potential water quality impacts;
- Minimise impact on known remnant ecosystems and ecological values; and
- Good existing linkages into public access roads.

As can be seen from the above matters, it is considered that the chosen location positively responds to each aspect. In this regard, it is considered that the chosen location for the industrial area represents a convenient, flexible and optimum location given existing site attributes and the array of future activities proposed.

8.3 Staging and Delivery Strategy

The overall area identified for the industrial area is almost 1,000 hectares in size and in order to ensure that unnecessary site preparatory and establishment works are not undertaken to meet the immediate requirements of the industrial area, a potential three (3) staged land delivery

strategy was devised. A first stage of approximately 180 hectares and some 15 lots ranging in size from 1.5 hectares to 30 hectares was developed as an appropriate extent of industrial land to be made available during the initial stages of the broader project.

This targeted approach enabled the more detailed planning to be undertaken, whilst still ensuring that appropriate linkages and connections were provided to the greater area to assist when any future development within these areas may occur.

The range of allotments proposed within the first stage was included so as to provide greater flexibility for a range of uses that may be able to be accommodated, whilst still provided larger allotments that could be readily further subdivided in the future to accommodate activity specific needs. All the key 'aspects' that were identified within this first stage, namely that of the electrical substation, chemical storage and concrete batching plant have been located on individual allotments on the southern side of the existing the Moray Carmichael Road reserve within close proximity to the entrance to the area to enable ease of access and establish a 'core hub' of activities at the entrance to the area. Larger allotments have been proposed on the northern side of Moray Carmichael Road and it is envisaged that these will be used initially to accommodate large vehicle lay down and storage areas directly related to mine machinery and equipment.

Importantly, Stage 1 has also been designed such that it can be developed appropriately and independently of any subsequent future stages. For further information on the proposed design, please refer to **Appendix A – Plans and Drawings**.

8.4 Titling Strategy

As a community title subdivision has been proposed as part of this application, an overarching draft community management statement has been prepared to provide a greater understanding of the type of subdivision proposed and related management that will occur. The statement in basic terms sets out the legal framework regarding access, common property and access to key services in order to ensure that a consistent and unified form of development occurs within the estate.

It is important to note that the proposed community titling strategy does not form part of the documentation that is requested to be approved as part of this application material, it merely has been included within this documentation for reference purposes.

For further information in relation to the preliminary documentation that has been prepared to support the community title reconfiguration proposed, please refer to **Appendix B** – Draft CMS.

8.5 Vegetation Clearing

To enable ‘early works’ to occur within the industrial area as well as enabling a more detailed understanding of the extent of works required to support this estate, the full extent of vegetation clearing reporting has been undertaken. As the basis for this clearing has been drawn from the extensive PVMP report undertaken as part of the EIS/SEIS submission, the extent of vegetation requested to be cleared covers the full extent of the industrial area not just Stage 1.

The current mapped vegetation within this area includes that of least concern regional ecosystems, with the revised mapping recently verifying that a number of pockets of least concern vegetation occur along the north-eastern boundary. These pockets are located within the third stage of the Precinct and it is not considered likely they will be removed until such time that there is intent for this last stage to be activated as there are no required bulk earthworks to be undertaken as part of Stage 1.

For further information in relation to the extent of vegetation clearing proposed, please refer to **Appendix D** – OPW Vegetation Clearing.

8.6 Preparatory Earthworks

Detailed engineering design works have been undertaken as part of the preparation of this application material to inform the extent of earthworks proposed and also enable their early consideration. Due to the large size of the overall industrial area and intent to only initially activate Stage 1, detailed reporting has only been undertaken for this stage. These design works have also been undertaken with the stormwater management strategy proposed to ensure that appropriate finished ground conditions are established.

The design strategy that underpinned the earthworks design was heavily reliant on the intended height levels of the rail line and the measures to convey, capture and treat stormwater. In a general sense, the Stage 1 area is to be split up such that a portion falls towards the south-west and the remaining towards the south-east. Due to existing levels, the entire Stage 1 is required to be in fill.

For further information in relation to the preparatory earthworks proposed, please refer to **Appendix E – OPW Bulk Earthworks**.

8.7 Concrete Batching

Due to the range of essential components intended to be constructed as part of the delivery of Stage 1 of the industrial area, a concrete batching plant is planned to be established and operated within the estate. The location of this batching plant has been located near the entrance to the estate such that it is readily accessible from Moray Carmichael Road. Whilst this activity is no longer prescribed as an ERA, a site based management plan has been prepared and accompanies this application that. This management plan provides detail in relation to the scale and scope of operations on site, as well as outlining any necessary emergency and safety measures.

For further information in relation to this matter, please refer to **Appendix F**.

8.8 Environmentally Relevant Activities

Due to the range of essential components intended to be constructed as part of the delivery of Stage 1 of the industrial area, a number of ERA activities and permits are required to be obtained. These activities are in relation to the required on-site effluent disposal and intention to store chemical (diesel fuel). Both these ERAs have been appropriately located near the entrance to the estate off the existing Moray Carmichael Road such that they can be readily and easily accessible and specific management plans have been prepared for each.

For further information in relation to both the environmentally relevant activities proposed, please refer to **Appendix G** and **Appendix H**.

8.9 Site Servicing

In order to ensure that the chosen location for the industrial area was appropriate in terms the ability for future essential services to be provided, a preliminary engineering services investigation was prepared and accompanies this application material. This report provides preliminary discussion on a site servicing strategy with respect to the future provision of civil services both too and within the industrial area.

This report demonstrates that the industrial area will be adequately serviced by potable water, sewerage, electrical services and vehicle access infrastructure. Where relevant, it also provides discussion on both interim and likely permanent servicing solutions. For further information in relation to the ability for civil services to be provided, please refer to **Appendix I – Preliminary Servicing**.

8.10 Stormwater

In conjunction with the detailed work that was undertaken for Stage 1 of the industrial in relation to bulk earthworks and vegetation clearing, a site based stormwater management plan was also prepared and accompanies this application material. This report provides a strategy in relation to the incorporation of stormwater quality and quantity techniques within Stage 1.

The strategy that has been proposed includes the construction of a number of open drainage channels and numerous bio-retention and detention basins within each of the catchments identified. The treatment train within each catchment has also been designed such that it can be developed in isolation from any other catchment, thus providing greater flexibility in the future. This report confirms that subject to the implementation of the recommended quality and quantity techniques, stormwater runoff will be able to be treated in accordance and compliance with the following key criteria:

- Water Sensitive Urban Design principles and will not affect any peak flows downstream;
- Compliance with QUDM;
- Compliance with the State Planning Policy 4/10 Healthy Waterways; and
- Ecological sustainability in terms of the development's impact upon receiving waters; and the viability of the proposed development.

For further information in relation to the recommended conveyance, capture and treatment of stormwater within the industrial area, please refer to **Appendix J – Stormwater Management**.

9.0 Conclusion

The Applicant has demonstrated that the proposal is considered consistent with the intent and relevant development provisions at both state and local level and specifically contained within the Planning Scheme for Belyando Shire.

The proposed development represents a crucial element of a wider strategy to develop a Mine Operation on the 'Moray Downs' and provide local facilities that service off site infrastructure needs.

Further the proposed development is:

- Consistent with the State and regional planning provisions applicable to the subject site;
- Consistent with the general planning principles in the Planning Scheme;
- Consistent with the intent and content of the 'Rural Zone';
- Generally in accordance with the performance criteria of the applicable development code, with alternative solutions provided where necessary; and
- Appropriately designed so that the development integrates within the context of the site and its surrounds without adversely impacting on neighbouring uses.

The proposed development is reasonable and appropriate within the context of the site and the planning framework for the area. Accordingly, it is requested that this application be favourably considered.

Appendix A: Plans and Drawing

NOTES:

This plan has been prepared for the exclusive use of the client as stated on this plan for the purpose of application to the relevant local authority for the land as described and should not be used by any other person or corporation and for any other purpose.

Areas and Dimensions are approximate only and are subject to final state approval and survey.

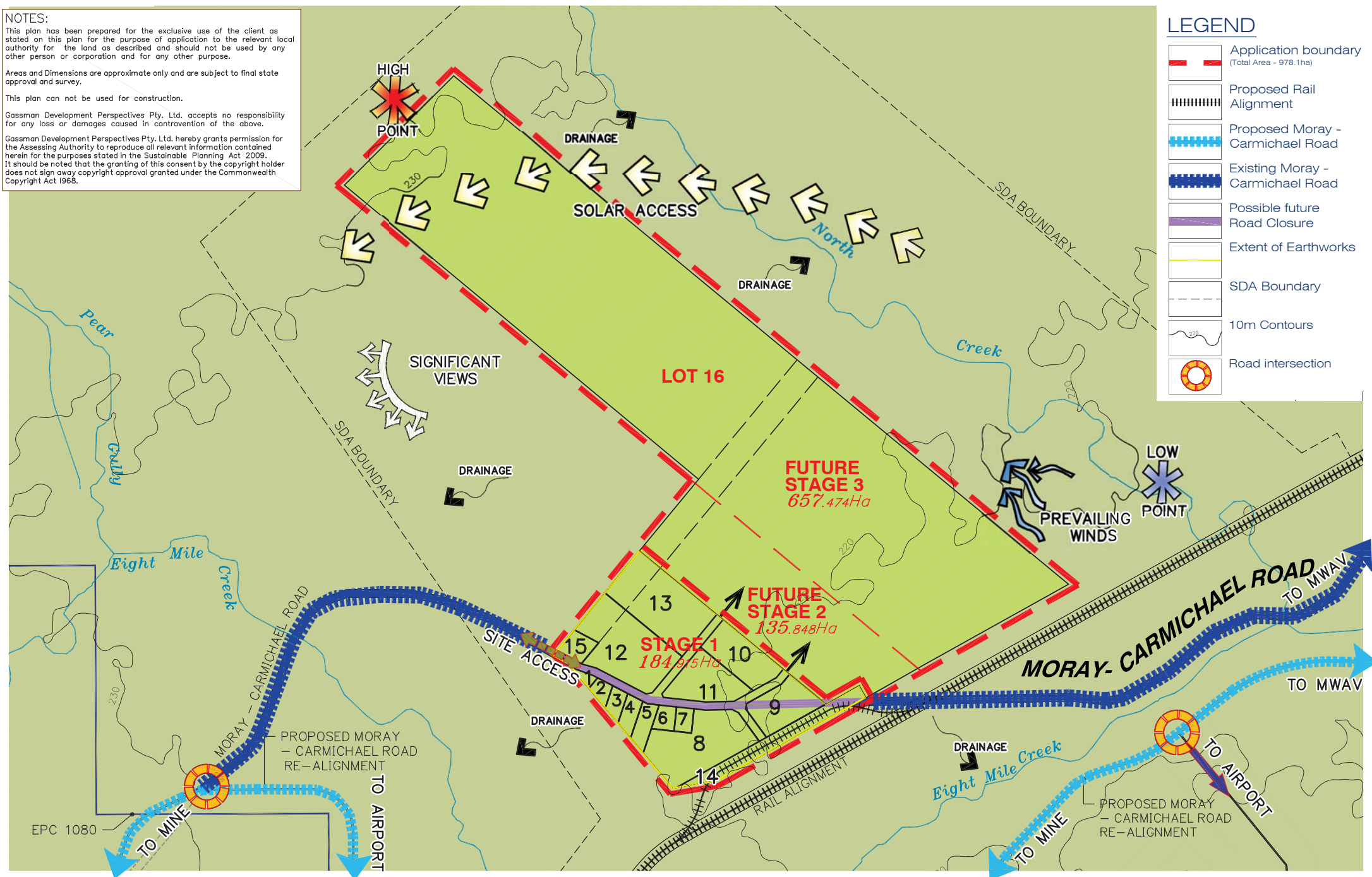
This plan can not be used for construction.

Gassman Development Perspectives Pty. Ltd. accepts no responsibility for any loss or damages caused in contravention of the above.

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LEGEND

-  Application boundary
(Total Area - 978.1ha)
-  Proposed Rail Alignment
-  Proposed Moray - Carmichael Road
-  Existing Moray - Carmichael Road
-  Possible future Road Closure
-  Extent of Earthworks
-  SDA Boundary
-  10m Contours
-  Road intersection



NOTES:

This plan has been prepared for the exclusive use of the client as stated on this plan for the purpose of application to the relevant local authority for the land as described and should not be used by any other person or corporation and for any other purpose.

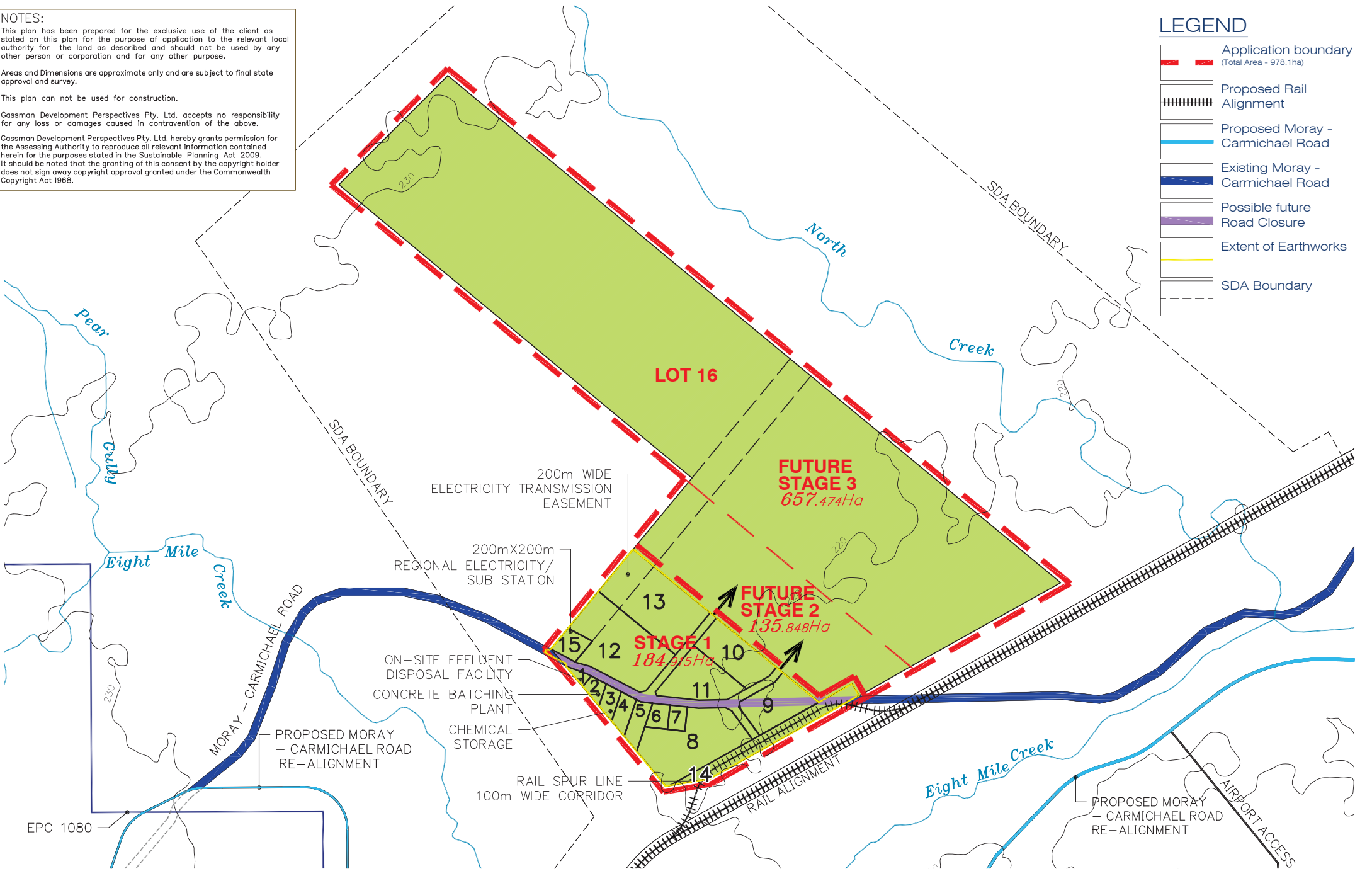
Areas and Dimensions are approximate only and are subject to final state approval and survey.

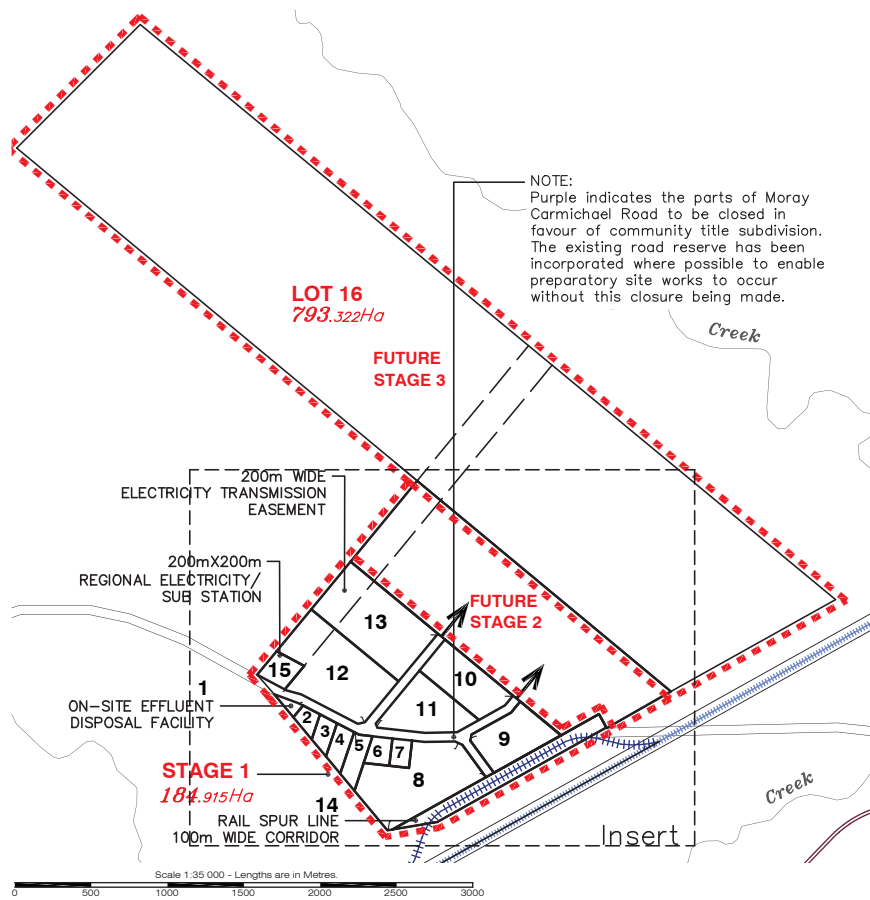
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- LEGEND
- Application boundary (Total Area - 978.1ha)
 - Proposed Rail Alignment
 - Proposed Moray - Carmichael Road
 - Existing Moray - Carmichael Road
 - Possible future Road Closure
 - Extent of Earthworks
 - SDA Boundary

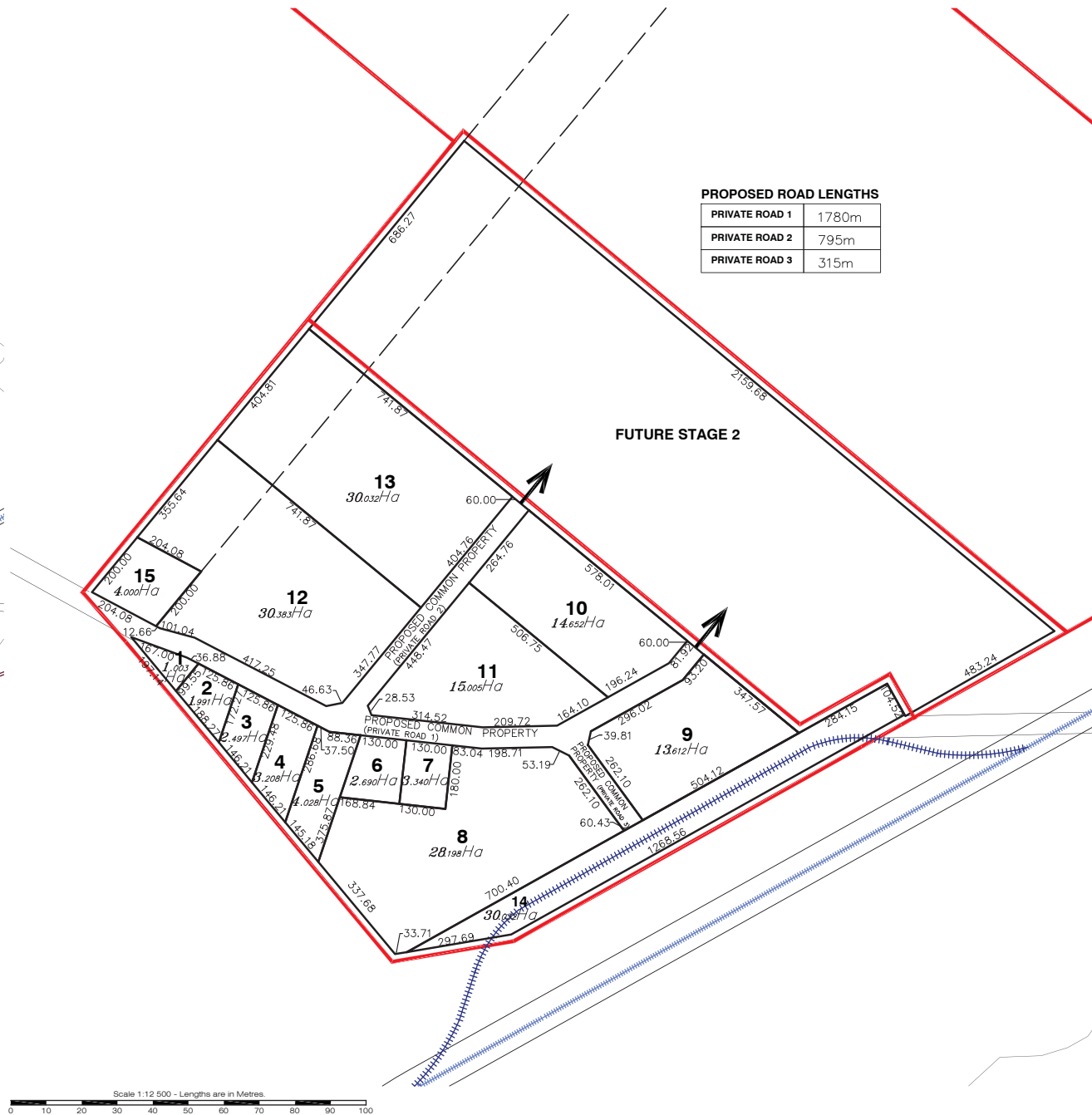




NOTE:
Purple indicates the parts of Moray Carmichael Road to be closed in favour of community title subdivision. The existing road reserve has been incorporated where possible to enable preparatory site works to occur without this closure being made.

PROPOSED ROAD LENGTHS

PRIVATE ROAD 1	1780m
PRIVATE ROAD 2	795m
PRIVATE ROAD 3	315m



NOTES:

This plan has been prepared for the exclusive use of the client as stated on this plan for the purpose of application to the relevant local authority for the land as described and should not be used by any other person or corporation and for any other purpose.

Areas and Dimensions are approximate only and are subject to final state approval and survey.

This plan can not be used for construction.

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AMENDMENT DETAILS		DATE
A		
F		
E		
D		
C		
B		
A	FINAL RELEASE	16-07-2013

Appendix B: Draft CMS

THIS STATEMENT MUST BE LODGED TOGETHER WITH A FORM 14 GENERAL REQUEST AND IN THE CASE OF A NEW STATEMENT MUST BE LODGED WITHIN THREE (3) MONTHS OF THE DATE OF CONSENT BY THE BODY CORPORATE

Office use only
CMS LABEL NUMBER

This statement incorporates and must include the following:

Schedule A - Schedule of lot entitlements
Schedule B - Explanation of development of scheme land
Schedule C - By-laws
Schedule D - Any other details
Schedule E - Allocation of exclusive use areas
Schedule F - Carmichael Off – Site Infrastructure Development Code

1. Name of community titles scheme

Carmichael Off-site Industrial Estate

2. Regulation module

-

3. Name of body corporate

Body Corporate for Adani Carmichael Industrial Estate

4. Scheme land

Lot on Plan Description	County	Parish	Title Reference
Lots 1 – 16 & Common Property on GDP Plan 5370 ROL PP 02 A	-	-	-

5. # Name and address of original owner

Adani Mining Pty Ltd

6. Reference to plan lodged with this statement

-

first community management statement only

7. Local Government community management statement notation

X signed

X name and designation

Isaac Regional Council name of Local Government

8. Execution by original owner/Consent of body corporate

/ /
Execution Date

.....
***Execution**

*Original owner to execute for a first community management statement

*Body corporate to execute for a new community management statement

Privacy Statement

Collection of this information is authorised by the Body Corporate and Community Management Act 1997 and is used to maintain the publicly searchable registers in the land registry. For more information about privacy in NR&W see the Department's website.

SCHEDULE A SCHEDULE OF LOT ENTITLEMENTS		
Lot on Plan	Contribution	Interest
1	X	X
2	X	X
3	X	X
4	X	X
5	X	X
6	X	X
7	X	X
8	X	X
9	X	X
10	X	X
11	X	X
12	X	X
13	X	X
14	X	X
15	X	X
16	X	X
TOTALS		

SCHEDULE B	EXPLANATION OF THE DEVELOPMENT OF SCHEME LAND
------------	---

DESCRIPTION OF FURTHER DEVELOPMENT OF [INSERT NAME]

1. Interpretation

1.1 Meaning of words

The following words have these meanings in this Schedule B of the community management statement unless the contrary intention appears.

- (a) **Act** means the *Body Corporate and Community Management Act 1977* (Cth), but not the Commercial Module.
- (b) **Category Index** means the number allocated to that CS Category in Table 1.
- (c) **CMS** means this community management statement.
- (d) **Community Titles Scheme** means the community titles scheme to which this CMS applies.
- (e) **Concept Plan** means a plan attached to this Schedule B illustrating an aspect of the future development of the Scheme Land.
- (f) **CS Category of a Lot** means the category allocated to the Lot from time to time used to calculate the contribution schedule lot entitlement of the Lot. The initial categories are marked on Concept Plan 4.
- (g) **CS Formula** means the formula used to calculate the contribution schedule lot entitlement of a Lot, using the Lot's CS Category, its Category Index, and its area, set out in clause 3 of this Schedule.
- (h) **Development Lots** means the Lots which are intended to be further subdivided to create the Lots shown on Concept Plan GDP Plan 5370 ROL LP 02 B. A Development Lot may be created by subdivision or amalgamation of existing Development Lots.
- (i) **Initial Market Value Index of a Lot** means the market value index of the Lot per square metre at the establishment of the Community Titles Scheme, set out in table 2 in clause 4 of this Schedule.
- (j) **IS Category of a Lot** means the category allocated to the Lot from time to time used to calculate the interest schedule lot entitlement of the Lot. The Initial categories are marked on Concept Plan 3.
- (k) **IS Formula** means the formula used to calculate the interest schedule lot entitlement of a Lot, using the Lot's IS Category, its Initial Market Value Index, and its area, set out in clause 4 of this Schedule.
- (l) **Local Government** means Isaac Regional Council.
- (m) **Lot** means a lot that is part of the Scheme Land.
- (n) **#####** means the development covered by the Community Titles Scheme and containing the Scheme Land.
- (o) **Scheme Land** means the land described as the scheme land in item 4 of this CMS.
- (p) **Commercial Module** means the *Body Corporate and Community Management (Commercial Module) Regulations 1997* (Qld).

1.2 Rules of Interpretation

In this Schedule B of the CMS unless the contrary intention appears:

- (a) a reference to this Schedule B of the CMS includes replacement of it;
- (b) a reference to a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;
- (c) the singular include the plural and vice versa;
- (d) the word person includes a firm, a body corporate, an unincorporated association or an authority; and
- (e) a reference to a person includes a reference to the person's executors, administrators, successors, substitutes (including, but not limited to, persons taking by novation) and assigns.

2. Further development in stages

2.1 Subsidiary schemes

- (a) The scheme land is made up of a layered arrangement consisting of the principal scheme being [insert name] community titles scheme ##### and a subsidiary scheme being [insert name] community titles scheme.
- (b) [Insert name] will be further subdivided by a standard plan into # lots and common property forming a subsidiary scheme described as [insert name] community titles scheme under the Commercial Module for office and warehouse facilities.
- (c) [Insert name] will be further subdivided by a standard format plan into # lots and common property forming a subsidiary scheme described as [insert name] community titles scheme under the Commercial Module for office and warehouse facilities.
- (d) [Insert name] will be further subdivided by a standard format plan into 2 lots and common property forming a subsidiary scheme described as [insert name] community titles scheme under the Commercial Module for industrial and warehouse facilities.
- (e) At the date of this CMS, there are no plans to create any other subsidiary schemes in [insert name], within the meaning in section 19 of the Act. However, other subsidiary schemes may be created later.

2.2 Total proposed development

- (a) The Carmichael Off-Site Industrial Estate is intended to be developed in a number of stages by the construction of roads and infrastructure and further subdivision of the Development Lots to create the proposed Lots shown on Concept Plan 1, or amalgamation to create Lots that are a combination of those proposed Lots. The whole development is shown on the Concept Plans.
- (b) Buildings will be built on Lots either before or after they are created by subdivision.

2.3 Common property

- (a) The areas that will be common property for Carmichael Off-Site Industrial Estate are shown on Concept Plan 1.

2.4 Future staging

- (a) The future stages, when they occur, will be subdivided by registration of standard format plans to create Lots and, possibly, common property, substantially in accordance with Concept Plan 1, subject to this CMS.
- (b) Separate Lots will be created. from each Development Lot by registration of standard format plans.
- (c) Lots may be created in any order, at any time.
- (d) Minor changes may-be made to the Concept Plans at any time.

2.5 Roads and public open space

Internal roads are intended to be private roads. This will be done at various stages of the development of #####.

2.6 Changes to aspects of the Scheme

Market, economic and site conditions, the requirements of the Local Government and other relevant authorities, and the type, extent and conditions of approvals granted by the Local Government and other relevant authorities may mean that changes are made to:

- (a) the number of stages;
- (b) the size of each stage;
- (c) the configuration of Lots in each stage;
- (d) the timing of each stage;
- (e) the number of Lots;
- (f) the size of Lots;
- (g) the position and size of roads;
- (h) the extent and location of the common property;
- (i) the extent and location of the public open space and roads; and
- (j) this CMS.

3. Calculation of contribution schedule lot entitlements•

The contribution schedule lot entitlements for the current stage of Carmichael Off-site Industrial Estate are set out in Schedule A. This clause explains how the contribution schedule lot entitlements for later stages will be calculated.

3.1 Lots that are not Development Lots

The contribution schedule lot entitlement for each Lot that is not a Development Lot will be allocated using the CS Formula, subject to this CMS.

3.2 CS Categories and Category Indices

- (a) To calculate contribution schedule lot entitlements, the Scheme Land has been categorised. Some uses of land within the categories are more intensive and so will involve more people using the common property and gaining benefits from the common property and body corporate services.
- (b) Concept Plan S shows the three CS Categories into which the Scheme Land has been divided for the purposes of this calculation. A comparative index for each CS Category has been developed, based on the predicted intensity of the proposed use in the category. This table sets out the CS Categories and the corresponding Category Index.

Table 1: CS Categories and Category Indices

Category	Category Index
Industrial	##

Commercial offices	##
--------------------	----

3.3 CS Formula

- (a) Firstly, the CS Category for each Lot can be determined from Concept Plan 1.
- (b) Next, the contribution schedule lot entitlement for each lot is calculated using this formula (and rounding up or down to the nearest whole number):

$$CS = CI \times A$$

where:

CS = contribution schedule lot entitlement

CI = CS Category Index for the Lot

A = Lot area (measured in sq m) divided by 100

3.4 Changes to contribution schedule lot entitlement

The CS Categories of the Scheme Land may change, due to market and economic conditions, the requirements of the Local Government and other relevant authorities and the type, extent and conditions of approvals granted by the Local Government and other relevant authorities. Any changes made will, so far as possible, reflect the same principles.

3.5 Calculation of the aggregate of contribution schedule lot entitlements

The aggregate of the contribution schedule lot entitlements is calculated as the sum of all contribution schedule lot entitlements for all Lots in the Community Titles Scheme. The aggregate will change from time to time as new Lots are created.

3.6 Development Lots

When a Development Lot is subdivided and a new Development Lot is created then the contribution schedule lot entitlement for the new Development Lot is a number (rounded up or down to the nearest whole number) calculated by dividing the contribution schedule lot entitlement for the original Development Lot by the area of the original Development Lot and then multiplying that number by the area of the new Development Lot.

3.7 Market & Relativity Principals (insert relevant description)

4. Interest schedule lot entitlements

- (a) The interest schedule lot entitlements for the current stage of [insert name] are set out in Schedule A. This clause explains how the interest schedule lot entitlements for later stages will be calculated.
- (b) The interest schedule lot entitlements for each Lot to be created by future subdivision will be allocated using the IS Formula, subject to this CMS.

4.2 IS Categories and IS Category Indices

- (a) To calculate interest schedule lot entitlements, the Scheme Land has been categorised.
- (b) Concept Plan # shows the # IS Categories into which the Scheme Land has been divided for the purposes of this calculation. The Initial Market Value Index for each IS Category has been developed

based on the market value at the date of this CMS. This table sets out the IS Categories and the corresponding Initial Market Value Index.

Table 2: IS Categories and Initial Market Value Indices

IS Category	Initial Market Value Index
Industrial 1	##
Industrial 2	##

4.3 IS Formula

- (a) Firstly, the IS category for each Lot can be determined from Concept Plan 1.
- (b) Next, the interest schedule lot entitlement for the Lot is calculated using this formula (and rounding up or down to the nearest whole number):

$$IS = IMVI \times A$$

where:

$$IS = \text{interest schedule lot entitlement}$$

$$IMVI = \text{Initial Market Value Index for the Lot}$$

$$A = \text{Lot area (measured in sq m) divided by 100}$$

4.4 Changes to interest schedule lot entitlement

The IS Categories of the Scheme Land may change, due to market and economic conditions, the requirements of the Local Government and other relevant authorities and the type, extent and conditions of approvals granted by the Local Government and other relevant authorities. Any changes made will so far as possible, reflect the same principles.

4.5 Calculation of the aggregate of Interest schedule lot entitlements

The aggregate of the interest schedule lot entitlements is calculated as the sum of all interest schedule lot entitlements for all Lots in the Community Titles Scheme. The aggregate will change from time to time as new Lots are created.

4.6 Development Lots

When a Development Lot is subdivided and a new Development Lot is created then the interest schedule lot entitlement for the new Development Lot is a number (rounded up or down to the nearest whole number) calculated by dividing the interest schedule lot entitlement for the original Development Lot by the area of the original Development Lot and then multiplying that number by the area of the new Development Lot.

5. Removal of undeveloped

5.1 Development Lot from scheme

- (a) The owner of a Development Lot may remove that Lot from the Community Titles Scheme at any time before subdivision of the Development Lot.
- (b) If a Development Lot is removed from the Community Title, Scheme, then the Community Titles Scheme will comprise any remaining Lots and existing common property.

6. Addition of other land to the scheme

- (a) The following land may be added as a Lot, part of a Lot or as common property:
 - (i) Lot ## ### may be added at some later time; and
 - (ii) other adjacent land may be added from time to time.
- (b) Subject to this CMS, for the purpose of adjusting or specifying lot entitlements as a consequence of the addition of land to the Community Titles Scheme:
 - (i) the contribution schedule lot entitlements for each Lot created will be calculated using the CS Formula; and
 - (ii) the interest schedule lot entitlements for each Lot created will be calculated using the IS Formula.
- (c) If the land to be added to the Community Titles Scheme as a Lot or part of a Lot does not have an IS category or a CS Category, the relevant Concept Plans must be amended to categorise the land according to the CS Category and the IS Category of the Lot of which the additional land forms part, or the adjacent Lot, as appropriate.

7. Amalgamation of Lots

7.1 Lots may be amalgamated

Lots may be amalgamated with other Lots or parts of Lots from time to time.

7.2 Lot entitlements

When Lots are amalgamated with other Lots or parts of Lots:

- (a) the contribution schedule lot entitlement for the amalgamated Lot is equal to the total contribution schedule lot entitlements of the Lots which were amalgamated plus a proportionate part of the contribution schedule lot entitlements of any parts of Lots (calculated as the area of the part of the Lot which has been amalgamated, divided by the total area of that original DA and then multiplied by the contribution schedule lot entitlement of that original Lot), rounded to the nearest whole number; and
- (b) the interest schedule lot entitlement for the amalgamated Lot is equal to the total interest schedule lot entitlements of the Lots which were amalgamated plus a proportionate part of the interest schedule lot entitlements of any parts of Lots (calculated as the area of the part of the Lot which has been amalgamated, divided by the total area of that original Lot, and then multiplied by the interest schedule lot entitlement of that original Lot), rounded to the nearest whole number.

SCHEDULE C	BY-LAWS
------------	---------

1. Interpretation

1.1 Meaning or words

The following words have these meanings unless the contrary intention appears.

- (a) **Act** means the *Body Corporate and Community Management Act 1997 (Qld)*.
- (b) **Assets** mean personal property of the Body Corporate.
- (c) **Body Corporate** means the body corporate for the Scheme.
- (d) **Code** means the Architectural and Landscaping Code which forms part of this community management statement.
- (e) **Common Property** means the Common Property for the Scheme.
- (f) **Directory Boards** means any directory board of Occupiers installed by the Body Corporate and the Common Property from time to time.
- (g) **Environmental Laws** means all statutes, regulations, statutory instruments, local laws, government policies, development conditions, or requirements of any government authority which, relate to environmental issues in the Scheme.
- (h) **Lot** means a lot that is part of the Scheme Land for the Scheme.
- (i) **Masterplan** means the plan labelled Concept Plan 1 in Schedule B of this community management statement.
- (j) **Occupier** includes any person that must, by law, comply with these by-laws.
- (k) **Regulation** means the *Body Corporate and Community Management (Commercial Module) Regulation 1997 (Qld)*.
- (l) **Scheme** means the community titles scheme to which this community management statement relates.
- (m) **Scheme Land** means the land described as the scheme land in item 4 of this community management statement.

1.2 Rules of interpretation

In these by-laws unless the contrary intention appears:

- (a) a reference to a by-law includes any variation or replacement of it;
- (b) a reference to a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;
- (c) the singular includes the plural and vice versa;
- (d) a reference to a person includes a firm, a body corporate, an unincorporated association or an authority;
- (e) a reference to any thing is a reference to the whole and each part of it; and
- (f) where these by-laws say that something can or must be done by the Body Corporate then that thing may be done by the committee unless there is a legal restriction on the committee doing so.

2. Protection of the Common Property

2.1 Gardens and Plants

An Occupier must not damage or remove any lawn, garden, plant or part of a plant on the Common Property without the consent of the Body Corporate.

2.2 Structures

Subject to any law, an Occupier must not alter, operate, damage or deface any Asset or structure that forms a part of the Common Property without the written consent of the Body Corporate.

2.3 Rubbish

An Occupier must:

- (a) dispose directly of any rubbish generated within the Occupier's Lot; and
- (b) not put any rubbish, dirt or other material on the Common Property except in bins provided by the Body Corporate.

2.4 Damage to Common Property

If an Occupier or its employee, agent, contractor, customer or visitor damages the Common Property, the Body Corporate may repair the damage and recover its repair costs from the Occupier as a liquidated debt.

3. Conduct on Parcel

3.1 Obstruction

An Occupier must not obstruct lawful use of the Common Property by another person.

3.2 Noise

An Occupier must not make or allow any noise in a Lot or on the Common Property that would unreasonably interfere with the use or enjoyment by others of a Lot or the Common Property. If noise is unavoidable then the Occupier must strive to minimise the noise.

3.3 Behaviour or visitors

Occupiers must make sure their employees, agents, contractors, customers and visitors comply with these by-laws and the community management statement.

3.4 Notice of accidents

If an Occupier or an Occupier's employee, agent, contractor, customers or visitor is involved in an accident on Common Property, the Occupier must notify the Body Corporate of the accident and give a reasonably detailed description of the circumstances.

3.5 Post box clearance

An Occupier must regularly clear its post box at the entry to its Lot or the Scheme Land.

4. Use of Lots

4.1 Use of Lots

- (a) Subject to this By-law, Lots may be used for any purpose permitted by law.

- (b) No Occupier may use any Lot for a use which is inconsistent with the general intent of the Masterplan.
- (c) Only 1 Lot in the Scheme may be used to conduct the business of a letting and selling agent for the Lots.
- (d) Initially, this Lot is Lot ##. The owner of that Lot may designate another Lot which may be used for that purpose instead of Lot ##. When this occurs, Lot ## may no longer be used for that purpose.
- (e) The process in clause 4.1(d) may be repeated each time a new Lot is designated as the Lot which may be used for conducting the business of a letting and selling agent for the Lots.

4.2 Display Site

Despite any other by-law, the original owner (within the meaning of the Act) may use any Lot that it owns or leases for display and promotional purposes.

4.3 Parking

Vehicles, trailers, boats and caravans must not be parked on parts of Lots other than garages, driveways or parking areas.

4.4 Maintenance of Lots

Lots must be kept clean, maintained in good order and condition and kept free of rubbish and vermin.

4.5 Garbage disposal

- (a) The following rules apply to garbage bins:
 - (i) garbage bins must be stored where they are not visible from outside the Lot; and
 - (ii) they must be emptied on a regular basis

4.6 Flammable liquids.

Occupiers must store and use flammable liquids or materials in their Lots in accordance with best practice.

4.7 Animals

Subject to any law, an Occupier must not keep animals on a Lot or the Common Property without the prior written consent of the Body Corporate.

4.8 Use of facilities

All facilities in Lots and the Common Property must be used properly and not for any purpose for which they were not designed.

4.9 Notice of damage

The Body Corporate must be promptly notified of any damage to or defect in water or gas pipes, electrical cables, service cables and other fixtures which comprise part of the common property.

5. Vehicles, parking and driving

5.1 Vehicles, parking and driving

Unless permitted under a by-law, an Occupier must not park or stand a vehicle or equipment on the Common Property.

5.2 Visitor parking

Areas of the Common Property constructed as car parks may be used for visitor parking but Occupiers must not park on, those areas. Parking is not allowed on those parts of the side of the internal roads on Common Property which are designated by signage.

6. Miscellaneous

- (a) The owner of a Lot must give a copy of these by-laws to any Occupier of the Lot.
- (b) If the Body Corporate incurs costs or expenses because an Occupier does not pay an amount due to the Body Corporate or breaches these by-laws, the Act or the Regulation, the Occupier must pay the Body Corporate those costs or expenses within 7 days of the Body Corporate demanding payment as a liquidated debt due to the Body Corporate.
- (c) Occupiers must comply with all laws (including, to remove any doubt, Environmental Laws) and the requirements of all relevant authorities.

7. Directory Board and Signs

- (a) The Body Corporate may allocate space on the Directory Board for the names of Occupiers and a description of their businesses.
- (b) The Body Corporate may determine in its discretion the size, appearance of and content of signs on the Directory Board.
- (c) If the Body Corporate displays a sign relating to an Occupier on the Directory Board, the Occupier must pay the Body Corporate costs of placing the sign on the Directory Board or removing it, including, without limitation, the cost of the sign.
- (d) Subject to the Code, Occupiers must not display any sign on a Lot which is visible from outside the Lot, or on the Common Property, without the Body Corporate's prior written consent, which must not be unreasonably withheld. To remove doubt, the Body Corporate must take into account any relevant provisions of the Code. If ARC approval has been obtained, there is no need for further approval.

SCHEDULE D	OTHER DETAILS REQUIRED/PERMITTED TO BE INCLUDED
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1. Connection to utility infrastructure

The owner of a lot in the community titles scheme may, for the further development of the lot as described in Schedule B of this community management statement, connect to the utility infrastructure the Common Property.

2. Architectural and Landscape Code

PREAMBLE

The vision for the Scheme is to create an industrial precinct that will meet all of the off-mine needs generated by the Carmichael Coal Mine, Railway and related off-site infrastructure

The purpose of this Code is to facilitate developments which will provide support to the mine and rail operations, and ensure that any such development is of a standard which reflects the broader values and principles of the off-site infrastructure precincts.

This Code, which forms part of the community management statement, will protect everyone's investment in the Scheme, including property values and each Lot owner or occupier's corporate image.

This Architectural and Landscaping Code is made up of six divisions:

Division 1	Introduction
Division 2	Establishment of the ARC
Division 3	Architectural and Landscaping Standards
Division 4	Construction Rules
Division 5	ARC Approvals, compliance and enforcement
Division 6	General

DIVISION 1: INTRODUCTION

1. Interpretation

- (a) The following words have these meanings in this Code unless the contrary intention appears.
- (i) **Act** means the *Body Corporate and Community Management Act 1997* (Qld), but does not mean the Commercial Module.
 - (ii) **Applicant** means the person who submits an application for approval of Works by the ARC under Division 5.
 - (iii) **ARC** means the architectural review committee established under Division 1.
 - (iv) **ARC Approval** means an approval granted by the ARC to Works under this Code.
 - (v) **Body Corporate** means the body corporate for the Scheme.

- (vi) **Bond** means a bank guarantee in a form acceptable to the ARC for an amount determined by the ARC.
 - (vii) **Business Day** means a day on which banks are open for general banking business in Brisbane, not being a Saturday or Sunday.
 - (viii) **Code** means this architectural and landscaping code.
 - (ix) **Construction** means all building, construction and landscaping work in the Scheme, whether or not this is in relation to Works,
 - (x) **Commercial Module** means the *Body Corporate and Community Management (Commercial Module) Regulation 1991* (Qld).
 - (xi) **Consultants** means professional consultants such as architects and engineers appointed by the ARC to advise the ARC about applications.
 - (xii) **Developer** means any person carrying out Works on the Scheme Land, and that person's agents, employees and contractors.
 - (xiii) **Environmental Laws** means all statutes, regulations, statutory instruments, local laws, government policies, development conditions, or requirements of any government authority (including the Local Government's "Best Practices") which relate to environmental issues in the Scheme.
 - (xiv) **Local Government** means Isaac Regional Council.
 - (xv) **Lot** means a Lot in the Scheme.
 - (xvi) **Original Owner** means the person who is the original owner for the Body Corporate under the Act.
 - (xvii) **Roads** means the local government controlled roads in the Scheme.
 - (xviii) **Rules** means the construction rules in Division 4.
 - (xix) **Scheme** means ### community titles scheme ##.
 - (xx) **Scheme Land** means the lots and common property a tile Scheme.
 - (xxi) **Standards** means the architectural and landscaping standards in Division 3.
 - (xxii) **Works** means building and landscaping work that must be approved by the ARC under this Code, described in clause 2.
- (b) In this Code unless the contrary intention appears;
- (i) a reference to a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;
 - (ii) the singular includes the plural and vice versa;
 - (iii) the word "pets" includes a firm, a body corporate, an unincorporated association or an authority;
 - (iv) if a period of time is specified and dates from a given day or the day of an act or event, it is to be calculated exclusive of that day; and
 - (v) a reference to a day is to be interpreted as the period of time commencing at midnight and ending 24 hours later.

2. Works

2.1 Meaning of Works

Works means all building, construction and landscaping work on a Lot which affects the exterior appearance of the Lot or any structure on the Lot.

2.2 Restriction on Works

- (a) A person must not carry out Works on Scheme Land unless:
 - (i) the Works have been approved by the ARC under this Code; and
 - (ii) all necessary other approvals have been obtained from the Local Government and other relevant authorities.
- (b) All Works must be done strictly in accordance with the required approvals for those Works, this Code, all laws (including, to remove any doubt, all Environmental Laws) and any ARC Approval.
- (c) Meetings must be convened by the secretary of the Body Corporate by written notice to the members, unless all members agree to dispense with written notice. The notice must be served by post or facsimile to the recorded address of the member at least 7 days before the proposed date of the meeting. The notice must show the date, time and place of the meeting.
- (d) ARC meetings must be held:
 - (i) on Business Days; and
 - (ii) between 9:00am and 5:00pm,unless the members all agree in writing to a different date or time.
- (e) Decisions will be made by a majority on a show of hands by members at the meeting. Each member will have 1 vote except for the chairperson, who will have a primary vote and a casting vote.
- (f) A member (including, to remove any doubt, the chairperson) who is absent from a meeting may appoint another member as his or her proxy. The proxy must:
 - (i) be in writing signed by the person making the appointment; and
 - (ii) be delivered to the secretary of the Body Corporate before the relevant ARC meeting.
- (g) A member acting as a proxy has the same powers at an ARC meeting as the member whom the member acting as a proxy represents.
- (h) The ARC may from time to time, designate 1 or more of the members to investigate matters for and on behalf of the ARC and report their findings to the ARC.
- (i) The ARC may hold meetings by telephone conference call.
- (j) A minute signed by all members takes effect as a resolution of the ARC.

3. Consultants

3.1 Consultants

- (a) The ARC may appoint Consultants from time to time to assist the ARC in properly performing the ARC's duties. To remove doubt, any member of the ARC may act as a Consultant.

- (b) Each application to the ARC may be submitted to the appropriate Consultant before the meeting at which the application will be considered.
- (c) The type of Consultant to review different applications may be determined by the ARC from time to time.

3.2 Reimbursement of Consultant fees

The ARC may require an Applicant to reimburse the Body Corporate for the reasonable cost of engaging any Consultant retained to assist the ARC in considering an application. In that case, the ARC must not issue an approval for the application until the cost is paid to the Body Corporate.

DIVISION 3: ARCHITECTURAL AND LANDSCAPING STANDARDS

AIM

To encourage development which promotes safe and efficient development, and balances the functional requirements of infrastructure with the amenity and character of the Scheme.

INTENT

These Standards intended to establish a framework which promotes appropriate design solutions which enhance and benefit the broader development.

This quality will be ensured by adherence to defined standards, both building and landscape, which are detailed in this document. In turn these Standards maintain, protect and enhance property values. It is therefore vital that property owners, tenants and potential purchasers within the Scheme adhere to, and are committed to, the implementation of the Standards.

STANDARDS EXPLANATION

Refer to the 'Carmichael Off-Site Infrastructure Development Code' contained in Schedule F of this document for detail in this regard.

DIVISION 4: CONSTRUCTION RULES

AIM

Developers must ensure that the presentation of the Scheme is maintained during construction activities and that inconvenience to adjacent owners and occupiers is minimised.

1. Intent

- (a) These Rules must be read in the context of the Code.
- (b) Developers must also comply with all laws and requirements of authorities, including the Building Code of Australia, the Local Government and all other relevant authorities having jurisdiction.

2. Scheme Land

- (a) Developers must check with the Body Corporate the location and status of all temporary access and haulage roads before commencing Construction. Where possible, Developers should arrange to use these temporary roads for all Construction traffic in preference to the Roads when it is necessary to access a Lot for Construction traffic.
- (b) Developers must ensure all:
 - (i) damage to the Roads is repaired to the satisfaction. of the Body Corporate;
 - (ii) spillages of concrete or similar materials are washed down as they occur; and
 - (iii) vehicles exiting a Lot are washed down before driving on the Roads.
- (c) Developers must mechanically sweep the Road from the entry to the Scheme Land to their specific access point to the relevant Lot at weekly in during the Construction period. In addition, Developers must remove all clay or mud deposits from trucks leaving the Lot as they occur.

3. Lot access

- (a) Developers must limit Construction access to Lots to the designated final development access point to limit damage to kerb and channel and trunk services. Access points must be properly formed with standard crossovers and sealed road surfaces provided to inside the Lot.
- (b) On completion of Construction activities, Developers must repair the Road adjoining the Lot and the crossover so that the entrance to the Lot is in an as new state.

4. Site fencing

- (a) Developers must erect temporary fencing around the perimeter of the Construction area on the Lot and maintain this for the full Construction period.
- (b) Fencing must comprise 1.8m high diamond mesh on minimum 4 No. straining wires with steel posts at maximum 15m centres.
- (c) Developers must cover all fences facing primary and secondary roads in woven (black) shade cloth tensioned between posts and straining wires.

5. Site establishments

- (a) Developers' site establishment and compounds shall be located in a single fenced off area located within, the relevant Lot and set back as far as possible from the Road boundary.
- (b) Developers must screen the site establishment and compound from public view and adjoining Lots, by a solid feriae or appropriate landscape planting,

6. Temporary services

Developers must establish and install all temporary services in accordance with the requirements of the Local Government and all relevant authorities, and pay any charges in connection with the use of these temporary services.

7. Signboards

- (a) Developers must not erect temporary advertising on or around the Lot makes approved beforehand in writing by the Body Corporate, which is not to be unreasonably withheld.
- (b) Site signage shall be limited to safety and directional signage required by the Local Government and relevant authorities.

8. Environmental control

- (a) Developers must comply with all laws (including, to remove any doubt, all Environmental Laws).
- (b) Developers must treat all stormwater run off by approved silt and pollutant traps before flowing off the Lot.
- (c) All Construction activities on Scheme Land must comply with all recommendations and requirements of the Environmental Management Plan and Environmental Impact Statements to the extent that they apply to those Construction activities.
- (d) Developers must submit their environmental procedures to the ARC as part of the ARC approval process. Developers must comply with these procedures (once approved by the ARC).

9. Noise control

- (a) Developers must keep noise resulting from Construction works to a minimum, and fit all machinery with noise suppressors.
- (b) Developers must, as a minimum, comply with the requirements or the Australian standards and all Local Government and relevant authorities requirements, in relation to noise.

10. Hours of work

Developers must ensure that all bouts of work do not exceed the approvals granted by Isaac Regional Council to the Construction activities. In addition, Developers must not undertake Construction work outside these hours.

Monday to Friday	7:00am to 6:00pm
Saturday	1:00am to 1:00pm
Sunday	No work

Public Holiday No work

Internal fit-out may be conducted outside of these hours with the prior approval of the ARC.

DIVISION 5: APPLICATIONS FOR ARC APPROVAL

1. Applications for ARC approval

- (a) Applications for an ARC Approval must be:
 - (i) submitted by the owner of the relevant LA or the owner's nominee or agent;
 - (ii) in writing on the Iona specified by the ARC;
 - (iii) submitted to the address for service of the Body Corporate;
 - (iv) accompanied by (in A1 format, 2 copies of each):
 - (A) floor plans (including site ratio and site coverage ratio);
 - (B) the site plans ;
 - (C) the drainage plans ;
 - (D) any landscaping plans ;
 - (E) any building plans (including elevations and cross sections) and specifications ;
 - (F) the descriptions and samples of exterior materials and colours and external light fittings;
 - (G) the construction arrangements, techniques and proposed access to the part of the Scheme Land;
 - (H) the construction program with clearly stated start/completion dates;
 - (I) any fee payable under this Code; and
 - (J) any other information required from time to time by the Body Corporate.
- (b) The ARC may require an Applicant to give additional information. The Applicant must supply the additional information as soon as reasonably possible.

1.2 Application fee

An Applicant for ARC approval must pay an application fee of \$200 or any other amount determined from time to time by the Body Corporate. An application must not be processed until the proper application fee is paid.

2. ARC Approvals

- (a) The ARC must consider applications using the Standards.
- (b) After the ARC has considered an application it must give the Applicant written notice approving the application (conditionally or unconditionally) or rejecting the application. The ARC must use its best endeavours to give the notice within 5 working days of receipt of the application fee and any additional information under clause 1.2.

- (c) If the ARC approves an application conditionally, the conditions may include, but are not limited to:
 - (i) submission of any additional plans and specifications or such other information as required by the ARC;
 - (ii) changes being made to any of the items or information included in the application; and
 - (iii) commencement of the Works within a reasonable time determined by the ARC.
- (d) All approvals must be affixed with the ARC approval stamp and signed by the Secretary of the Body Corporate or a person authorised by the ARC for this purpose.
- (e) An ARC Approval expires when any relevant Local Government or other authority approvals expire, or, if there are no other expiry dates, 2 years from the date of the ARC Approval.
- (f) If an Applicant:
 - (i) has obtained an ARC Approval;
 - (ii) obtains all necessary approvals from the Local Government and all other relevant authorities; and
 - (iii) the Works have changed since the ARC Approval was obtained because of the requirements of the Local Government or the other relevant authorities,

the Applicant must submit to the ARC, at the address for service of the Body Corporate, 2 copies of all necessary plans and correspondence which shows the extent of the changes.
- (g) If the change is not a substantial change, the information is submitted to the ARC for information only.
- (h) If the change is a substantial Change, the Applicant must undergo the approval process described in clauses 1 and 2 of this Division to obtain a new ARC Approval. However, the Applicant need not pay an application fee.

3. Bonds

- (a) The ARC may require payment of a Bond, to be held by the Body Corporate.
- (b) The Body Corporate may use the Bond to reimburse the Body Corporate at any time for:
 - (i) any expenses incurred exercising rights under this Code because the Applicant breached this Code or the conditions of an ARC Approval; or
 - (ii) any loss or damage suffered by the Body Corporate as a result of the construction of the Works.
- (c) If on the final inspection the ARC discovers that there have been changes to the Works from the approved Works plans, then the Body Corporate may use the Bond to undertake work required to reinstate the Works to that approved by the ARC.
- (d) The Body Corporate must return the Bond (to the extent it has not been called upon) to the Applicant when the ARC confirms that the relevant Works have been completed in accordance with the ARC Approval.

4. Inspection and compliance

This is the procedure for the inspection of Works when they are complete:

- (a) the Applicant must notify the ARC that the Works are complete and with the notice, give the ARC plans of the following (to the extent they comprise the Works):
 - (i) all buildings;
 - (ii) landscaping and irrigation; and
 - (iii) the location of all new services installed as part of the Works, such as stormwater, sewerage, mains water, telecommunications and data lines, electricity cables and gas lines; and
- (b) within 14 days of receiving the notice the ARC must inspect the Works;
- (c) if the Works have not been completed in accordance with the ARC Approval, the ARC will notify the Applicant in writing of the non-compliance, specifying the particulars of non-compliance; and
- (d) the Applicant must remedy the non-compliance within 30 days after receiving the notice from the ARC, and then the notice and inspection procedure described in this clause applies again.

5. Relaxation

The ARC may allow non-compliance with any requirement of this Code (including, without limitation, the Standards or the Rules) in its absolute discretion.

6. Breach of Code

- (a) If the Applicant does not comply with this Code or with any approval issued by the ARC under this Code, the Body Corporate may serve a notice on the Applicant requiring it to remedy the non-compliance within a reasonable period set out in the notice.
- (b) If the Applicant does not remedy the non-compliance in the period set out in the notice, the Body Corporate may:
 - (i) enter any part of the Scheme Land where the non-compliance has occurred; and
 - (ii) remedy the non-compliance; or
 - (iii) remove the non-complying Works; and
 - (iv) recover the costs of its action under this clause as a liquidated debt from the Applicant, or deduct the costs from the Bond.
- (c) The Body Corporate may take any action it considers necessary to prevent a breach of this Code. For example, without limitation, it may:
 - (i) require all work on the relevant Scheme Land to cease; or
 - (ii) restrict the access of the Applicant, its agents, employees or contractors to the relevant Scheme Land.

DIVISION 6: GENERAL

1. Miscellaneous

1.1 No Waiver of future approvals

The approval of the ARC to any Works is not a waiver of the right to approve conditionally or reject any similar Works subsequently submitted for Body Corporate approval.

1.2 No liability for Body Corporate or ARC

- (a) Neither the ARC, nor any member of the ARC, nor the Body Corporate is liable to any Applicant for any loss, damage or injury arising out of or in any way connected with any recommendation, approval (conditional or unconditional) or disapproval given under this Code unless due to the wilful misconduct, bad faith, or criminal act of the ARC, its members, the Body Corporate or their duly authorised representative.
- (b) Approvals (conditional or unconditional) of any application will not be construed as compliance by the Works with any laws about construction of the Works, the structural soundness of the Works, or any other approvals required for the Works.

1.3 Indemnity

The Applicant will indemnify the Body Corporate, the ARC and any agent, employee or contractor of the Body Corporate or the ARC against all losses, claims, demands, and expenses which the Body Corporate, the ARC or any agent, employee or contractor of the Body Corporate or the ARC sustains or incurs due to the Applicant's non-compliance with this Code.

1.4 Severability

If the whole or any part of a provision of this Code is void, unenforceable or illegal in a jurisdiction it is severed for that jurisdiction. The remainder of this Code has full force and effect and the validity or enforceability of that provision in any other jurisdiction is not affected. This clause has no effect if the severance alters the basic nature of this Code or is contrary to public policy.

1.5 Conflict with laws and requirements

If the whole or any part of a provision of this Code conflicts with any law or a requirement of the Local Government or any relevant authority, it is of no effect to the extent of the conflict.

1.6 Appeals

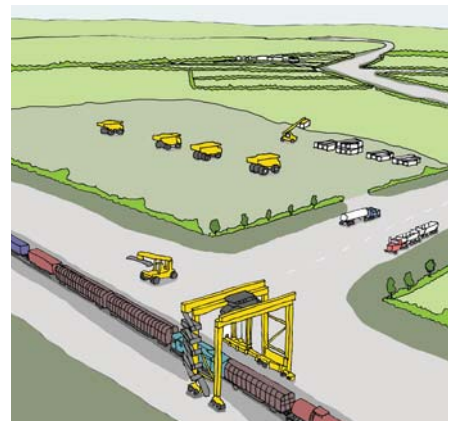
To remove any doubt, the dispute resolution provisions of Chapter 6 of the Act apply to the resolution of disputes under this Code.

SCHEDULE E	DESCRIPTION OF LOTS ALLOCATED EXCLUSIVE USE AREAS OF COMMON PROPERTY
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Not applicable

SCHEDULE F	CARMICHAEL OFF – SITE INFRASTRUCTURE DEVELOPMENT CODE
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Overleaf



Carmichael Off-Site Infrastructure Development Code

17th July 2013



project coordination
urban + regional planning
landscape + urban design
environmental management
visualisation + spatial services
surveying services
advisory services



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TABLE OF CONTENTS

LIST OF TABLES	4
1.0 INTRODUCTION	5
1.1 PURPOSE OF THE DEVELOPMENT CODE	5
1.2 DEVELOPMENT CODE PRECINCTS	5
2.0 APPLICATION OF THE DEVELOPMENT CODE	7
2.1 GENERAL	7
3.0 DICTIONARY	8
3.1 APPLICATION OF DEFINITIONS	8
3.2 CARMICHAEL SPECIFIC DEFINITIONS	8
4.0 PRECINCT INTENTS	10
4.1 GENERAL	10
5.0 TABLES OF ASSESSMENT	12
5.1 GENERAL	12
5.2 CARMICHAEL MWAV PRECINCT	12
5.3 CARMICHAEL AIRPORT PRECINCT	13
5.4 CARMICHAEL INDUSTRIAL PRECINCT	14
5.5 SUPPORTED AREA PRECINCT	15
5.6 CARMICHAEL RURAL PRECINCT	16
5.7 SELF ASSESSABLE DEVELOPMENT – APPLICABLE PROVISIONS	18
6.0 DEVELOPMENT CODE PURPOSE	19
7.0 DEVELOPMENT CODE	21
SCHEDULE 1: CARMICHAEL LAND USE PRECINCTS	31
SCHEDULE 2: SUSTAINABILITY AND DESIGN GUIDELINES	32
SCHEDULE 3: MWAV MASTER PLAN	33
SCHEDULE 4: OBSTACLE LIMITATION SURFACES	34
SCHEDULE 5: AIRPORT MASTER PLAN	35

List of Tables

Table 1: Material change of use within Carmichael MWAV 12

Table 2: Reconfiguring a lot within Carmichael MWAV..... 13

Table 3: Material change of use within Carmichael Airport Precinct..... 13

Table 4: Reconfiguring a lot within Carmichael Airport Precinct..... 14

Table 5: Material change of use within Carmichael Industrial Precinct..... 14

Table 6: Reconfiguring a lot 15

Table 7: Material change of use within Supported Area Precinct 15

Table 8: Reconfiguring a lot within Supported Area Precinct..... 16

Table 9: Material change of use within Rural Precinct..... 17

Table 10: Reconfiguring a lot within Rural Precinct 18

Table 11: Applicable Self assessable development provisions 18

Table 12: Material Change of Use Requirements 21

Table 13: Reconfiguration of a Lot Requirements..... 28

1.0 INTRODUCTION

1.1 PURPOSE OF THE DEVELOPMENT CODE

The purpose of the Carmichael Off-site Infrastructure Development Code ('Development Code') is to strengthen and support the required off-site infrastructure activities required in conjunction with the Carmichael Coal Mine and Rail project (the 'Project') by providing the appropriate planning framework and guidance. This Development Code will specifically provide a clear direction for the establishment, ongoing operation and growth of supporting Mine Workers Accommodation Village (MWAV), Airport and Industrial Area on the site. This Development Code also recognises the ongoing historical use of areas not directly required to be permanently utilised in conjunction with the Project.

This Development Code is aimed at targeting relevant land use provisions for each off-site infrastructure area so as to provide clear direction and clarity for the lawful operation and enhancement of each off-site infrastructure area.

1.2 DEVELOPMENT CODE PRECINCTS

In order to provide the planning framework and guidance for the off-site infrastructure activities, a number of land use Precincts were identified. This strategy enabled tailored and targeted requirements to be produced for each Precinct. A brief description of each of the Precincts is as follows:

- Precinct A (Carmichael MWAV): Area planned and designated to accommodate a 3,500 bed mine workers accommodation village ('MWAV') and supporting complementary activities and services;
- Precinct B (Carmichael Airport): Intended location of the private airport to provide the key access gateway to the broader project;
- Precinct C (Carmichael Industrial): Designated area for the industry to provide appropriate off-mine facilities and services to assist in servicing the planned mine and nearby mine workers accommodation village;
- Precinct D (Supported Areas): Areas currently located around the periphery of the core off-site infrastructure items to accommodate any future growth or relocation of such items; and

- Precinct E (Carmichael Rural): Remaining areas not required to be permanently utilised in conjunction with the broader project and where the ongoing historical use is encouraged.

2.0 APPLICATION OF THE DEVELOPMENT CODE

2.1 GENERAL

This Development Code applies to the identified Precincts illustrated on the drawing in *Schedule 1 – Land Use Precincts*.

The Tables of Assessment indicated in Part 5.0 identifies the levels of assessment for development occurring within these Precincts. These Tables of Assessment override all other tables of assessment as contained within the *Planning Scheme for Belyando Shire*.

Self assessable development is deemed to be development that is consistent with the intent of this Development Code, and therefore need only comply with the self assessable acceptable solutions of this Development Code contained in Part 7.0.

The definitions of all relevant terms and land uses contained within this Development Code are to be found within Part 2, Definitions of the *Planning Scheme for Belyando Shire*, except as specifically defined within Part 3.0 of this document.

This Development Code only applies to the specific forms of development outlined and the Precinct Tables of Assessment in Part 5.0. All other forms of development are subject to the relevant planning provisions of the *Planning Scheme for Belyando Shire*.

This Development Code does not negate the need for environmental permits and authorisations to be obtained for any future land uses and/or activities, it merely provides guidance and regulation as to what forms of development are considered appropriate in locational aspects of the site.

3.0 DICTIONARY

3.1 APPLICATION OF DEFINITIONS

The definitions outlined in Part 3.2 below have been compiled specifically for this Development Code and have been generally adapted from the *Planning Scheme for Belyando Shire*. Where applicable, these specific uses or development definitions override those contained within Part 2, Definitions of the *Planning Scheme for Belyando Shire*.

For any proposed use that does not comply or appear within these specific definitions below, the current use or development definitions contained within the *Planning Scheme for Belyando Shire* apply.

3.2 CARMICHAEL SPECIFIC DEFINITIONS

The following use or development definitions are specifically applicable to this Development Code.

“Carmichael accommodation” – means “premises” comprising primarily of “accommodation units” such as workers accommodation camps and villages. The term includes shared dining, laundry and recreation facilities which cater exclusively for the residents of the accommodation and a manager’s office and residence. The term also includes a “shop” and/or “hotel” to cater exclusively for residents of the accommodation.

“Carmichael industrial activities” – means “premises” used for activities involving the manufacture, production, servicing, storage and distribution of goods, articles, equipment or vehicles, including:

- (1) “Extractive industry”;
- (2) “Industry”;
- (3) “Noxious industry”;
- (4) “Service station”;
- (5) “Storage facility”;
- (6) “Transport terminal”;
- (7) Chemical and/or fuel storage; and
- (8) “Caretakers residence”.

“Carmichael special development” – means “premises” used for activities ordinarily associated within the Carmichael Coal Mine and Rail project not herein defined, including:

- (1) Core infrastructure items including power supply; on-site effluent disposal; water capture, conveyance and storage and any ancillary structures associated with such;
- (2) Temporary workers camps and lay down areas;
- (3) Quarries and quarrying related activities;
- (4) “Railway activities”;
- (5) Road freight logistics hubs and lay down areas; and
- (6) State and regional emergency facilities and services.

“Carmichael temporary activities” – means “premises” used on an irregular or infrequent basis that does not require the construction of a permanent building, the installation of permanent infrastructure or services. A temporary activity use must not exceed more than six (6) months per calendar year in relation to any given use or activity and must be ordinarily associated with the Carmichael Coal Mine and Rail project.

4.0 PRECINCT INTENTS

4.1 GENERAL

In line with the purpose of the Development Code, a number of distinct land use Precincts were established to provide targeted planning framework and guidance. The provisions contained within the Development Code specifically relate to these five (5) identified Precincts which are as outlined below:

- Precinct A (Carmichael MWAV);
- Precinct B (Carmichael Airport);
- Precinct C (Carmichael Industrial);
- Precinct D (Supported Areas); and
- Precinct E (Carmichael Rural).

The spatial context of each Precinct is contained within the mapping provided in *Schedule 1 – Land Use Precincts*.

The intent of each of these Precincts is as outlined below:

- Precinct A (Carmichael MWAV): This Precinct applies to the area planned and designated to accommodate a 3,500 bed workers accommodation village and supporting complementary activities and services. This Precinct recognizes the importance of flexibility and future site specific design challenges that may need to be overcome, whilst ensuring the integrated nature and consistent character planned for the MWAV is maintained. The reorganisation or relocation of planned MWAV elements within the Precinct is also supported and enabled.
- Precinct B (Carmichael Airport): This Precinct is reflective of the planned location for the private airport to be located on the site. This Precinct recognises the possibility that the airport may be constructed in phases and that additional growth and appropriate airport compatible uses may be established over time. The role that the airport will play as the key gateway to the broader project is also noted and encouraged to be embraced.
- Precinct C (Carmichael Industrial): This Precinct applies to the area designated for the industrial area that is to provide appropriate facilities and services to assist in servicing the planned mine and nearby workers accommodation village. This Precinct represents

the first stage of a potential three (3) stage industrial land delivery program. This Precinct also encourages the appropriate use of balance areas and large super lots for low impact activities, such as vehicle set down and open storage areas. The ability for a range of appropriate uses to be established on single allotments, as well as the ability for smaller lots to be developed responsive to end-user requirements is also supported and enabled.

- *Precinct D (Supported Areas)*: This Precinct applies to the areas around the periphery of the core off-site infrastructure Precincts. This Precinct acknowledges the potential for such infrastructure items to be modified; expanded and/or relocated over time and ensures that sufficient areas are available for this to occur without impacting on the ongoing historical use of nearby areas. The possible utilisation of parts of this Precinct for “Carmichael temporary activities” is supported.
- *Precinct E (Carmichael Rural)*: This Precinct applies to the remaining areas within the application extent that are not required to be permanently utilised in conjunction with the broader project and where the ongoing historical use is encouraged. A modified version of the current Rural Zone has been adapted to encourage and promote the ongoing historical use of this surplus area, namely that of agricultural and grazing activities. The utilisation of parts of this Precinct for “Carmichael temporary activities” is also supported.

5.0 TABLES OF ASSESSMENT

5.1 GENERAL

Pursuant to s.242 of the *Sustainable Planning Act 2009*, the Tables of Assessment nominated below apply to the area specified within the Land Use Precincts. These Precincts are as follows:

- Precinct A (Carmichael MWAV);
- Precinct B (Carmichael Airport);
- Precinct C (Carmichael Industrial);
- Precinct D (Supported Areas); and
- Precinct E (Carmichael Rural).

The following tables are applicable, as annotated, to each of these Precincts.

5.2 CARMICHAEL MWAV PRECINCT

5.2.1 CARMICHAEL MWAV TABLE OF ASSESSMENT

The following table applies to all relevant Material Change of Use applications.

Table 1: Material change of use within Carmichael MWAV

"Use"	Assessment Category	Applicable Code
"Carmichael accommodation"	Self Assessment where complying with the applicable acceptable solutions in the Development Code and not exceeding 3,500 beds	Development Code
	Code assessment if any applicable acceptable solution is not met	Development Code
"Carmichael industrial activities"	Code assessment where the proposed use is to directly provide a service to the MWAV Impact assessment otherwise	Development Code
"Carmichael special development"	Code assessment	Development Code
"Carmichael temporary activities"	Self Assessment where complying with the applicable acceptable solutions in the Development Code	Development Code
	Code assessment if any applicable acceptable solution is not met	Development Code

"Agriculture"	Self Assessment where: (a) complying with the acceptable solutions in the Development Code; (b) not involving "building work" other than "minor building work".	Development Code
	Code assessment otherwise	Development Code
"Grazing"	Self Assessment where: (c) complying with the acceptable solutions in the Development Code; (d) not involving "building work" other than "minor building work".	Development Code
	Code assessment otherwise	Development Code
All other "uses"	Impact assessment	

The following table applies to all relevant Reconfiguring a Lot applications.

Table 2: Reconfiguring a lot within Carmichael MWAV

Type	Assessment Category	Applicable Code
"Reconfiguring a lot"	Code assessment	Development Code

5.3 CARMICHAEL AIRPORT PRECINCT

5.3.1 CARMICHAEL AIRPORT TABLE OF ASSESSMENT

The following table applies to all relevant Material Change of Use applications.

Table 3: Material change of use within Carmichael Airport Precinct

"Use"	Assessment Category	Applicable Code
"Airport"	Self Assessment where complying with the applicable acceptable solutions in the Development Code	Development Code
	Code assessment if any applicable acceptable solution is not met	Development Code
"Carmichael industrial activities"	Self Assessment where complying with the applicable acceptable solutions in the Development Code	Development Code
	Code assessment if any applicable acceptable solution is not met	
"Carmichael special development"	Code assessment	Development Code

“Carmichael temporary activities”	Self Assessment where complying with the applicable acceptable solutions in the Development Code	Development Code
	Code assessment if any applicable acceptable solution is not met	Development Code
“Agriculture”	Self Assessment where: (e) complying with the acceptable solutions in the Development Code; (f) not involving “building work” other than “minor building work”.	Development Code
	Code assessment otherwise	Development Code
“Grazing”	Self Assessment where: (g) complying with the acceptable solutions in the Development Code; (h) not involving “building work” other than “minor building work”.	Development Code
	Code assessment otherwise	Development Code
All other “uses”	Impact assessment	

The following table applies to all relevant Reconfiguring a Lot applications.

Table 4: Reconfiguring a lot within Carmichael Airport Precinct

Type	Assessment Category	Applicable Code
“Reconfiguring a lot”	Code assessment	Development Code

5.4 CARMICHAEL INDUSTRIAL PRECINCT

5.4.1 CARMICHAEL INDUSTRIAL TABLE OF ASSESSMENT

The following table applies to all relevant Material Change of Use applications.

Table 5: Material change of use within Carmichael Industrial Precinct

“Use”	Assessment Category	Applicable Code
“Carmichael industrial activities”	Self Assessment where complying with the applicable acceptable solutions in the Development Code	Development Code
	Code assessment if any applicable acceptable solution is not met	Development Code
“Carmichael special development”	Self Assessment where complying with the applicable acceptable solutions in the Development	Development Code

	Code Code assessment if any applicable acceptable solution is not met	Development Code
“Carmichael temporary activities”	Self Assessment where complying with the applicable acceptable solutions in the Development Code Code assessment if any applicable acceptable solution is not met	Development Code Development Code
“Agriculture”	Self Assessment where: (i) complying with the acceptable solutions in the Development Code; (j) not involving “building work” other than “minor building work”. Code assessment otherwise	Development Code Development Code
“Grazing”	Self Assessment where: (k) complying with the acceptable solutions in the Development Code; (l) not involving “building work” other than “minor building work”. Code assessment otherwise	Development Code Development Code
All other “uses”	Impact assessment	

The following table applies to all relevant Reconfiguring a Lot applications.

Table 6: Reconfiguring a lot

Type	Assessment Category	Applicable Code
“Reconfiguring a lot”	Code assessment	Development Code

5.5 SUPPORTED AREA PRECINCT

5.5.1 SUPPORTED AREAS TABLE OF ASSESSMENT

The following table applies to all relevant Material Change of Use applications.

Table 7: Material change of use within Supported Area Precinct

“Use”	Assessment Category	Applicable Code
“Airport”	Code assessment where the proposed use is located adjacent to the “Carmichael Airport Precinct” Impact assessment otherwise	Development Code
“Carmichael”	Code assessment where the proposed use is	Development Code

accommodation"	located adjacent to the "Carmichael MWAV Precinct" Impact assessment otherwise	
"Carmichael industrial activities"	Code assessment where the proposed use is located adjacent to the "Carmichael Industrial Precinct" Impact assessment otherwise	Development Code
"Carmichael special development"	Code assessment if any applicable acceptable solution is not met	Development Code
"Carmichael temporary activities"	Self Assessment where complying with the applicable acceptable solutions in the Development Code Code assessment if any applicable acceptable solution is not met	Development Code Development Code
"Agriculture"	Self Assessment where: (m) complying with the acceptable solutions in the Development Code; (n) not involving "building work" other than "minor building work". Code assessment otherwise	Development Code Development Code
"Grazing"	Self Assessment where: (o) complying with the acceptable solutions in the Development Code; (p) not involving "building work" other than "minor building work". Code assessment otherwise	Development Code Development Code
All other "uses"	Impact assessment	

The following table applies to all relevant Reconfiguring a Lot applications.

Table 8: Reconfiguring a lot within Supported Area Precinct

Type	Assessment Category	Applicable Code
"Reconfiguring a lot"	Code assessment	Development Code

5.6 CARMICHAEL RURAL PRECINCT

5.6.1 CARMICHAEL RURAL TABLE OF ASSESSMENT

The following table applies to all relevant Material Change of Use applications.

Table 9: Material change of use within Rural Precinct

“Use”	Assessment Category	Applicable Code
“Carmichael temporary activities”	Self Assessment where complying with the applicable acceptable solutions in the Development Code Code assessment if any applicable acceptable solution is not met	Development Code Development Code
“Agriculture”	Self Assessment where complying with the applicable acceptable solutions in the Development Code Code assessment if any applicable acceptable solution is not met	Development Code Development Code
“Bed and breakfast premises”	Self Assessment where complying with the applicable acceptable solutions in the Development Code Code assessment if any applicable acceptable solution is not met	Development Code Development Code
“Caretakers residence”	Self Assessment where complying with the applicable acceptable solutions in the Development Code Code assessment if any applicable acceptable solution is not met	Development Code Development Code
“Detached house”	Self Assessment where complying with the applicable acceptable solutions in the Development Code Code assessment if any applicable acceptable solution is not met	Development Code Development Code
“Grazing”	Self Assessment where complying with the applicable acceptable solutions in the Development Code Code assessment if any applicable acceptable solution is not met	Development Code Development Code
“Home business”	Self Assessment where complying with the applicable acceptable solutions in the Development Code Code assessment if any applicable acceptable solution is not met	Development Code Development Code
All other “uses”	Impact assessment	

The following table applies to all relevant Reconfiguring a Lot applications.

Table 10: Reconfiguring a lot within Rural Precinct

Type	Assessment Category	Applicable Code
"Reconfiguring a lot"	Code assessment	Development Code

5.7 SELF ASSESSABLE DEVELOPMENT – APPLICABLE PROVISIONS

Applicable acceptable solutions for self assessable development are set out in Table 11:

Table 11: Applicable Self assessable development provisions

Acceptable solutions applicable to <u>all</u> self assessable material changes of use	
Development	Applicable acceptable solutions in Development Code
All self assessable uses	AS19, AS20.1 or AS20.2, AS21.1 or AS21.2, AS22, AS23
Additional acceptable solutions applicable only to <u>certain</u> self assessable material changes of use	
Development	Applicable acceptable solutions in Development Code
Carmichael accommodation	AS1, AS2, AS3, AS4.1-AS4.2
Carmichael industrial activities	AS5, AS6, AS7.1-AS7.2, AS8.1-AS8.2
Carmichael special development	AS9
Carmichael temporary activities	AS10, AS11
Airport	AS12, AS13.1-AS13.2
Bed and breakfast	AS14.1-AS14.2
Caretakers' residence	AS15.1-AS15.2
Detached house	AS16
Home business	AS17.1-AS17.2
Grazing	AS18

6.0 DEVELOPMENT CODE PURPOSE

The following outcomes are the purpose of the Development Code:

- (1) Provision of the appropriate planning framework for the location and operation of required off-site infrastructure items for the Carmichael Coal and Rail Mine project.
- (2) Areas potentially required for future off-site infrastructure items are appropriately identified and are not prejudiced by permanent inappropriate development.
- (3) Historical “agriculture” and “grazing” uses are encouraged to continue on areas not required for off-site infrastructure items. Interim use of any areas required for off-site infrastructure items are appropriately managed and are not prejudiced by permanent inappropriate development.
- (4) Within any “Precinct” of this Development Code, “development”:
 - (a) maintains the environment, including soil, air and water, compatible with healthy natural systems and ensures public health and safety;
 - (b) protects good quality agricultural land (GQAL) within Precinct E (Rural) where possible from fragmentation, alienation or encroachment of incompatible land “uses” in accordance with State Planning Policy 1/92 – Development and Conservation of Agricultural Land;
 - (c) is located, designed and operated in a manner that protects and enhances the planned scale, intensity, form and character;
 - (d) maintains the planned amenity;
 - (e) does not prejudice or impact adversely on other “uses”, particularly “sensitive land uses”, including those within other “zones”;
 - (f) does not prejudice or unduly impact on mineral resources or their extraction;
 - (g) has an appropriately designed access to the road network, and traffic generated by the development does not impact adversely on the local road network;
 - (h) does not adversely impact on areas and sites of conservation importance, including cultural and high landscape values;
 - (i) is located and designed in ways that minimise the need for flood and landslide mitigation, and to protect people and premises from such natural events;
 - (j) has water supply, stormwater disposal, sustainable effluent and waste disposal and power, to appropriate standards, adequate for the “use”; and
 - (k) does not adversely impact on infrastructure.

- (5) Within any "Precinct" within this Development Code, the following are appropriate "uses":
- (a) "MWAV accommodation" within Precinct A (Carmichael MWAV);
 - (b) "Carmichael airport" within Precinct B (Carmichael Airport);
 - (c) "Carmichael industrial activities" within Precinct C (Carmichael Industrial);
 - (d) "Carmichael special development" within Precinct D (Supported Areas);
 - (e) permanent forms of "agriculture" and "grazing" within Precinct E (Carmichael Rural);
 - (f) interim forms of "agriculture" and "grazing" within any Precinct;
 - (g) "Carmichael special development" in any Precinct, excluding Precinct D (Carmichael Rural)
 - (h) "Carmichael temporary activities" within Precinct D (Carmichael Rural);
 - (i) ancillary "Carmichael industrial activities" within Precinct A (Carmichael MWAV);
and
 - (j) ancillary "Carmichael industrial activities" within Precinct B (Carmichael Airport).

7.0 DEVELOPMENT CODE

Table 12: Material Change of Use Requirements

“Material change of use”	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
SELF ASSESSABLE, CODE ASSESSABLE OR IMPACT ASSESSABLE DEVELOPMENT	
“Carmichael accommodation” use	
PC1 Village Design The provision of residential accommodation and residential support services with the MWAV is undertaken in a logical, integrated and commensurate manner.	AS1 The design of the MWAV is undertaken generally consistent with the layout; design and provision of items illustrated in the Master Plan contained in Schedule 3 – MWAV Master Plan.
PC2 Dwelling Yield The dwelling yield of the “development” is compatible with the provision of residential support and ancillary services.	AS2 No more than 3,500 beds are provided on the “premises”.
PC3 Height The height of “buildings” and “structures” does not impact adversely on the planned amenity of the locality and is consistent with industrial built form.	AS3 “Buildings” and “structures” are not more than: (a) 8.5 metres; or (b) Two (2) storeys.
PC4 Building Clearances “Buildings” and “structures” are sited so not to pose risk to person or property.	AS4.1 A minimum clearance of 3 metres is provided between accommodation modules/pods where there are no openings. AS4.2 A minimum clearance of 6 metres is provided between accommodation modules/pods where there are openings.
“Carmichael industrial” uses	
PC5 Height The height of “buildings” and “structures” does not impact adversely on the planned amenity of the locality and is consistent with industrial built form.	AS5 “Buildings” and “structures” are not more than: (c) 15 metres; or (d) Four (4) storeys.
PC6 Site Cover The site coverage of “buildings” will be in accordance with the planned industrial of the Precinct.	AS6 Site cover does not exceed 70% in relation to each “premises” allotted area.
PC7 Setbacks and Boundary Clearances “Buildings” and “structures” are located to ensure industrial amenity is maintained.	AS7.1 “Buildings” and “structures” have a setback not less than 10 metres from any public road frontage. AS7.2

“Material change of use”	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
	No minimum boundary clearances apply to side and rear setbacks and non-public roads for “buildings” and “structures” as they will not be readily visible from the public domain.
PC8 Car Parking Location On-site vehicle parking is provided to meet expected demand, having regard to: (a) the size of the proposed workforce; (b) the likely number of visitors to the individual tenancies; (c) the likely size and number of service and transport vehicles to be on the individual premises at any one time; (d) on-site parking and loading/unloading activities within individual tenancies; (e) any possible future expansion, redevelopment or change of use; (f) the availability of overflow parking to be accommodated outside the individual premises boundaries and within the established Industrial Estate as to which it is located within.	AS8.1 Car parking must be provided with two (2) spaces per individual premises. AS8.2 All car parking is designed and constructed in accordance with the applicable provisions of AUSTROADS AS 2890.1, 2890.2.
“Carmichael special development” use	
PC9 Industrial Integration The use of “premises” is compatible with the master planning undertaken for the industrial area.	AS9 The use of any “premises” does not compromise the planned stormwater and/or effluent disposal measures to be incorporated within the industrial area.
“Carmichael temporary activities” use	
PC10 Landscape Amenity The general open landscape character of the broader areas is maintained through the appropriate retention of mature landscaping.	AS10 Trees of greater than four (4) metres in height are retained where possible and the “activity” is undertaken to promote the maintenance of such trees.
PC11 Airport Safety “Buildings” and “structures” within and around the “Airport” do not compromise its’ operational safety and functioning.	AS11 The height and siting of buildings complies with the restrictions outlined on the OLS plan contained within <i>Schedule 4 – Obstacle Limitation Surfaces.</i>
“Airport” use	
PC12 Airport Development The airport development is undertaken in a logical, integrated and functional manner.	AS12 The development of the Airport is undertaken generally consistent with the layout; design and provision of items illustrated in the Master Plan

"Material change of use"	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
	contained in <i>Schedule 5 – Airport Master Plan</i> .
PC13 Airport Safety "Buildings" and "structures" within and around the "Airport" do not compromise its' operational safety and functioning.	AS13.1 Navigational guides and airport safety measures are provided on-site in accordance with the appropriate aeronautic safety and registration/licensing requirements. AS13.2 The height and siting of buildings complies with the restrictions outlined on the OLS plan contained within <i>Schedule 4 – Obstacle Limitation Surfaces</i> .
"Bed and breakfast premises" use	
PC14 "Bed and breakfast premises" "Premises" used for a "Bed and breakfast premises" are of a scale and are operated in a manner so as not to impact adversely on the amenity of the locality.	AS14.1 Provision is made for no more than six (6) paying guests to be accommodated at any one time. AS14.2 "Premises" contains not more than three (3) "accommodation units" for guest accommodation purposes.
"Caretakers premises" use	
PC15 "Caretakers premises" "Caretakers premises" remains an ancillary function to the use of the "premises" and is provided with appropriate levels of water supply.	AS15.1 No more than one (1) "caretaker's residence" per lot. AS15.2 "Premises" are connected to a rain water tank with a minimum capacity of: (a) 45,000 litres where not in a reticulated water supply area; (b) 22,000 litres where in a reticulated water supply area.
"Detached house" use	
PC16 "Detached house" "Premises" used for a "Detached house" is provided with appropriate levels of water supply.	AS16 "Premises" are connected to a rain water tank with a minimum capacity of: (a) 45,000 litres where not in a reticulated water supply area; (b) 22,000 litres where in a reticulated water supply area.
"Home business" use	

"Material change of use"	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
PC17 "Home business" "Premises" used for "Home business" are of a scale and are operated in a manner so as not to impact adversely on the amenity of the locality.	AS17.1 No more than one (1) person other than the residents of the "premises" is employed in the "Home business". AS17.2 No more than 150m² of "total use area" is used for the purpose of a "Home business". AS17.3 No more than two (2) clients normally attend the "premises" at any one time, unless the "premises" is used to provide home based child care. AS17.4 No goods or products produced by other businesses are displayed for sale in any window or outdoor area. AS17.5 Operate only between the hours of 7:00am and 6:00pm. AS17.6 Loading and unloading occurs between the hours of: (a) 7:00am to 6:00pm, Monday to Friday; and (b) 7:00am and 12:00 (noon) on Saturdays. AS17.7 No loading or unloading occurs on Sundays and public holidays.
"Grazing" use	
PC18 "Grazing" Separation distances are provided to ensure: (a) the future viability of surrounding "uses"; (b) infrastructure items are protected from incompatible "development"; (c) an appropriate standard of amenity and public safety; and (d) conflict arising from incompatible "uses" is minimised.	AS18 Pens and yards maintain a minimum separation distance of 300 metres to "sensitive land uses" not associated with the "Grazing".
All "Uses"	

"Material change of use"	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
PC19 Amenity Any proposed use must not detract from the amenity of the local area having regard to, but not limited to, to the impact of: a) noise; b) hours of operation; c) traffic; d) lighting; e) signage; f) visual amenity; g) privacy; h) odour and emissions.	AS19 No acceptable solution provided.
PC20 Water Supply All "premises" have an adequate volume and supply of water for the "use".	AS20.1 "Premises" are connected to appropriate levels of water supply. or AS20.2 "Premises" where the "use" does not require any provision of water, are not required to be connected.
PC21 Effluent Disposal All "premises" adequately provide for the treatment and disposal of effluent and other waste water for the "use".	AS21.1 "Premises" are connected to an appropriate on-site effluent disposal system. or AS21.2 "Premises" where the "use" does not require any provision of effluent disposal, are not required to be connected.
PC22 Stormwater Stormwater is collected and discharged so as to: (a) protect the stability of buildings or the use of adjacent land; and (b) protect and maintain environmental values.	AS22 Stormwater is collected and discharged in accordance with the Queensland Urban Drainage Manual and State Planning Policy 4/10 – Healthy Waters.
PC23 Power Supply "Premises" are provided with an adequate supply of electricity for the "use".	AS23 All "premises" have a supply of electricity either through the provision of a reticulated power supply or use of generators.

“Material change of use”	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
CODE OR IMPACT ASSESSABLE DEVELOPMENT	
Urban Fabric	
PC24 Functional Spaces “Development” provides an appropriate and consistent built form fabric commensurate to the intended use area “premises” and surrounds.	AS24 “Buildings” and “structures” are designed and constructed in accordance with the guidance provided in <i>Schedule 2 – Sustainability and Design Guidelines</i> .
Amenity	
PC25 Transport Movements Transport movements associated with the use protect the amenity of the locality.	AS25 Transport movements do not occur through residential areas.
PC26 Ridgelines and Escarpments Ridgelines and escarpments are maintained in a natural state to protect landscape values and visual amenity.	No acceptable solution is prescribed.
PC27 Landscaping and External Activity Areas Landscaping and external activity areas are provided on-site to: (a) contribute to a pleasant and functional built form; (b) provide positive sun and breeze control; (c) make provision for recreation areas; and (d) contribute to the positive visual qualities of the locality.	No acceptable solution is prescribed.
PC28 Lighting The design of lighting does not prejudice the amenity of the locality through poorly directed lighting, lighting overspill or lighting glare.	AS28 Direct lighting or lighting does not exceed 8.0 lux at 1.5 metres beyond the boundary of the site.
PC29 Airport Amenity and Safety “Airport” activities: (a) do not adversely impact on the amenity of the surrounding residents; (b) ensure the safe operation of aeronautical and support activities; and (c) ensure the safety of surrounding “Premises”.	No acceptable solution is prescribed.
Infrastructure	
PC30 Vehicle Access Vehicle access is provided to ensure the safe and functional operation for motorists and pedestrians.	AS30 All “premises” have access to a formed road. Access is designed and constructed in accordance with the applicable provisions of AUSTROADS AS 2890.1, 2890.2 .
PC31 Roads	AS31

"Material change of use"	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
Adequate all-weather road access is provided between the "premises" and the existing road network.	Public roads are designed and constructed in accordance with Schedule 1: Division 2: Standards for Roads, Carparking, Manoeuvring Areas and Access, Section 2.1(1) of the <i>Planning Scheme for Belyando Shire</i> .
PC32 "Electricity transmission line easement" – Vegetation Transmission lines with an "electricity transmission line easement" are protected from vegetation.	AS32.1 Planted vegetation within an "electricity transmission line easement" has a mature height not exceeding 1.5 metres. AS32.2 No part of planted vegetation, at its mature size, is located closer than 2.5 metres to an electricity transmission line.
Environmental	
PC33 "Watercourses" and "Lakes" "Development" ensures the maintenance of riparian areas and water quality including protection from off-site transfer or sediment.	AS33 A minimum 50 metre wide buffer area is provided extending out from the "defining bank" of any "watercourse" or "lake".
PC34 Air Emissions Air emissions from "premises" do not cause environmental harm or nuisance to adjoining properties of "sensitive land uses".	No acceptable solution is prescribed.
PC35 Noise Emissions Noise emissions from "premises" do not cause environmental harm or nuisance to adjoining properties of "sensitive land uses".	No acceptable solution is prescribed.
PC36 Water Quality The standard of effluent and / or stormwater run-off from "premises" ensures the quality of surface and underground water is suitable for: (a) the biological integrity of aquatic ecosystems; (b) recreational use; (c) supply a drinking water after minimal treatment; (d) agricultural use; or (e) industrial use.	No acceptable solution is prescribed.
PC37 Construction Activities Erosion control measures and silt collection measures ensure that environmental values are protected during construction activities.	AS37 During construction soil erosion and sediment is controlled in accordance with standards contained in Schedule 1, Division 1: Standards for Construction

“Material change of use”	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
	Activities, Section 1.1 of the <i>Planning Scheme for Belyando Shire</i> .
Constraint	
PC38 “Development” in the vicinity of “Airports” “Development” in the vicinity of “airports”: (a) protects the operation of the “airport”; (b) is designed and located to achieve a suitable standard of amenity for the proposed activity; and (c) does not restrict the future operational requirements of the “airport”.	AS38 The height and siting of buildings complies with the restrictions outlined on the OLS plan contained within <i>Schedule 4 – Obstacle Limitation Surfaces</i> .
PC39 Aviation Facilities Aviation facilities are protected from physical obstructions and electromagnetic emissions that may adversely affect their function.	AS39 “Buildings” and “structures” do not intersect the 3° plane extended from any NDB navigational aide.

Table 13: Reconfiguration of a Lot Requirements

“Reconfiguring a Lot”	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
“Carmichael MWAV” Precinct	
PC1 MWAV Minimum Lot Size The master planned communal nature of the MWAV is retained.	AS1 All lots have a minimum area of 100 hectares.
“Carmichael Airport” Precinct	
PC2 The secure and integrated nature of the Airport is retained.	AS2 All lots have a minimum area of 150 hectares.
“Carmichael Industrial” Precinct	
PC3 All industrial allotments are to be of sufficient size to comfortably accommodate the type of industrial development envisaged.	AS3 All lots have: (a) a minimum area of 1,000m ² ; (b) a minimum frontage of 20 metres; and (c) a minimum width to depth ratio of 1:5.
“Carmichael Supported Areas” Precinct	
PC4 The reconfiguration of lots is compatible with the nearby offsite infrastructure items.	AS4.1 All lots have a minimum area of 100 hectares where adjoining the “Carmichael MWAV” Precinct. AS4.2 All lots have a minimum area of 150 hectares where adjoining the “Carmichael Airport” Precinct.

“Reconfiguring a Lot”	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
	AS4.3 All lots have a minimum area of 1,000m ² where adjoining the “Carmichael Industrial” Precinct.
“Carmichael Rural” Precinct	
PC5 The reconfiguration of lots ensures that this Precinct retains its viability as an area of primary production.	AS5 All lots have a minimum area of 500 hectares.
Layout and Design	
PC6 Layout and Design The reconfiguring of lots: (a) ensures safe and livable communities; (b) ensures safe and legible vehicle and pedestrian movement areas and roads; (c) integrates with adjoining land; and (d) optimises the protection of environmental values, significant features, open space areas and high conservation or landscape values.	No acceptable solution is prescribed.
PC7 Siting of Buildings and Structures Lot size, layout and design enable future uses to comply with separation distances for buildings and structures in respect of: (a) Electricity transmission line easements; (b) “Watercourses” and “lakes”; (c) Ridgelines and escarpments; (d) Cultural heritage places; and (e) Protected areas.	No acceptable solution is prescribed.
Infrastructure	
PC8 Street Lighting Street lighting is provided: (a) to ensure safety for vehicles, cyclists and pedestrians; and (b) to an appropriate engineering standard.	AS8 Street lighting is designed in accordance with Schedule 1, Division 2: Standards for Roads, Carparking, Manoeuvring Areas and Access, Section 2.1(1).
PC9 Water Supply All “premises” have an adequate volume and supply of water for the “use”.	AS9.1 “Premises” are connected to appropriate levels of water supply. or AS9.2

“Reconfiguring a Lot”	
PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS
	“Premises” where the “use” does not require any provision of water, are not required to be connected.
PC10 Effluent Disposal All “premises” adequately provide for the treatment and disposal of effluent and other waste water for the “use”.	AS10.1 “Premises” are connected to an appropriate on-site effluent disposal system. or AS10.2 “Premises” where the “use” does not require any provision of effluent disposal, are not required to be connected.
PC11 Stormwater Stormwater is collected and discharged so as to: (a) protect the stability of buildings or the use of adjacent land; and (b) protect and maintain environmental values.	AS11 Stormwater is collected and discharged in accordance with the Queensland Urban Drainage Manual and State Planning Policy 4/10 – Healthy Waters.
PC12 Power Supply “Premises” are provided with an adequate supply of electricity for the “use”.	AS12 All “premises” have a supply of electricity either through the provision of a reticulated power supply or use of generators.
PC13 Vehicle Access Vehicle access is provided to ensure the safe and functional operation for motorists and pedestrians.	AS13 All “premises” have access to a formed road. Access is designed and constructed in accordance with the applicable provisions of AUSTROADS AS 2890.1, 2890.2 .
PC14 Roads Adequate all-weather road access is provided between the “premises” and the existing road network.	AS14 Roads are designed and constructed in accordance with Schedule 1: Division 2: Standards for Roads, Carparking, Manoeuvring Areas and Access, Section 2.1(1) of the <i>Planning Scheme for Belyando Shire</i> .
Environmental	
PC15 Construction Activities Erosion control measures and silt collection measures ensure that environmental values are protected during construction activities.	AS15 During construction soil erosion and sediments controlled in accordance with the standards contained in Schedule 1, Division 1: Standards for Construction Activities, Section 1.1 of the <i>Planning Scheme for Belyando Shire</i> .

Schedule 1: Carmichael Land Use Precincts

NOTES:

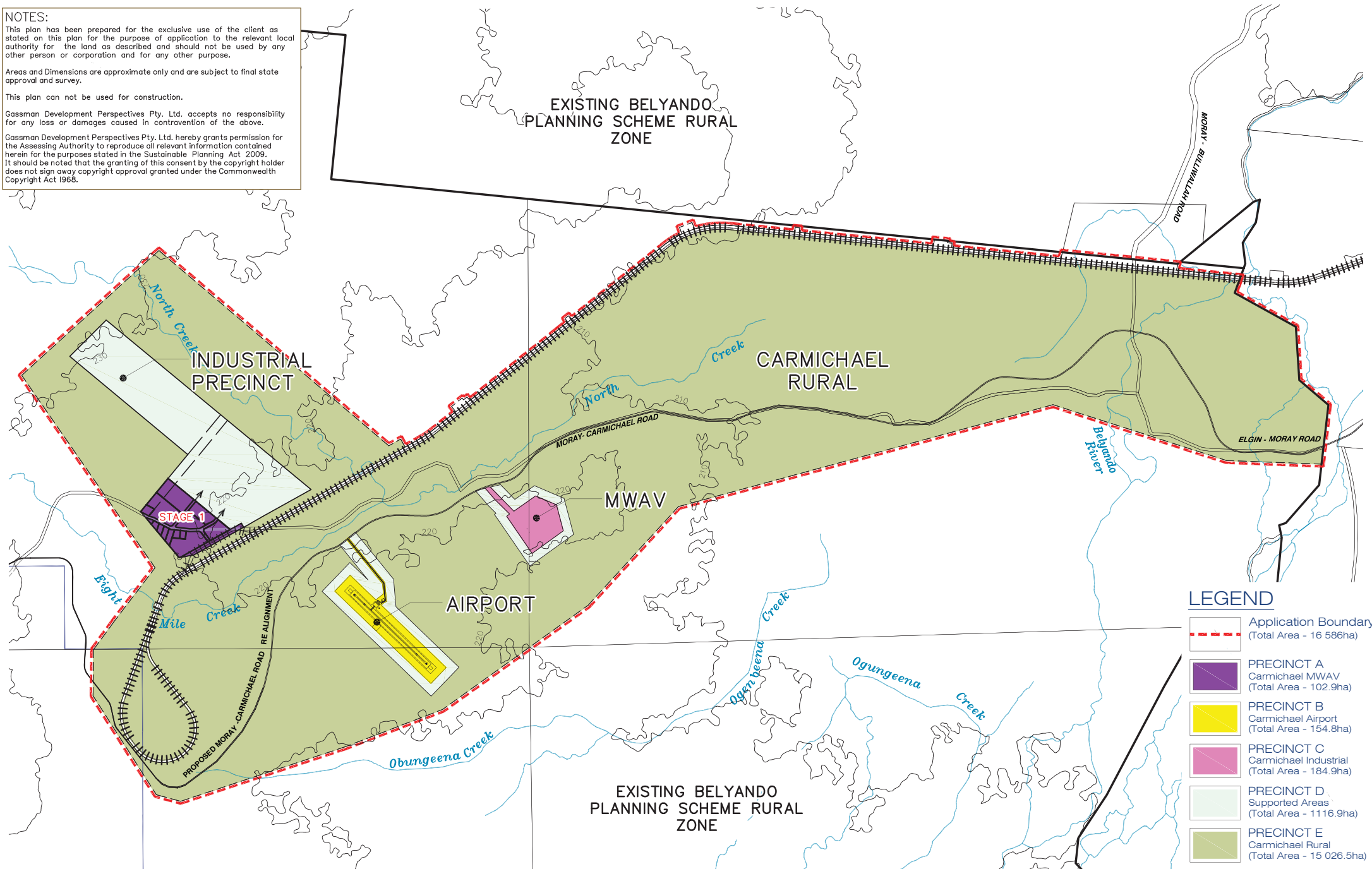
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This plan can not be used for construction.

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LEGEND

- Application Boundary (Total Area - 16 586ha)
- PRECINCT A Carmichael MWAV (Total Area - 102.9ha)
- PRECINCT B Carmichael Airport (Total Area - 154.8ha)
- PRECINCT C Carmichael Industrial (Total Area - 184.9ha)
- PRECINCT D Supported Areas (Total Area - 1116.9ha)
- PRECINCT E Carmichael Rural (Total Area - 15 026.5ha)

Schedule 2: Sustainability and Design Guidelines



Sustainability and Design Guidelines

17th July 2013

1.0 Introduction

This schedule has been prepared as part of the s.242 Preliminary Approval (PA Application) documentation to be lodged by Adani Mining Pty Ltd, over land on the Moray Downs. The intention of the schedule is to provide a framework of themes and guidelines that will shape the future design of development on site. Good design is not just a matter of taste, it incorporates principles and parameters which future development can be shaped upon to create efficient, flexible, attractive and integrated proposals that will ultimately be sustainable in the future.

There are a number of fundamental principles implicit in the creation of sustainable development. Sustainability in its widest terms, has to be the overriding guiding principle implicit in the creation of new development on the subject site. In order to provide clarity with regards the key influences on future development seven key sustainability themes have been included within this schedule, each with their own set of design guidelines that will help shape and frame future development.

The defined themes include

1. 'Identity';
2. 'Attractive Lifestyle';
3. 'Efficiency',
4. 'Safety';
5. 'Connectivity'
6. 'Adaptability'; and
7. 'Legibility'.

The design guidelines included within this document have been heavily influenced by the key principles of urban design. Urban design is effectively the process of creating 'places' from space by manipulating and shaping the built environment to create sustainable and attractive places. Accordingly the design objectives included will seek to manage elements such as permeability, variety, robustness, visual appropriateness, richness, personalisation and legibility (Bentley et al., 1985), commonly referred to as the building blocks of the built environment.

1.1 Purpose of Schedule

It has been widely acknowledged that development must be constructed and maintained in a manner that is sustainable, safe, efficient and attractive in order to achieve the wider goals of the project. This schedule seeks to establish the appropriate framework to frame future development by considering relevant sustainability themes so that each proposal can be assessed holistically in terms of its contribution to the overarching strategic goal on site.

Accordingly, this schedule will help the applicant and future designers to create coherent places, routes and uses that will complement each other in a self reinforcing manner and add value to the public realm of the future Carmichael Community.

The sustainability themes and design guidelines included in this report describe and illustrate the preferred character and nature of future development, however they are not meant to be interpreted as a definitive vision rather a structure for imaginative and innovative detailed design to be based on.

1.2 Application of Schedule

This document has been prepared as part of a s.242 Preliminary Approval Application that will seek to affect the existing Planning Scheme for Belyando Shire administered by Isaac Regional Council, and will be positioned as a schedule to the Carmichael Off Site Infrastructure Development Code (Development Code). The Development Code will determine how development will be assessed within the subject area using a variety of mechanisms such as the tables of development and code provisions.

The Development Code will require that all new development classified as either code or impact assessable development will be required to provide an assessment of the proposed development against this schedule as a response to the performance criteria of the code. Accordingly all new development, defined as code or impact, will be required to demonstrate how the development complements or is consistent with the defined themes and design objectives of this schedule in order to verify the merits of the development.

1.3 Context of Locations

The PA Application incorporates five defined precincts all contained within the 'Moray Downs' property namely:

- Precinct A (Carmichael MWAV);
- Precinct B (Carmichael Airport);
- Precinct C (Carmichael Industrial);
- Precinct D (Supported Areas); and
- Precinct E (Carmichael Rural).

Each of the defined precincts will have a specific character based on their use and location which will be fostered in the sustainability and design guidelines that follow.

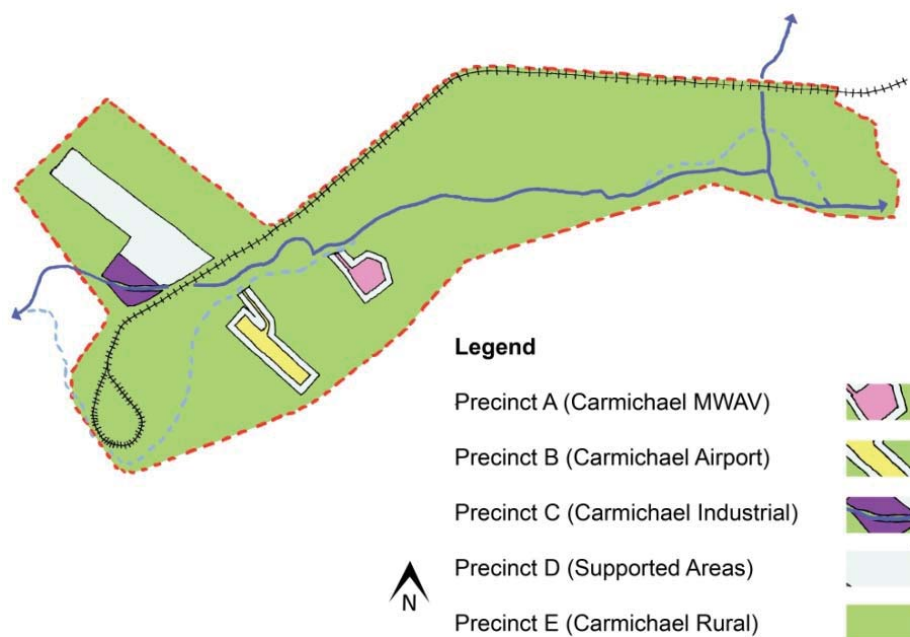


Figure 1: PA application precincts, Source: GDP, 2013

1.3.1 Precinct A (Carmichael MWAV);



The Carmichael MWAV will effectively accommodate the residential and associated facilities components of the proposal. The vision for the MWAV is based on a walkable community that provides residents with the necessary facilities and services to cater for an attractive lifestyle. Accordingly the characteristics of the built environment will be heavily influenced by pedestrian scaled facilities.

The intent for Precinct A (Carmichael MWAV) is defined as:

This Precinct applies to the area planned and designated to accommodate the 3,500 workers accommodation village and supporting complementary activities and services. This Precinct recognizes the importance of flexibility and future site specific design challenges that may need to be overcome, whilst ensuring the integrated nature and consistent character planned for the MWAV is maintained. The reorganisation or relocation of planned MWAV elements within the Precinct is also supported and enabled.



Figure 2: Conceptual perspective of the proposed MWAV, Source: GDP, 2013

1.3.2 Precinct B (Carmichael Airport);



Carmichael Airport will accommodate a private airport that will significantly help to reduce the sites isolation from urban centres. The airport will act as the primary entrance point for the majority of visitors to the subject site and therefore the built environment must reflect its importance within the local area. The character of the built environment will be defined by the operations function as a gateway into the site and maintaining safety and operational integrity within the site.

The intent for Precinct B (Carmichael Airport) is defined as:

This Precinct is reflective of the planned location for the private airport to be located on the site. This Precinct recognises the possibility that the airport may be constructed in phases and that additional growth and appropriate airport compatible uses may be established over time. The role that the airport will play as the key gateway to the broader project is also noted and encouraged to be embraced.



Figure 3: Conceptual perspective of Airport, Source: GDP, 2013

1.3.3 Precinct C (Carmichael Industrial);



The Carmichael Industrial Area is intended to provide capacity for industrial uses that will service the Carmichael Coal Mine and associated off site infrastructure such as the MWAV and Airport. Significantly there is significant future potential for this area of the site to accommodate a rail siding which could be utilised for bulky transport operations. The character of the built environment will reflect the requirements of operations , with efficiency, safety and security key influences on development.

The intent for Precinct C (Carmichael Industrial) is defined as:

This Precinct applies to the area designated for the industrial area that is to provide appropriate facilities and services to assist in servicing the planned mine and nearby workers accommodation village. This Precinct represents the first stage of a potential three (3) stage industrial land delivery program. This Precinct also encourages the appropriate use of balance areas and large super lots for low impact activities, such as vehicle set down and open storage areas that do not require permanent infrastructure servicing connections. The ability for a range of appropriate uses to be established on single allotments, as well as the ability for smaller lots to be developed responsive to end-user requirements is also supported and enabled.



Figure 4: Conceptual perspective of Industrial Area, Source: GDP, 2013

1.3.4 Precinct D (Supported Areas); and



Precinct D: Supported Areas relates to distinct areas of land located adjacent to the defined precincts of A, B and C. The defined support areas have been incorporated within the PA Application in order to ensure future capacity for expansion should the need arise in the future. The character of the built environment envisioned with Precinct D will closely reflect the character of the adjoining area.

The intent for Precinct D (Supported Areas) is defined as:

This Precinct applies to the areas around the periphery of the core off-site infrastructure item Precincts. This Precinct acknowledges the potential for such infrastructure items to be modified; expanded and/or relocated over time and ensures that sufficient areas are available for this to occur without impacting on the ongoing historical use of nearby areas. The possible utilisation of parts of this Precinct for “Carmichael temporary activities” is supported.

1.3.5 Precinct E (Carmichael Rural)



Precinct E: Carmichael Rural relates to the balance area of the subject site which for all intents and purposes will retain its current land use designation and context under the Belyando Planning Scheme. Minor exceptions include the potential for this precinct to incorporate temporary uses related to the wider project. It is envisioned that the character of Precinct E will remain largely unaffected and continue to reflect the Rural characteristics of the location.

The intent for Precinct E (Carmichael Rural) is defined as:

This Precinct applies to the remaining areas within the application extent that are not required to be permanently utilised in conjunction with the broader project and where the ongoing historical use is encouraged. A modified version of the current Rural Zone of this area has been retained to encourage and promote the ongoing historical use of this surplus area, namely that of agricultural and grazing activities. The utilisation of parts of this Precinct for “Carmichael temporary activities” is also supported.

2.0 Sustainability Themes

As discussed earlier seven key sustainability principles have informed the design guidance contained within this document. The following sections of this schedule detail the design guidance relevant to each of the defined themes that will help guide future development on site.

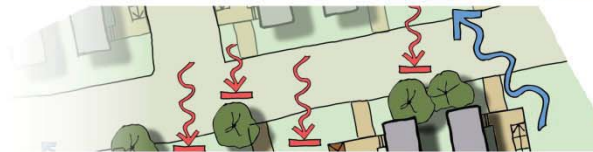
Identity



Attractive Lifestyle



Efficiency



Safety



Connectivity



Adaptability



Legibility



Figure 5: Sustainability themes, Source: GDP, 2013

3.0 Theme One: Identity

- 3.1 *The proposed development will have a distinct sense of place and identity and every element of the built environment will seek to promote and refine this sense of identity. Each element from the broad landscape character feature down to the street furniture proposed on site should reflect this identity.*

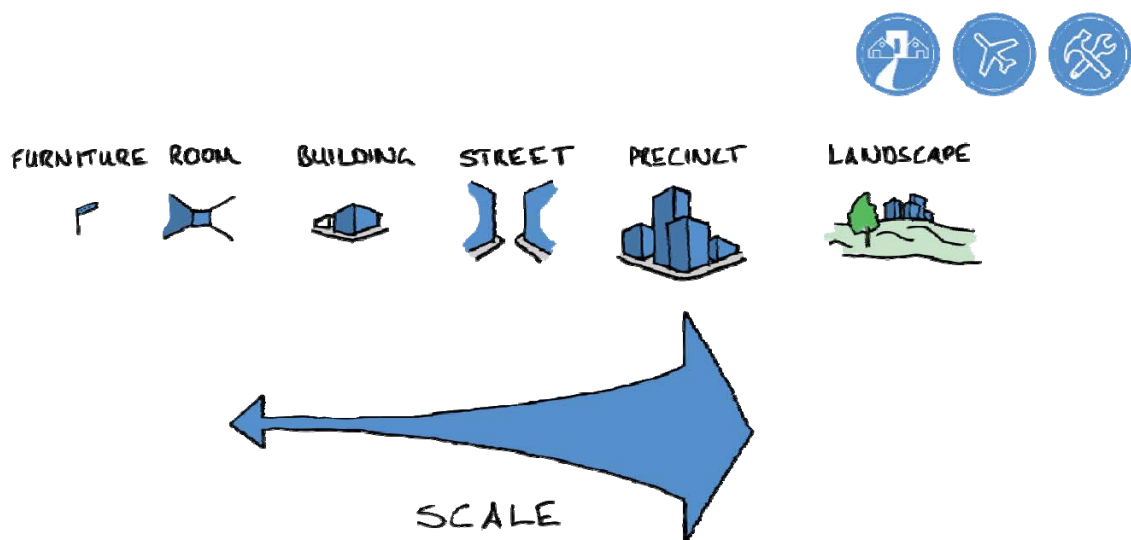


Figure 6: Scale of assessment, Source: GDP, 2013

...

- 3.2 *Each planned precinct should have a defined character that effectively reflects the nature and function of the subject area.*



...

- 3.3 *Building design and appearance should reflect the function of the building and positively contribute to the identity and character of the local area.*

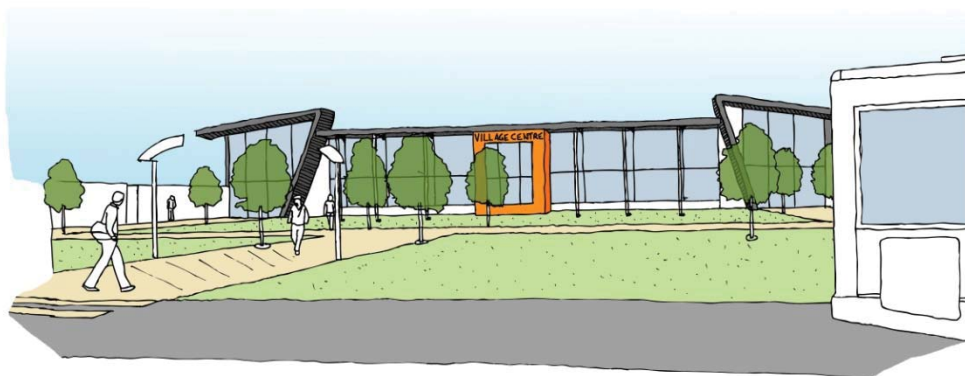


Figure 7: Conceptual perspective of Village Tavern, Source: GDP, 2013

...

- 3.4 *A high quality public realm will significantly influence the definition of identity of the local area. The hardscape, furniture and landscape elements should be selected to provide a distinctive aesthetic that is complementary to the surrounding planned character. It is essential that all elements are robust and have low maintenance requirements that will withstand the harsh conditions of the region while achieving the required aesthetic look, design and function.*



...

- 3.5 *Shared ownership of communal space should be encouraged in order to foster a sense of identity within the site. New development will ensure maintenance and management of communal areas is not jeopardised.*



...

- 3.6 *The proposed airport will be the primary entrance to the subject site for the majority of people, the importance of this entrance should be reflected in the built form of the facility and associated entry statements.*



Figure 8: Conceptual perspective of Airport arrival, Source: GDP, 2013

...

- 3.7 *New development will seek to reinforce and replenish where necessary local biodiversity values in order to integrate the built environment with the local environmental surroundings.*



...

4.0 Theme Two: Attractive Lifestyle

- 4.1 *Healthy and active lifestyles should be encouraged on site through the provision of appropriate facilities and services that broaden the recreational choices of residents.*

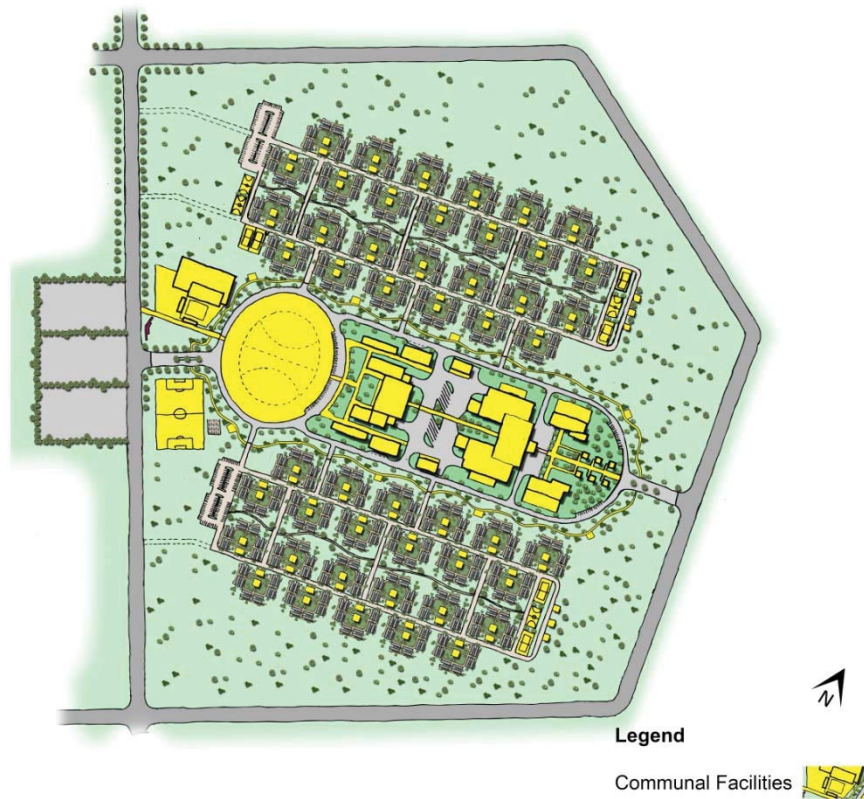


Figure 9: Communal facilities, Source: GDP, 2013

...

- 4.2 Through the application of appropriate residential densities a walkable and compact development can be achieved. In this regard all residential units should be within a 400m (5 minute walk) – 800m (10 minute walk) distance of higher order communal facilities.

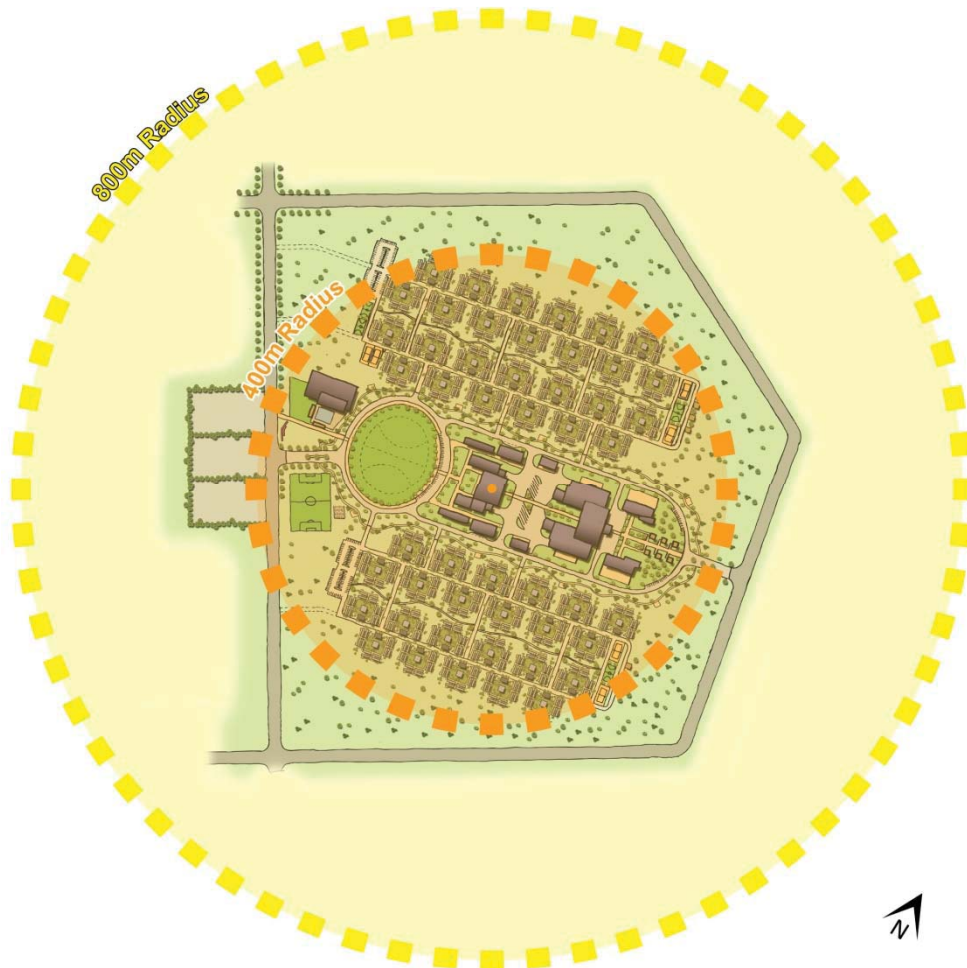


Figure 10: Walking distances within MWAV, Source: GDP, 2013

...

- 4.3 Individual accommodation units should be designed to provide an adequate and comfortable amount of internal private space to cater for individual needs in order to achieve a pleasant and healthy living environment.



...

- 4.4 *Accommodation clusters should be designed to promote a sense of community and co operation. Communal amenity space should be comfortable, safe, flexible, attractive, functional and be maintained and managed to provide convenient and direct access for residents as a respite from the wider development.*



Figure 11: Typical accommodation cluster layout, Source: GDP, 2013

...

- 4.5 *Communal open spaces both formal and informal in nature should be provided on site in order to offer respite from the built environment.*



...

- 4.6 *Communal spaces should be located in central and strategic locations in order to encourage use and social interaction amongst residents. Communal spaces will be designed with flexibility to cater for a wide variety of users.*



5.0 Theme Three: Efficiency

- 5.1 *Applying appropriate densities of development will help to reduce the need to consume additional land. Accordingly new development should seek to compliment the planned densities of development and service provision within the subject site.*

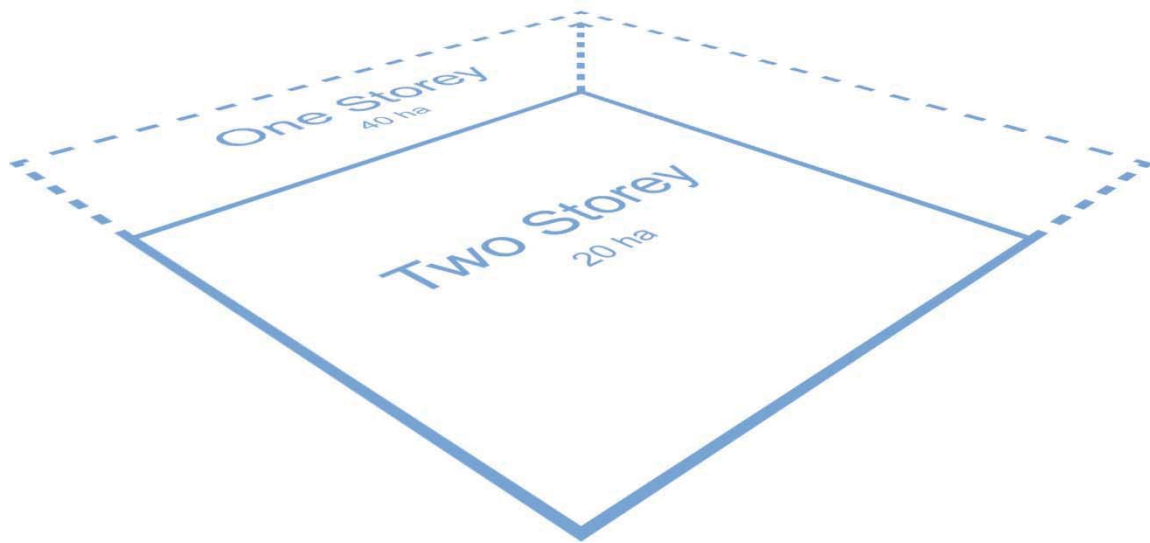


Figure 12: Residential land requirements, Source: GDP, 2013

...

- 5.2 *Local climatic conditions should be harnessed wherever possible to reduce the requirement for artificial heating and cooling within new development. New development should be located and orientated in a manner that acknowledges solar paths and prevailing winds in order to utilise their potential in managing micro climates. Accordingly mitigation features should be provided to western facing facades such as landscape treatments, eaves and awnings. Hardstand areas should be located downwind of residential areas to avoid heat transfer effect and clusters should incorporate voids in the building massing to ensure wind penetration through the built form.*

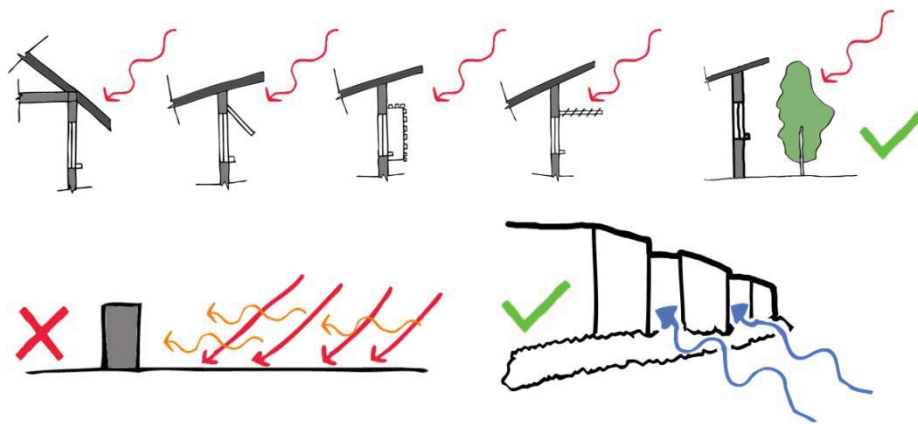


Figure 13: Building techniques to manage climate, Source: GDP, 2013

...

- 5.3 The wind characteristics of the subject site should be utilised to manage micro climates within the subject site. Landscape and built form design should direct wind patterns through the subject site. Specifically development should seek to utilise the cooling prevailing winds and block hot northerly winds from penetrating the built form.

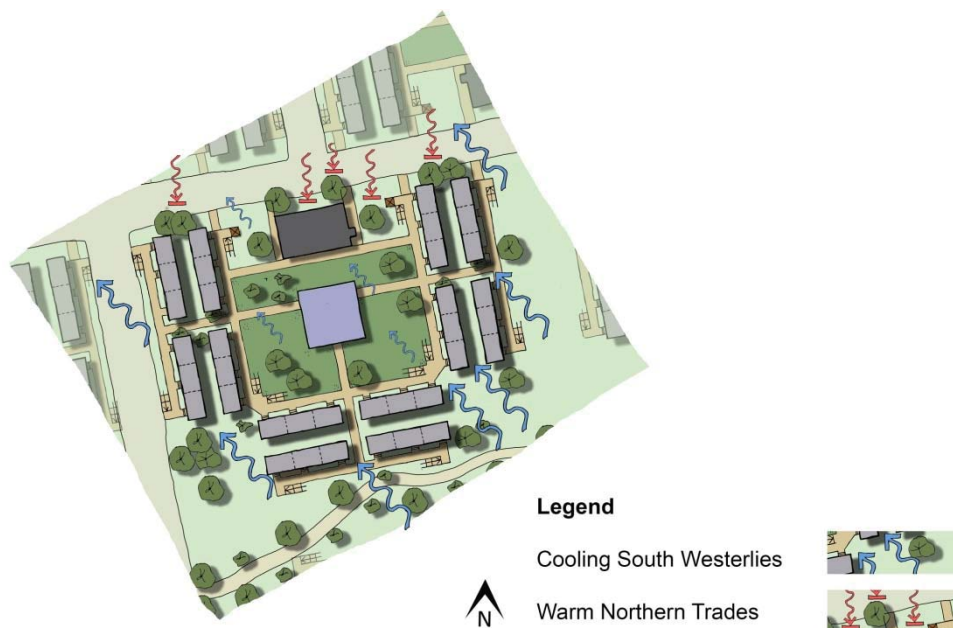


Figure 14: Managing wind exposure, Source: GDP, 2013

...

- 5.4 The proposed design will seek to tread lightly on the subject site, thus minimising future potential rehabilitation works. Development should largely be constructed and established in a modular format that effectively sits atop the existing soil characteristics, avoiding land disturbance and disruptive foundation removal. Further fill associated with proposed development will only be required as to achieve the necessary fall for stormwater purposes.



...

- 5.5 *Management of emissions such as noise pollution, air pollution and light pollutions should be managed to ensure no unreasonable adverse impacts are experienced by adjacent land uses.*



...

- 5.6 *Low maintenance and durability of materials and products should be a priority for all materials used on site. Maintenance and renovation of modular of facilities and accommodation units will be preferred over recurring replacement.*



...

- 5.7 *The proposed development should implement appropriate recycling strategies in order to reduce the quantity of materials going to landfill. New development should incorporate facilities to separate waste into appropriate streams for collection and disposal.*



...

6.0 Theme Four: Safety

6.1 *Emergency Access to all areas of the subject site must be prioritised at all times.*



...

6.2 *Both physical and perceived safety should be considered and encouraged in all development.*



...

- 6.3 *Passive surveillance helps ensure safety levels and the perception of safety are achieved throughout the development. By orientating development appropriately passive surveillance can help reduce the need for costly counter security measures.*



Figure 15: Orientating development to facilitate passive surveillance, Source: GDP 2013

...

- 6.4 *Development should seek to ensure that key routes and landmarks have appropriate lighting at night to foster a sense of safety and security.*



...

- 6.5 *Each distinct use or operation should provide administration, security and emergency facilities located in close proximity to the site entrance, or where this is not practical provide clear direction to the appropriate facilities.*



...

6.6 Entrances to building should be clearly identified from street level



Figure 16: Conceptual perspective of entrance treatment, Source: GDP, 2013

...

6.6 Appropriate fencing should be incorporated within the development in order to provide security and safety for both goods, machinery, operational requirements and personnel. The design and location of fencing will reflect its purpose.



...

6.7 The operation of the airport will be dependant on the ensuring safety and efficiency levels are maintained, in this regard no development will be permitted that interferes with the airports operational integrity.



...

- 6.8 *Water sensitive urban design features such as swales, rainwater tanks and bio-retention ponds should be utilised where possible and utilised as aesthetic features within the built environment.*



...

7.0 Theme Five: Connectivity

- 7.1 *A movement framework will shape how movement and transport is undertaken on the subject site incorporating a variety of different modes of transport. The movement framework should allow journeys to be made in a direct, efficient and safe manner by either personal or organised communal transport.*

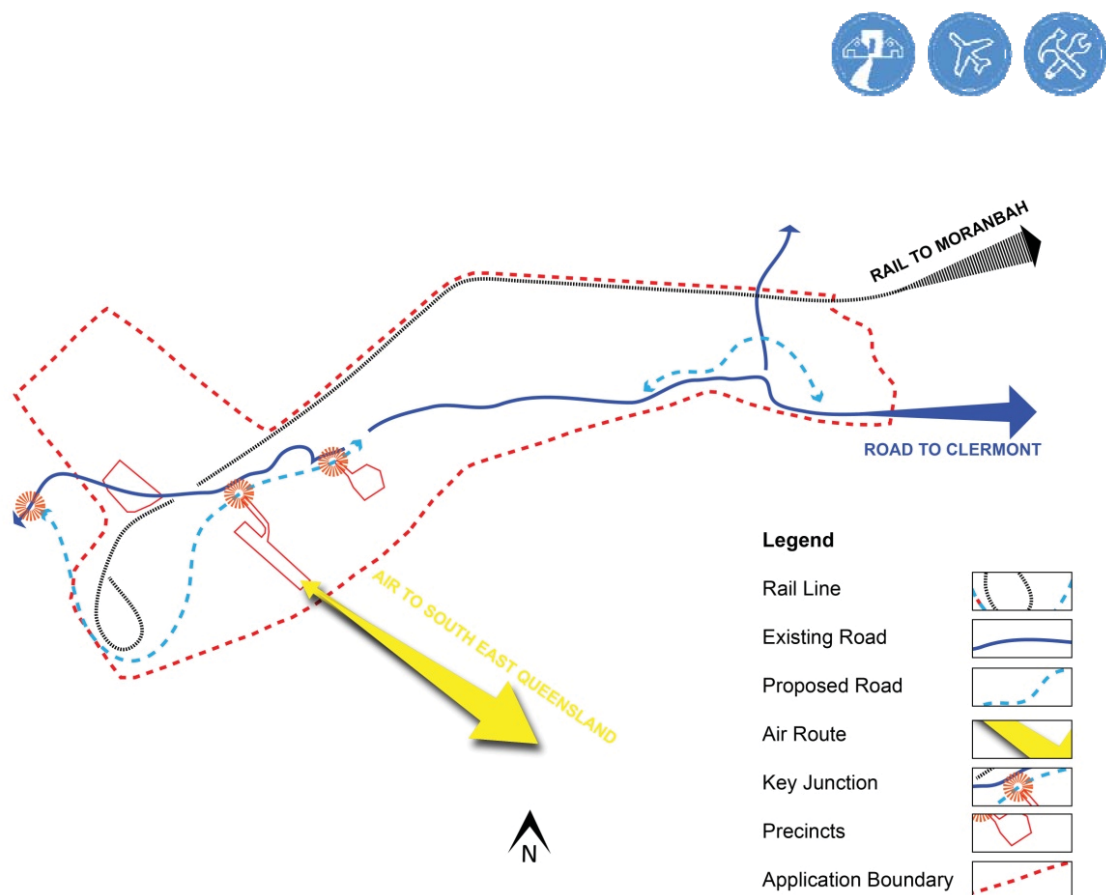


Figure 17: Site accessibility network, Source: GDP, 2013

...

- 7.2 A route hierarchy helps to define key routes within the proposed development, improving legibility and increasing efficiency. New development should respect the planned route hierarchy on the subject site and provide mitigation management features should development impact on the performance of the hierarchy.

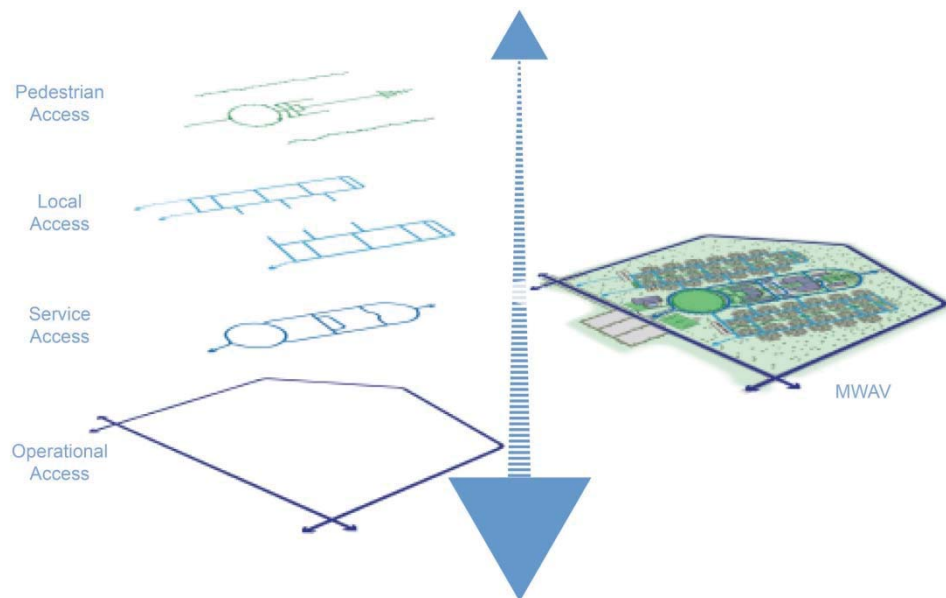


Figure 18: Route hierarchy MWAV, Source: GDP, 2013

...

- 7.3 The interaction of defined facilities and movement networks will result in the creation of activity nodes within the subject site. Activity nodes should be acknowledged and planned for by providing appropriate facilities such as signage, street furniture or shelter in accordance with the level of use.

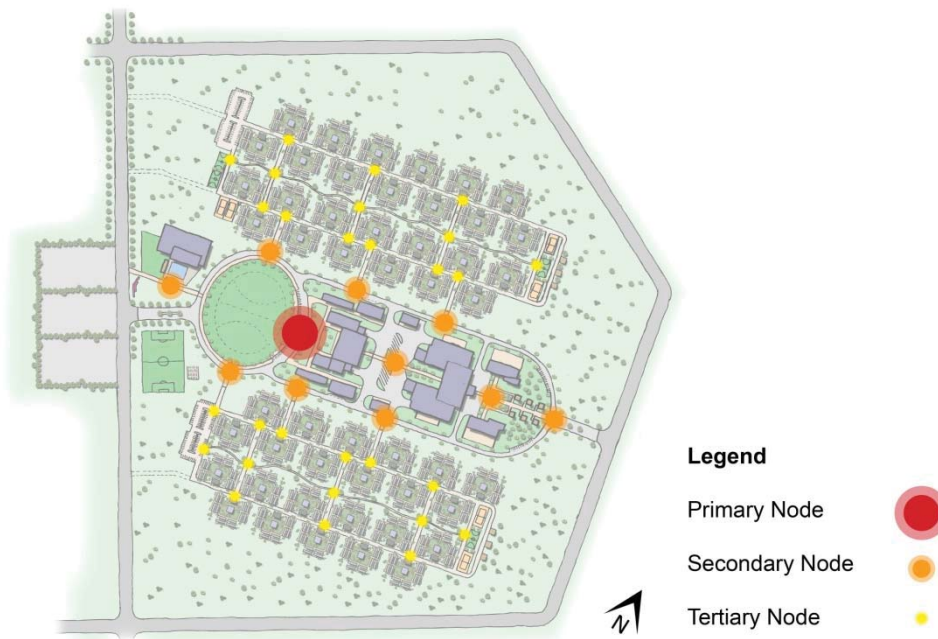


Figure 19: Activity node MWAV, Source: GDP, 2013

...

- 7.4 Operational access should be prioritised within communal areas to ensure safe and efficient access can be achieved.



...

- 7.5 Due to the importance of bus transport within the proposal, bus stops will become significant activity nodes within the built environment. Accordingly appropriate facilities such as shelter, seating, information boards, signage and administration facilities should all be located in close proximity to bus stop facilities.

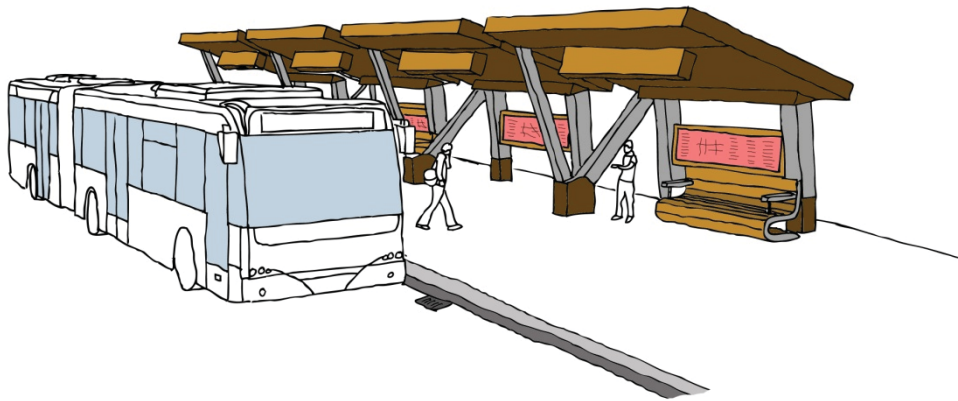


Figure 20: Conceptual perspective of bus stop facilities, Source: GDP, 2013

...

- 7.6 Servicing of communal facilities should be undertaken behind building frontages to avoid noise, lighting and air emissions that have the potential to negatively impact on surrounding uses.



...

- 7.7 *Shared access routes can integrate the needs of distinct access categories whilst also successfully reducing infrastructure costs and land consumption.*

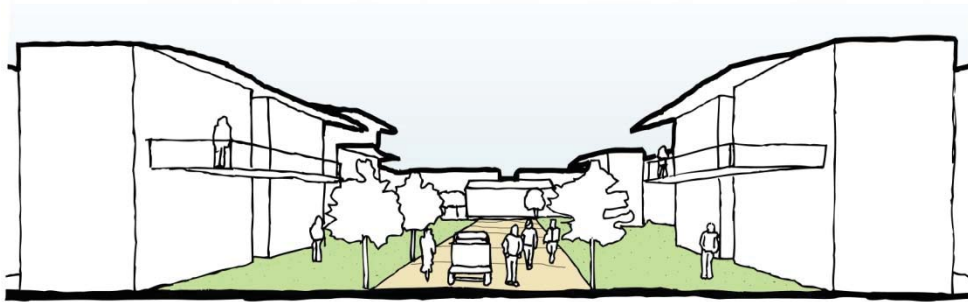


Figure 21: Conceptual section of shared route, Source: GDP, 2013

...

- 7.8 *Due to the specific operational requirements of the subject area, car parking will be clustered in distinct locations, due to the defined transport strategy on site and the potential to reduce conflict within residential and operational areas.*



...

- 7.9 *Development in the southern portion of the Precinct B: Carmichael Industrial will not restrict or jeopardise the potential for future bulk transport operations associated with a rail siding.*



...

8.0 Theme Six: Adaptability

- 8.1 *Development should be designed in a manner that will allow for its eventual closure, deconstruction and removal from the site.*



...

- 8.2 *The potential for accommodation demand to fluctuate over the lifespan of the MWAV should be acknowledged and designed for. In this regard the MWAV should be designed so that areas of the village can be decommissioned and secured over periods of time, and conversely the potential for the MWAV to expand must be maintained should such a need arise in the future.*

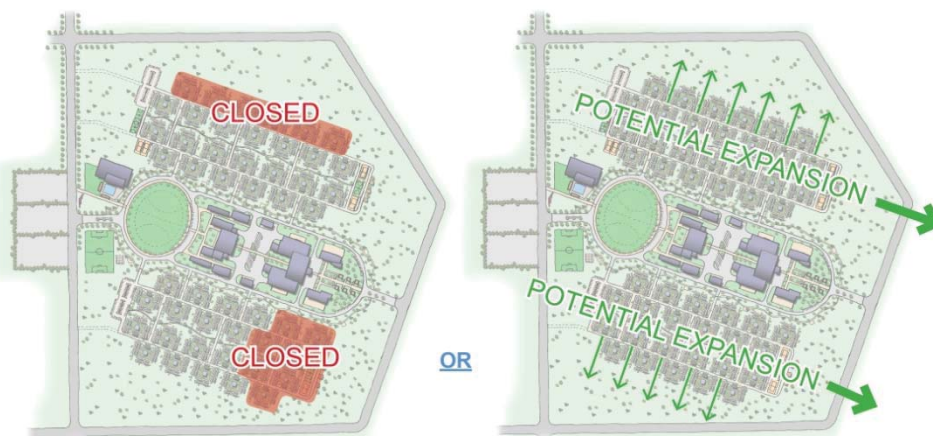


Figure 22: Capacity for expansion or contraction within MWAV, Source: GDP, 2013

...

- 8.3 *The planned level of facilities and services provision should expand and potentially decrease with population fluctuations in order to ensure adequate levels of service and carrying capacities are achieved.*



...

- 8.4 *Future development should where practical retain the planned urban structure in order to maintain consistency.*



...

- 8.5 *Given the largely modular format of construction on the subject site, opportunities to modify and adapt units in a manner that respects the overarching sustainability themes and design guidelines should be explored in order to cater for varying and evolving needs.*



...

- 8.6 *New development should be designed to consider how facilities are used and perceived both during the day and at night.*



...

- 8.7 *By encouraging a sense of ownership and engagement over the communal realm such areas can evolve and adapt to the needs of residents without significant capital investments.*



9.0 Theme Seven: Legibility

- 9.1 *Development should be designed to assist navigation within the site and its surrounds through the use of a variety of contextual cues.*



...

- 9.2 *Land use distinction should be utilised as the primary means of contributing to the legibility of the built environment.*



...

- 9.3 Built form massing, height and scale should be used to distinguish significant communal facilities from private residential areas.

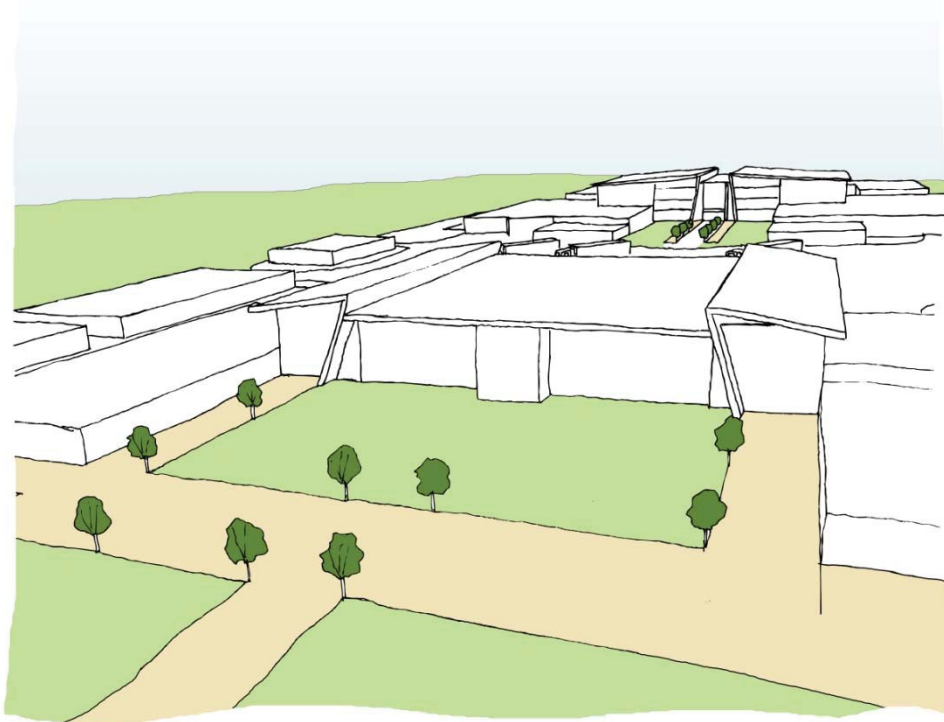


Figure 23: Effect of built form, massing and height, Source: GDP, 2013

...

- 9.4 Gateways help to distinguish the perception of moving between two defined areas. By heightening this effect, the character of defined areas can be emphasised. Gateways and entry statements should be utilised to reinforce the perception of moving from one defined space to another.

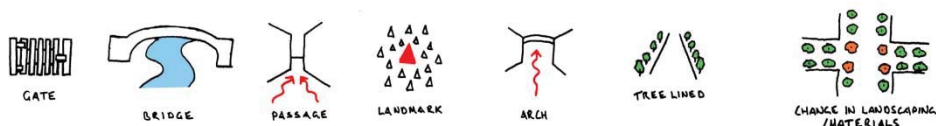


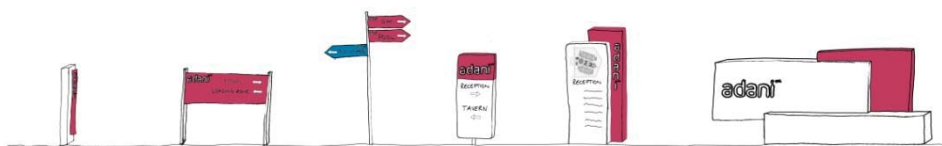
Figure 24: Gateway features, Source: GDP, 2013

- 9.5 *Defined views within the built environment contribute to ones understanding of the development. The incorporation of vistas within the built environment can provide a valuable orientating ability in addition to an aesthetic value. Accordingly new development should not compromise significant vistas.*



...

- 9.6 *Signage will play a key role in ones ability to move efficiently and intelligently through the proposed development. Legibility, consistency and ease of comprehension will be key attributes of the signage established on site. A design palette incorporating different structures, heights, materials and colours will be established over the subject site and all new development should be consistent with this palette.*



...

- 9.7 *Landmark structures offer development a tangible sense of identity in addition to making a significant contribution to legibility within the built environment.*

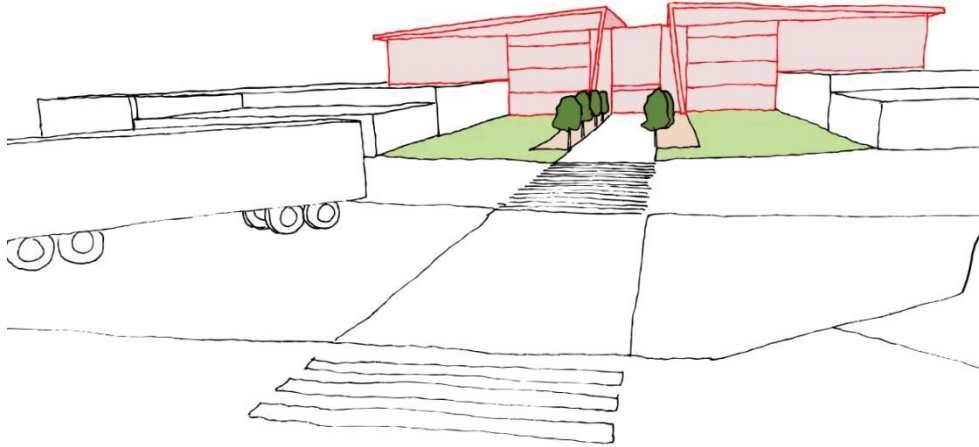


Figure 25: Landmark structure within built environment, Source: GDP, 2013

- 9.8 *The planned route hierarchy will incorporate a variety of street treatments that will differentiate each category of route. New development incorporating an extension to planned routes should be consistent with the character of the relevant route.*

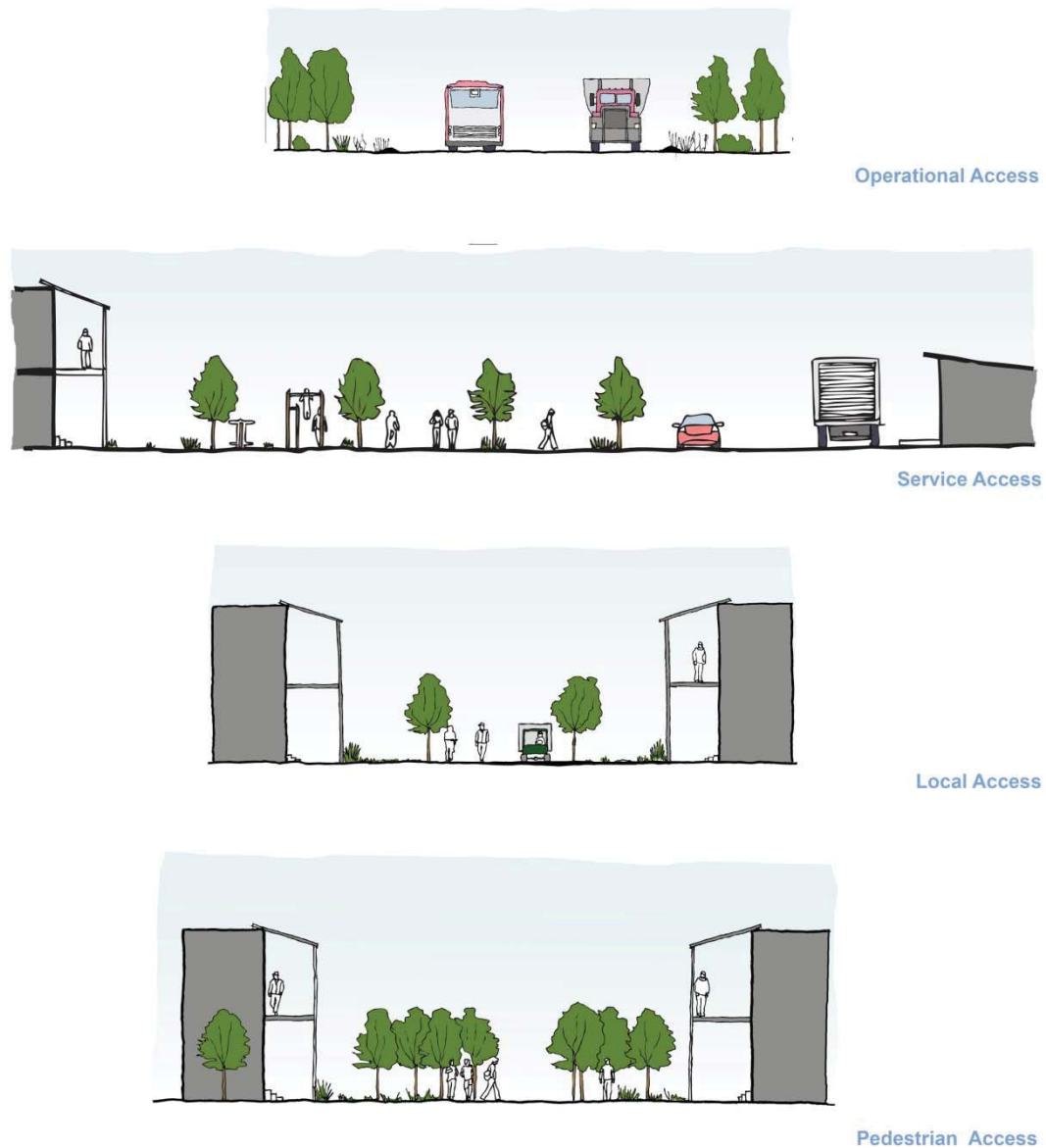


Figure 26: Route hierarchy, Source: GDP, 2013

...

10.0 Bringing the Themes Together

Development that brings together and complies with the seven themes of sustainability and design objectives will effectively achieve the desired built format over the subject site. The themes presented in this schedule have no order of priority – they each carry equal weight.

It is important to note that this schedule is not intended as a prescriptive recipe book of finished and detailed drawings ready to be implemented, it is rather a template to provide imaginative responses a structure to base their designs off whilst incorporating key principles and objectives.

The images, perspectives and plans contained within this document are not meant to be interpreted as defined blueprints for development rather a framework to inform how development may potentially look.

Schedule 3: MWAV Master Plan



NOTES:

This plan has been prepared for the exclusive use of the client as stated on this plan for the purpose of application to the relevant local authority for the land as described and should not be used by any other person or corporation and for any other purpose.

Areas and Dimensions are approximate only and are subject to final state approval and survey.

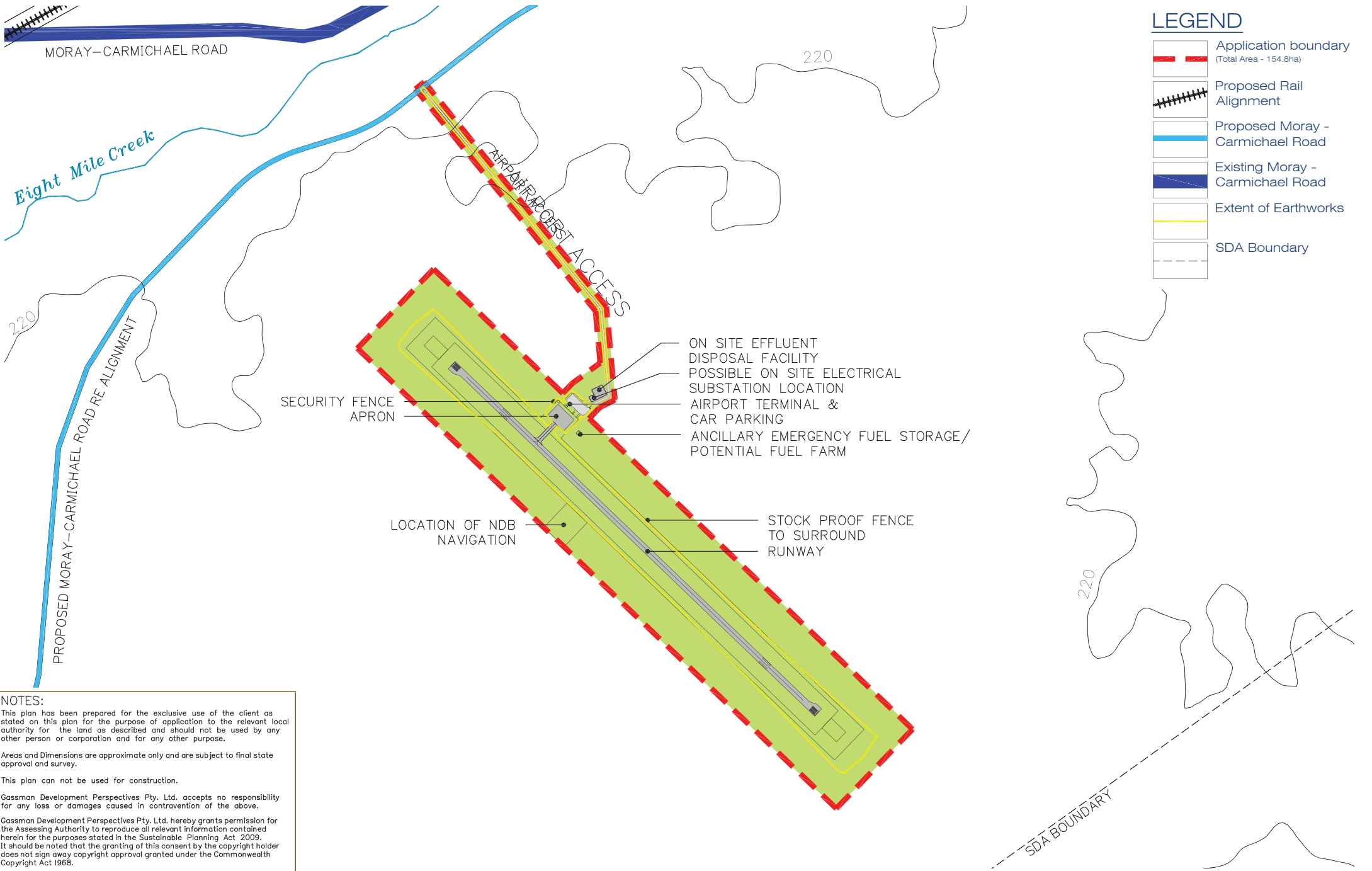
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Schedule 4: Obstacle Limitation Surfaces

Schedule 5: Airport Master Plan



- LEGEND**
- Application boundary (Total Area - 154.8ha)
 - Proposed Rail Alignment
 - Proposed Moray - Carmichael Road
 - Existing Moray - Carmichael Road
 - Extent of Earthworks
 - SDA Boundary

NOTES:

This plan has been prepared for the exclusive use of the client as stated on this plan for the purpose of application to the relevant local authority for the land as described and should not be used by any other person or corporation and for any other purpose.

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Appendix C: Code Assessment

4.1.2.3 Performance Criteria and Acceptable Solutions – “Material change of Use”

“Material change of Use”		
Performance Criteria	Acceptable Solution	Proposal Compliance
Location		
PC1 Non-“Rural Activities” - Locational Criteria Non-“rural activities” are located in the Rural “Zone” only where those activities: do not unduly impact on the character and amenity of the locality; are directly and primarily associated with rural activities, a natural resource related industry or natural or cultural resources; cannot reasonably be located in another more appropriate zone; do not prejudice the existing or future productive capacity of rural land or other natural resources; and do not adversely affect the landscape values and scenic qualities of the locality.	No acceptable solution is prescribed.	PC1 – Performance Solution The proposed development is for industrial operations to support a planned natural resource related industry (mine). The industrial uses have been strategically located within close proximity to the mine, the mine workers accommodation village, and the airport that is to service the mine. The immediate area surrounding the proposed industrial uses is currently used for a mix of cattle grazing and mining exploration activities. The industrial uses are seen as a supporting form of supplementary infrastructure to support the expanded mining activities. Importantly, the remoteness of the area should assist in minimising any potential adverse amenity and/or character impacts for the industry uses. Due to the direct relationship between the industrial uses and the mine, the location is considered ideal. The site for the industrial uses has been chosen to sit outside the planned mining area such that the productive capacity of natural resources is maintained. Where required, appropriate landscaping could be implemented to assist in reducing any potential loss of landscape values, however given the remoteness of the area any such inclusion is not considered necessary and has not been included as part of the current design. Accordingly, it is considered that the proposed industrial area is appropriately located within the rural zone to support a natural resource related industry.
Amenity		
PC2 Non-“Rural Activities” - Scale Non-“rural activities” are of a scale that is consistent with the amenity and character of the locality and do not prejudice the operation and viability of other “uses” or activities in the Rural “Zone” or other “zones”.	AS2 The “total use area” is less than 150m².	PC2 – Performance Solution The scale of the proposed industrial uses is a direct correlation to the scale and form of mining operations proposed on the site. Once operational, the mine will set the character of the immediate area and this industrial area will complement such character. The areas included within the EIS/SEIS for the mine and mine support aspects (off-site infrastructure) are clearly identified and outlined. The proposed industrial area is located in one such area and as such it is not considered that it will prejudice the operation and/or viability of other uses within the Rural zone.

PC3 Non-“Rural Activities” - Operating Hours Non-“rural activities” are operated so as to ensure that the activities and the operation of equipment occur at appropriate times to protect the amenity of the locality.	AS3 Non-“rural activities” are operated only between the hours of 7:00am and 6:00pm.	PC3 – Performance Solution The Industrial Area will service the industrial and infrastructure support needs associated with the Carmichael coal mine, and will need to ‘operate’ in accordance with the mine imperatives. In that regard, and given that workers will work in shifts that could extend outside of the hours nominated in AS3, the Industrial uses will need to be accessible and operational, at least in a reduced capacity, between the hours of 6pm and 7am. Given, however, that the functions of the Industrial uses are largely internalised, it is to be located as close as practical to the mine itself, and there are no sensitive receivers located between the Industrial uses and the mine, any potential impacts on the amenity of others will be entirely mitigated.
PC4 Non-“Rural Activities” - Delivery of Goods The loading and unloading of goods in connection with non-“rural activities” occurs at appropriate times to protect the amenity of the locality.	AS4.1 Loading and unloading occurs only between the hours of: (a) 7:00am and 6:00pm, Monday to Friday; and (b) 7:00am and 12:00 (noon) on Saturdays. AS4.2 No loading and unloading occurs on Sundays and public holidays.	PC4 – Performance Solution Due to the rural and remote setting of the Industrial area, typical considerations in relation to loading and unloading hours are not considered relevant in this particular instance. The proposed Industrial uses are to support a 24 hour mining operation and as such it is considered likely that a similar 24 hour loading/unloading schedule may also occur. As there are no nearby sensitive land uses, any loading/unloading that occurs is not considered likely to result in adverse amenity impacts on the surrounding locale.
PC5 “Residential Activities” Land within the Rural “Zone” is maintained for rural activities.	For “caretaker’s residences”: AS5 No more than 1 (one) “caretaker’s residence” per lot. For all other “residential activities”: No acceptable solution is prescribed.¹⁴	PC5 – Performance Solution As this proposal is impact assessable, it is required to demonstrate compliance with relevant sections of the planning scheme (amongst other aspects). Where any conflict occurs, there must be sufficient grounds to overcome any areas of non-compliance for it to be favorably considered. As the proposed Industrial uses are not rural uses, it is considered to conflict with the performance criteria. Importantly however, it is also noted that the Industrial use and its’ direct linkage to the natural resource related industry, does not necessarily mean that it is a “residential activity” as drawn to by the performance criterion. Notwithstanding, a more strategic level of assessment has been undertaken to demonstrate the suitability of the proposed Industrial uses. Specifically, detailed assessment has been undertaken against the prescribed outcomes for the Rural zone as s4.1.2.2 of the Planning Scheme states that these are the “purpose of the code”. This strategic level assessment is considered consistent with the impact assessable nature of the application and consistency between

		the proposed development and the outcomes of the Rural zone is considered to represent 'sufficient grounds'. Outcome (1) of the code includes that the rural zone “<i>retains its viability as an area of primary production and natural resource use, including mining</i>”. The proposed Industrial uses are critical pieces of supplementary infrastructure to support the planned mining activity. Outcome (2) of the code deals with the appropriate location of rural and mining activities. This proposed Industrial uses are designed to support expanded mine exploration and construction activities that will be occurring on the site and in this regard are appropriately located. Outcome (3) includes obligations of development including appropriate access; environmental maintenance; flood immunity and infrastructure servicing. Broader strategies and studies have been included within the EIS/SEIS that deal with matters such as access and environmental management. Supporting information has been included within this application in relation to bulk earthworks/flooding and infrastructure servicing to demonstrate the suitability of the site. Outcome (4) prescribes a range of “appropriate uses” within the rural zone. A number of these uses include those reasonably associated with a natural resource use and/or natural resource industry. As the Industrial uses are specifically planned to support the mine, they are considered to represent compatible uses. In this regard, it is considered that the proposed airport is appropriate and there are sufficient grounds to justify the identified location.
PC6 Height The height of “buildings” and “structures” does not impact adversely on the amenity of the locality and is consistent with the predominant rural form.	AS6 “Buildings” and “structures” other than those within 100 metres of the boundary of an “airport”¹⁵ are not more than: (a) 8.5 metres; and (b) 2 (two) storeys, at any point above natural ground level. (Except where establishing in an existing “building” and no “building works” are being undertaken for that existing “building”, and excluding windmills, silos and other rural operational equipment).	PC6 – Performance Solution The maximum height of Industrial uses proposed is 15 metres. This is the result of the fact that the uses are designed to support coal mine operations and the equipment and operations related to the mine cannot be accommodated within a smaller built form. In justification of this increased height, the Industrial uses will be internalised within a consolidated industrial estate in order to prevent them appearing ad-hoc and highly visible from public roads.

PC7 Setbacks and Boundary Clearances “Buildings” and “structures” are located to ensure the rural amenity is maintained.	AS7.1 “Buildings” and “structures” have a setback of not less than 20 metres from any road frontage other than a State Controlled Road as identified on Land Characteristics Map – Features Map. AS7.2 “Buildings” and “structures” have side and rear boundary clearances of not less than 15 metres from property boundaries (except where establishing in an existing “building” and no “building works” are being undertaken for that existing “building”).	AS7.1 - Complies Building setbacks in excess of 20m are provided to public road frontages. AS7.2 – Complies All side and rear boundary setbacks are in excess of 15 metres from property boundaries.
PC8 Transport Movements Transport movements associated with the use protect the amenity of the locality.	For “rural activities” and “industrial activities”: AS8 Transport movements do not occur through residential areas. For all other “uses”: No acceptable solution is prescribed.	AS8 – Complies The Industrial Uses will have direct access via a private road to the public Moray-Carmichael Road, and will not need to pass through or near to the proposed Mine Workers Accommodation Village, which represents the nearest residential area.
PC9 “Building” and “Structure” Design “Buildings” and “structures” are designed such that the amenity of the locality is protected and maintained.	No acceptable solution is prescribed.	PC9 – Complies All buildings/structures proposed in association with the Industrial uses will be no greater than 15 metres high and set back significant distances from public roads. Their designs will be largely functional for the purpose that they are fulfilling, however nothing about these designs will detract from the broader rural amenity or character of the locale.
PC10 Ridgelines and Escarpments Ridgelines and escarpments are maintained in a natural state to protect rural character,	No acceptable solution is prescribed.	PC10 - Complies The Industrial uses are not located on a ridgeline or escarpment.

landscape values, and visual amenity.		
PC11 Landscaping and External Activity Areas Landscaping and external activity areas are provided on-site to: (a) contribute to a pleasant and functional rural built form; (b) provide positive sun and breeze control; (c) make provision for recreation areas; and contribute to the positive visual qualities of the locality.	No acceptable solution is prescribed.	PC11 – Complies The current application is to authorise the design, siting and operation of the Industrial uses on the identified location. Specific matters in relation to landscaping are to be subject to separate detailed operational works application. Importantly, appropriate conditions can be set as part of the consideration of this application within the SEIS process such that any future applications for such works comply with the relevant requirements.
PC12 Lighting The design of lighting does not prejudice the amenity of the locality through poorly directed lighting, lighting overspill or lighting glare.	AS12 Direct lighting or lighting does not exceed 8.0 lux at 1.5 metres beyond the boundary of the site.	AS12 – Complies The current application is to authorise the design, siting and operation of the Industrial uses on the identified location. Specific matters in relation to detailed lighting design and provision are to be subject to separate detailed design exercises. The Applicant would be willing to accept a condition of approval that a lighting plan be submitted prior to issue of a Building Work application, in order that lighting intensity, light spill and glare be addressed.
C13 Separation of Incompatible Land Uses Separation distances are provided to ensure: (a) the future viability of surrounding “uses”; (b) infrastructure items are protected from incompatible “development”; an appropriate standard of amenity and public safety; and conflict arising from incompatible “uses” is minimised.	For “sensitive land uses” and “rural activities” other than “intensive animal industries”: AS13.1 Minimum separation between “sensitive land uses” and “rural activities” are as stated in Schedule 2, Division 1: Separation Distances – Agricultural and Residential Uses For “sensitive land uses” and “intensive animal industries”: AS13.2 Minimum separation distances between “sensitive land uses” and “intensive animal industries” are as stated in Schedule 2, Division 2: Separation Distances	AS13 – Complies As the proposed Industrial uses are intended to service and support the broader mining activity, it is located within close proximity to mining operations. Importantly, the Industry location has been strategically selected such that it is clear and does not impact on the extractive industry operations. Appropriate operational safety parameters have also been incorporated into the design (including building height restrictions and security fencing) to ensure that appropriate levels of public safety are achieved. In this regard, the location and intent of the Industrial uses are not considered likely to unreasonably impact on the viability and operation of surrounding areas.

	– Intensive Animal Industries, Section 2.1. For “grazing”: AS13.3 Pens and yards maintain a minimum separation distance of 300 metres to “sensitive land uses” not associated with the “grazing”. For “uses” other than “sensitive land uses”¹⁶ and “extractive industries”: AS13.4 “Buildings”, “structures” and “outdoor activity areas” maintain a minimum separation distance to “extractive industries” as stated in Schedule 2, Division 3: Separation Distances – Extractive Industries, Section 3.1. For all “uses”: AS13.5 “Buildings”, “structures” and “outdoor activity areas” maintain a minimum separation distance to petroleum and gas pipelines and refuse tips as stated in Schedule 2, Division 5: Separation Distances – Infrastructure Items, Section 5.1.	
Infrastructure		
PC14 Water Supply All “premises” have an adequate volume and supply of water for the “use”.	AS14.1 “Premises” are connected to Council’s reticulated water supply system.	AS14 – Complies The proposed Industrial uses are to be provided with appropriate levels of water servicing. Provisions in relation to the permanent supply of water to the project are generally outlined within the broader EIS/SEIS under consideration.

	or AS14.2 “Premises” are connected to an approved water allocation as provided by the relevant agency. or For “detached houses” or “caretakers residences”: AS14.3 “Premises” are connected to a rain water tank with a minimum capacity of: 45, 000 litres where not in a reticulated water supply area; (b) 22, 000 litres where in a reticulated water supply area.	In support of this current application, infrastructure and servicing information has been provided in Appendix H (Preliminary Servicing report) to outline possible interim servicing solutions until such time that the permanent solution is provided. Importantly, there is the intent for appropriate services of water supply to be provided to the Industrial area at all times. Appropriate conditions can be set as part of the consideration of this application within the EIS/SEIS process such that all future water supply complies with the relevant requirements.
PC15 Effluent Disposal All “premises” provide for the treatment and disposal of effluent and other waste water to ensure the protection of public health and environmental values.	AS15.1 “Premises” are connected to Council’s reticulated sewerage system. or AS15.2 “Premises” not in a sewered area have an on-site effluent disposal system in accordance with Schedule 1, Division 4: Standards for Sewerage Supply, Section 4.2.	AS15 – Complies The proposed Industrial uses are to be provided with appropriate levels of servicing. In support of this current application, infrastructure and servicing information has been provided to outline the preferred effluent disposal strategy. Specifically, a site based management plan (see Appendix G) and Environmentally Relevant Activity application has been prepared and accompanies the development application material in relation to the likely provision of an on-site effluent disposal system to the Industrial area.
PC16 Stormwater Stormwater is collected and discharged so as to: (a) protect the stability of buildings or the use of adjacent land; and (b) protect and maintain environmental values.	AS16 Stormwater is collected and discharged in accordance with Schedule 1, Division 5: Standards for Stormwater Drainage, Section 5.1.	AS16 – Complies Detailed stormwater reporting has been prepared and accompanies this current application (see Appendix I).

PC17 Electricity “Premises” are provided with an adequate supply of electricity for the “use”.	AS17 All “premises” have a supply of electricity.	AS17 – Complies Electricity will be supplied to the Industrial uses under the terms described within the EIS for the broader mine and offsite infrastructure components, hence the Applicant would accept a condition requiring that such an electricity connection be made.
PC18 Vehicle Access Vehicle access is provided to ensure the safe and functional operation for motorists and pedestrians.	For all self-assessable uses: AS18.1 All “premises” have vehicle access to a formed road. Access is designed and constructed in accordance with Schedule 1, Division 2: Standards for Roads, Carparking, Manoeuvring Areas and Access, Section 2.3(2). For all other “uses”: AS18.2 All “premises” have vehicle access to a formed road. Access is designed and constructed in accordance with Schedule 1, Division 2: Standards for Roads, Carparking, Manoeuvring Areas and Access, Section 2.3(1).	AS18 – Complies Vehicular access will be provided into the Industrial uses via Moray Carmichael Road. Moray-Carmichael Road will be ‘formed’ as a result of road upgrade works to be completed as a consequence of the Carmichael Mine EIS approval.
PC19 Vehicle Parking and Service Vehicle Provision Vehicle parking and service vehicle provision is adequate for the “use” and ensures safe and functional operation for motorists and pedestrians.	AS19.1 All “uses” provide vehicle parking in accordance with Schedule 1, Division 2: Standards for Roads, Carparking, Manoeuvring Areas and Access, Section 2.2(1) (a). AS19.2 Car parking, service vehicle parking and manoeuvring areas are designed and constructed in accordance with Schedule 1, Division 2: Standards for Roads,	PC19 – Performance Solution The Concept Plans contained in Appendix A of this report illustrates the location of proposed vehicle parking and maneuvering areas associated with the Industrial uses. Given that the industrial activities will service for the needs of Carmichael coal mine and other related off-site infrastructure, the amount of car parking required may be less than that which would need to be dedicated at a traditional industrial facility located in an urban area, and instead will cater only for the functional car parking load required.

	Carparking, Manoeuvring Areas and Access, Section 2.2(1) (b).	
PC20 Roads Adequate all-weather road access is provided between the “premises” and the existing road network.	AS20 Roads are designed and constructed in accordance with Schedule 1, Division 2: Standards for Roads, Carparking, Manoeuvring Areas and Access, Section 2.1(1).	AS20 – Complies Vehicular access will be provided into the Industrial uses via Moray Carmichael Road. Moray-Carmichael Road will be ‘formed’ as a result of road upgrade works to be completed as a consequence of the Carmichael Mine EIS approval.
PC21 “Electricity transmission line easement” - Vegetation Transmission lines within an “electricity transmission line easement” are protected from vegetation.	AS21.1 Planted vegetation within an “electricity transmission line easement” has a mature height not exceeding 2.5 metres as shown in Schedule 2, Division 4: Powerline / Electricity Easements, Section 4.2 Diagram 3. AS21.2 No part of planted vegetation, at its mature size, is located closer than 2.5 metres to an electricity transmission line as shown in Schedule 2, Division 4: Powerline / Electricity Easements, Section 4.2 Diagram 3.	AS21 – Complies Vegetation within any proposed future electricity easement will be conditioned to be managed in accordance with the acceptable solutions stated.
PC22 “Electricity transmission line easement” – Vegetated Buffers Vegetated buffers adjoining an “electricity transmission line easement” are maintained to provide: (a) a visual buffer to the easement; and (b) a separation distance from	AS22 Existing vegetation, comprising trees and/or shrubs, shall be retained within 20 metres of an “electricity transmission line easement” as shown in Schedule 2, Division 4: Powerline / Electricity Easements, Section 4.2 Diagram 4.	AS22 – Complies Vegetation buffers located adjacent to any proposed future electricity easement can be conditioned to be managed in accordance with the acceptable solutions stated.

the easement. PC23 “Electricity transmission line easement” - Separation Distance “Habitable buildings” and “child oriented uses” are located to ensure community safety.	AS23 “Habitable buildings” and “child oriented uses” maintain a minimum separation distance from the most proximate boundary of an “electricity transmission line easement” in accordance with Schedule 2, Division 4: Powerline / Electricity Easements, Section 4.1 (1) and Section 3.1 Diagram 1.	AS23 – Complies Whilst it is not anticipated that any ‘Habitable buildings’ or ‘child oriented use’ will be established within the nominated separation distances from any proposed future electricity easements, such separation distance can still be conditioned in accordance with the acceptable solutions stated.
Environmental		
PC24 “Watercourses” and “Lakes” “Development” ensures the maintenance of riparian areas and water quality including protection from off- site transfer of sediment.	AS24 A minimum 50 metre wide buffer area is provided extending out from the “defining bank” of any “watercourse” or “lake”. <i>Note: See diagrammatic representation of a “defining bank” in Schedule 3.</i>	PC24 – Complies The extent of the industrial uses and associated earthworks and vegetation clearing far exceeds the 50 metre separation distance to a “defining bank” of any “watercourse” or “lake”.
PC25 Vegetation Retention “Development” retains vegetation for the: (a) protection of scenic quality; (b) protection of general habitat; (c) protection of soil quality; and establishment of open space corridors and networks.	AS25 Vegetation comprising 20% of each regional ecosystem type is retained within each lot with retained vegetation made up of woody remnant, regrowth or replanted natural species, excluding deep-rooted crops and clear fell plantation forestry. The shade lines are a minimum of 10 metres in width; clumps have an area greater than 2 hectares.	AS25 – Complies No regional ecosystem vegetation is proposed to be cleared to facilitate the Stage One Industrial uses. Refer to the Operational Works (Vegetation Clearing) documentation contained in Appendix D of this report for further details.
PC26 Cultural Heritage “Development” ensures the protection and maintenance of places and items of cultural heritage.	AS26.1 A minimum separation distance of 50 metres is provided to the “defining bank” of “watercourses” and “lakes”.	AS26 – Complies A distance far exceeding the minimum 50 metres required will be maintained between the proposed Industrial uses and the “defining bank” of “watercourses” and “lakes”, as well as to any cemeteries and burial sites as identified in Schedule 2, Division 7: Places and Items of Cultural Heritage, Section 7.1

	<i>Note: See diagrammatic representation of a “defining bank” in Schedule 3.</i> AS26.2 A minimum separation distance of 50 metres is provided to cemeteries and burial sites as identified in Schedule 2, Division 7: Places and Items of Cultural Heritage, Section 7.1.	
PC27 Air Emissions Air emissions from “premises” do not cause environmental harm or nuisance to adjoining properties or “sensitive land uses”.¹⁷	No acceptable solution is prescribed.	PC 27 - Complies The operation of Industrial activities on the land obviously has potential to impact on the amenity of adjoining properties and/or sensitive land uses in regards to air emissions. These Industrial uses constitute off-site infrastructure which is deemed critical to the successful operation of the Carmichael coal mine. On that basis, the EIS process will be the authorizing mechanism by which broader issues of economic importance and overriding needs are discussed in the context of resolving potential or perceived land use conflicts. Notwithstanding the above, site based management plans have been prepared in relation to Concrete Batching (Appendix F), Chemical Storage use (see Appendix G) and Sewage Treatment (see Appendix H) uses in order to mitigate any potential air emissions from the site.
PC28 Noise Emissions Noise emissions from “premises” do not cause environmental harm or nuisance to adjoining properties or “sensitive land uses”.¹⁸	No acceptable solution is prescribed.	PC28 - Complies The operation of Industrial activities on the land obviously has potential to impact on the amenity of adjoining properties and/or sensitive land uses in regards to noise impacts. These Industrial uses constitute off-site infrastructure which is deemed critical to the successful operation of the Carmichael coal mine. On that basis, the EIS process will be the authorizing mechanism by which broader issues of economic importance and overriding needs are discussed in the context of resolving potential or perceived land use conflicts. Notwithstanding the above, site based management plans have been prepared in relation to Concrete Batching (Appendix F), Chemical Storage use (see

		Appendix G) and Sewage Treatment (see Appendix H) uses in order to mitigate any potential air emissions from the site.
PC29 Water Quality The standard of effluent and / or stormwater run-off from “premises” ensures the quality of surface and underground water is suitable for: (a) the biological integrity of aquatic ecosystems; (b) recreational use; (c) supply as drinking water after minimal treatment; (d) agricultural use; or (e) industrial use. ¹⁹	No acceptable solution is prescribed.	PC29 - Complies A site based management plan addressing the proposed system of effluent disposal is included in Appendix H of this report. Furthermore, a Stormwater Management Plan addressing water quality objectives is included in Appendix J of this report. These reports demonstrate that compliance with the relevant water quality objectives can be met and subsequently conditions.
PC30 Excavation or Filling Excavating or filling of land: (a) ensures safety and amenity for the users of the “premises” and nearby land; minimises soil erosion and instability of surrounding areas; and does not degrade the environmental values of receiving waters.	AS30.1 Batters have a maximum slope of 25%, are terraced at every rise of 1.5 metres and each terrace has a minimum depth of 750mm. AS30.2 Excavation or filling within 1.5 metres of any site boundary is battered or retained by a wall that does not exceed 1 metre in height. AS30.3 The extent of filling or excavation does not exceed 40%² of the site area or 500m² whichever is lesser. AS30.4 Filling and excavation is not greater than 1 metre in height or depth. AS30.5	AS30 - Complies Detailed engineering design works have been undertaken as part of the preparation of this application material for the Industrial Area to inform the extent of earthworks proposed and also enable their early consideration. These design works have also been undertaken with the stormwater management strategy proposed and to ensure that appropriate finished ground conditions are established. The design strategy that underpinned the earthworks design was also heavily reliant on the flood immunity levels and the intended measures to convey, capture and treat stormwater. For further information in relation to the preparatory earthworks proposed, please refer to Appendix E (OPW Bulk Earthworks).

	Only clean uncontaminated fill is used (i.e. no building waste, concrete, green waste or contaminated material etc. is used as fill). AS30.6 The site is not on the contaminated land register AS30.7 Any excavation or filling occurs more than 25 metres from the “defining bank” of any “watercourse” or “lake”. <i>Note: See diagrammatic representation of a “defining bank” in Schedule 3.</i> AS30.8 Excavation or filling is undertaken in accordance with Schedule 1, Division 1: Standards for Construction Activities, Section 1.1.	
PC31 Construction Activities Erosion control measures and silt collection measures ensure that environmental values are protected during construction activities.	AS31 During construction soil erosion and sediment is controlled in accordance with standards contained in Schedule 1, Division 1: Standards for Construction Activities, Section 1.1.	AS31 Complies Erosion control and silt collection measures are proposed to be implemented during construction, as stated in the Operational Works (Bulk Earthworks) documentation contained in Appendix E of this report.
Constraint		
PC32 “Development” in the vicinity of “Airports” “Development” in the vicinity of “airports”: (a) protects the operation of the “airport”; is designed and located to	AS32 “Buildings” and “structures” within 100 metres of the boundary of an “airport” are less than 7.5 metres in height at any point above natural ground level.	AS32 Complies The proposed Industrial uses will be located in excess of 100 metres from the proposed Carmichael private airport.

achieve a suitable standard of amenity for the proposed activity; and does not restrict the future operational requirements of the “airport”. ²⁰	(Except where establishing in an existing “building” and no “building works” are being undertaken for that existing “building”.)	
PC33 Good Quality Agricultural Land Areas Good quality agricultural land areas as identified on the Land Characteristics Map – Good Quality Agricultural Land are conserved and managed for the longer term and protected from development that may lead to its alienation or diminished productivity. ²¹	No acceptable solution is prescribed.	PC33 – Performance Solution The subject site has traditionally been associated with grazing related agricultural operations and as such, any departure from this historical use requires careful consideration. On a project wide (macro scale), the land to be used for the mine and off-site infrastructure items is being considered as a whole and is to be dealt with on a project wide scale. This consideration includes aspects of varied land uses and applicable offsets/integration policies. At the level of the proposed use (micro scale), the use of the identified location for Industrial uses represents a negligible portion of the existing land mass of the Moray Downs property. In this regard, it is not considered that these Industrial uses will compromise or fragment the remaining agricultural use of the site and surrounds.
PC34 Flooding “Premises” are designed and located so as: (a) not to be adversely impacted upon by flooding; (b) to protect life and property; and not to have an undesirable impact on the extent or magnitude of flooding. ²²	No acceptable solution is prescribed.	PC34 - Complies The proposed Industrial Area has been located clear of known historic floodways.
PC35 Protected Areas “Development” is undertaken to ensure areas of significant biodiversity and habitat value and high scenic quality are protected.	AS35 A minimum separation distance of 100 metres is provided to protected areas as identified on Land Characteristics Map – Features Map.	AS35 - Complies The proposed Industrial uses are located greater than 100 metres from the nearest protected area’ shown on the ‘Land Characteristics Map – Features Map’, being Doongmabulla Springs to the west.
PC36 Sloping Land “Development” is undertaken to ensure: vulnerability to landslip, erosion and land degradation is	AS36 “Development” is not undertaken on slopes greater than 15%.	AS36 - Complies The site of the proposed Industrial uses is essentially flat, and therefore well below the nominated maximum 15% slope.

minimised; and safety of persons and property is not compromised.		
PC37 Transport Infrastructure Separation distances are provided to ensure: transport infrastructure items are protected from incompatible “development”; and an appropriate standard of amenity and public safety is provided to adjoining “uses”.	AS37 “Buildings” and “structures” maintain a minimum separation distance to rail lines and State controlled roads (as identified on Land Characteristics Map – Features Map) as stated in Schedule 2, Division 5: Separation Distances – Infrastructure Items, Section 5.1).	AS37 - Complies All proposed “buildings” and “structures” related to the Industrial uses will be located far in excess of the separation distances from rail and State controlled road infrastructure nominated on the Land Characteristics Map – Features Map.
PC38 Aviation Facilities Aviation facilities are protected from physical obstructions and electromagnetic emissions that may adversely affect their function.	AS38.1 “Development” is not undertaken within 150 metres of the NDB as identified on Land Characteristics Map – Aviation Facilities and in accordance with Schedule 2, Division 8: Sensitive Areas for Aviation Facilities, Diagram 1. For “development” between 150 metres and 500 metres of the NDB: AS38.2 “Buildings” and “structures” do not intersect the 3° plane extending from the NDB as identified on Land Characteristics Map – Aviation Facilities and in accordance with Schedule 2, Division 8: Sensitive Areas for Aviation Facilities, Diagram 1.	AS38 - Complies The proposed development is not located in Clermont, therefore is outside of the specified distances from the NDB.
“Use”		
PC39 “Airport” “Airport” activities: do not adversely impact on the amenity of surrounding residents;	No acceptable solution is prescribed.	Not Applicable No airport premises use is proposed in conjunction with the Industrial uses.

(b) ensure the safe operation of aeronautical and support activities; and (c) ensure the safety of surrounding "Premises". 23		
PC40 "Bed and Breakfast Premises" "Premises" used for a "bed and breakfast premises" are of a scale and are operated in a manner so as not to impact adversely on the amenity of the locality.	AS40.1 Provision is made for no more than 6 (six) paying guests to be accommodated at any one time. AS40.2 "Premises" contains not more than 3 (three) "accommodation units" for guest accommodation purposes.	Not Applicable No bed and breakfast premises use is proposed in conjunction with the Industrial uses.
PC41 "Extractive Industry" "Premises" used for "extractive industries": (a) do not impact adversely on the amenity of other "uses" in the Rural "Zone" or other "zones"; (b) are designed and operated to ensure the protection and maintenance of environmental values; are rehabilitated to provide for future re-use of the land and to prevent ongoing risk of adverse impacts on the local environment and amenity; and are designed and operated so that the safety of persons and property is not compromised.	No acceptable solution is prescribed.	Not Applicable No Extractive Industry use is proposed in conjunction with the Industrial uses.
PC42 "Home Business" "Premises" used for a "home business" are of a scale and are operated in a manner so as not to impact adversely on the amenity of the locality.	AS42.1 No more than 1 (one) person other than the residents of the "premises" is employed in the "home business". AS42.2	Not Applicable No home business use is proposed in conjunction with the Industrial uses.

	No more than 150m² of “total use area” is used for the purposes of a “home business”. AS42.3 No more than 2 (two) clients normally attend the “premises” at any one time. AS42.4 No goods or products produced by other businesses are displayed for sale in any window or outdoor area. AS42.5 Operate only between the hours of 7:00am and 6:00pm.	
C43 “Intensive Animal Industries” “Intensive animal industries”: (a) do not impact adversely on the amenity of the Rural “Zone”, and surrounding areas; are designed and operated to ensure the protection and maintenance of environmental values; and are rehabilitated to provide for future re-use of the land and to prevent ongoing risk of adverse impacts on the local environment and amenity.	No acceptable solutions prescribed.	Not Applicable No intensive animal industry use is proposed in conjunction with the Industrial uses.

PC44 “Caravan and Relocatable Home Park” or “Accommodation Building”) Development for the purposes of accommodating workers is: on the same site as, or is immediately adjoining, the rural production or natural resource related industry with which it is associated; and is established only for a defined period; and) Development for the purposes of accommodating tourists is of a small scale.	No acceptable solution is prescribed.	Not Applicable No caravan, relocatable home park or accommodation building use is proposed in conjunction with the Industrial uses.
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5.2 Performance Criteria and Acceptable Solutions – “Reconfiguring a Lot”

“Reconfiguring a Lot”		
Performance Criteria	Acceptable Solution	Proposal Compliance
Rural “Zone”		
PC1 Rural “Zone” – Minimum Lot Size The reconfiguring of lots ensures the Rural “Zone” retains its viability as an area of primary production and that development is consistent with the local character ⁷⁶.	For land in Classes A and B Good Quality Agricultural Land Area, as shown on the Land Characteristics Map – Good Quality Agricultural Land: AS1.1 All lots have a minimum area of 500 hectares. For land in Class C1 Good Quality Agricultural Land Area, as shown on the Land Characteristics Map – Good Quality Agricultural Land: AS1.2 All lots have a minimum area of 1000 hectares. For land not in the Good Quality Agricultural Land Area, as shown on the Land Characteristics Map – Good Quality Agricultural Land: AS1.3 All lots have a minimum area of 5000 hectares. AS1.4 All lots have a minimum width to depth ratio of 1:5.	PC1 – Performance Solution The proposed Community Title Subdivision (illustrated on the Concept Plan contained in Appendix A of this report) is intended to create allotments which will contain industrial and infrastructure facilities that have a direct link to the Applicant’s Carmichael Coal Mine, located immediately to the West. It is expected that this Industrial area will be authorised under the approval conditions for the Carmichael Coal Mine and Rail Project, which is proceeding as a Significant Project under the control of the Queensland Coordinator General. The EIS for this Project nominates the Industrial area as critical off-site infrastructure. On that basis, the minimum allotment sizes which normally apply to land subdivisions within the Rural zone should not be applied in this instance. Furthermore, an s242 Preliminary Approval Affecting the Local Planning Scheme is being sought (by way of a separate development application) which seeks to establish a new land use precinct over the area of the Community Title Subdivision. This new precinct, known as the Carmichael Off-Site Industrial Zone, will authorise new allotment sizes down to the size proposed in the ROL Concept Plan contained in Appendix A of this Report. A range of industrial land uses linked to the establishment and operation of the Carmichael Coal Mine will then be facilitated to establish on the allotments created.

Urban “Zone”		
PC2 Urban “Zone” – Minimum Lot Size Lots within the Urban “Zone” are of a sufficient size to accommodate residential uses, consistent with the local character and which enables future uses to comply with the Urban Zone Code.	AS2 All lots have: (a) a minimum area of 450m ² ; (b) a minimum frontage of 15 metres; and (c) a minimum width to depth ratio of 1:5.	Not Applicable The subject land is not located within the Urban Zone.
Commercial “Zone”		
PC3 Commercial “Zone” – Minimum Lot Size Lots within the Commercial “Zone” are of a sufficient size to accommodate commercial uses, consistent with the local character and which enables future uses to comply with the Commercial Zone Code.	AS3 All lots have: (a) a minimum area of 600m ² ; and (b) a minimum frontage of 18 metres.	Not Applicable The subject land is not located within the Commercial Zone.
Industrial “Zone”		
PC4 Industrial “Zone” – Minimum Lot Size Lots within the Industrial “Zone” are of a sufficient size to accommodate industrial uses, consistent with the local character and which enables future uses to comply with the Industrial Zone Code.	AS4 All lots have: (a) a minimum area of 800m ² ; (b) a minimum frontage of 20 metres; and (c) a minimum width to depth ratio of 1:5.	Not Applicable The subject land is not located within the Industrial Zone.

Open Space and Recreation “Zone”

**PC5 Open Space and Recreation
“Zone” – Minimum Lot Size**

Lots within the Open Space and Recreation “Zone” are of a sufficient size to accommodate recreational uses, consistent with the local character and which enables future uses to comply with the Open Space and Recreation Zone Code.

No acceptable solution is prescribed.

Not Applicable

The subject land is not located within the Open Space and Recreation Zone.

Urban "Zone" Emerging Community Area		
PC6 Emerging Community Area Where located in the Emerging Community Area, as indicated on Zoning Map 3, development facilitates the creation of a well-designed and integrated urban community which: (a) is well connected to the remainder of Moranbah; (b) provides for a mix of residential forms consistent with other provisions of this code; meets local community needs for "open space and recreation activities" and "community oriented activities"; accommodates "commercial activities" located in a neighbourhood level centre servicing the Emerging Community Area and up to an ultimate floor space of 6,000m², but which develops commensurate with local community needs does not include a full line supermarket and which does not otherwise detract from the function or viability of the Moranbah town centre; has a high level of convenience and accessibility by walking, cycling and vehicles; (e) has a high standard of urban design; and enables the ordered and efficient provision of infrastructure ⁷⁷.	AS6 No acceptable solution is prescribed.	Not Applicable The subject land is not located within the Emerging Community Area of the Urban Zone.

Layout and Design		
PC7 Layout and Design The reconfiguring of lots: (a) ensures safe and livable communities; ensures safe and legible vehicle and pedestrian movement areas and roads; (c) integrates with adjoining land; and optimises the protection of environmental values, significant features, open space areas and high conservation or landscape values.	No acceptable solution is prescribed.	PC7 – Complies Allotments within the proposed industrial area (Stage 1) will range from a minimum size of 1.003 ha up to a maximum of 30.383 ha. These sizes have been determined by the uses proposed to be established on them, most of which are underpinned by a functional layout plan in order to ensure that they are fit for purpose. No Regional Ecosystem vegetation is required to be cleared to facilitate construction of the Stage One area. The subdivision design is based on a bulk earthworks design (see Appendix E of this Report) and stormwater management strategy (see Appendix J of this Report) which confirms that it integrates with the adjoining land and proposed infrastructure.
PC8 “Electricity Transmission Line Easement” Lot layout and design adjoining an “electricity transmission line easement” promotes community safety and health and wellbeing.	AS8 Lot layout and design is in accordance with Schedule 2, Division 4: Powerline/Electricity Easements, Section 4.1, Diagram 2.	AS8 – Complies As illustrated on the Concept Plan in Appendix A, the location for a proposed electricity easement is shown across the western portions of proposed Lots12 and 13 to cater for the transmission lines which are likely to emanate from the proposed electricity substation on Lot 15. Appropriate use and building restrictions will apply within the area of this easement.
PC9 Siting of Buildings and Structures Lot size, layout and design enable future uses to comply with separation distances for buildings and structures in respect of: (a) “Watercourses” and “lakes”; (b) Ridgelines and escarpments; (c) Cultural heritage places; and (d) Protected areas.	No acceptable solution is prescribed.	PC9 – Complies Allotments within the proposed industrial area (Stage 1) will range from a minimum size of 1.003 ha up to a maximum of 30.383 ha. These sizes have been determined by the uses proposed to be established on them, most of which are underpinned by a functional layout plan in order to ensure that they are fit for purpose. Furthermore, none of the proposed use areas on each allotment are within close proximity to defined “watercourses”, “lakes”, ridgelines or escarpments, cultural heritage places or protected areas.

Infrastructure		
PC10 Street Lighting Street lighting is provided: to ensure safety for vehicles, cyclists and pedestrians; and (b) to an appropriate engineering standard.	AS10 Street lighting is designed and constructed in accordance with Schedule 1, Division 2: Standards for Roads, Carparking, Manoeuvring Areas and Access, Section 2.1(1).	PC10 – Performance Solution The isolated nature of the industrial area, combined with the fact that roads within it will be private ('Common Property' under a Community Title Scheme) suggests that there will not be the need for street lighting, and instead suitable lighting will be installed on each proposed allotment as part of the proposed industrial activities.
PC11 Water Supply Each lot has an adequate volume and supply of water.	For land within the Open Space zone within or adjacent to the towns of Moranbah or Clermont (as shown on zoning maps 2 and 3), or within the Urban, Commercial or Industry zones: AS11.1 Each lot is connected to Council's reticulated water supply system in accordance with Schedule 1, Division 3: Standards for Water Supply. or For all other land: AS11.2 "Premises" are connected to an approved water allocation as provided by the relevant agency.	AS11 – Complies The proposed Industrial allotments are to be provided with appropriate levels of water servicing. Provisions in relation to the permanent supply of water to the project are generally outlined within the broader EIS/SEIS under consideration. In support of this current application, sufficient infrastructure and servicing information has been provided in Appendix I (Preliminary Servicing report) to outline possible interim servicing solutions until such time that the permanent solution is provided. Importantly, there is the intent for appropriate services of water supply to be provided to the Industrial area at all times. Appropriate conditions can be set as part of the consideration of this application within the EIS/SEIS process such that all future water supply complies with the relevant requirements.

PC12 Effluent Disposal Each lot provides for the treatment and disposal of effluent and other waste water to ensure the protection of public health and environmental values.	For land within the Open Space zone within or adjacent to the towns of Moranbah or Clermont (as shown on zoning maps 2 and 3), or within the Urban, Commercial or Industry zones: AS12.1 Each lot is connected to Council's reticulated sewerage system in accordance with Schedule 1, Division 4: Standards for Sewerage Supply, Section 4.1. or For all other land: AS12.2 "Premises" have an onsite effluent disposal system in accordance with Schedule 1, Division 4: Standards for Sewerage Supply, Section 4.2.	AS12 – Complies The proposed Industrial allotments are to be provided with appropriate levels of servicing. In support of this current application, infrastructure and servicing information has been provided to outline the preferred effluent disposal strategy. Specifically, a site based management plan (see Appendix H) and Environmentally Relevant Activity application has been prepared and accompanies the development application material in relation to the likely provision of an on-site effluent disposal system to the Industrial area.
PC13 Stormwater Stormwater is collected and discharges so as to: (a) protect the stability of buildings or the use of adjacent land; and (b) protect and maintain environmental values.	AS13 Stormwater is collected and discharged in accordance with Schedule 1, Division 5: Standards for Stormwater Drainage, Section 5.1.	AS13 – Complies Detailed stormwater reporting has been prepared and accompanies this current application (see Appendix J).
PC14 Electricity Each lot is provided with an adequate supply of electricity.	For land within the Open Space zone within or adjacent to the towns of Moranbah or Clermont (as shown on zoning maps 2 and 3), or within the Urban, Commercial or Industry zones: AS14 Each lot is connected to the reticulated electricity supply.	AS14 – Complies Electricity will be supplied to the Industrial estate under the terms described within the EIS for the broader mine and offsite infrastructure components, hence the Applicant would accept a condition requiring that such an electricity connection be made.
PC15 Vehicle Access Vehicle access is provided to each lot to ensure the safe and functional operation for motorist and pedestrians.	AS15 Each lot has a vehicle access to a formed road. Access is to be designed and constructed in accordance with Schedule 1, Division 2: Standards for Roads, Carparking, Manoeuvring Areas and Access, Section 2.3(1) and (2).	AS15 – Complies Vehicular access will be provided to the Industrial allotments via a new private road (Common Property within a Community Title Scheme). This private road will in turn gain access to the existing Moray-Carmichael Road reserve which will be 'formed' as a result of road upgrade works to be completed as a consequence of the Carmichael Mine EIS approval.

PC16 Roads Adequate all-weather road access is provided between each lot and the existing road network.	AS16 Roads are designed and constructed in accordance with Schedule 1, Division 2: Standards for Road, Carparking, Manoeuvring Areas and Access, Section 2.1(1).	AS16 – Complies Vehicular access will be provided to the Industrial allotments via a new private road (Common Property within a Community Title Scheme). This private road will in turn gain access to the existing Moray-Carmichael Road reserve which will be 'formed' as a result of road upgrade works to be completed as a consequence of the Carmichael Mine EIS approval.
PC17 “Electricity Transmission Line Easement” – Separation Distance “Habitable buildings” and “child oriented uses” are located to ensure community safety.	AS17 “Habitable buildings” and “child oriented uses” maintain a minimum separation distance from the most proximate boundary of an “electricity Transmission Line easement” in accordance with Schedule 2, Division 4:	AS17 = Complies Whilst it is not anticipated that any ‘Habitable buildings’ or ‘child oriented use’ will be established within the nominated separation distances from any proposed future electricity easements, such separation distance can still be conditioned in accordance with the acceptable solutions stated.
Environmental		
PC18 Excavation or Filling Excavating or filling of land: (a) ensures safety and amenity for the users of the “premises” and land in close proximity; (b) minimises soil erosion; and (c) limits detrimental impacts on water quality.	AS18 Excavation or filling is undertaken in accordance with Schedule 1, Division 1: Standards for Construction Activities, Section 1.1.	AS18 – Complies Detailed engineering design works have been undertaken as part of the preparation of this application material for the Industrial Area to inform the extent of earthworks proposed and also enable their early consideration. These design works have also been undertaken with the stormwater management strategy proposed and to ensure that appropriate finished ground conditions are established. The design strategy that underpinned the earthworks design was also heavily reliant on the flood immunity levels and the intended measures to convey, capture and treat stormwater. For further information in relation to the preparatory earthworks proposed, please refer to Appendix E (OPW Bulk Earthworks).

PC19 Vegetation Retention Reconfiguring a lot retains vegetation for the: (a) protection of scenic quality; (b) protection of general habitat; (c) protection of soil quality; establishment of open space corridors and networks; and (e) purpose of positive climate response.	No acceptable solution is prescribed.	PC19 – Complies No Regional Ecosystem vegetation will be cleared in order to facilitate the proposed subdivision. Documentation relating to the proposed OPW (Vegetation Clearing) application for Stages 1 to 3 of the Industrial Area is contained in Appendix D of this Report.
PC20 Construction Activities Erosion control measures and silt collection measures ensure that environmental values are protected during construction activities.	AS20 During construction soil erosion and sediments controlled in accordance with standards contained in Schedule 1, Division 1: Standards for Construction Activities, Section 1.1.	AS20 - Complies Erosion control and silt collection measures are proposed to be implemented during construction, as stated in the Operational Works (Bulk Earthworks) documentation contained in Appendix E of this report.
Constraint		
PC21 Sloping Land Reconfiguring a lot ensures: vulnerability to landslip, erosion and land degradation is minimised; and b) safety of persons and property is not compromised.	AS21 Reconfiguring a lot is not undertaken on slopes greater than 15%.	AS21 - Complies The site of the proposed Industrial subdivision is essentially flat, and therefore well below the nominated maximum 15% slope.

Appendix D: OPW Vegetation Clearing



Vegetation Management Plan: Industry

17th July 2013



project coordination
urban + regional planning
landscape + urban design
environmental management
visualisation + spatial services
surveying services
advisory services



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We have prepared this report for the sole purposes of Adani Mining Pty Ltd (“Client”) for the specific purpose of a Operational Works (Vegetation Clearing) (“Purpose”). This report is strictly limited to the Purpose and the facts and matters stated in it and does not apply directly or indirectly and will not be used for any other application, purpose, use or matter.

In preparing this report we have made certain assumptions. We have assumed that all information and documents provided to us by the Client or as a result of a specific request or enquiry were complete, accurate and up-to-date. Where we have obtained information from a government register or database, we have assumed that the information is accurate. Where an assumption has been made, we have not made any independent investigations with respect to the matters the subject of that assumption. We are not aware of any reason why any of the assumptions are incorrect.

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Approval for Issue

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V2.0	David Hansen	Director		17 th July, 2013

Final Distribution

Adani Mining Pty Ltd	1 electronic copy
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Table of Contents

EXECUTIVE SUMMARY	6
1.0 INTRODUCTION	7
1.1 BACKGROUND	7
2.0 VMP PROVISIONS	8
3.0 VMP OBJECTIVES	9
3.1 VEGETATION PROTECTION	9
3.2 VEGETATION TO BE REMOVED.....	11
3.3 CORRECTIVE ACTIONS	12
3.4 REUSE OF FELLED VEGETATION.....	12
3.5 STOCKPILES	12
3.6 FAUNA PROVISIONS.....	13
4.0 LANDSCAPING REQUIREMENTS.....	14
5.0 INVASIVE WEED MANAGEMENT.....	15
5.1 OBJECTIVES.....	15
5.2 PERFORMANCE CRITERIA	15
5.3 CORRECTIVE ACTIONS	15
6.0 EROSION AND SEDIMENT CONTROL.....	16
7.0 SUMMARY OF PERFORMANCE INDICATORS	17
8.0 CONCLUSION	18
APPENDIX A: PMAV APPLICATION PREPARED BY GHD	19
APPENDIX B: PVMP APPLICATION PREPARED BY GHD	20
APPENDIX C: VEGETATION REMOVAL PLAN.....	21

List of Figures

Figure 1: Tree Protection (source – AS4970 – Protection of Trees on Development Sites) 10

List of Tables

Table 1: General Guidelines for weed removal..... 15

Executive Summary

Gassman Development Perspectives have been commissioned to complete and compile the necessary application material for inclusion within the Supplementary Environmental Impact Statement (SEIS) for the Carmichael Coal Mine and Rail Project (the Project) for a number of offsite infrastructure items. The aim of this approach is to ideally minimise overall assessment timeframes following determination of the project wide Environmental Impact Statement (EIS).

This application provides the necessary details and measures proposed to facilitate the required vegetation removal for the proposed Industrial Precinct.

This report builds upon the detailed and location-specific environmental reporting that has been completed for the project, including the chosen location for the Industrial Precinct.

The information contained within this report will ensure that all vegetation clearing occurs in compliance with the relevant Australian Standards and best practice methodologies.

1.0 Introduction

1.1 Background

This Vegetation Management Plan (VMP) has been prepared in support of an operational works application for vegetation removal. This proposal is for the construction of an Industrial Precinct and associated infrastructure including an access road. The proposed development is shown in the proposal plan overleaf.

The principle intention of this VMP to appropriately reflect the current status of vegetation on the site, its location, management and treatment in relation to removal, retention, protection, relocation, propagation, treatment and enhancement.

Remnant vegetation mapping provided by the Department of Natural Resources and Mines (DNRM) indicates that two (2) portions of the Industrial Precinct will result in the removal of approximately 4.89 hectares of 'least concern' Regional Ecosystems 10.4.5/10.4.3a and 10.3.4b/10.3.6a/10.3.3b/10.3.3a respectively. However, ground truthing exercises undertaken by ecologists from GHD have indicated that whilst the location and shape of the vegetation polygons are accurate, the descriptions of the community are not accurate and are more representative of RE 10.4.5 and 10.3.4/10.3.6/10.3.3 respectively. Consequently, a Property Map of Assessable Vegetation (PMAV) application and a Property Vegetation Management Plan (PVMP) application have been prepared by GHD been included in **Appendix A** and **Appendix B** to this report, respectively. These applications address the requirements for applications made under the *Vegetation Management Act 1999*.

NOTES:

This plan has been prepared for the exclusive use of the client as stated on this plan for the purpose of application to the relevant local authority for the land as described and should not be used by any other person or corporation and for any other purpose.

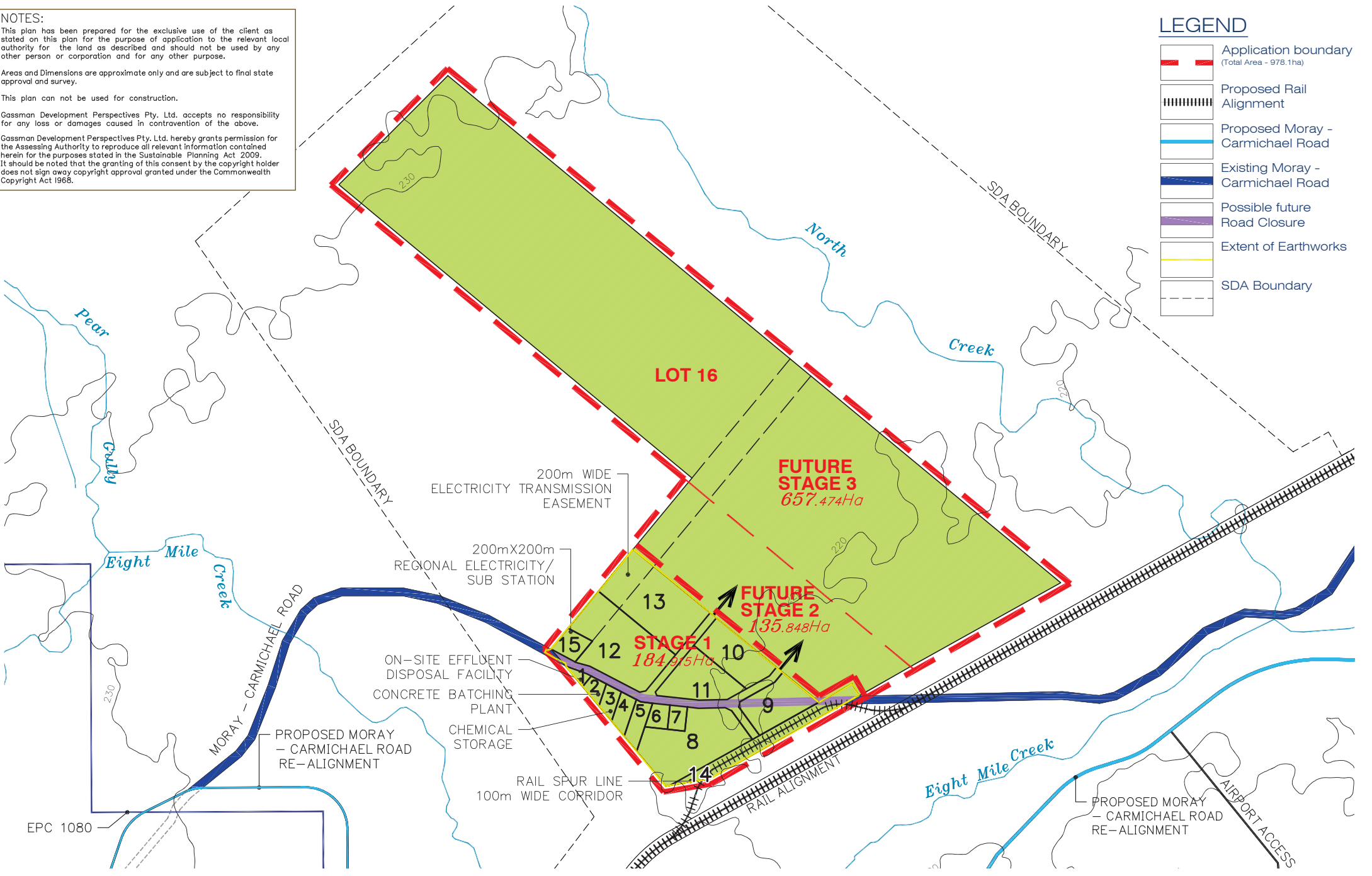
Areas and Dimensions are approximate only and are subject to final state approval and survey.

This plan can not be used for construction.

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- LEGEND
- Application boundary (Total Area - 978.1ha)
 - Proposed Rail Alignment
 - Proposed Moray - Carmichael Road
 - Existing Moray - Carmichael Road
 - Possible future Road Closure
 - Extent of Earthworks
 - SDA Boundary



2.0 VMP Provisions

This VMP has been prepared to cover the following aspects of vegetation management:

- The location of the vegetation subject to this application, indicating which vegetation is proposed to be retained, relocated, removed or damaged;
- Remnant or non-remnant status of the vegetation type to be removed;
- Vegetation management strategies including:
 - o Vegetation protection
 - o Reuse of felled Vegetation
 - o Disposal methods for remaining debris
 - o The vegetation proposed to remain on site is in locations that will not hinder works or pose safety issues.

It is intended that all retained vegetation outside of the proposed development footprint will remain to provide landscape features, ecological functions, habitat corridors, visual significance and buffers, as well as to maintain the character of the area and assist in the conservation of biodiversity in the region.

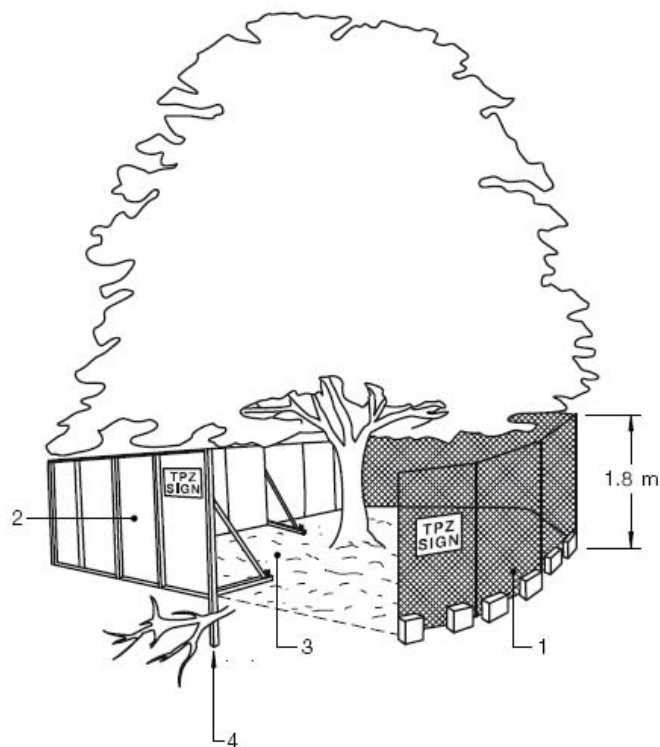
3.0 VMP Objectives

- To identify type and location of the site's existing vegetation;
- Identify existing vegetation to be retained and protected;
- To identify and locate existing vegetation required for removal;
- To provide a specific method of tree clearance that will minimise impact on the surrounding ecology;
- To provide information for the protection of existing vegetation to be retained;
- To provide sustainable reuse methods for the felled vegetation; and
- To limit any possible erosion from vegetation clearing practices.

3.1 Vegetation Protection

Vegetation outside of the allocated clearance areas will be protected from on site clearing and construction activities by incorporating the following procedures:

- 1) The trees that fall outside of the allocated tree clearance area will be protected by the provision of a hard standing steel fence (**Figure 2**) as per Australian Standard AS 4970-2009 (Protection of Trees on Development Sites) where appropriate. Groups of trees can be protected in the same way with a continuous hard steel fence. In situations where the extent of clearing is such that hard standing steel fence is not feasible or appropriate to install, orange mesh fencing supported by steel pickets will instead be utilised.



LEGEND:

- 1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
- 2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
- 3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
- 4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

Figure 1: Tree Protection (source – AS4970 – Protection of Trees on Development Sites)

- 2) All machine operators conducting the tree clearing process are to be provided with a copy of the approved Tree Clearing Plan.
- 3) No site sheds, parking areas or buildings are located outside the clearing area.
- 4) The area surrounding the tree for removal is clear of any hazards and maintains adequate room to safely conduct the removal.
- 5) The vegetation removal process has focused on providing environmentally sensitive and sustainable practices. These include:

- Possible fauna removal if required;
 - Reuse of felled material for on the site use.
- 6) The following activities are prohibited to occur within the vegetation protection zones or drip-lines of trees marked for retention:
- Machinery or vehicle parking;
 - Disposal of liquids of any type;
 - Repairs or refuelling;
 - Earthworks;
 - Temporary sheds;
 - Stockpiling (Refer to section 3.7).

3.2 Vegetation to be Removed

973.2 hectares of non-remnant vegetation located in the areas required to accommodate the bulk earthworks will require removal in addition to 4.89 hectares of 'least concern' Regional Ecosystems 10.4.5 and 10.3.4/10.3.6/10.3.3 as identified by field exercises conducted by GHD ecologists (**Appendix B**). A plan indicating the areas for vegetation removal is included in **Appendix C**.

3.2.1 Reasons for Vegetation Removal

- To facilitate the approved Bulk Earthworks.
- Site access/Roads/Driveways.
- Safety for future property uses.
- Area for ancillary use of the site and landscaping.

3.2.2 Tree Clearing Process:

1. Locate and ensure the trees that have been protected in accordance with the procedures outlined in **Section 3.1** of this report.
2. Woodchip the felled vegetation on site.

4. Stump grind remains or remove from ground with excavator.

3.3 Corrective Actions

If vegetation not identified for removal is disturbed during the bulk earthworks process, then discussions with Council environmental officers will be required to identify any needs for additional rehabilitation to compensate for the tree damage or removal.

If a retained tree shows signs of ill health, then the causes are to be identified and amelioration methods are to be discussed with council.

3.4 Reuse of Felled Vegetation

Any wood chipped vegetation should be reused on the site for future landscape and site stabilisation purposes. To achieve satisfactory mulch, material pasteurization is the minimum process required to achieve weed and pathogen free mulch from the chipping process.

The vegetation proposed for wood chipping should be weed free and will therefore pose little threat from contaminants. Stockpiles of mulch will need to be maintained at 55°C for three weeks to produce conditions to kill possible pathogens. Longer periods will not damage the material, however occasional turning of the stockpile will limit decomposition of the mulch.

3.5 Stockpiles

- Stockpiles are not to be located within 30 meters from the surrounding adjacent vegetation.
- Stockpiles are not to be located in areas allocated for road constructions.
- Stockpiles are not to be located in any areas with difficult access or on steep slopes.
- Stockpiles are not to exceed 3000mm in height.

3.6 Fauna Provisions

It is recommended that a suitably qualified fauna spotter/catcher be engaged to identify any habitat features encountered throughout the clearing works. When identified, the spotter/catcher will direct the clearing operator to pause operations to enable to rescue of injured or displaced wildlife. The fauna spotter/catcher should be present on site during all vegetation clearing works. Any injured wildlife should be captured and transported to the nearest veterinary clinic if practical, but due to the remoteness of the clearing area, it may be more feasible to perform humane euthanasia on site using methods outlined in the ANZCCART publication entitled “Euthanasia of Animals Used for Scientific Purposes.”

4.0 Landscaping Requirements

Landscaping on the site after the construction works are complete will focus on the existing and desired species for the area, utilising existing seed stock and plants endemic to the region where available.

Also incorporated into the landscaping should be suitable native species that are suited to specialised landscape requirements. The design focused on creating potential for ecological links with local systems and sustainable vegetation.

5.0 Invasive Weed Management

5.1 Objectives

- To reduce the extent of weed species that are currently threatening or pose future threats to diversity levels and ecological processes within the region; and
- To remove present weed species from the subject site.

Table 1: General Guidelines for weed removal

Weed Type	Removal and control methods
Vines	The vine should be cut at the base and the root system physically removed. If this is not possible, cut the stem and paint with herbicide. The upper parts of the vine should be left in situ to decay and not pulled from host tree due to the potential to cause leaf loss and tree damage to the host tree.
Soft Weeds	The soft weeds should be manually removed by hand and disposed of from site where possible or sprayed with a targeted herbicide application.
Woody Weeds	Woody weeds are to be removed by hand and/or machine where possible and disposed from site or sprayed with a targeted herbicide application. Strong or developed species may require the stem to be cut and painted with herbicide.
Trees	Where machine access is available trees should be lopped and the stump grinded in accordance with safe and accepted vegetation management procedures, ensuring safety and clear access. Smaller trees under 20mm in diameter can be lopped at base and treated immediately with a 1:1 mixture of Glyphosate or recommended herbicide for that specific species. Larger trees should be drilled at a downward angle into xylem/phloem of the tree and left standing in situ to decay and provide habitat.

5.2 Performance Criteria

- All targeted tree weed species have been removed from the subject site
- No erosion or re-growth of the weed species is evident

5.3 Corrective Actions

Re-apply procedures and actions to eradicate weed re-establishment within the area.

6.0 Erosion and Sediment Control

Erosion and sediment control measures will be installed onsite prior to the commencement of clearing operation. This should include sediment fencing around the clearance area to reduce sediment loading into nearby waterways and erosion once clearing of the site commences until completion and the site is re-stabilised.

A Sediment and Erosion Control Management Plan will be prepared and submitted by a suitably qualified engineering consultant.

7.0 Summary of Performance Indicators

1. Vegetation removal was restricted to footprint of Industrial Precinct.
2. Vegetation that remains outside this area is not disturbed.
3. A suitably qualified fauna spotter catcher was present for all clearing operations.
4. Fauna was dispersed or relocated to suitable locations.
5. Abundance of weed species within the area was reduced.
6. No increased erosion or sediment loss occurred from site as a result of the vegetation clearing.
7. Felled vegetation has been wood-chipped and stockpiled.

8.0 Conclusion

This Vegetation Management Plan (VMP) has been prepared to guide contractors in best practice methodology for the removal of vegetation to facilitate the future construction of an Industrial Precinct and associated infrastructure.

The plan has identified the vegetation that will require protection during the construction process to ensure no damage occurs. It also has identified vegetation which is required to be removed and has described methods to carry out these works.

Other sustainable planning allocations have been made which include having a suitably qualified fauna spotter catcher present during all stages of clearing, protective fencing, felling and the reuse of felled material onsite.

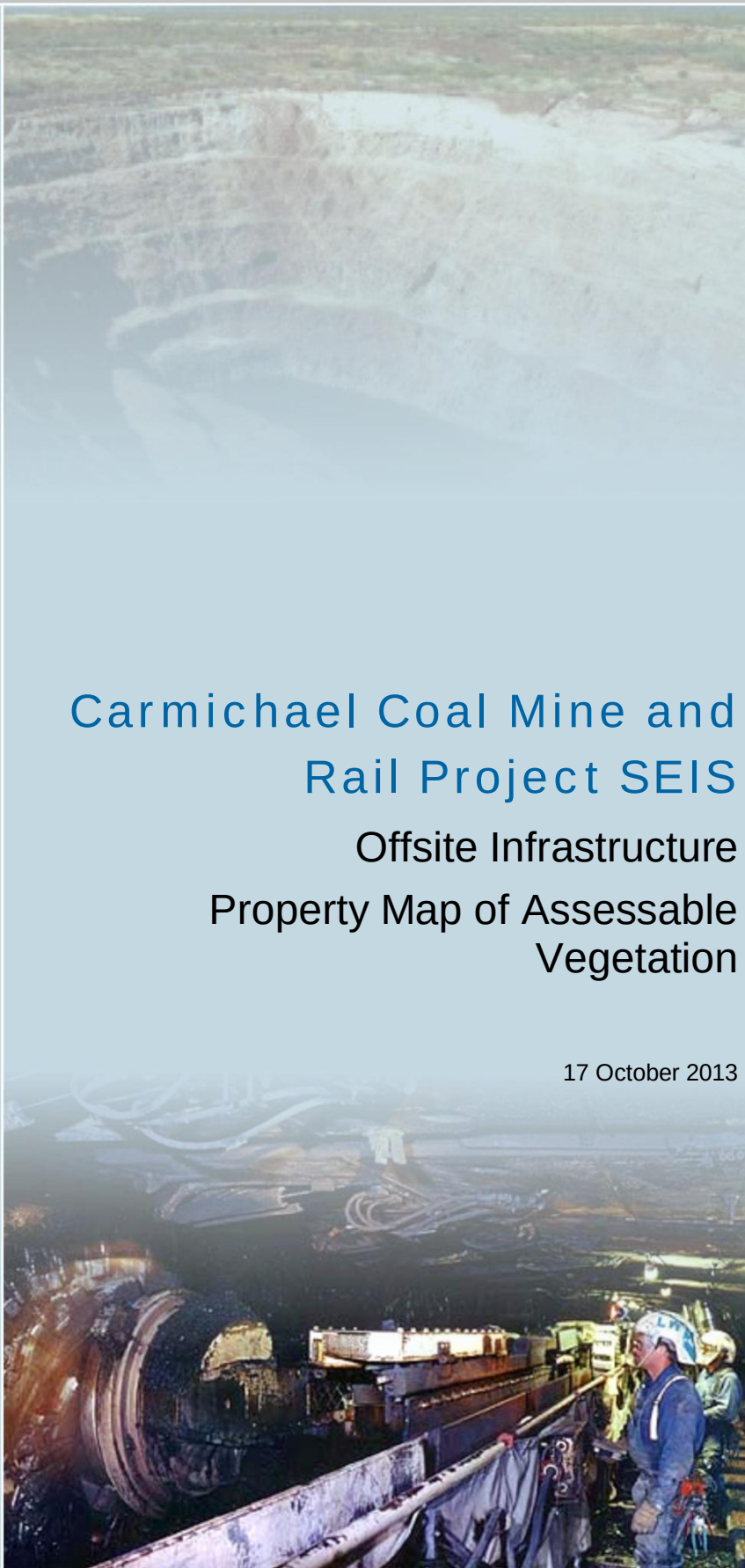
The above specifications and management plans have been included with the graphic plans to provide the necessary information for council officers to enable them to make a reasonable assessment of the proposed actions and the procedures in relation to the vegetation management and clearing procedures to be undertaken for the removal of vegetation from the subject site.

Appendix A: PMAV Application prepared by GHD



Adani Mining Pty Ltd

adaniTM



**Carmichael Coal Mine and
Rail Project SEIS**
Offsite Infrastructure
Property Map of Assessable
Vegetation

17 October 2013





This Carmichael Coal Mine and Rail Project SEIS: Property Map of Assessable Vegetation ("the Report") has been prepared by GHD Pty Ltd ("GHD") on behalf of and for Adani Mining Pty Ltd ("Adani") in accordance with an agreement between GHD and Adani.

The Report may only be used and relied on by Adani for the purpose of informing environmental assessments and planning approvals for the proposed Carmichael Coal Mine and Rail Project (Purpose) and may not be used by, or relied on by any person other than Adani.

The services undertaken by GHD in connection with preparing the Report were limited to those specifically detailed in this Report.

The Report is based on conditions encountered and information reviewed, including assumptions made by GHD, at the time of preparing the Report. Assumptions made by GHD are contained through the Report and that the information provided to GHD is accurate.

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- *reliance on the Report by a third party, or use of this Report other than for the Purpose.*

Table of contents

1.	Introduction	1
1.1	Project overview.....	1
1.2	Purpose of this report.....	2
1.3	Property details	2
1.4	Study area.....	2
1.5	Assumptions and limitations	2
2.	Methodology.....	4
2.1	Overview	4
2.2	Desktop assessments.....	4
2.3	Field assessments	4
2.4	PMAV category classifications.....	4
3.	Desktop assessment.....	7
3.1	Site location and regional context.....	7
3.2	Site landform and geology	7
3.3	Existing mapping.....	7
4.	Field assessment	9
4.1	Survey effort.....	9
4.2	Proposed mapping.....	9
5.	PMAV details.....	20
6.	References	22

Table index

Table 1	Property details	2
Table 2	PMAV category classifications.....	5
Table 3	Summary of RE polygons resulting in a proposed change in RE status	12
Table 4	Summary of RE polygons resulting in a proposed change in RE designation/proportion (but no change in RE status)	18
Table 5	Summary or regional ecosystem status.....	20

Figure index

Figure 1	Study area.....	3
----------	-----------------	---



Figure 2	Certified regional ecosystems (volume 6.1) and flora survey sites	8
Figure 3	Field verified regional ecosystems.....	10
Figure 4	Nominated regional ecosystem polygon changes	11

Plate index

Plate 1	Vegetation assessment polygon 16.....	29
Plate 2	Vegetation assessment polygon 17.....	32
Plate 3	Vegetation assessment polygon 23.....	35
Plate 4	Vegetation assessment polygon 24.....	39
Plate 5	Vegetation assessment polygon 26.....	42
Plate 6	Vegetation assessment polygon 27.....	44
Plate 7	Vegetation assessment polygon 29.....	47
Plate 8	Vegetation assessment polygon 10.....	51
Plate 9	Vegetation assessment polygon 30.....	54
Plate 10	Vegetation assessment polygon 28.....	57
Plate 11	Vegetation assessment polygon 28.....	61
Plate 12	Vegetation assessment polygon 11.....	64
Plate 13	Vegetation assessment polygon 13.....	66
Plate 14	Vegetation assessment polygon 14.....	69
Plate 15	Vegetation assessment polygon 15.....	72
Plate 16	Vegetation assessment polygon 19.....	75
Plate 17	Vegetation assessment polygon 20.....	78
Plate 18	Vegetation assessment polygon 21.....	81
Plate 19	Vegetation assessment polygon 3.....	85
Plate 20	Vegetation assessment polygon 4.....	88
Plate 21	Vegetation assessment polygon 5.....	91
Plate 22	Vegetation assessment polygon 7.....	94
Plate 23	Vegetation AssessmentPolygon 9.....	97

Appendices

Appendix A – Quaternary and BioCondition Site Assessments



1. Introduction

1.1 Project overview

Adani Mining Pty Ltd (Adani, the Proponent), commenced an Environmental Impact Statement (EIS) process for the Carmichael Coal Mine and Rail Project (the Project) in 2010. On 26 November 2010, the Queensland (Qld) Office of the Coordinator General declared the Project a 'significant project' and the Project was referred to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPac) (referral No. 2010/5736). The Project was assessed to be a controlled action on the 6 January 2011 under section 75 and section 87 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The controlling provisions for the Project include:

- World Heritage properties (sections 12 & 15A)
- National Heritage places (sections 15B & 15C)
- Wetlands (Ramsar) (sections 16 & 17B)
- Listed threatened species and communities (sections 18 & 18A)
- Listed migratory species (sections 20 & 20A)
- The Great Barrier Reef Marine Park (GBRMP) (sections 24B & 24C).

The Qld Government's EIS process has been accredited for the assessment under Part 8 of the EPBC Act in accordance with the bilateral agreement between the Commonwealth of Australia and the State of Queensland.

The Proponent prepared an EIS in accordance with the Terms of Reference (ToR) issued by the Qld Coordinator-General in May 2011 (Qld Government, 2011). The EIS process is managed under section 26(1) (a) of the *State Development and Public Works Act 1971* (SDPWO Act), which is administered by the Qld Government's Department of State Development, Infrastructure and Planning (DSDIP).

The EIS, submitted in December 2012, assessed the environmental, social and economic impacts associated with developing a 60 million tonne (product) per annum (Mtpa) thermal coal mine in the northern Galilee Basin, approximately 160 kilometres (km) north-west of Clermont, Central Queensland, Australia. Coal from the Project will be transported by rail to the existing Goonyella and Newlands rail systems, operated by Aurizon Operations Limited (Aurizon). The coal will be exported via the Port of Hay Point and the Point of Abbot Point over the 60 year (90 years in the EIS) mine life.

Project components are as follows:

- The Project (Mine): a greenfield coal mine over EPC 1690 and the eastern portion of EPC 1080, which includes both open cut and underground mining, on mine infrastructure and associated mine processing facilities (the Mine) and the Mine (offsite) infrastructure including a workers accommodation village and associated facilities, a permanent airport site, an industrial area and water supply infrastructure

- The Project (Rail): a greenfield rail line connecting to mine to the existing Goonyella and Newlands rail systems to provide for the export of coal via the Port of Hay Point (Dudgeon Point expansion) and the Port of Abbot Point, respectively including:
 - Rail (west): a 120 km dual gauge portion running west from the Mine site east to Diamond Creek
 - Rail (east): a 69 km narrow gauge portion running east from Diamond Creek connecting to the Goonyella rail system south of Moranbah.
 - Quarries: The use of five local quarries to extract quarry materials for construction and operational purposes.

1.2 Purpose of this report

The property vegetation assessment map (PMAV) redefines the mapping of remnant vegetation based on field verified evidence. The purpose of this report is to support an application for re-mapping of regional ecosystem over Lot 662 on PH1491.

This report provides an outline of the methods and results of the vegetation assessment undertaken on Lot 662 on PH1491, on which this PMAV application is based.

1.3 Property details

Table 1 provides a summary of the property details for which the PMAV applies.

Table 1 Property details

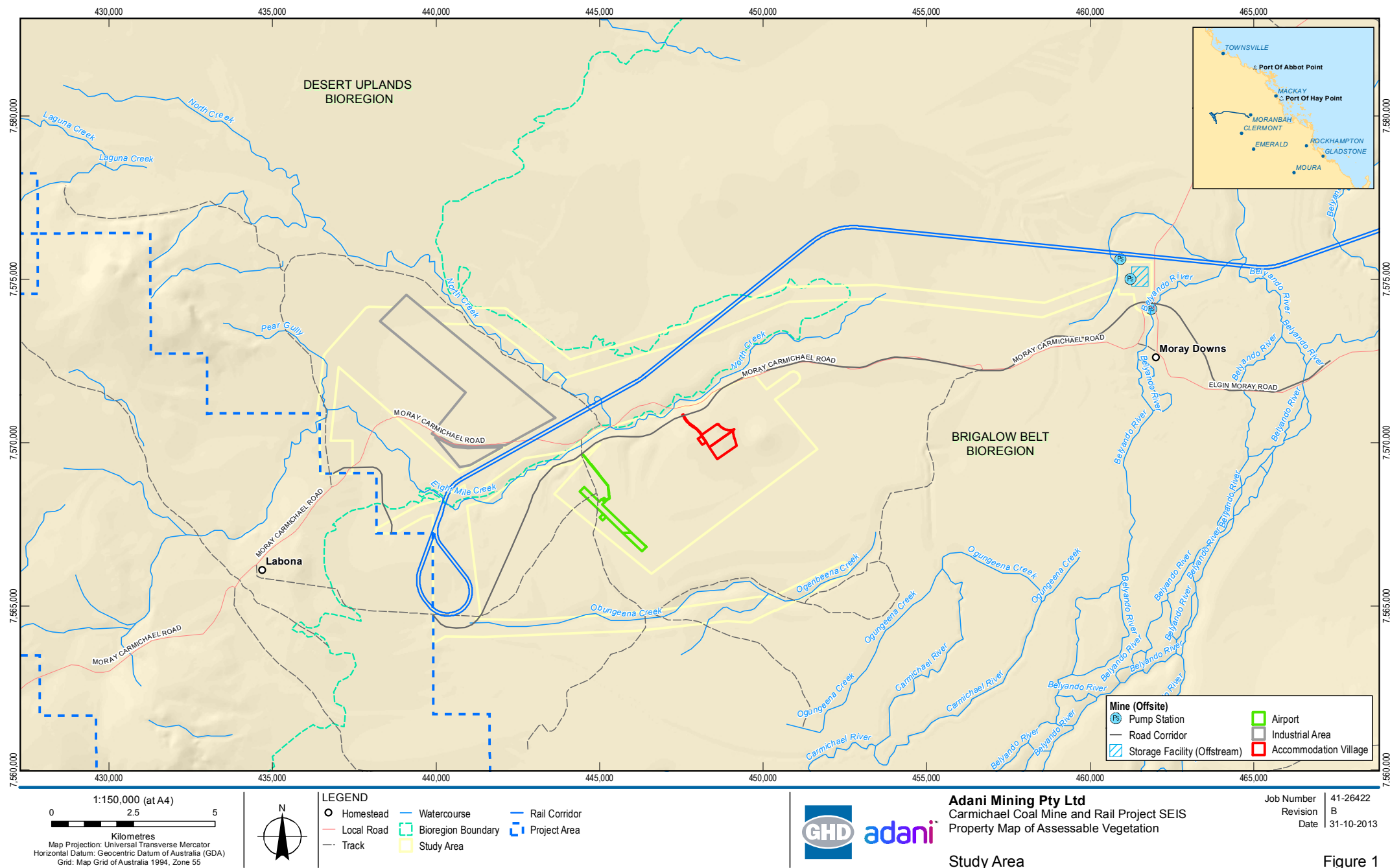
Address	Moray Carmichael Boundary Road, Moray Downs
Lot number	Lot 662 on PH1491
Application area	Approximately 7,635.8 ha
Local government area	Isaac Regional Council
Local plan zoning	Rural
Existing land use	Grazing
Proposed land use	Accommodation village, industrial area, airport and water infrastructure to support development of the Project (Mine)
Type of application	Correction to mapping
Previous PMAV applications	None

1.4 Study area

The Study Area for the assessment is shown in Figure 1. The Study Area is located immediately east of the proposed Project (Mine) and covers an area of approximately 7,635.8 ha.

1.5 Assumptions and limitations

Field surveys were undertaken within the Study Area outlined in Figure 1.



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Carmichael Coal Mine and Rail Project SEIS
Property Map of Assessable Vegetation

Job Number 41-26422
Revision B
Date 31-10-2013

Study Area

Figure 1

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2. Methodology

2.1 Overview

A combination of desktop assessments and detailed site assessments were used to accurately map and define vegetation communities within the Study Area, based on vegetation categories defined by the Queensland Herbarium.

2.2 Desktop assessments

Prior to survey, a desktop assessment was undertaken to assist with the final determination of vegetation community boundaries within the Study Area. The following information sources were reviewed:

- Current certified RE mapping Version 6.1b
- Historical Department of Environment and Heritage Protection (DEHP) aerial imagery for the location
- Queensland Herbarium mapping and methodology procedures outlined in Neldner et al., 2012

2.3 Field assessments

Site surveys were carried out by GHD botanists between 30 April and 6 May 2013 and assessed the accuracy of RE mapping within discrete areas within the Study Area. Sites were assessed using the Quaternary method under the Queensland Herbarium mapping methodology (Neldner et al., 2012). In brief, a Quaternary level of assessment involves collection of data regarding the structure and composition of strata comprising the vegetation community. A combination of high resolution aerial imagery, historical photographs and field traverses (using hand held global positioning system (GPS) were used to delineate between RE boundaries. BioCondition assessments, as outlined in Eyre et al., (2011), were also undertaken at some sites, and the data obtained has been utilised in the RE ground-truthing process.

A number of RE polygons were consistent across the Study Area (e.g. 10.3.4b/10.3.6a/10.3.3b polygons were consistently ground-truthed as 10.3.6a). In these cases, representative assessment sites have been used on which to base the field verifications for these RE polygons (see Appendix A).

2.4 PMAV category classifications

Rules for mapping changes, based on the *Vegetation Management Act 1999* (VM Act) definitions for remnant vegetation and remnant least concern, of concern and endangered REs, have been established by the Queensland Herbarium in Methodology for survey and mapping of Regional Ecosystems and vegetation communities in Queensland (Neldner et al., 2012). These rules have been summarised below where necessary to outline how the field data was gathered and mapping for this PMAV prepared.

PMAV vegetation category classifications, as defined within the VM Act, are provided in Table 2.



Table 2 PMAV category classifications

PMAV Category	Description
Category A	An area identified as: - a declared, offset or exchange area; or - being unlawfully cleared; or - subject to a restoration notice or an enforcement notice under the Planning Act; or - being a declared area by the chief executive under section 20BA of the VM Act.
Category B	An area shown on a regional ecosystem map or remnant map as remnant vegetation.
Category C	An area other than a Category A area, that contains regrowth vegetation that is an endangered, of concern or a least concern regional ecosystem that has not been cleared since 31 December 1989.
Category X	An area: - where clearing has occurred; and - is not a Category A area, Category B area or category C area on a property map of assessable vegetation made under section 20B; and - at the time of the making, under section 20B or 20C, or the replacement, under section 20D, of the property map of assessable vegetation applying to the area— - does not contain remnant vegetation; or - is not cleared due to burning, flooding or natural causes and the vegetation in the area forms a predominant canopy that— - has cover that averages less than 50% of the undisturbed predominant canopy; or - has height that averages less than 70% of the vegetation's undisturbed height; or - is not composed of species characteristic of the vegetation's undisturbed predominant canopy.

As established in the VM Act to demonstrate that vegetation mapped as remnant should be mapped non-remnant, it is necessary to establish one of the following:

- That the density (or projective foliage cover) of the subject vegetation canopy averages less than 50 percent that of the undisturbed predominant canopy of the vegetation.
- That the canopy height of the subject vegetation averages less than 70 percent that of the undisturbed height of the RE.
- That the species composition of the subject vegetation canopy is not characteristic of the species composition of the REs undisturbed predominant canopy (on its own this will generally only indicate that another RE may be more applicable, rather than that the subject vegetation is non-remnant, unless the dominant species are exotic).

Therefore, for the purpose of demonstrating that an area of vegetation which is currently mapped as remnant vegetation should be mapped in a PMAV as a category X area, it is necessary to demonstrate that the vegetation has been cleared before (as defined by the VM Act and not by burning, flooding or natural causes) and that the vegetation has not regained sufficient height or canopy density, or does not have the species composition, to be remnant vegetation.



These rules introduce a number of terms, the interpretation of which is essential for an accurate understanding of the changes recommended in this report. Therefore, it is necessary to define a number of these terms:

- 'Undisturbed' means the pre-clear condition of the vegetation in an RE. The pre-clear condition of vegetation can only be measured using reference sites. Neldner et al. (2012) makes recommendations for the selection of reference sites – they should be in good condition and be representative of the subject RE (same dominant species etc.).
- 'Predominant canopy' means the stratum forming the Ecological Dominant Layer (EDL). This is the layer that has the greatest above-ground biomass, and is usually the tallest tree layer (T1).
- 'Average' – the measure for average used by the Queensland Herbarium for measuring canopy height and density is the median.

3. Desktop assessment

3.1 Site location and regional context

The Study Area occurs in central Queensland at the boundary of the Desert Uplands and Brigalow Belt bioregions within the Belyando River sub-catchment of the Burdekin Catchment.

This region has been utilised extensively for livestock grazing and coal extraction, resulting in significant reduction in vegetation communities within the area.

3.2 Site landform and geology

The Belyando River sub-catchment is characterised by generally low relief floodplains drained by braided channels and surrounded by wide alluvial plains (Dight, 2009). Within the region, connectivity of remnant vegetation is maintained by riparian vegetation including mature river red gum (*Eucalyptus camaldulensis*) and paper bark (*Melaleuca leucadendra*) associated with the Carmichael and Belyando rivers. The Study Area drains into a number of ephemeral creeks that become undefined before draining into the Belyando River. The elevated location of the Study Area in the Burdekin Catchment in combination with seasonality of rainfall means stream flows are generally restricted to the wetter months (November to March). During the dryer months (June and July) many streams and drainage channels dry while larger rivers sustain only pools or low flows.

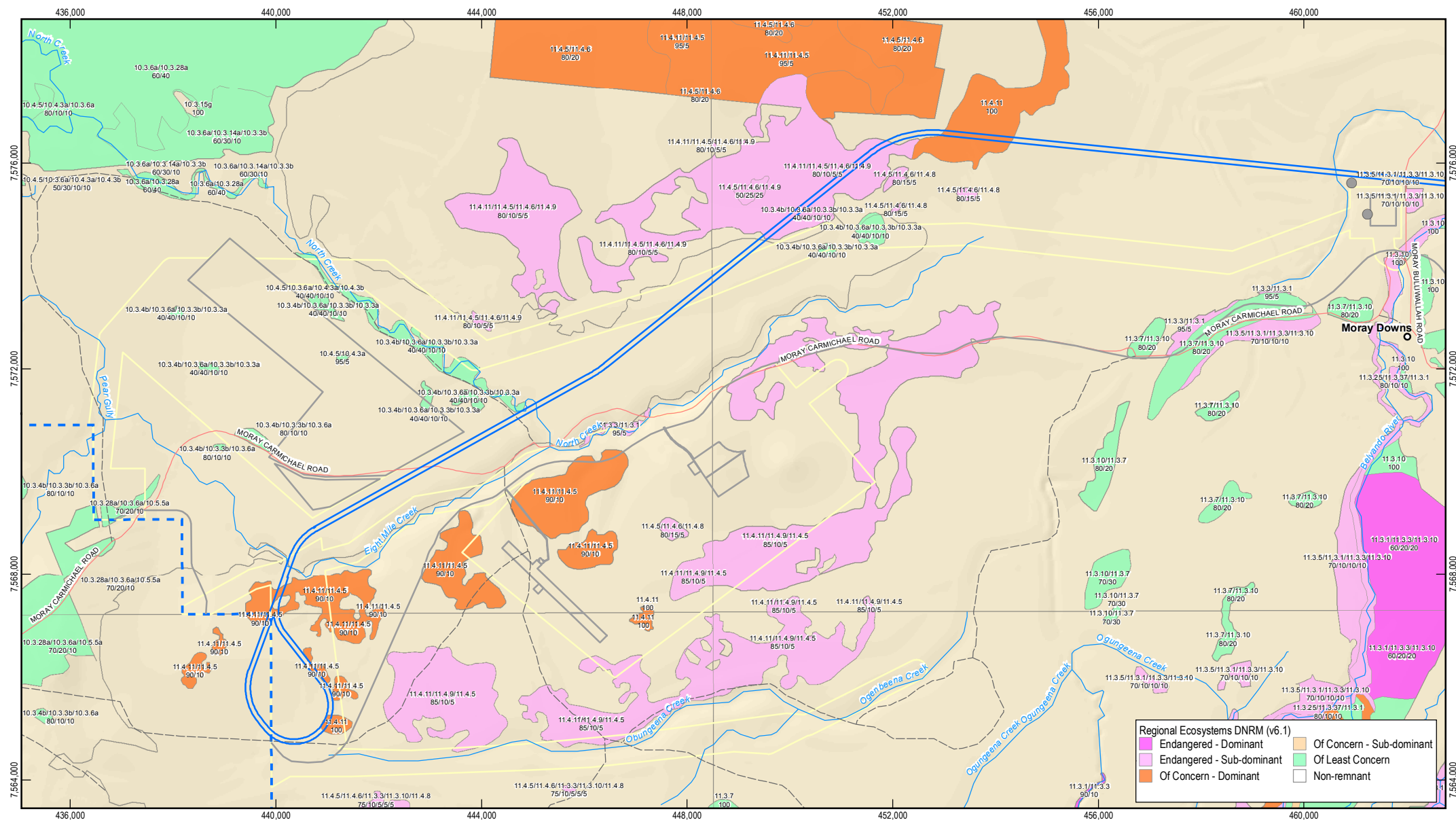
Geological data was sourced from the Department of Natural Resources and Mines (DNRM) using the Surat Basin Surface Geology dataset (DNRM, 2012). Soil information was acquired from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Australian Soil Resource Information System (CSIRO, 2010). The geology that shapes the Study Area is predominantly Tertiary and Quaternary alluvials and colluvials, less than 65 million years old (DNRM, 2012). The key geological unit underlying much of the Study Area is the Woondoolia beds and unconsolidated materials, comprising fluvial sands and clays (Vertosols and Kandosols) on gently undulating plains (DNRM, 2012). This is consistent with the currently mapped land zones 4 and 5 by the Queensland Herbarium (Wilson and Taylor, 2012).

3.3 Existing mapping

The current certified RE mapping (version 6.1b) identified the Study Area as predominately supporting non-remnant vegetation. A total of 16 REs are currently mapped in the Study Area:

- 7 least concern Desert Upland REs (10.3.3, 10.3.4, 10.3.6, 10.3.28, 10.4.3, 10.4.5, 10.5.5)
- 4 least concern Brigalow Belt REs (11.3.1, 11.3.3, 11.3.25, 11.3.37)
- 2 of concern Brigalow Belt REs (11.4.5, 11.4.6)
- 3 endangered Brigalow Belt REs (11.4.8, 11.4.9, 11.4.11)

The existing DEHP RE mapping for the Study Area is provided in Figure 2.



Regional Ecosystems DNRM (v6.1)

Endangered - Dominant	Of Concern - Sub-dominant
Endangered - Sub-dominant	Of Least Concern
Of Concern - Dominant	Non-remnant

0 1:100,000 (at A4) 2 4
Kilometres
Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 55



LEGEND

- Homestead
- Watercourse
- Project Area
- Local Road
- Study Area
- Mine (Offsite)
- Track
- Rail Corridor
- Mine (Offsite)



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DNRM Certified Regional Ecosystems - V6.1

Figure 2

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4. Field assessment

4.1 Survey effort

Site surveys were carried out by GHD botanists between 30 April and 6 May 2013. A total of 30 polygons were surveyed utilising 100 metre (m) transects.

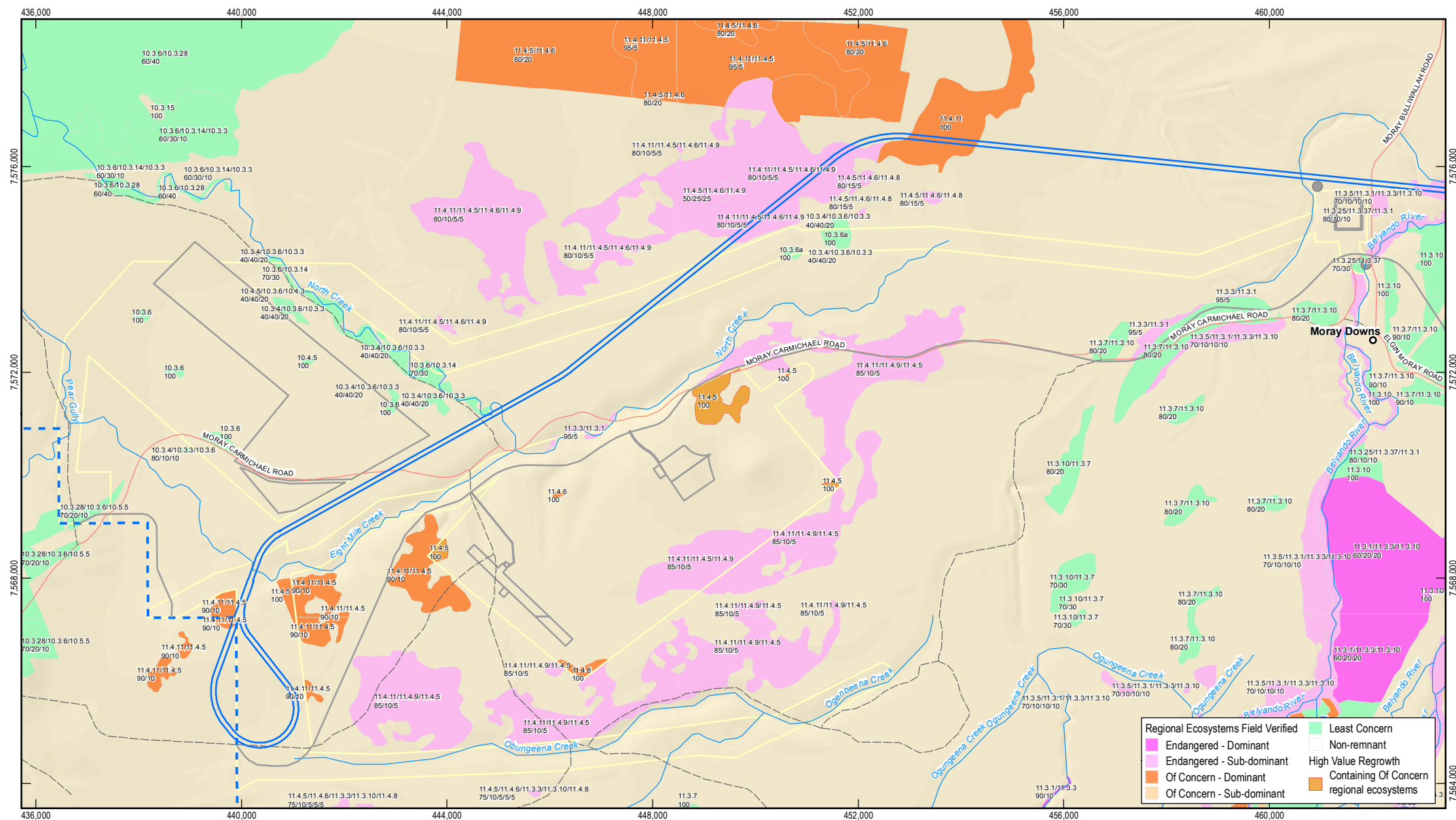
4.2 Proposed mapping

Table 3 describes the polygons within the Study Area that have a proposed change of RE status. Table 4 describes the polygons within the Study Area that have a proposed change of RE designation or where a change is recommended to the proportion of constituent REs within heterogeneous polygons (with no associated change in status). A summary of the justification for the change in RE is also presented in these tables. Further assessment site data and justification for the proposed RE changes are provided in Appendix A.

A total of 16 REs were confirmed present within the Study Area, including a large number of small areas mapped as the least concern REs 10.3.6a and the of concern 11.4.11/11.4.5, as well as smaller areas mapped as the least concern 11.3.25, 11.3.3 and 11.3.37, associated with watercourses. The field verified RE mapping is provided Figure 3.

Remnant vegetation was observed to be less extensive than presented by the certified RE mapping. Specifically, many areas mapped as containing natural grasslands RE 11.4.11 and *Acacia argyrodendron* woodland (RE 11.4.5) were not found to occur within some parts of the Study Area.

The polygons represented in Figure 4 refine the present certified RE mapping across the lot by proposing more accurate mapping based on aerial photograph interpretation coupled with field survey data using a method consistent with the Queensland Herbarium procedure for ground-truthing REs (Neldner et al., 2012).



Regional Ecosystems Field Verified		Least Concern
Endangered - Dominant		Non-remnant
Endangered - Sub-dominant		High Value Regrowth
Of Concern - Dominant		Containing Of Concern regional ecosystems
Of Concern - Sub-dominant		

1:100,000 (at A4)

0 2 4

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 55



LEGEND

- Homestead
- Watercourse
- Rail Corridor
- Mine (Offsite)
- Local Road
- Study Area
- Project Area
- Mine (Offsite)
- Track



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Field Verified Regional Ecosystems

Figure 3

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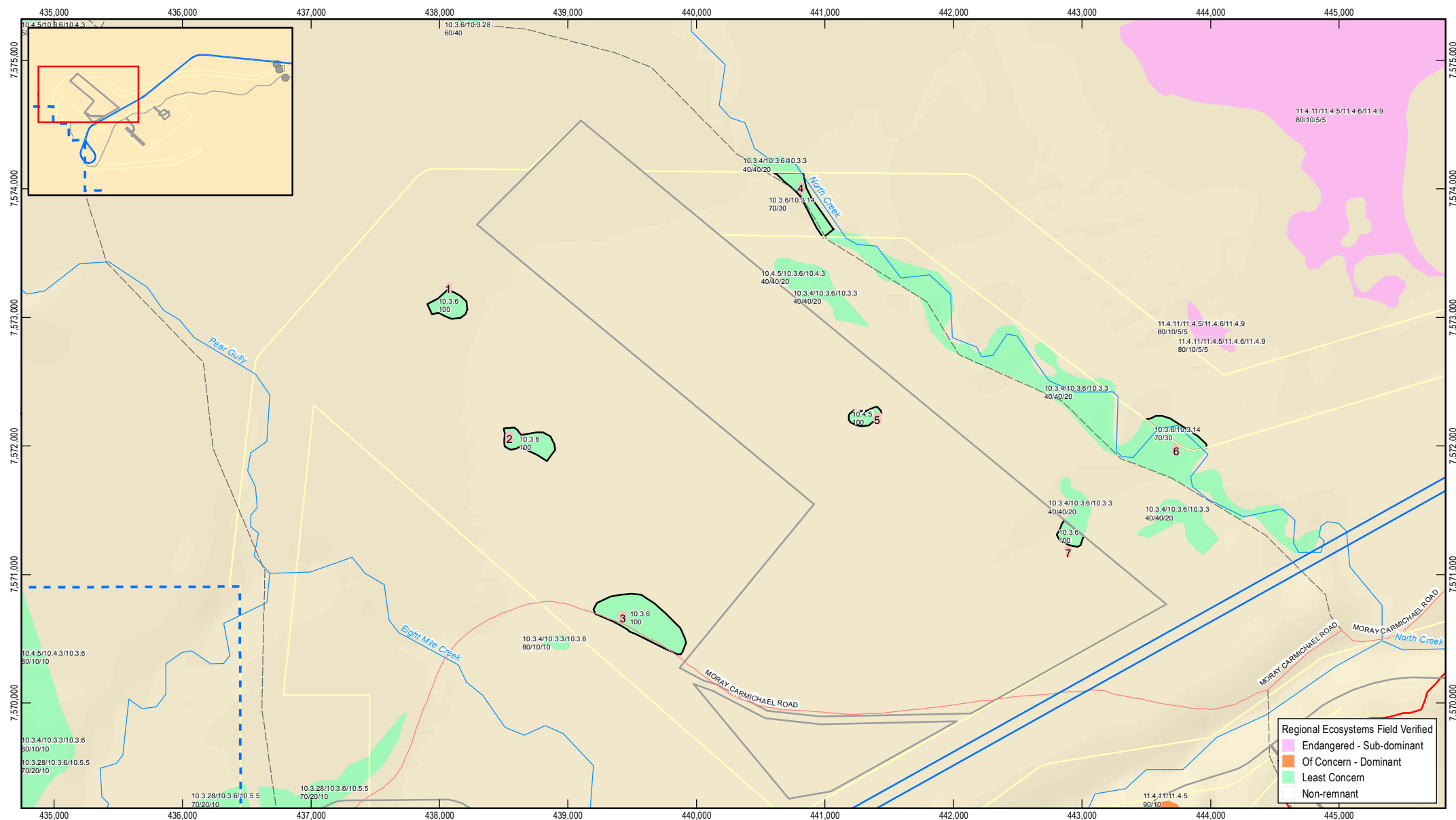
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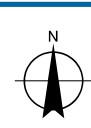
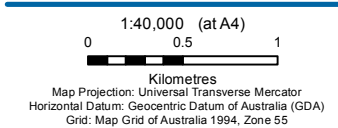
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Regional Ecosystems Field Verified

- Endangered - Sub-dominant
- Of Concern - Dominant
- Least Concern
- Non-remnant



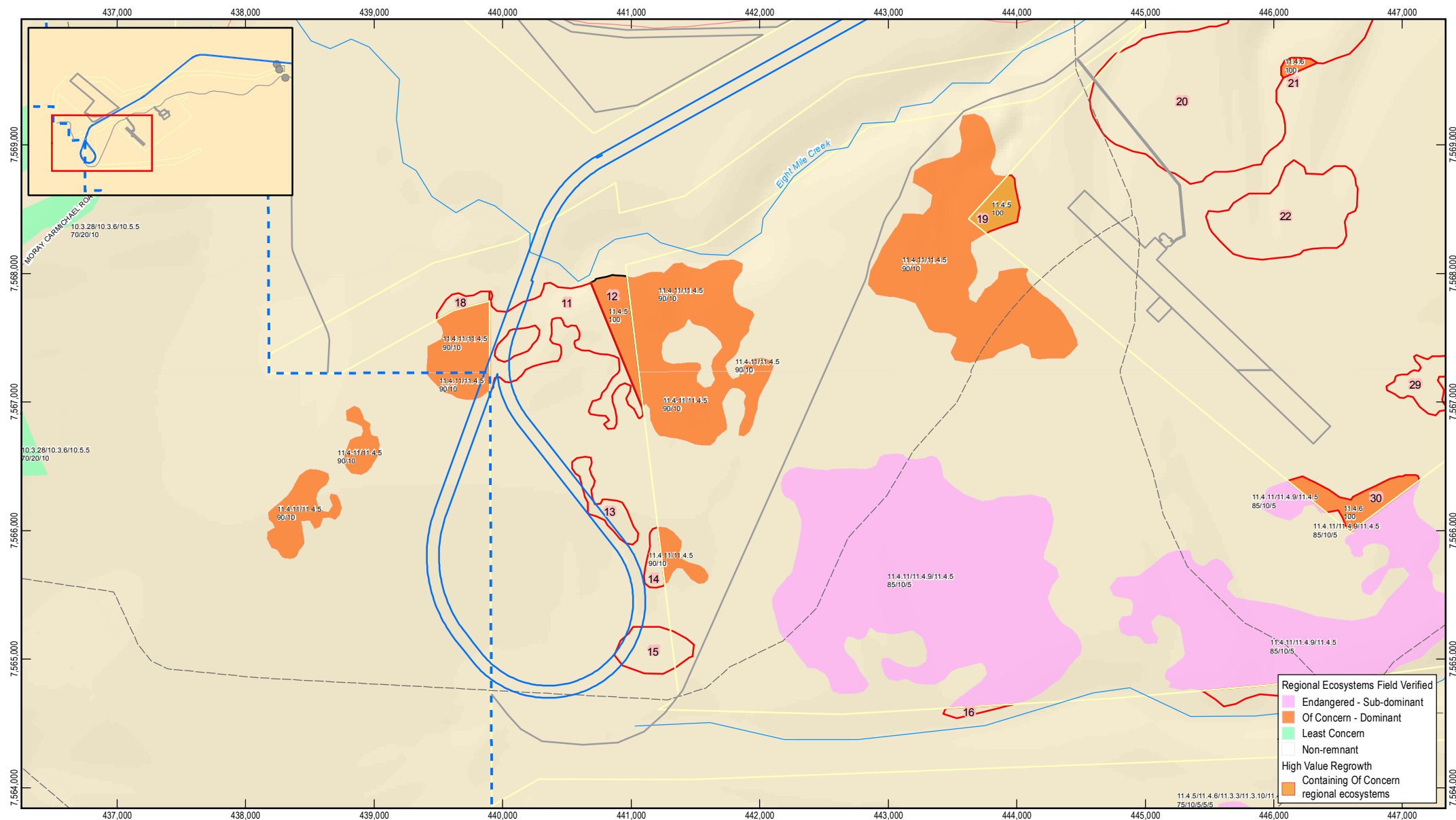
- LEGEND**
- Local Road
 - Watercourse
 - Regional Ecosystem Change
 - Rail Corridor
 - Track
 - Study Area
 - Code
 - Project Area
 - Status
 - Mine (Offsite)



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 Nominated RE Polygon Changes
 within the Study Area

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Figure 4
Sheet 1 of 5



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0 0.5 1
Kilometres
Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 55



LEGEND

- Local Road
- Watercourse
- Regional Ecosystem Change
- Rail Corridor
- Track
- Study Area
- Code
- Project Area
- Status
- Mine (Offsite)



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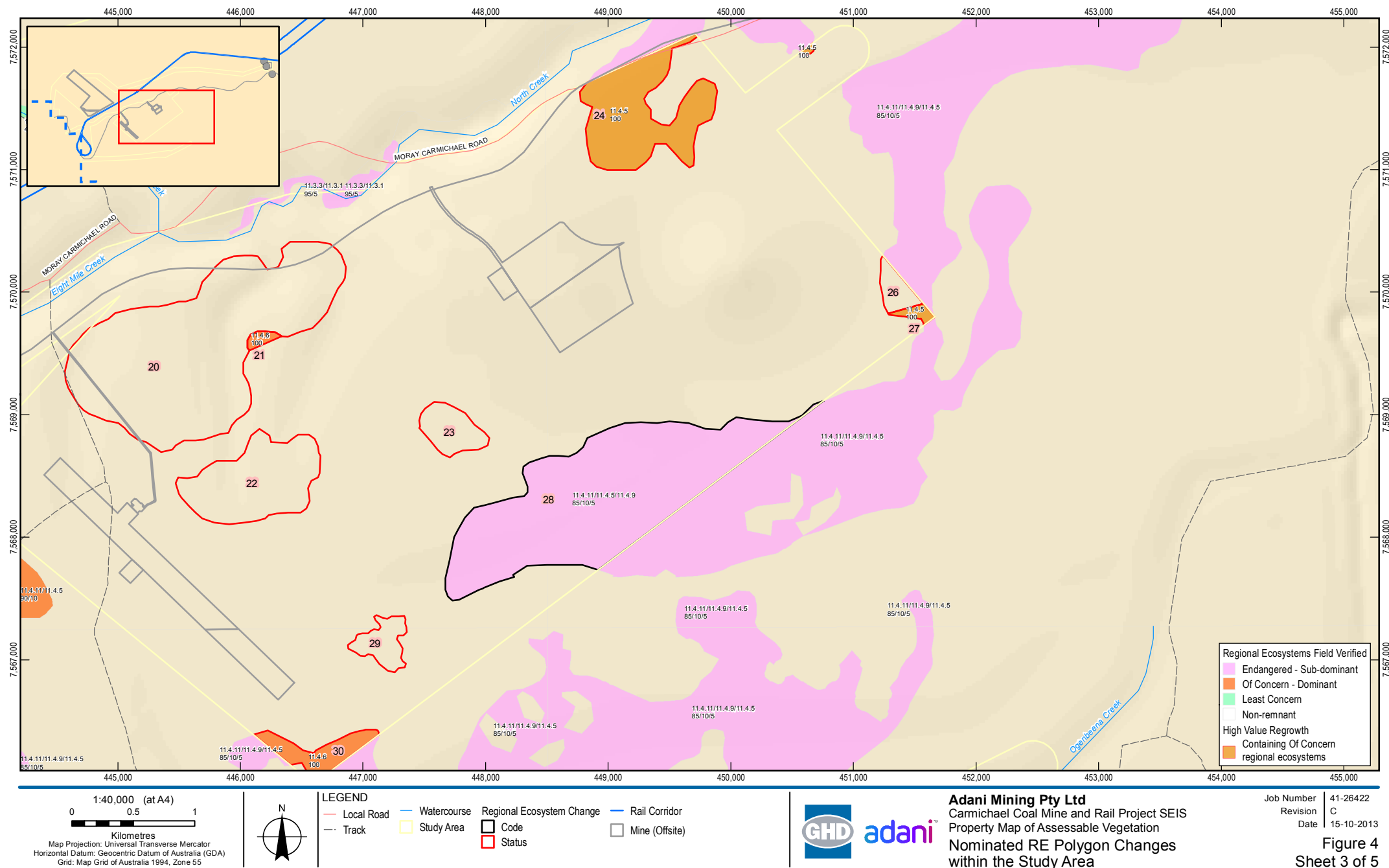
Figure 4
Sheet 2 of 5

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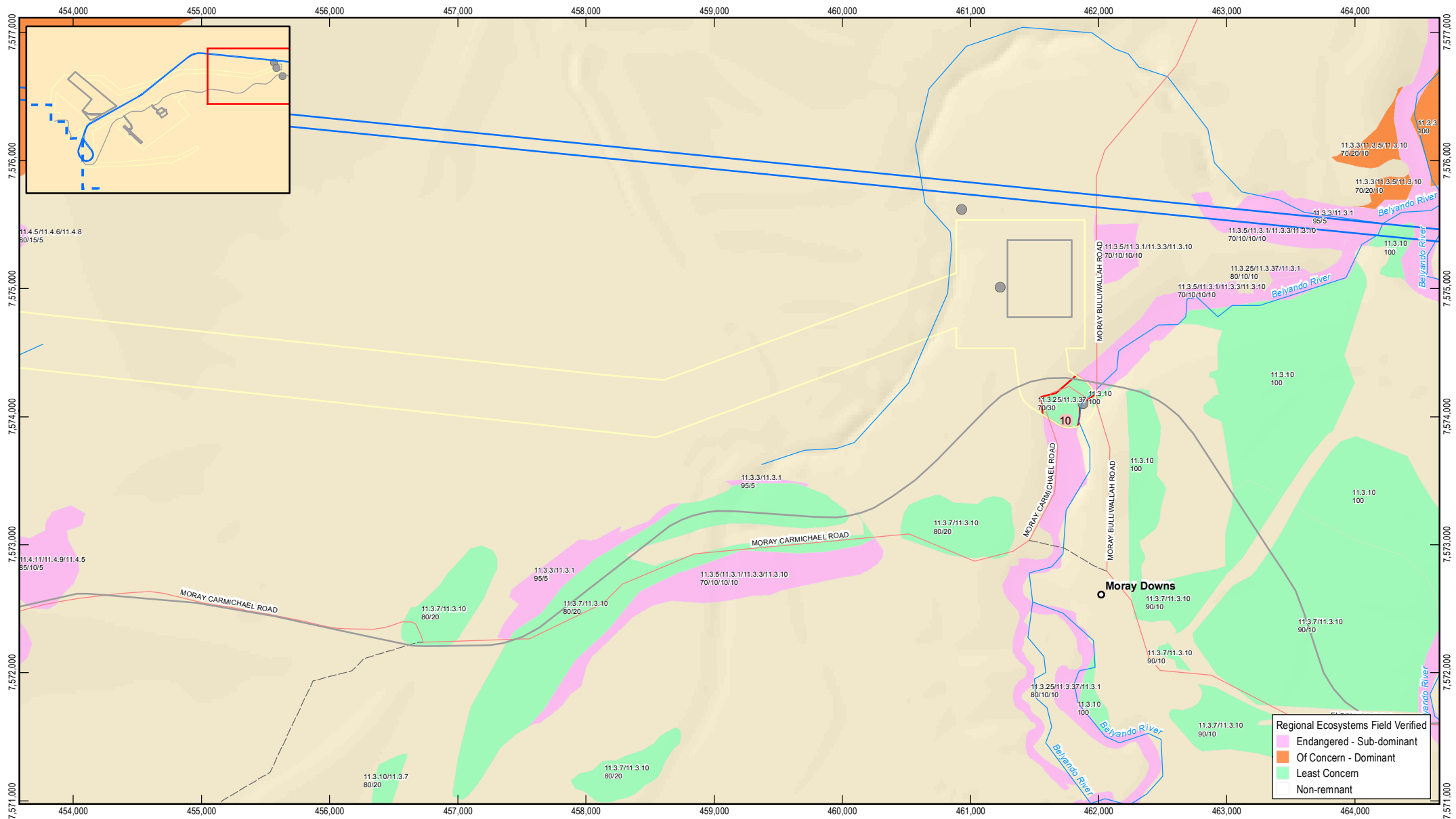
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Regional Ecosystems Field Verified

- Endangered - Sub-dominant
- Of Concern - Dominant
- Least Concern
- Non-remnant

1:40,000 (at A4)
0 0.5 1
Kilometres
Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 55



LEGEND

- Homestead
- Watercourse
- Local Road
- Track
- Regional Ecosystem Change
- Study Area
- Status
- Rail Corridor
- Mine (Offsite)



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Job Number 41-26422
Revision C
Date 15-10-2013

Figure 4
Sheet 5 of 5

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Table 3 Summary of RE polygons resulting in a proposed change in RE status

Polygon	Existing RE Mapping	RE Observed	Area (ha)	Justification for change in RE mapping
10	Endangered 11.3.25/11.3.37/ 11.3.1	Least concern 11.3.37/11.3.25	9.79	Assessment was undertaken within 11.3.37, as 11.3.25 was too narrow to survey. Field surveys found this polygon to be characterised by fringing riparian woodland dominated by <i>Eucalyptus coolabah</i> and <i>E. camaldulensis</i> to 18 m tall. The community occurs on flat to gently undulating alluvial plains comprising sandy soils (land zone 3). Site inspection found the species composition, geology and landform corresponds to a heterogeneous polygon comprising REs 11.3.37/11.3.25.
11	Of concern 11.4.11/11.4.5	Non-remnant	45.23	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> (buffel grass). Site inspection found buffel grass encroachment and fire, as a result of past and current land management, has largely displaced native grass species, altering the species composition and now resembles non-remnant vegetation. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). Although sparsely scattered shrubs were observed (to 5 m), no tree layer was present, with the structure and composition of the community uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) and application of fire management has occurred within the area.
13	Of concern 11.4.11/11.4.5	Non-remnant	10.70	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> with sparsely scattered shrubs to 3 m. Site inspection found buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition and now resembles non-remnant vegetation. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). Although patchy areas of sparse shrubs were observed, no tree layer was present, with the structure and composition of the community uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) and application of fire management has occurred within the area.

Polygon	Existing RE Mapping	RE Observed	Area (ha)	Justification for change in RE mapping
14	Of concern 11.4.11/11.4.5	Non-remnant	5.01	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> with sparsely scattered shrubs to 2 m. Site inspection found buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition and now resembles non-remnant vegetation. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). Although patchy areas of sparse shrubs were observed, no tree layer was present, with the structure and composition of the community uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) and application of fire management has occurred within the area.
15	Of concern 11.4.11	Non-remnant	16.82	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> with sparsely scattered shrubs to 6 m. Site inspection found buffel grass encroachment, as a result of past and current land management, has largely displaced native grass species, altering the species composition and now resembles non-remnant vegetation. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) has occurred within the area.
16	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	2.54	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> with sparsely scattered shrubs to 2 m. Site inspection found buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition and now resembles non-remnant vegetation. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). While patchy areas of sparse shrubs were observed, no tree layer was present, with the structure and composition of the community uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) and application of fire management has occurred within the area.

Polygon	Existing RE Mapping	RE Observed	Area (ha)	Justification for change in RE mapping
17	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	14.40	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> with sparsely scattered shrubs to 2 m. Site inspection found buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition and now resembles non-remnant vegetation. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). While patchy areas of sparse shrubs were observed, no tree layer was present, with the structure and composition of the community uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) and application of fire management has occurred within the area.
18	Of concern 11.4.11/11.4.5	Non-remnant	3.98	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> with sparsely scattered shrubs. Buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition and now resembles non-remnant vegetation. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). While patchy areas of sparse shrubs were observed, no tree layer was present, with the structure and composition of the community uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) and application of fire management has occurred within the area.
19	Of concern 11.4.11/11.4.5	Non-remnant	10.02	Field surveys found this polygon to be characterised by young acacia regrowth to 6.5 m, with a buffel grass understorey. Buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition of the understorey. While patchy areas of sparse shrubs were observed, no tree layer was present, with the structure and composition of the community uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, the height and composition of the shrub layer resembles of concern high value regrowth vegetation with evidence of significant clearing (prior to 1989) occurring within the area.

Polygon	Existing RE Mapping	RE Observed	Area (ha)	Justification for change in RE mapping
20	Of concern 11.4.11/11.4.5	Non-remnant	202.34	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> with sparsely scattered shrubs (to 5 m). Buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition and now resembles non-remnant vegetation. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). While patchy areas of sparse shrubs were observed, no tree layer was present, with the structure and composition of the community uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) and application of fire management has occurred within the area.
22	Of concern 11.4.11/11.4.5	Non-remnant	58.13	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> with sparsely scattered shrubs (to 5 m). Buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition and now resembles non-remnant vegetation. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). While patchy areas of sparse shrubs was observed, no tree layer was present and structure and composition of the sparse shrub layer is uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) and application of fire management has occurred within the area. .
23	Endangered 11.4.5/11.4.6/ 11.4.8	Non-remnant	16.05	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> with sparsely scattered shrubs (to 5 m). Buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition and now resembles non-remnant vegetation. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). While patchy areas of sparse shrubs and an emergent layer of <i>Atalaya hemiglauc</i> was observed, no tree layer was present and structure and composition of the sparse shrub layer is uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) and application of fire management has occurred within the area.

Polygon	Existing RE Mapping	RE Observed	Area (ha)	Justification for change in RE mapping
24	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	65.00	Field surveys found this polygon to be characterised by young <i>Lysiphyllum carronii</i> regrowth to 7 m, with a buffel grass understorey. Buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). While <i>A. argyrodendron</i> is not present, the height and composition of the shrublayer is characteristic of those observed within RE 11.4.5. Although historical aerial imagery for the area is limited, the height and composition of the shrub layer resembles of concern high value regrowth vegetation with evidence of significant clearing (prior to 1989) and application of fire management occurring within the area.
25	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	0.58	Field surveys found this polygon is characterised by young <i>Atalaya hemiglauc</i> a regrowth to 6 m, with a buffel grass understorey. Buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). While <i>A. argyrodendron</i> is not present, the height and composition of the shrublayer is characteristic of those observed within RE 11.4.5. Although historical aerial imagery for the area is limited, the height and composition of the shrub layer resembles of concern high value regrowth vegetation with evidence of significant clearing (prior to 1989) and application of fire management occurring within the area.
26	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	8.40	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> with sparsely scattered shrubs (to 7 m). Buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition and now resembles non-remnant vegetation. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). While patchy areas of sparse shrubs (<i>Lysiphyllum carronii</i> and <i>Atalaya hemiglauc</i> a) was observed, no tree layer was present and structure and composition of the sparse shrub layer is uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) and application of fire management has occurred within the area.

Polygon	Existing RE Mapping	RE Observed	Area (ha)	Justification for change in RE mapping
27	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	2.80	Field surveys found this polygon to be characterised by young <i>Atalaya hemiglauc</i> and <i>Lysiphyllum carronii</i> regrowth, with a buffel grass understorey. Buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition of the understorey. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). While <i>A. argyrodendron</i> is not present, the height and composition of the shrublayer is characteristic of those observed within RE 11.4.5. Although historical aerial imagery for the area is limited, the height and composition of the shrub layer resembles of concern high value regrowth vegetation with evidence of significant clearing (prior to 1989) and application of fire management occurring within the area.
29	Of concern 11.4.11	Non-remnant	12.53	Field surveys found this polygon to be characterised by grazing pasture dominated by <i>Cenchrus ciliaris</i> with sparsely scattered emergent shrublayer (to 9 m). Buffel grass encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition and now resembles non-remnant vegetation. <i>Acacia argyrodendron</i> is highly sensitive to fire with buffel grass capable of supporting intense fires that can result in tree death (DEHP, 2013). While patchy areas of sparse shrubs and an emergent layer was observed (<i>Lysiphyllum carronii</i>) was observed, no tree significant layer was present, with the structure and composition of the community uncharacteristic of remnant or regrowth communities for the area. Although historical aerial imagery for the area is limited, evidence of significant clearing (prior to 1978) and application of fire management has occurred within the area.
30	Endangered 11.4.11/11.4.9/ 11.4.5	Of concern 11.4.5	16.36	Field surveys found this polygon to be characterised by very sparse low trees to 12 m, with mid-dense shrubs to 6 m, over a predominantly <i>Cenchrus ciliaris</i> -dominated ground layer. Buffel encroachment and altered fire regimes, as a result of past and current land management, has largely displaced native grass species, modifying the species composition in the ground layer. While patchy areas of tall shrubs and small trees were observed, no significant brigalow (<i>Acacia harpophylla</i>) tree layer was observed within the polygon. The dominant canopy species (to 12 m high) was <i>Acacia cambagei</i> , with <i>A. argyrodendron</i> as a canopy sub-dominant. The structure and composition of species within the community is consistent with the of concern RE 11.4.6.

Table 4 Summary of RE polygons resulting in a proposed change in RE designation/proportion (but no change in RE status)

Polygon	Existing RE Mapping	RE Observed	Area (ha)	Justification for change in RE mapping
1	Least concern 10.3.4/10.3.6/ 10.3.3	Least concern 10.3.6a	4.52	Field surveys found this polygon to be characterised by low open woodland dominated by <i>Eucalyptus brownii</i> and <i>E. melanophloia</i> to 14 m tall. The community occurs on gently undulating alluvial plains comprising loamy sands (land zone 3). Site inspection found the species composition, geology and landform corresponds to RE 10.3.6a. This polygon also represents part of the true extent of RE 10.3.6a on the Lot.
2	Least concern 10.3.4/10.3.6/ 10.3.3	Least concern 10.3.6a	5.93	Field surveys found this polygon to be characterised by low open woodland dominated by <i>Eucalyptus brownii</i> to 12 m tall. The community occurs on gently undulating alluvial plains comprising loamy sands (land zone 3). Site inspection found the species composition, geology and landform corresponds to RE 10.3.6a.
3	Least concern 10.3.4/10.3.3/ 10.3.6	Least concern 10.3.6a	17.09	Field surveys found this polygon is characterised by low open woodland dominated by <i>Eucalyptus brownii</i> to 13 m tall. The community occurs on gently undulating alluvial plains comprising loamy sands (land zone 3). Site inspection found the species composition, geology and landform corresponds to RE 10.3.6a.
4	Least concern 10.3.4/10.3.6/ 10.3.3/10.3.3	Least concern 10.3.6a/ 10.3.14	5.63	Field surveys found this polygon to be characterised by low open woodland dominated by <i>Eucalyptus brownii</i> to 16 m tall. The community occurs on gently undulating alluvial plains comprising loamy sands (land zone 3). Smaller patches along the riparian corridor were found to be dominated by <i>E. camaldulensis</i> . Site inspection found the species composition, geology and landform corresponds to a mix polygon comprising REs 10.3.6a/10.3.14.
5	Least concern 10.4.5/10.4.3	Least concern 10.4.5	2.48	Field surveys found this polygon to be characterised by low open woodland dominated by <i>Acacia cambagei</i> with <i>A. harpophylla</i> to 15 m tall. The community occurs on gently undulating plains comprising cracking clay soils (land zone 4). Site inspection found the species composition, geology and landform corresponds to RE 10.4.5.
6	Least concern 10.3.4/10.3.6/ 10.3.3	Least concern 10.3.6a/ 10.3.14	5.45	Field surveys found this polygon to be characterised by low open woodland dominated by <i>Eucalyptus brownii</i> to 14 m tall. The community occurs on gently undulating alluvial plains comprising loamy sands (land zone 3). Smaller patches along the riparian corridor were found to be dominated by <i>E. camaldulensis</i> . Site inspection found the species composition, geology and landform corresponds to a mix polygon comprising REs 10.3.6a/10.3.14.

Polygon	Existing RE Mapping	RE Observed	Area (ha)	Justification for change in RE mapping
7	Least concern 10.3.4/10.3.6/ 10.3.3/10.3.3	Least concern 10.3.6a	2.52	Field surveys found this polygon to be characterised by low open woodland dominated by <i>Eucalyptus melanophloia</i> and <i>E. brownii</i> to 14 m tall. The community occurs on flat to gently undulating alluvial plains comprising sandy soils (land zone 3). Site inspection found the species composition, geology and landform corresponds to RE 10.3.6a.
8	Least concern 10.3.4/10.3.6/ 10.3.3	Least concern 10.3.6a	6.33	Field surveys found this polygon to be characterised by low open woodland dominated by <i>Eucalyptus brownii</i> to 15 m tall. The community occurs on flat to gently undulating alluvial plains comprising sandy soils (land zone 3). Site inspection found the species composition, geology and landform corresponds to RE 10.3.6a.
9	Least concern 10.3.4/10.3.3/ 10.3.6	Least concern 10.3.6a	18.47	Field surveys found this polygon to be characterised by open woodland dominated by <i>Eucalyptus brownii</i> and <i>Corymbia clarksoniana</i> to 17 m tall. The community occurs on flat to gently undulating alluvial plains comprising sandy soils (land zone 3). Site inspection found the species composition, geology and landform corresponds to RE 10.3.6a.
12	Of concern 11.4.11/11.4.5	Of concern 11.4.5	14.33	Field surveys found this polygon to be characterised by low shrubland dominated by <i>Acacia harpophylla</i> / <i>A. argyrodendron</i> (lack of flowers/seed pods limited species identification). The community occurs on flat to gently undulating plains comprising clay soils (land zone 4). Site inspection found while buffel grass encroachment as a result of on-going land management has altered the species composition, the species composition, geology and landform corresponds to RE 11.4.5.
21	Of concern 11.4.11/11.4.5	Of concern 11.4.6	2.51	Field surveys found this polygon to be characterised by woodland dominated by <i>Acacia cambagei</i> to 12 m tall. The community occurs on flat to gently undulating plains comprising clay soils (land zone 4). Site inspection found the species composition, geology and landform corresponds to RE 11.4.6.
28	Endangered 11.4.11/11.4.9/ 11.4.5 (85/10/5)	Endangered 11.4.11/11.4.5/ 11.4.9 (85/10/5)	189.77	Field surveys found this polygon to be characterised by young regrowth to 6 m, with a dense ground layer of native species, with areas of heavy weed encroachment (<i>Parthenium hysterophorus</i>). A small area (approximately 100 m x 200 m) of brigalow (<i>Acacia harpophylla</i>) open-forest (to 9 m) with a parthenium-dominated ground layer occurs within the polygon. Cattle grazing and altered fire regimes, as a result of past and current land management, has largely displaced mature woodland trees, modifying the structure and species composition of the majority of the community. The mix of sparse low shrubs and native open grasslands, plus the small area of brigalow open-forest conforms to the mixed polygon 11.4.11/11.4.5/11.4.9, forming a mosaic across the polygon.



5. PMAV details

A total of 30 changes to existing RE mapping are proposed from the field surveys. This includes:

- 19 proposed changes to RE status
 - 7 endangered RE polygons to become non-remnant
 - 1 endangered RE polygon to become least concern
 - 9 of concern RE polygons to become non-remnant
 - 1 endangered RE polygons to become of concern
- 12 proposed changes to RE designation or proportion of constituent REs within heterogeneous polygons (i.e. where more than one RE occurs within a single polygon), with no resulting change in RE status. These include heterogeneous polygons of of concern REs that will become homogenous (i.e. where a single RE occurs within a polygon) of concern REs and a heterogeneous polygon of endangered RE that will have the proportion of component REs altered.

Proposed changes to current regional ecosystem mapping are shown in Figure 3 and Figure 4. Table 5 provides a summary of the regional ecosystem status within the Study Area.

Table 5 Summary of regional ecosystem status

Polygon	Current RE Mapping	RE Observed	Area (ha)
1	Least concern 10.3.4/10.3.6/ 10.3.3	Least concern 10.3.6a	4.52
2	Least concern 10.3.4/10.3.6/ 10.3.3	Least concern 10.3.6a	5.93
3	Least concern 10.3.4/10.3.3/ 10.3.6	Least concern 10.3.6a	17.09
4	Least concern 10.3.4/10.3.6/ 10.3.3/10.3.3	Least concern 10.3.6a/ 10.3.14	5.63
5	Least concern 10.4.5/10.4.3	Least concern 10.4.5	2.48
6	Least concern 10.3.4/10.3.6/ 10.3.3	Least concern 10.3.6a/ 10.3.14	5.45
7	Least concern 10.3.4/10.3.6/ 10.3.3/10.3.3	Least concern 10.3.6a	2.52
8	Least concern 10.3.4/10.3.6/ 10.3.3	Least concern 10.3.6a	6.33
9	Least concern 10.3.4/10.3.3/ 10.3.6	Least concern 10.3.6a	18.47
10	Endangered 11.3.25/11.3.37/11.3.1	Least concern 11.3.37/11.3.25	9.79
11	Of concern 11.4.11/11.4.5	Non-remnant	45.23
12	Of concern 11.4.11/11.4.5	Of concern 11.4.5	14.33
13	Of concern 11.4.11/11.4.5	Non-remnant	10.70
14	Of concern 11.4.11/11.4.5	Non-remnant	5.01
15	Of concern 11.4.11	Non-remnant	16.82
16	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	2.54
17	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	14.40
18	Of concern 11.4.11/11.4.5	Non-remnant	3.98
19	Of concern 11.4.11/11.4.5	Non-remnant	10.02
20	Of concern 11.4.11/11.4.5	Non-remnant	202.34
21	Of concern 11.4.11/11.4.5	Of concern 11.4.6	2.51
22	Of concern 11.4.11/11.4.5	Non-remnant	58.13



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Polygon	Current RE Mapping	RE Observed	Area (ha)
23	Endangered 11.4.5/11.4.6/ 11.4.8	Non-remnant	16.05
24	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	65.00
25	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	0.58
26	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	8.40
27	Endangered 11.4.11/11.4.9/ 11.4.5	Non-remnant	2.80
28	Endangered 11.4.11/11.4.9/ 11.4.5 (85/10/5)	Endangered 11.4.11/11.4.5/11.4.9 (85/10/5)	189.77
29	Of concern 11.4.11	Non-remnant	12.53
30	Endangered 11.4.11/11.4.9/ 11.4.5	Of concern 11.4.5	16.36



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Appendices





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Appendix A – Quaternary and BioCondition Site Assessments

Endangered to Non-remnant

Polygon 16 (Vegetation assessment site 42)

Mapped RE: Endangered, 11.4.11/11.4.9/11.4.5 (85/10/5)

Observed RE: Non-remnant (100)

Polygon No.:	16	Recorder:	Peter Wagner	Date:	04/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	3	1 – 5	Very sparse
S2	Absent	Absent	Absent
G	0.5	0 – 1	Dense
Structural formation:	Non-remnant pasture grassland		
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 443506	N 7565406
50 m point:	Zone	5 5	E 443550	N 7565412

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
11.1 – 12.2	1.1	S1	<i>Vachellia farnesiana</i>	mimosa bush
18.9 – 19.3	0.4	S1	<i>Atalaya hemiglauc</i>	cattle bush
33.1 – 34.0	0.9	S1	<i>Atalaya hemiglauc</i>	cattle bush
66.1 – 67.2	1.1	S1	<i>Lysiphyllum carronii</i>	red bauhinia
81.1 – 81.8	0.7	S1	<i>Vachellia farnesiana</i>	mimosa bush

Summary:

Intercept of EDL 0 – 50 m:	N/A
Intercept of EDL 50 – 100 m:	N/A
Measured crown cover % of EDL 0 – 100 m:	N/A
Structural formation:	Non-remnant pasture grassland

Conclusions/notes:

- Structure does not meet remnant status
- Species not consistent with endangered RE polygon 11.4.11/11.4.9/11.4.5; species composition and community height not sufficient to be included as 11.4.9 or 11.4.5. Grass layer dominated by non-native buffel grass deeming it non-remnant (see Appendix 3, Neldner et al., 2012)
- Site condition measured as moderate (VAST 3), with weed encroachment and some cattle



Summary:

- disturbance recorded throughout the study area
- Site is proposed as non-remnant

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Atalaya hemiglauca</i>	cattle bush
S1	A	<i>Vachellia farnesiana</i> *	mimosa bush
S1	A	<i>Lysiphyllum carronii</i>	red bauhinia
S1	A	<i>Apophyllum anomalum</i>	warrior bush
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Rhychosia minima</i> var. <i>australis</i>	rhynchosia
G	A	<i>Desmodium campylocaulon</i>	creeping tick-trefoil
G	A	<i>Stemodia glabella</i>	smooth bluerod
G	A	<i>Polymeria ambigua</i>	creeping polymeria
G	A	<i>Sida cordifolia</i> *	flannel weed
G	A	<i>Sida trichopoda</i>	high sida
G	A	<i>Neptunia gracilis</i>	native sensitive plant
G	A	<i>Trianthema portulacastrum</i> *	black pigweed
G	A	<i>Cyperus</i> sp.	
G	A	<i>Glycine tabacina</i>	

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 1 Vegetation assessment polygon 16





Polygon 17 (Vegetation assessment site 43)

Mapped RE: Endangered, 11.4.11/11.4.9/11.4.5 (85/10/5)

Observed RE: Non-remnant (100)

Polygon No.:	17	Recorder:	Peter Wagner	Date:	04/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	3.5	3 – 5	Very sparse
S2	1.5	1 – 3	Very sparse
G	0.5	0 – 1	Dense
Structural formation:	Non-remnant pasture grassland		
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 445990	N 7564800
50 m point:	Zone	5 5	E 456030	N 7564810

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
8.2 – 8.7	0.5	S2	<i>Vachellia farnesiana</i>	mimosa bush
13.4 – 13.9	0.5	S2	<i>Vachellia farnesiana</i>	mimosa bush
31.1 – 36.8	5.7	S1	<i>Lysiphyllum carronii</i>	red bauhinia
55.8 – 56.6	0.8	S1	<i>Atalaya hemiglauc</i>	cattle bush
79.9 – 80.8	0.9	S2	<i>Vachellia farnesiana</i>	mimosa bush

Summary:

Intercept of EDL 0 – 50 m:	N/A
Intercept of EDL 50 – 100 m:	N/A
Measured crown cover % of EDL 0 – 100 m:	N/A
Structural formation:	Non-remnant pasture grassland

Conclusions/notes:

- Structure does not meet remnant status
- Species not consistent with endangered RE polygon 11.4.11/11.4.9/11.4.5; species composition and community height not sufficient to be included as 11.4.9 or 11.4.5. Grass layer dominated by non-native buffel grass deeming it non-remnant (see Appendix 3, Neldner et al., 2012)
- Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area
- Site is proposed as non-remnant

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Atalaya hemiglauca</i>	cattle bush
S1	A	<i>Vachellia farnesiana</i> *	mimosa bush
S1	A	<i>Lysiphyllum carronii</i>	red bauhinia
S2	D	<i>Vachellia farnesiana</i> *	mimosa bush
S2	A	<i>Apophyllum anomalum</i>	warrior bush
S2	A	<i>Atalaya hemiglauca</i>	cattle bush
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Rhychosia minima</i> var. <i>australis</i>	rhynchosia
G	A	<i>Desmodium campylocaulon</i>	creeping tick-trefoil
G	A	<i>Stemodia glabella</i>	smooth bluerod
G	A	<i>Polymeria ambigua</i>	creeping polymeria
G	A	<i>Sida cordifolia</i> *	flannel weed
G	A	<i>Sida trichopoda</i>	high sida
G	A	<i>Neptunia gracilis</i>	native sensitive plant
G	A	<i>Trianthema portulacastrum</i> *	black pigweed
G	A	<i>Cyperus</i> sp.	
G	A	<i>Solanum</i> sp.	

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated
 *indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 2 Vegetation assessment polygon 17





Polygon 23 (Vegetation assessment site 47)

Mapped RE: Endangered, 11.4.5/11.4.6/11.4.8 (80/15/5)

Observed RE: Non-remnant (100)

Polygon No.:	23	Recorder:	Peter Wagner	Date:	05/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E	10	10 - 11	Very sparse
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	3.5	3 – 5	Very sparse
S2	1.5	1 – 3	Very sparse
G	0.6	0 - 1	Dense
Structural formation:		Non-remnant shrubland	
Ecologically dominant layer:		S1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 447716	N 7568882
50 m point:	Zone	5 5	E 447756	N 7568879

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
26.2 – 26.9	0.7	S2	<i>Vachellia farnesiana</i>	mimosa bush
37.4 – 38.2	0.8	S2	<i>Atalaya hemiglauc</i>	cattle bush
40.0 – 40.5	0.5	S2	<i>Alectryon oleifolius</i>	western rosebush
45.4 – 47.0	1.6	S2	<i>Lysiphyllum carronii</i>	red bauhinia
87.9 – 93.2	5.3	S1	<i>Atalaya hemiglauc</i>	cattle bush
88.1 – 88.7	0.6	S2	<i>Atalaya hemiglauc</i>	cattle bush

Summary:

Intercept of EDL 0 – 50 m:	0.0 m
Intercept of EDL 50 – 100 m:	5.3 m
Measured crown cover % of EDL 0 – 100 m:	5.3
Structural formation:	Non-remnant shrubland

Conclusions/notes:

- Structure does not meet remnant status
- Species not consistent with endangered RE polygon 11.4.5/11.4.6/11.4.8; dominant species not consistent to be included as 11.4.5, 11.4.6 and 11.4.8
- Site condition measured as moderate (VAST 2), with weed encroachment and some cattle disturbance recorded throughout the study area
- Site is proposed as non-remnant

Plant Species

Str.	Rel. ¹	Scientific name	Common name
E	D	<i>Atalaya hemiglauca</i>	cattle bush
S1	D	<i>Atalaya hemiglauca</i>	cattle bush
S1	A	<i>Acacia salicina</i>	sally wattle
S2	D	<i>Atalaya hemiglauca</i>	cattle bush
S2	A	<i>Vachellia farnesiana</i> *	mimosa bush
S2	A	<i>Opuntia tomentosa</i> *	velvety tree pear
S2	A	<i>Apophyllum anomalum</i>	warrior bush
S2	A	<i>Alectryon oleifolius</i>	western rosebush
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Cyperus sp.</i>	
G	A	<i>Aristida latifolia</i>	feather-top wiregrass
G	A	<i>Chenopodium auricomum</i>	Queensland bluebush
G	A	<i>Rhychosia minima var. australis</i>	rhynchosia
G	A	<i>Tephrosia supina</i>	
G	A	<i>Aristida leptopoda</i>	white speargrass
G	A	<i>Sida trichopoda</i>	high sida
G	A	<i>Bulbine bulbosa</i>	native leek
G	A	<i>Commelina diffusa</i>	wandering jew
G	A	<i>Stemodia glabella</i>	smooth bluerod
G	A	<i>Polymeria ambigua</i>	creeping polymeria
G	A	<i>Euphorbia tannensis</i>	spurge
G	A	<i>Astrebla lappacea</i>	curly Mitchell grass
G	A	<i>Cullen tenax</i>	emu foot
G	A	<i>Portulaca oleracea</i> *	common pigweed
¹ Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated			
*indicates a non-native species			

Vegetation DBH – Not applicable to vegetation community

Plate 3 Vegetation assessment polygon 23





Polygon 24 (Vegetation assessment site 23) and representative of Polygon 25

Mapped RE: Endangered, 11.4.11/11.4.9/11.4.5 (85/10/5)

Observed RE: Non-remnant (100)

Polygon No.:	24	Recorder:	Jessica Newton	Date:	05/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	6	6 – 7	Very sparse
S2	2.5	1 – 6	Mid-dense
G	0.6	0 – 1	Dense
Structural formation:	Non-remnant shrubland		
Ecologically dominant layer:	S2		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 449392	N 7571835
50 m point:	Zone	5 5	E 449434	N 7571866

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
1.0 – 2.1	0.8	S2	<i>Atalaya hemiglauc</i>	cattle bush
48.1 – 52.4	4.3	S2	<i>Lysiphyllum carronii</i>	red bauhinia
64.3 – 66.8	2.5	S2	<i>Atalaya hemiglauc</i>	cattle bush
78.2 – 81.9	3.7	S2	<i>Santalum lanceolatum</i>	sandalwood
82.1 – 83.0	0.9	S2	<i>Eremophila deserti</i>	Ellangowan poison bush
87.5 – 90.1	2.6	S2	<i>Lysiphyllum carronii</i>	red bauhinia
96.3 – 99.0	2.7	S2	<i>Lysiphyllum carronii</i>	red bauhinia

Summary:

Intercept of EDL 0 – 50 m:	5.1 m
Intercept of EDL 50 – 100 m:	12.4 m
Measured crown cover % of EDL 0 – 100 m:	17.5
Structural formation:	Non-remnant shrubland

Conclusions/notes:

- Structure does not meet remnant status
 - Species not consistent with endangered RE polygon 11.4.11/11.4.9/11.4.5; species composition and community height not sufficient to be included as 11.4.9 or 11.4.5
- Vegetation structure (EDL = S2) is inconsistent with the grassland community RE 11.4.11



Summary:

- Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area
- Site is proposed as non-remnant

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Lysiphyllum carronii</i>	red bauhinia
S2	A	<i>Eremophila mitchellii</i>	false sandalwood
S2	A	<i>Santalum lanceolatum</i>	sandalwood
S2	A	<i>Eremophila deserti</i>	Ellangowan poison bush
S2	A	<i>Geijera parviflora</i>	wilga
S2	A	<i>Terminalia oblongata</i>	yellow wood
S2	A	<i>Lysiana subfalcata</i>	lemon-flowered mistletoe
S2	A	<i>Carissa lanceolata</i>	conkerberry
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Tephrosia supina</i>	
G	A	<i>Stachytarpheta jamaicensis</i> *	snakeweed
G	A	<i>Abutilon fraseri</i>	dwarf lantern flower
G	A	<i>Neptunia gracilis</i>	native sensitive plant
G	A	<i>Ocimum tenuiflorum</i>	native thyme
G	A	<i>Sida trichopoda</i>	high sida
G	A	<i>Capparis lasiantha</i>	wait-a-while
G	A	<i>Vittadinia pustulata</i>	daisy
G	A	<i>Bulbine bulbosa</i>	native leek
G	A	<i>Glycine falcata</i>	glycine
G	A	<i>Rhychosia minima</i> var. <i>australis</i>	rhynchosia

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 4 Vegetation assessment polygon 24





Polygon 26 (Vegetation assessment site 24)

Mapped RE: Endangered, 11.4.11/11.4.9/11.4.5 (85/10/5)

Observed RE: Non-remnant (100)

Polygon No.:	26	Recorder:	Jessica Newton	Date:	05/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	6	6 – 7	Very sparse
S2	2.5	1 – 6	Sparse
G	0.6	0 – 1	Dense
Structural formation:		Non-remnant shrubland	
Ecologically dominant layer:		S2	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 451516	N 7569896
50 m point:	Zone	5 5	E 451524	N 7569940

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
51.0 – 53.2	2.2	S2	<i>Lysiphyllum carronii</i>	red bauhinia
51.0 – 52.8	1.8	S2	<i>Atalaya hemiglauc</i>	cattle bush
87.3 – 89.1	1.8	S2	<i>Lysiphyllum carronii</i>	red bauhinia
90.1 – 90.5	0.4	S2	<i>Carissa lanceolata</i>	conkerberry

Summary:

Intercept of EDL 0 – 50 m:	0.0 m
Intercept of EDL 50 – 100 m:	6.2 m
Measured crown cover % of EDL 0 – 100 m:	6.2
Structural formation:	Non-remnant shrubland

Conclusions/notes:

- Structure does not meet remnant status
- Species not consistent with endangered RE polygon 11.4.11/11.4.9/11.4.5; species composition and community height not sufficient to be included as 11.4.9 or 11.4.5. Vegetation structure (EDL = S2) is inconsistent with the grassland community RE 11.4.11
- Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area
- Site is proposed as non-remnant



Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Lysiphyllum carronii</i>	red bauhinia
S2	A	<i>Eremophila mitchellii</i>	false sandalwood
S2	A	<i>Santalum lanceolatum</i>	sandalwood
S2	A	<i>Eremophila deserti</i>	Ellangowan poison bush
S2	A	<i>Geijera parviflora</i>	wilga
S2	A	<i>Terminalia oblongata</i>	yellow wood
S2	A	<i>Lysiana subfalcata</i>	lemon-flowered mistletoe
S2	A	<i>Carissa lanceolata</i>	conkerberry
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Tephrosia supina</i>	
G	A	<i>Stachytarpheta jamaicensis</i> *	snakeweed
G	A	<i>Abutilon fraseri</i>	dwarf lantern flower
G	A	<i>Neptunia gracilis</i>	native sensitive plant
G	A	<i>Ocimum tenuiflorum</i>	native thyme
G	A	<i>Sida trichopoda</i>	high sida
G	A	<i>Capparis lasiantha</i>	wait-a-while
G	A	<i>Vittadinia pustulata</i>	daisy
G	A	<i>Bulbine bulbosa</i>	native leek
G	A	<i>Glycine falcata</i>	glycine
G	A	<i>Rhychosia minima</i> var. <i>australis</i>	rhynchosia

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 5 Vegetation assessment polygon 26





Polygon 27 (Vegetation assessment site 25)

Mapped RE: Endangered, 11.4.11/11.4.9/11.4.5 (85/10/5)

Observed RE: Non-remnant - high value regrowth containing of concern RE 11.4.5 (100)

Polygon No.:	27	Recorder:	Jessica Newton	Date:	05/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	8	7 – 8	Sparse
T2			
T3			
S1	3	1 - 6	Mid-dense
S2	Absent	Absent	Absent
G	0.6	0 – 1	Dense
Structural formation:		High value regrowth	
Ecologically dominant layer:		S1	

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 451475	N 7569849
50 m point:	Zone	5 5	E 451412	N 7569855

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
0 – 3.2	3.2	S1	<i>Lysiphyllum carronii</i>	red bauhinia
3.0 – 5.1	2.1	S1	<i>Atalaya hemiglauc</i>	cattle bush
13.6 – 14.2	0.6	S1	<i>Eremophila mitchellii</i>	false sandalwood
31.2 – 32.0	0.8	S1	<i>Atalaya hemiglauc</i>	cattle bush
54.0 – 62.1	8.1	S1	<i>Atalaya hemiglauc</i>	cattle bush
75.1 – 84.9	9.8	S1	<i>Lysiphyllum carronii</i>	red bauhinia

Summary:

Intercept of EDL 0 – 50 m:	6.7 m
Intercept of EDL 50 – 100 m:	17.9 m
Measured crown cover % of EDL 0 – 100 m:	24.6
Structural formation:	Non-remnant shrubland

Conclusions/notes:

- Structure does not meet remnant status
- Species not consistent with endangered RE polygon 11.4.11 and 11.4.9; species composition and community height not sufficient to be included as 11.4.9. Vegetation structure (EDL = S2) is inconsistent with the grassland community RE 11.4.11. Species composition consistent with regrowth 11.4.5
- Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area

Summary:

- Site is proposed as non-remnant, high value regrowth containing RE 11.4.5

Plant Species

Str.	Rel. ¹	Scientific name	Common name
T1	D	<i>Lysiphyllum carronii</i>	red bauhinia
T1	A	<i>Atalaya hemiglauc</i>	cattle bush
S1	D	<i>Eremophila mitchellii</i>	false sandalwood
S1	A	<i>Owenia acidula</i>	emu apple
S1	A	<i>Capparis lasiantha</i>	wait-a-while
S1	A	<i>Atalaya hemiglauc</i>	cattle bush
S1	A	<i>Vachellia farnesiana</i> *	mimosa bush
S1	A	<i>Santalum lanceolatum</i>	sandalwood
S1	A	<i>Lysiphyllum carronii</i>	red bauhinia
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Desmodium campylocaulon</i>	creeping tick-trefoil

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 6 Vegetation assessment polygon 27





Polygon 29 (Vegetation assessment site 31)

Mapped RE: Of concern, 11.4.11 (100)

Observed RE: Non-remnant (100)

Polygon No.:	29	Recorder:	Peter Wagner	Date:	01/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council.				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E	7	6 – 9	Very dense
T1			
T2			
T3			
S1	5.5	4 – 6	Very dense
S2	2	1 – 4	Very dense
G	0.8	0 – 1	Dense
Structural formation:	Non-remnant sparse shrubland		
Ecologically dominant layer:	S1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 447185	N 7567144
50 m point:	Zone	5 5	E 447236	N 7567148

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
0 – 1.2	1.2	S2	<i>Apophyllum anomalum</i>	warrior bush
24.6 – 27.2	2.6	S1	<i>Atalaya hemiglauc</i>	cattle bush
26.6 – 30.0	3.4	S1	<i>Eremophila mitchellii</i>	false sandalwood
26.8 – 32.3	5.5	S2	<i>Lysiphyllum carronii</i>	red bauhinia
32.0 – 32.6	0.6	S2	<i>Apophyllum anomalum</i>	warrior bush
32.1 – 34.4	2.3	S1	<i>Lysiphyllum carronii</i>	red bauhinia
67.3 – 68.1	0.8	S2	<i>Lysiphyllum carronii</i>	red bauhinia
93.1 – 93.4	0.3	S2	<i>Vachellia farnesiana*</i>	mimosa bush

Summary:

Intercept of EDL 0 – 50 m:	8.3 m
Intercept of EDL 50 – 100 m:	0.0 m
Measured crown cover % of EDL 0 – 100 m:	8.3
Structural formation:	Non-remnant sparse shrubland

Conclusions/notes:

- Structure does not meet remnant status
- Species and structure consistent with non-remnant vegetation; the community structure



Summary:

(EDL = S1) is not consistent with a grassland community, where the EDL must be the G layer

- Site condition measured as moderate (VAST 2), with weed encroachment and some cattle disturbance recorded throughout the study area
- Site is proposed as non-remnant

Plant Species

Str.	Rel. ¹	Scientific name	Common name
E	D	<i>Lysiphyllum carronii</i>	red bauhinia
E	A	<i>Acacia cambagei</i>	gidgee
S1	D	<i>Eremophila mitchellii</i>	false sandalwood
S1	A	<i>Owenia acidula</i>	emu apple
S1	A	<i>Geijera parviflora</i>	wilga
S1	A	<i>Parsonsia lanceolata</i>	rough silkpod
S2	C	<i>Atalaya hemiglauca</i>	cattle bush
S2	C	<i>Vachellia farnesiana</i> *	Mimosa bush
S2	A	<i>Owenia acidula</i>	emu apple
S2	A	<i>Apophyllum anomalum</i>	warrior bush
S2	A	<i>Citrus glauca</i>	wild lime
S2	A	<i>Capparis mitchellii</i>	bumble tree
S2	A	<i>Alectryon diversifolius</i>	scrub boonaree
S2	A	<i>Capparis lasiantha</i>	wait-a-while
S2	A	<i>Capparis loranthifolia</i>	
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Desmodium campylocaulon</i>	creeping tick-trefoil
G	A	<i>Rhychosia minima var. australis</i>	rhynchosia
G	A	<i>Neptunia gracilis</i>	native sensitive plant
G	A	<i>Cyperus sp.</i>	
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Hibiscus trionum</i>	bladder ketmia
G	A	<i>Tribulus terrestris</i>	caltrop

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Plate 7 Vegetation assessment polygon 29



Endangered to least concern

Polygon 10 (Vegetation assessment site 7)

Mapped RE: Endangered, 11.3.25/11.3.37/11.3.1 (80/10/10)

Observed RE: Least concern, 10.3.37/11.3.25 (70/30) – 11.3.37 was assessed

Polygon No.:	10	Recorder:	Jessica Newton	Date:	02/05/2013
Purpose:	Regional ecosystem verification and BioCondition assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	17	15 – 18	Very Sparse
T2	13	8 – 14	Mid-dense
T3			
S1	3	1 – 6	Very sparse
S2			
G	0.5	0 – 1	Dense
Structural formation:	Remnant eucalypt open-woodland fringing watercourse		
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 461831	N 7574157
50 m point:	Zone	5 5	E 461798	N 7574123

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
44.0 – 50.0	6.0	T2	<i>Eucalyptus coolabah</i>	coolabah
45.7 – 56.9	11.2	T2	<i>Eucalyptus coolabah</i>	coolabah
55.8 – 61.6	5.8	T2	<i>Eucalyptus coolabah</i>	coolabah
66.6 – 68.8	2.2	T2	<i>Eucalyptus coolabah</i>	coolabah
96.5 – 100.0	3.5	T1	<i>Eucalyptus coolabah</i>	coolabah
99.6 – 100.0	0.4	S1	<i>Grewia retusifolia</i>	dog's balls

Summary:

Intercept of EDL 0 – 50 m:	0.0 m
Intercept of EDL 50 – 100 m:	3.5 m
Measured crown cover % of EDL 0 – 100 m:	3.5 m
Structural formation:	Remnant eucalypt open-woodland

Summary:

Conclusions/notes:

- Structure meets remnant status
- Species consistent with least concern RE 11.3.25 and 11.3.37; no species consistent with the endangered RE 11.3.1 were recorded within the remnant polygon
- Site condition measured as moderate (VAST 2), with some cattle disturbance recorded throughout the study area
- Site is proposed as least concern RE polygon 11.3.37/11.3.25 (70/30)

Plant Species

Str.	Rel. ¹	Scientific name	Common name
T1	D	<i>Eucalyptus coolabah</i>	coolabah
T1	S	<i>Eucalyptus camaldulensis</i> var. <i>camaldulensis</i>	river red gum
T2	A	<i>Cymbidium canaliculatum</i>	black orchid
T2	D	<i>Eucalyptus coolabah</i>	coolabah
T2	S	<i>Eucalyptus camaldulensis</i> var. <i>camaldulensis</i>	river red gum
T2	A	<i>Terminalia oblongata</i>	yellow wood
T2	A	<i>Lysiphyllum carronii</i>	red bauhinia
S1	A	<i>Grewia retusifolia</i>	dog's balls
S1	C	<i>Acacia stenophylla</i>	belalie
S1	C	<i>Acacia salicina</i>	sally wattle
S1	A	<i>Melaleuca trichostachya</i>	river teatree
G	A	<i>Eulalia aurea</i>	silky browntop
G	A	<i>Cyperus exaltatus</i>	giant sedge
G	A	<i>Paspalidium distans</i>	
G	A	<i>Alternanthera denticulata</i> var. <i>micrantha</i>	joyweed
G	A	<i>Aeschynomene indica</i>	budda pea
G	A	<i>Echinochloa colona</i> *	awnless barnyard grass
G	A	<i>Marsilea mutica</i>	smooth nardoo
G	A	<i>Aristida jerichoensis</i> var. <i>jerichoensis</i>	Jericho wiregrass
G	A	<i>Chloris ventricosa</i>	tall chloris
G	A	<i>Chrysopogon fallax</i>	golden beard grass
G	A	<i>Urochloa mosambicensis</i> *	
G	A	<i>Abutilon oxycarpum</i>	flannel flower
G	A	<i>Hybanthus monopetalus</i>	spade flower
G	A	<i>Phyllanthus virgatus</i>	spurge
G	A	<i>Chamaesyce dallachyana</i>	caustic weed
G	A	<i>Cullen tenax</i>	emu foot
G	A	<i>Alloteropsis semialata</i>	cockatoo grass
G	A	<i>Eragrostis elongata</i>	clustered lovegrass

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH (from BioCondition Assessment)

Scientific name	Common name	DBH (mm)	Average DBH (mm)
Eucalypts			
Eucalyptus coolabah	coolabah	620, 720, 426, 328, 397, 700, 750, 350, 520, 350, 1000, 950, 1000, 580, 360, 700, 620, 700, 900, 750	636
Eucalyptus camaldulensis var. camaldulensis	river red gum	490, 480, 300, 300, 360, 420, 450, 550, 900, 340, 350	449
Average DBH for eucalypts:			569
Non-eucalypts			
Lysiphyllum carronii	red bauhinia	261, 300	281
Average DBH for non-eucalypts:			281

Plate 8 Vegetation assessment polygon 10



Endangered to of concern

Polygon 30 and representative of Polygon 12 (Vegetation assessment site 34)

Mapped RE: Endangered, 11.4.11/11.4.9/11.4.5 (85/10/5)

Observed RE: Of concern, 11.4.6 (100)

Polygon No.:	30	Recorder:	Peter Wagner	Date:	02/05/2013
Purpose:	Regional ecosystem verification and BioCondition assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	8	6 – 12	Sparse
T2			
T3			
S1	4.5	3 – 6	Mid-dense
S2	1.5	1 – 3	Sparse
G	0.7	0 – 1	Dense
Structural formation:	Remnant open-woodland		
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum	MGA55	Transect length (m):	100
Start point:	Zone	5 5 E	446364	N 7566156
50 m point:	Zone	5 5 E	446397	N 7566191

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
1.5 – 3.5	2.0	S2	<i>Carissa ovata</i>	currant bush
14.7 – 16.2	1.5	S2	<i>Carissa ovata</i>	currant bush
23.8 – 24.3	0.5	S2	<i>Apophyllum anomalum</i>	warrior bush
44.1 – 44.6	0.5	S1	<i>Lysiphyllum carronii</i>	red bauhinia
46.0 – 48.0	2.0	T1	<i>Lysiphyllum carronii</i>	red bauhinia
69.5 – 76.0	6.5	T1	<i>Eremophila mitchellii</i>	false sandalwood
77.0 – 79.5	2.5	S1	<i>Atalaya hemiglauc</i>	cattle bush
81.2 – 84.7	3.5	T1	<i>Lysiphyllum carronii</i>	red bauhinia
91.3 – 97.3	6.0	T1	<i>Atalaya hemiglauc</i>	cattle bush

Summary:

Intercept of EDL 0 – 50 m:	2.0 m
Intercept of EDL 50 – 100 m:	16.0 m
Measured crown cover % of EDL 0 – 100 m:	18.0
Structural formation:	Remnant open-woodland

Summary:

Conclusions/notes:

- Structure meets remnant status
- Species consistent with of concern RE 11.4.6; species and structure inconsistent with the endangered RE 11.4.9 and 11.4.5, and vegetation structure (EDL = T1) is inconsistent with the grassland community RE 11.4.11
- Site condition measured as moderate (VAST 2), with weed encroachment and some cattle disturbance recorded throughout the study area
- Site is proposed as of concern RE 11.4.6

Plant Species

Str.	Rel. ¹	Scientific name	Common name
T1	D	<i>Acacia cambagei</i>	gidgee
T1	S	<i>Acacia argyrodendron</i>	blackwood
T1	A	<i>Lysiphyllum carronii</i>	red bauhinia
T1	A	<i>Cymbidium canaliculatum</i>	black orchid
T1	A	<i>Terminalia oblongata</i>	yellow wood
S1	C	<i>Eremophila mitchellii</i>	false sandalwood
S1	C	<i>Atalaya hemiglauca</i>	cattle bush
S1	A	<i>Terminalia oblongata</i>	yellow wood
S1	A	<i>Capparis loranthifolia</i>	
S2	D	<i>Atalaya hemiglauca</i>	cattle bush
S2	A	<i>Owenia acidula</i>	emu apple
S2	A	<i>Apophyllum anomalum</i>	warrior bush
S2	A	<i>Vachellia farnesiana</i> *	mimosa bush
S2	A	<i>Capparis lasiantha</i>	wait-a-while
S2	A	<i>Alectryon diversifolius</i>	scrub boonaree
S2	A	<i>Opuntia tomentosa</i> *	velvety tree pear
S2	A	<i>Lysiphyllum carronii</i>	red bauhinia
S2	A	<i>Carissa ovata</i>	currant bush
G	D	<i>Cenchrus ciliaris</i>	buffel grass
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Desmodium campylocaulon</i>	creeping tick-trefoil
G	A	<i>Neptunia gracilis</i>	native sensitive plant

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH (from BioCondition Assessment)

Scientific name	Common name	DBH (mm)	Average DBH (mm)
Non-eucalypts			
<i>Atalaya hemiglauca</i>	cattle bush	180, 190, 160	177
<i>Terminalia oblongata</i>	yellow wood	320, 210, 230	253
<i>Acacia cambagei</i>	gidgee	300, 190, 230, 160, 180, 290, 180, 250, 220, 230, 165, 230, 210, 210, 180, 360, 360, 180, 160, 150	204

Scientific name	Common name	DBH (mm)	Average DBH (mm)
<i>Acacia argyrodendron</i>	blackwood	200, 260, 235, 350, 285, 190, 170, 325, 255, 170	244
<i>Lysiphyllum carronii</i>	red bauhinia	300	300
Average DBH for eucalypts:			229

Plate 9 Vegetation assessment polygon 30



Endangered to endangered

Polygon 28 (Vegetation assessment site 29) and representative of polygon 12

Mapped RE: Endangered, 11.4.11/11.4.9/11.4.5 (85/10/5)

Observed RE: Endangered, 11.4.11/11.4.5/11.4.9 (85/10/5)

Polygon No:	28	Recorder:	Peter Wagner	Date:	01/05/2013
Purpose:	Regional ecosystem verification and BioCondition assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1			
T2			
T3			
S1	2	1 – 5	Very sparse
S2			
G	0.6	0 – 1	Dense
Structural formation:	Remnant grassland		
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 448695	N 7567907
50 m point:	Zone	5 5	E 448695	N 7567957

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
50.1 – 50.4	0.3	S1	<i>Alectryon diversifolius</i>	scrub boonaree

Summary:

Intercept of EDL 0 – 50 m:	N/A
Intercept of EDL 50 – 100 m:	0.3
Measured crown cover % of EDL 0 – 100 m:	0.3
Structural formation:	Grassland

Conclusions/notes:

- Structure meets remnant status
- Species consistent with of concern RE 11.4.11 and 11.4.5
- Site condition measured as moderate (VAST 2), with some cattle disturbance recorded throughout the study area
- Site is proposed as of concern RE polygon 11.4.11/11.4.5 (85/10) – forming part of RE polygon 11.4.11/11.4.5/11.4.9 (85/10/5) (see assessment site 30)

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	C	<i>Atalaya hemiglauca</i>	cattle bush
S1	C	<i>Acacia argyrodendron</i>	blackwood
S1	A	<i>Vachellia farnesiana</i> *	mimosa bush
S1	A	<i>Terminalia oblongata</i>	yellow wood
S1	A	<i>Capparis mitchellii</i>	bumble tree
S1	A	<i>Capparis lasiantha</i>	wait-a-while
S1	A	<i>Alectryon diversifolius</i>	scrub boonaree
S1	A	<i>Owenia acidula</i>	emu apple
G	C	<i>Aristida leptopoda</i>	white speargrass
G	C	<i>Astrebula pectinata</i>	barley Mitchell grass
G	S	<i>Digitaria divaricatissima</i>	umbrella grass
G	A	<i>Dichanthium sericeum</i>	Queensland blue grass
G	A	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Panicum decompositum</i> var. <i>decompositum</i>	native millet
G	A	<i>Enneapogon polyphyllus</i>	leafy nineawn
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Aristida personata</i>	purple wiregrass
G	A	<i>Desmodium campylocaulon</i>	creeping tick-trefoil
G	A	<i>Neptunia gracilis</i>	native sensitive plant
G	A	<i>Solanum esuriale</i>	quena
G	A	<i>Iseilema vaginiflorum</i>	red Flinders grass
G	A	<i>Bulbine bulbosa</i>	native leek
G	A	<i>Tribulus terrestris</i>	caltrop
G	A	<i>Rhychosia minima</i> var. <i>australis</i>	rhynchosia
G	A	<i>Phyllanthus virgatus</i>	spurge
G	A	<i>Commelina diffusa</i>	wandering jew
G	A	<i>Aster</i> sp.	

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated
 *indicates a non-native species



Plate 10 Vegetation assessment polygon 28





Polygon 28 (Vegetation assessment site 30)

Mapped RE: Endangered, 11.4.11/11.4.9/11.4.5 (85/10/5)

Observed RE: Endangered, 11.4.11/11.4.5/11.4.9 (85/10/5)

Polygon No.:	28	Recorder:	Peter Wagner	Date:	01/05/2013
Purpose:	Regional ecosystem verification and BioCondition assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	7.5	6 – 9	Sparse
T2			
T3			
S1	4	3 – 6	Very sparse
S2	1.5	1 – 3	Verysparse
G	0.6	0 – 1	Dense
Structural formation:	Remnant open-woodland		
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 449780	N 7568210
50 m point:	Zone	5 5	E 449815	N 7568220

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
0 – 2.1	2.1	S1	<i>Terminalia oblongata</i>	yellow wood
5.1 – 8.8	3.7	T1	<i>Acacia harpophylla</i>	brigalow
12.8 – 62.8	60.0	S1	<i>Acacia harpophylla</i>	brigalow
32.3 – 41.1	8.8	T1	<i>Acacia harpophylla</i>	brigalow
75.4 – 79.1	3.7	S1	<i>Terminalia oblongata</i>	yellow wood
81.1 – 84.3	3.2	S2	<i>Acacia harpophylla</i>	brigalow
87.0 – 87.6	0.6	S2	<i>Acacia harpophylla</i>	brigalow
91.1 – 96.5	5.4	T1	<i>Acacia harpophylla</i>	brigalow

Summary:

Intercept of EDL 0 – 50 m:	12.5
Intercept of EDL 50 – 100 m:	5.4
Measured crown cover % of EDL 0 – 100 m:	17.9
Structural formation:	Remnant open-woodland
Conclusions/notes:	
• Structure meets remnant status	



Summary:

- Species consistent with endangered RE 11.4.9
- Site condition measured as moderate (VAST 2), with weed encroachment and some cattle disturbance recorded throughout the study area
- Site is proposed as endangered RE polygon 11.4.9 (100) – forming part of RE polygon 11.4.11/11.4.5/11.4.9 (85/10/5) (see assessment site 29)

Plant Species

Str.	Rel. ¹	Scientific name	Common name
T1	D	<i>Acacia harpophylla</i>	brigalow
T1	A	<i>Terminalia oblongata</i>	yellow wood
T1	A	<i>Lysiphyllum carronii</i>	red bauhinia
T1	A	<i>Lysiana subfalcata</i>	lemon-flowered mistletoe
S1	D	<i>Acacia harpophylla</i>	brigalow
S1	A	<i>Terminalia oblongata</i>	yellow wood
S2	D	<i>Vachellia farnesiana</i> *	mimosa bush
G	D	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Astrebula elymoides</i>	Mitchell grass
G	A	<i>Echinochloa colona</i> *	awnless barnyard grass
G	A	<i>Hibiscus trionum</i>	bladder ketmia
G	A	<i>Portulaca oleracea</i> *	common pigweed
G	A	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Solanum nigrum</i> *	black-berry nightshade
G	A	<i>Cucumis myriocarpus subsp. myriocarpus</i> *	prickly paddy-melon
G	A	<i>Neptunia gracilis</i>	native sensitive plant
G	A	<i>Bothriochloa pertusa</i> *	Indian bluegrass
G	A	<i>Panicum decompositum var. decompositum</i>	native millet

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species



Plate 11 Vegetation assessment polygon 28





Of concern to non-remnant

Polygon 11 (Vegetation assessment site 39) and representative of Polygon 18

Mapped RE: Of concern, 11.4.11/11.4.5 (90/10)

Observed RE: Non-remnant (100)

Polygon No.:	11	Recorder:	Peter Wagner	Date:	04/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	3.5	2 – 5	Very sparse
S2	1.5	1 – 2	Very sparse
G	0.6	0 – 1	Dense
Structural formation:	Non-remnant pasture grassland		
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5 E 440738	N 7567675	
50 m point:	Zone	5 5 E 440781	N 7567678	

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
11.1 – 12.8	1.7	S1	<i>Acacia salicina</i>	sally wattle
33.2 – 35.6	2.4	S1	<i>Lysiphyllum carronii</i>	red bauhinia

Summary:

Intercept of EDL 0 – 50 m:	0.0
Intercept of EDL 50 – 100 m:	0.0
Measured crown cover % of EDL 0 – 100 m:	0.0
Structural formation:	Non-remnant pasture grassland

Conclusions/notes:

- Structure does not meet remnant status
- Species not consistent with of concern RE polygon 11.4.11/11.4.5; species composition and community height not sufficient to be included as 11.4.5. Grass layer dominated by non-native buffel grass deeming it non-remnant (see Appendix 3, Neldner et al., 2012)
- Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area

Summary:

- Site is proposed as non-remnant

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Lysiphyllum carronii</i>	red bauhinia
S1	A	<i>Vachellia farnesiana</i> *	mimosa bush
S1	A	<i>Acacia salicina</i>	sally wattle
S1	A	<i>Capparis mitchellii</i>	bumble tree
S2	D	<i>Atalaya hemiglauca</i>	cattle bush
S2	A	<i>Opuntia tomentosa</i> *	velvety tree pear
S2	A	<i>Vachellia farnesiana</i> *	mimosa bush
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Desmodium sp.</i>	
G	A	<i>Trianthema portulacastrum</i> *	black pigweed
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Tribulus terrestris</i>	caltrop
G	A	<i>Cyperus sp.</i>	
G	A	<i>Cucumis melo subsp. agrestis</i>	Ulcardo melon
G	A	<i>Aster sp.</i>	
G	A	<i>Neptunia gracilis</i>	native sensitive plant

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 12 Vegetation assessment polygon 11





Polygon 13 (Vegetation assessment site 41)

Mapped RE: Of concern, 11.4.11/11.4.5 (90/10)

Observed RE: Non-remnant (100)

Polygon No.:	13	Recorder:	Peter Wagner	Date:	04/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	1.5	1 – 2	Very sparse
S2	Absent	Absent	Absent
G	0.5	0 – 1	Dense
Structural formation:	Non-remnant pasture grassland		
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 440924	N 7566044
50 m point:	Zone	5 5	E 440971	N 7566061

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
15.1 – 15.4	0.3	S1	<i>Atalaya hemiglauc</i>	cattle bush
25.8 – 27.3	1.5	S1	<i>Atalaya hemiglauc</i>	cattle bush
33.2 – 35.5	2.3	S1	<i>Lysiphyllum carronii</i>	red bauhinia
87.2 – 87.9	0.7	S1	<i>Atalaya hemiglauc</i>	cattle bush

Summary:

Intercept of EDL 0 – 50 m:	0.0
Intercept of EDL 50 – 100 m:	0.0
Measured crown cover % of EDL 0 – 100 m:	0.0
Structural formation:	Non-remnant pasture grassland
Conclusions/notes:	- Structure does not meet remnant status - Species not consistent with of concern RE polygon 11.4.11/11.4.5; species composition and community height not sufficient to be included as 11.4.5. Grass layer dominated by non-native buffel grass deeming it non-remnant (see Appendix 3, Neldner et al., 2012) - Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area - Site is proposed as non-remnant

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Atalaya hemiglauca</i>	cattle bush
S1	A	<i>Lysiphyllum carronii</i>	red bauhinia
S1	A	<i>Vachellia farnesiana</i> *	mimosa bush
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Hibiscus sturtii</i>	hill hibiscus
G	A	<i>Brachyscome dentata</i>	
G	A	<i>Rhychosia minima var. australis</i>	rhynchosia
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Evolvulus alsinoides</i>	tropical speedwell
G	A	<i>Stemodia glabella</i>	smooth bluerod
G	A	<i>Sida cordifolia</i> *	flannel weed
G	A	<i>Solanum sp.</i>	
G	A	<i>Polymeria ambigua</i>	creeping polymeria
G	A	<i>Trianthema portulacastrum</i> *	black pigweed
G	A	<i>Neptunia gracilis</i>	native sensitive plant

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 13 Vegetation assessment polygon 13





Polygon 14 (Vegetation assessment site 40)

Mapped RE: Of concern, 11.4.11/11.4.5 (90/10)

Observed RE: Non-remnant (100)

Polygon No.:	14	Recorder:	Peter Wagner	Date:	04/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	3	2 – 5	Very sparse
S2	1.5	1 – 2	Very sparse
G	0.6	0 – 1	Dense
Structural formation:	Non-remnant pasture grassland		
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 441280	N 7565822
50 m point:	Zone	5 5	E 441335	N 7565833

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
31.6 – 32.5	1.5	S1	<i>Atalaya hemiglauc</i>	cattle bush
32.5 – 33.6	1.1	S1	<i>Atalaya hemiglauc</i>	cattle bush
98.1 – 88.5	0.4	S1	<i>Atalaya hemiglauc</i>	cattle bush

Summary:

Intercept of EDL 0 – 50 m:	0.0
Intercept of EDL 50 – 100 m:	0.0
Measured crown cover % of EDL 0 – 100 m:	0.0
Structural formation:	Non-remnant pasture grassland

Conclusions/notes:

- Structure does not meet remnant status
- Species not consistent with of concern RE polygon 11.4.11/11.4.5; species composition and community height not sufficient to be included as 11.4.5. Grass layer dominated by non-native buffel grass deeming it non-remnant (see Appendix 3, Neldner et al., 2012)
- Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area
- Site is proposed as non-remnant

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Atalaya hemiglauca</i>	cattle bush
S1	S	<i>Vachellia farnesiana</i> *	mimosa bush
S1	A	<i>Lysiphyllum carronii</i>	red bauhinia
S2	D	<i>Atalaya hemiglauca</i>	cattle bush
S2	A	<i>Vachellia farnesiana</i> *	mimosa bush
S2	A	<i>Opuntia tomentosa</i> *	velvety tree pear
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Rhychosia minima</i> var. <i>australis</i>	rhynchosia
G	A	<i>Aristida latifolia</i>	feather-top wiregrass
G	A	<i>Stemodia glabella</i>	smooth bluerod
G	A	<i>Desmodium campylocaulon</i>	creeping tick-trefoil
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Polymeria ambigua</i>	creeping polymeria
G	A	<i>Alternanthera denticulata</i> var. <i>micrantha</i>	joyweed
G	A	<i>Sida cordifolia</i> *	flannel weed
G	A	<i>Solanum</i> sp.	
G	A	<i>Commelina diffusa</i>	wandering jew
G	A	<i>Neptunia gracilis</i>	native sensitive plant
G	A	<i>Cyperus</i> sp.	
G	A	<i>Trianthema portulacastrum</i> *	black pigweed
¹ Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated			
*indicates a non-native species			

Vegetation DBH – Not applicable to vegetation community

Plate 14 Vegetation assessment polygon 14



Polygon 15 (Vegetation assessment Site 32)

Mapped RE: Of concern, 11.4.11 (100)

Observed RE: Non-remnant (100)

Polygon No.:	15	Recorder:	Peter Wagner	Date:	01/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1			
T2			
T3			
S1	3.5	2 – 6	Very sparse
S2	1.5	2 – 6	Very sparse
G	0.7	0 - 1	Dense
Structural formation:	Non-remnant pasture grassland		
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 441108	N 7565019
50 m point:	Zone	5 5	E 441150	N 7565026

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
45.1 – 45.6	0.5	S2	<i>Capparis lasiantha</i>	wait-a-while
78.3 – 82.2	3.9	S1	<i>Lysiphyllum carronii</i>	red bauhinia
91.1 – 91.3	0.2	S2	<i>Capparis lasiantha</i>	wait-a-while

Summary:

Intercept of EDL 0 – 50 m:	N/A
Intercept of EDL 50 – 100 m:	N/A
Measured crown cover % of EDL 0 – 100 m:	N/A
Structural formation:	Non-remnant pasture grassland
Conclusions/notes:	
- Structure does not meet remnant status - Species not consistent with of concern RE 11.4.11; grass layer dominated by non-native buffel grass deeming it non-remnant (see Appendix 3, Neldner et al., 2012) - Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area - Site is proposed as non-remnant	



Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Lysiphyllum carronii</i>	red bauhinia
S1	A	<i>Atalaya hemiglauc</i>	cattle bush
S1	A	<i>Alectryon oleifolius</i>	western rosewood
S2	C	<i>Capparis lasiantha</i>	wait-a-while
S2	C	<i>Apophyllum anomalum</i>	warrior bush
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Stemodia glabella</i>	smooth bluerod
G	A	<i>Desmodium campylocaulon</i>	creeping tick-trefoil
G	A	<i>Neptunia gracilis</i>	native sensitive plant
G	A	<i>Aster sp.</i>	
G	A	<i>Sida cordifolia</i> *	flannel weed
G	A	<i>Aristida personata</i>	purple wiregrass
G	A	<i>Astrebula elymoides</i>	Mitchell grass
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Solanum esuriale</i>	quena
G	A	<i>Cyperus sp.</i>	
G	A	<i>Physalis angulata</i> *	
G	A	<i>Dichanthium sericeum</i>	Queensland bluegrass
G	A	<i>Aristida leptopoda</i>	white speargrass
G	D	<i>Panicum decompositum</i> var. <i>decompositum</i>	native millet
G	A	<i>Sesbania cannabina</i>	sesbania pea
G	A	<i>Bothriochloa pertusa</i> *	Indian bluegrass
G	A	<i>Iseilema vaginiflorum</i>	red Flinders grass

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated
 *indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 15 Vegetation assessment polygon 15





Polygon 19 (Vegetation assessment site 44)

Mapped RE: Of concern, 11.4.11/11.4.5 (90/10)

Observed RE: Non-remnant - high value regrowth containing of concern RE 11.4.5 (100)

Polygon No.:	19	Recorder:	Jessica Newton	Date:	05/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	4.5	3 – 6.5	Sparse
S2	1.5	1 – 3	Sparse
G	0.7	0 – 1	Dense
Structural formation:	High value regrowth		
Ecologically dominant layer:	S1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 443871	N 7568603
50 m point:	Zone	5 5	E 443915	N 7568611

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
6.8 – 7.9	1.1	S1	<i>Atalaya hemiglauc</i>	cattle bush
15.1 – 15.7	0.6	S2	<i>Vachellia farnesiana</i>	mimosa bush
52.3 – 61.6	9.3	S1	<i>Acacia argyrodendron</i>	blackwood
68.2 – 69.1	0.9	S2	<i>Atalaya hemiglauc</i>	cattle bush
81.1 – 81.9	0.8	S2	<i>Vachellia farnesiana</i>	mimosa bush
90.1 – 92.0	1.9	S2	<i>Lysiphyllum carronii</i>	red bauhinia

Summary:

Intercept of EDL 0 – 50 m:	1.1 m
Intercept of EDL 50 – 100 m:	9.3 m
Measured crown cover % of EDL 0 – 100 m:	10.4
Structural formation:	Non-remnant shrubland

Conclusions/notes:

- Structure does not meet remnant status
- Species not consistent with endangered RE polygon 11.4.11/11.4.5; Community height not sufficient to be included as 11.4.5. Vegetation structure (EDL = S1) is not consistent with the grassland community RE 11.4.11 and the grass layer is dominated by non-native buffel grass deeming it non-remnant (see Appendix 3, Neldner et al., 2012). Species composition consistent with regrowth 11.4.5



Summary:

- Site condition measured as moderate (VAST 3), with weed encroachment and some cattle disturbance recorded throughout the study area
- Site is proposed as non-remnant, high value regrowth containing RE 11.4.5

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Acacia argyrodendron</i>	blackwood
S1	A	<i>Acacia cambagei</i>	gidgee
S1	A	<i>Lysiphyllum carronii</i>	red bauhinia
S1	A	<i>Capparis loranthifolia</i>	
S2	D	<i>Acacia argyrodendron</i>	blackwood
S2	A	<i>Atalaya hemiglauca</i>	cattle bush
S2	A	<i>Vachellia farnesiana</i> *	mimosa bush
S2	A	<i>Capparis lasiantha</i>	wait-a-while
S2	A	<i>Lysiphyllum carronii</i>	red bauhinia
S2	A	<i>Alectryon oleifolius</i>	western rosewood
S2	A	<i>Apophyllum anomalum</i>	warrior bush
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Desmodium campylocaulon</i>	creeping tick-trefoil
G	A	<i>Rhychosia minima</i> var. <i>australis</i>	rhynchosia
G	A	<i>Bothriochloa bladhii</i> subsp. <i>bladhii</i>	forest bluegrass
G	A	<i>Aster</i> sp.	
G	A	<i>Glycine tabacina</i>	
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Portulaca pilosa</i> *	akulikuli
G	A	<i>Neptunia gracilis</i>	native sensitive plant

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 16 Vegetation assessment polygon 19





Polygon 20 (Vegetation assessment site 45) and representative of Polygon 22

Mapped RE: Of concern, 11.4.11/11.4.5 (90/10)

Observed RE: Non-remnant (100)

Polygon No.:	20	Recorder:	Peter Wagner	Date:	05/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	Absent	Absent	Absent
T2	Absent	Absent	Absent
T3			
S1	4.5	4 – 5	Very sparse
S2	1.75	1 – 4	Very sparse
G	0.6	0 - 1	Dense
Structural formation:	Non-remnant pasture grassland		
Ecologically dominant layer:	G		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 445621	N 7569270
50 m point:	Zone	5 5	E 445670	N 7569279

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
1.2 – 1.4	0.2	S2	<i>Vachellia farnesiana</i>	mimosa bush
31.1 – 31.5	0.4	S2	<i>Vachellia farnesiana</i>	mimosa bush
65.6 – 67.1	1.5	S2	<i>Vachellia farnesiana</i>	mimosa bush
78.2 – 79.0	0.8	S2	<i>Atalaya hemiglauc</i>	cattle bush
92.3 – 92.9	0.6	S2	<i>Vachellia farnesiana</i>	mimosa bush
95.0 – 95.9	0.9	S2	<i>Lysiphyllum carronii</i>	red bauhinia

Summary:

Intercept of EDL 0 – 50 m:	0.0
Intercept of EDL 50 – 100 m:	0.0
Measured crown cover % of EDL 0 – 100 m:	0.0
Structural formation:	Non-remnant pasture grassland

Conclusions/notes:

- Structure does not meet remnant status
- Species not consistent with endangered RE polygon 11.4.11/11.4.5; dominant species not consistent and community height not sufficient to be included as 11.4.5. The grass layer is dominated by non-native buffel grass deeming it non-remnant (see Appendix 3, Neldner et al., 2012)
- Site condition measured as moderate (VAST 3), with weed encroachment and some cattle



Summary:

- disturbance recorded throughout the study area
- Site is proposed as non-remnant

Plant Species

Str.	Rel. ¹	Scientific name	Common name
S1	D	<i>Atalaya hemiglauc</i>	cattle bush
S2	D	<i>Vachellia farnesiana</i> *	mimosa bush
S2	A	<i>Capparis mitchellii</i>	bumble tree
S2	A	<i>Atalaya hemiglauc</i>	cattle bush
S2	A	<i>Lysiphyllum carronii</i>	red bauhinia
S2	A	<i>Acacia harpophylla</i>	brigalow
S2	A	<i>Santalum lanceolatum</i>	sandalwood
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Desmodium sp.</i>	
G	A	<i>Neptunia gracilis</i>	native sensitive plant
G	A	<i>Aster sp.</i>	
G	A	<i>Sida cordifolia</i> *	flannel weed
G	A	<i>Tephrosia supina</i>	
G	A	<i>Bulbine bulbosa</i>	native leek
G	A	<i>Stemodia glabella</i>	smooth bluerod
G	A	<i>Bothriochloa bladhii subsp. bladhii</i>	forest bluegrass
G	A	<i>Sida trichopoda</i>	high sida

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH – Not applicable to vegetation community

Plate 17 Vegetation assessment polygon 20



Of concern to of concern

Polygon 21 (Vegetation assessment site 46)

Mapped RE: Of concern, 11.4.11/11.4.5 (90/10)

Observed RE: Of concern 11.4.6 (100)

Polygon No.:	21	Recorder:	Peter Wagner	Date:	05/05/2013
Purpose:	Regional ecosystem verification assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	10	8 – 12	Mid-dense
T2	6.5	6 – 8	Sparse
T3			
S1	2	1 – 4	Very sparse
S2			
G	0.6	0 - 1	Mid-dense
Structural formation:	Remnant open-forest		
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 446260	N 7569600
50 m point:	Zone	5 5	E 446202	N 7569601

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
0 – 4.8	4.8	T1	<i>Acacia cambagei</i>	gidgee
2.0 – 3.1	1.1	S1	<i>Geijera parviflora</i>	wilga
4.1 – 8.6	4.5	T2	<i>Acacia cambagei</i>	gidgee
5.5 – 6.7	1.2	S1	<i>Santalum lanceolatum</i>	sandalwood
10 – 25.5	15.5	T1	<i>Acacia cambagei</i>	gidgee
27.1 – 28.0	0.9	S1	<i>Eremophila mitchellii</i>	false sandalwood
30.0 – 44.6	14.6	T1	<i>Acacia cambagei</i>	gidgee
45.2 – 46.3	1.1	T2	<i>Lysiphyllum carronii</i>	red bauhinia
51.3 – 64.2	12.9	T2	<i>Acacia cambagei</i>	gidgee
55.2 – 56.5	1.3	S1	<i>Eremophila mitchellii</i>	false sandalwood
65.3 – 68.4	3.1	T1	<i>Acacia cambagei</i>	gidgee
66.2 – 68.6	2.4	T2	<i>Lysiphyllum carronii</i>	red bauhinia
71.3 – 80.5	9.2	T2	<i>Acacia cambagei</i>	gidgee
85.1 – 98.6	13.5	T2	<i>Acacia cambagei</i>	gidgee
82.3 – 86.3	4.0	T1	<i>Acacia cambagei</i>	gidgee



Summary:

Intercept of EDL 0 – 50 m:	34.9 m
Intercept of EDL 50 – 100 m:	7.1 m
Measured crown cover % of EDL 0 – 100 m:	42.0
Structural formation:	Remnant open-forest
Conclusions/notes:	
- Structure meets remnant status - Species not consistent with endangered RE polygon 11.4.11/11.4.5; species and community structure not consistent with 11.4.5 and 11.4.11. - Site condition measured as moderate (VAST 2), with weed encroachment and some cattle disturbance recorded throughout the study area - Site is proposed as of concern RE 11.4.6 (100)	

Plant Species

Str.	Rel. ¹	Scientific name	Common name
T1	D	<i>Acacia cambagei</i>	gidgee
T1	A	<i>Lysiphyllum carronii</i>	red bauhinia
T2	D	<i>Acacia cambagei</i>	gidgee
T2	A	<i>Lysiana sp.</i>	
S1	D	<i>Eremophila mitchellii</i>	false sandalwood
S1	A	<i>Santalum lanceolatum</i>	sandalwood
S1	A	<i>Geijera parviflora</i>	wilga
S1	A	<i>Carissa ovata</i>	currant bush
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Sida cordifolia</i> *	flannel weed
¹ Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated			
*indicates a non-native species			

Vegetation DBH – Not available for vegetation community

Plate 18 Vegetation assessment polygon 21





Least concern to least concern

Polygon 3 (Vegetation assessment site 3) and representative of Polygons 1, 2 and 8

Mapped RE: Least concern, 10.3.4b/10.3.3b/10.3.6a (80/10/10)

Observed RE: Least concern, 10.3.6a (100)

Polygon No.:	3	Recorder:	Jessica Newton	Date:	03/05/2013
Purpose:	Regional ecosystem verification and BioCondition assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	11	8 – 13	Mid-dense
T2	Absent	Absent	Absent
T3			
S1	5	4-7	Sparse
S2	1.5	1-2	Sparse
G	0.7	0-1	Mid-dense
Structural formation:	Remnant eucalypt open-woodland		
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum	MGA55	Transect length (m):	100
Start point:	Zone	5 5 E 439703	N 7570525	
50 m point:	Zone	5 5 E 439678	N 7570569	

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
0 - 1	1.0	T1	<i>Eucalyptus brownii</i>	Reid River box
9.1 – 13.5	4.4	T1	<i>Eucalyptus brownii</i>	Reid River box
18.4 – 32.4	14.0	T1	<i>Eucalyptus brownii</i>	Reid River box
39.9 – 41.1	1.2	S1	<i>Acacia excelsa subsp. excelsa</i>	ironwood
50.5 – 53.1	2.5	T1	<i>Eucalyptus coolabah</i>	Coolabah
51.1 - 62.7	11.6	T1	<i>Eucalyptus brownii</i>	Reid River box
58.5 – 59.0	0.5	S2	<i>Acacia excelsa subsp. excelsa</i>	ironwood
60.3 – 62.9	2.6	T1	<i>Eucalyptus brownii</i>	Reid River box
63.8 – 66.0	2.2	T1	<i>Eucalyptus brownii</i>	Reid River box
69.8 – 71.0	1.4	T1	<i>Eucalyptus brownii</i>	Reid River box
73.6 – 83.8	10.2	T1	<i>Eucalyptus brownii</i>	Reid River box
83.9 – 86.5	2.6	S2	<i>Acacia excelsa subsp. excelsa</i>	ironwood
95.0 –	5.0	T1	<i>Eucalyptus coolabah</i>	coolabah



Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
100.0				

Summary:

Intercept of EDL 0 – 50 m:	19.4 m
Intercept of EDL 50 – 100 m:	35.4 m
Measured crown cover % of EDL 0 – 100 m:	54.9
Structural formation:	Remnant eucalypt open-woodland

Conclusions/notes:

- Structure meets remnant status
- Species consistent with least concern RE 10.3.6a; no species consistent with the least concern REs 10.3.3 or 10.3.3 were recorded within the remnant polygon
- Site condition measured as moderate (VAST 2), with some cattle disturbance recorded throughout the study area
- Site is proposed as least concern RE 10.3.6a

Plant Species

Str.	Rel. ¹	Scientific name	Common name
T1	D	<i>Eucalyptus brownii</i>	Reid River box
T1	S	<i>Eucalyptus coolabah</i>	coolabah
T1	A	<i>Grevillea striata</i>	beefwood
T1	A	<i>Eucalyptus moluccana</i>	Silver-leaved ironbark
T1	A	<i>Corymbia clarksoniana</i>	Clarkson's bloodwood
S1	D	<i>Acacia excelsa subsp. excelsa</i>	ironwood
S1	A	<i>Pittosporum spinescens</i>	wallaby apple
S1	A	<i>Grevillea striata</i>	beefwood
S2	D	<i>Carissa lanceolata</i>	conkerberry
S2	A	<i>Grewia retusifolia</i>	dog's balls
S2	S	<i>Acacia excelsa subsp. excelsa</i>	ironwood
S2	A	<i>Capparis mitchellii</i>	bumble tree
S2	A	<i>Citrus glauca</i>	wild lime
S2	A	<i>Acacia bidwillii</i>	corkwood wattle
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	S	<i>Aristida calycina var. calycina</i>	dark wiregrass
G	A	<i>Chrysopogon fallax</i>	golden beard grass
G	A	<i>Abutilon fraseri</i>	dwarf lantern flower
G	A	<i>Cyanthillium cinereum</i>	vernonia
G	A	<i>Rostellularia adscendens var. hispida</i>	pink tongues
G	A	<i>Heteropogon contortus</i>	black spear grass
G	A	<i>Stylosanthes scabra</i> *	stylo
G	A	<i>Commelina diffusa</i>	wandering jew
G	A	<i>Pterocaulon sphacelatum</i>	fruit salad plant

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH (from BioCondition Assessment)

Scientific name	Common name	DBH (mm)	Average DBH (mm)
Eucalypts			
<i>Eucalyptus brownii</i>	Reid River box	375	375
<i>Eucalyptus coolabah</i>	coolabah	540, 420, 410	457
<i>Corymbia clarksoniana</i>	Clarkson's bloodwood	530	530
Average DBH for eucalypts:			455

Plate 19 Vegetation assessment polygon 3





Polygon 4 (Vegetation assessment site 15) and representative of Polygon 6

Mapped RE: Least concern, 10.3.4b/10.3.6a/10.3.3b/10.3.3a (40/40/10/10)

Observed RE: Least concern, 10.3.6a/10.3.14 (70/30)

Polygon No.:	4	Recorder:	Jessica Newton	Date:	03/05/2013
Purpose:	Regional ecosystem verification and BioCondition assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	15	13 – 16	Sparse
T2	10	7 – 12	Mid-dense
T3			
S1	5	3.5 – 6	Mid-dense
S2	2	1 – 3	Mid-dense
G	0.6	0 – 1	Dense
Structural formation:	Remnant eucalypt open-woodland		
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 440739	N 7574056
50 m point:	Zone	5 5	E 440711	N 7574097

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
15.3 – 25.6	10.3	T2	<i>Eucalyptus brownii</i>	Reid River box
31.0 – 37.8	6.8	T1	<i>Eucalyptus brownii</i>	Reid river box
56.1 – 57.3	1.2	T2	<i>Lysiphyllum carronii</i>	red bauhinia
96.2 - 100	3.8	T2	<i>Eucalyptus brownii</i>	Reid River box

Summary:

Intercept of EDL 0 – 50 m:	6.8 m
Intercept of EDL 50 – 100 m:	0.0 m
Measured crown cover % of EDL 0 – 100 m:	6.8
Structural formation:	Remnant eucalypt open-woodland

Conclusions/notes:

- Structure meets remnant status
- Species consistent with least concern RE 10.3.6a and 10.3.14; no species consistent with the least concern REs 10.3.4b, 10.3.3a or 10.3.3b were recorded within the remnant polygon
- Site condition measured as moderate (VAST 2), with some cattle disturbance recorded throughout the study area
- Site is proposed as least concern RE 10.3.6a/10.3.14 (70/30)



Plant Species

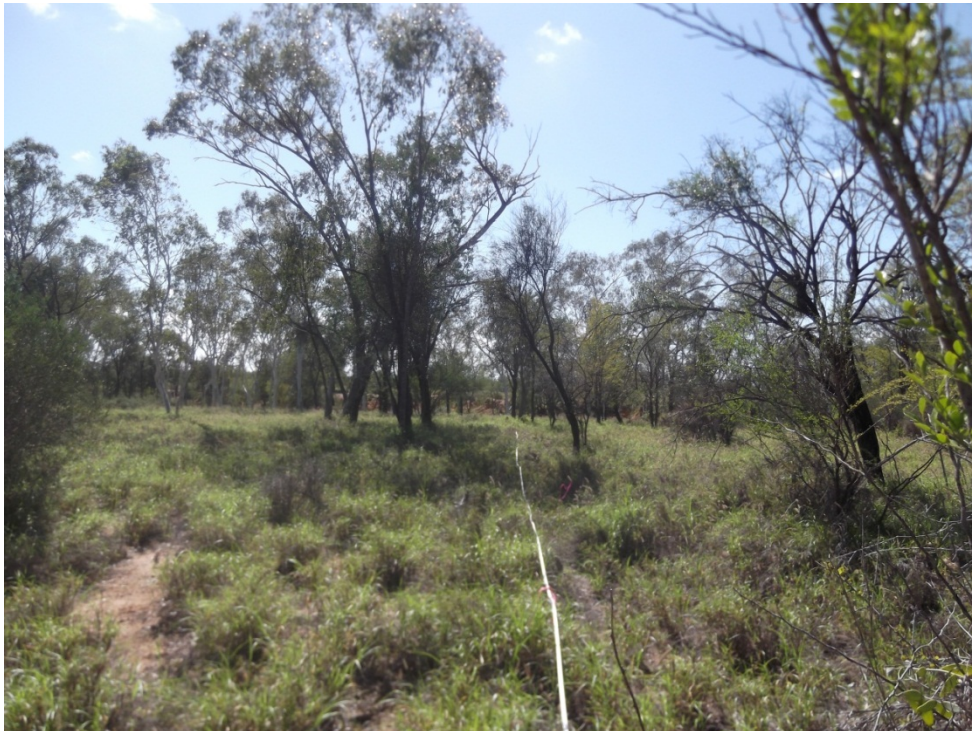
Str.	Rel. ¹	Scientific name	Common name
T1	D	<i>Eucalyptus brownii</i>	Reid River box
T1	S	<i>Eucalyptus camaldulensis</i> var. <i>obtusa</i>	river red gum
T2	D	<i>Eucalyptus brownii</i>	Reid River box
T2	A	<i>Acacia excelsa</i> subsp. <i>excelsa</i>	ironwood
T2	A	<i>Lysiphyllum carronii</i>	red bauhinia
S1	D	<i>Acacia excelsa</i> subsp. <i>excelsa</i>	ironwood
S1	A	<i>Grevillea striata</i>	beefwood
S1	A	<i>Terminalia oblongata</i>	yellow wood
S1	A	<i>Lysiphyllum carronii</i>	red bauhinia
S1	A	<i>Atalaya hemiglauca</i>	cattle bush
S2	A	<i>Pittosporum spinescens</i>	wallaby apple
S2	A	<i>Acacia excelsa</i> subsp. <i>excelsa</i>	ironwood
S2	A	<i>Citrus glauca</i>	wild lime
S2	A	<i>Capparis lasiantha</i>	wait-a-while
S2	A	<i>Opuntia tomentosa</i> *	velvety tree pear
S2	A	<i>Grewia retusifolia</i>	dog's balls
S2	A	<i>Carissa lanceolata</i>	conkerberry
S2	A	<i>Eremophila mitchellii</i>	false sandalwood
S2	A	<i>Capparis canescens</i>	Wild orange
G	A	<i>Abutilon fraseri</i>	dwarf lantern flower
G	A	<i>Aristida calycina</i> var. <i>calycina</i>	dark wiregrass
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Urochloa mosambicensis</i> *	
G	A	<i>Enneapogon gracilis</i>	slender bottlewashers
G	A	<i>Sida cordifolia</i> *	flannel weed

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated
 *indicates a non-native species

Vegetation DBH (from BioCondition Assessment)

Scientific name	Common name	DBH (mm)	Average DBH (mm)
Eucalypts			
<i>Eucalyptus brownii</i>	Reid River box	530, 310	420
Average DBH for eucalypts:			
<i>Lysiphyllum carronii</i>	red bauhinia	330	330
Average DBH for non-eucalypts:			
			330

Plate 20 Vegetation assessment polygon 4





Polygon 5 (Vegetation assessment site 26)

Mapped RE: Least concern, 10.4.5/10.4.3a (95/5)

Observed RE: Least concern, 10.4.5 (100)

Polygon No.:	5	Recorder:	Jessica Newton	Date:	05/05/2013
Purpose:	Regional ecosystem verification and BioCondition assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	12	8 – 15	Sparse
T2	Absent	Absent	Absent
T3			
S1	5	3 – 6	Mid-dense
S2	1.5	1 – 3	Sparse
G	0.6	0 – 1	Mid-dense
Structural formation:	Remnant acacia open-forest		
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 441389	N 7572255
50 m point:	Zone	5 5	E 441347	N 7572237

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
2.2 – 2.5	0.3	S2	<i>Carissa lanceolata</i>	conkerberry
3.9 – 4.7	0.8	S2	<i>Carissa lanceolata</i>	conkerberry
8.6 – 15.5	6.9	S1	<i>Eremophila mitchellii</i>	false sandalwood
15.6 – 18.0	2.4	T1	<i>Acacia cambagei</i>	gidgee
19.4 – 20.4	1.0	S2	<i>Carissa lanceolata</i>	conkerberry
24.5 – 30.0	5.5	S1	<i>Casuarina cristata</i>	belah
30.6 – 34.0	3.4	T1	<i>Acacia cambagei</i>	gidgee
33.1 – 35.2	2.1	S1	<i>Santalum lanceolatum</i>	sandalwood
36.2 – 39.8	3.6	T1	<i>Acacia cambagei</i>	gidgee
36.7 – 42.6	5.9	S1	<i>Eremophila mitchellii</i>	false sandalwood
60.0 – 69.2	9.2	T1	<i>Acacia cambagei</i>	gidgee
44.4 – 47.5	3.1	S1	<i>Terminalia oblongata</i>	yellow wood
50.5 – 54.4	3.9	S1	<i>Acacia cambagei</i>	gidgee
65.2 – 69.2	4.0	S2	<i>Eremophila mitchellii</i>	false sandalwood
85.1 – 87.9	2.8	T1	<i>Acacia harpophylla</i>	brigalow
91.1 – 93.5	2.4	S1	<i>Acacia cambagei</i>	gidgee
95.3 – 100	4.7	S2	<i>Acacia cambagei</i>	gidgee
95.5 – 95.6	0.1	S2	<i>Carissa lanceolata</i>	conkerberry



Summary:

Intercept of EDL 0 – 50 m:	9.4 m
Intercept of EDL 50 – 100 m:	12.0 m
Measured crown cover % of EDL 0 – 100 m:	21.4
Structural formation:	Remnant acacia open-forest

Conclusions/notes:

- Structure meets remnant status
- Species consistent with least concern RE 10.4.5; species composition inconsistent with the least concern RE 10.4.3a were recorded within the remnant polygon
- Site condition measured as moderate (VAST 2), with some cattle disturbance recorded throughout the study area
- Site is proposed as least concern RE 10.4.5 (100)

Plant Species

Str.	Rel. ¹	Scientific name	Common name
T1	D	<i>Acacia cambagei</i>	gidgee
T1	S	<i>Acacia harpophylla</i>	brigalow
T1	A	<i>Casuarina cristata</i>	belah
S1	D	<i>Acacia cambagei</i>	gidgee
S1	A	<i>Eremophila mitchellii</i>	false sandalwood
S1	A	<i>Santalum lanceolatum</i>	sandalwood
S1	S	<i>Acacia harpophylla</i>	brigalow
S1	A	<i>Terminalia oblongata</i>	yellow wood
S1	A	<i>Casuarina cristata</i>	belah
S2	D	<i>Carissa lanceolata</i>	conkerberry
S2	A	<i>Alectryon diversifolius</i>	scrub boonaree
S2	A	<i>Eremophila deserti</i>	Ellangowan poison bush
S2	A	<i>Casuarina cristata</i>	belah
S2	A	<i>Parsonsia lanceolata</i>	rough silkpod
S2	A	<i>Jasminum didymum</i>	jasmine
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Parthenium hysterophorus</i> *	parthenium
G	A	<i>Leptochloa digitata</i>	umbrella canecgrass
G	A	<i>Echinochloa colona</i> *	awnless barnyard grass
G	A	<i>Passiflora sp.</i> *	
G	A	<i>Tribulus terrestris</i>	caltrop
G	A	<i>Alternanthera mirabilis</i> var. <i>micrantha</i>	joyweed
G	A	<i>Glinus lotoides</i>	hairy carpet-weed
G	A	<i>Portulaca oleracea</i> *	common pigweed

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated
 *indicates a non-native species

Vegetation DBH (from BioCondition Assessment)



Scientific name	Common name	DBH (mm)	Average DBH (mm)
Average DBH for eucalypts:			
<i>Acacia cambagei</i>	gidgee	196, 225, 234, 248, 289, 215, 204, 304, 266, 226, 328, 160, 280, 150, 150, 150, 160 210, 170, 230, 200, 460, 210, 240, 180, 210, 180, 160, 350, 160, 250, 240, 220, 220, 230, 350, 320, 300, 420, 150, 150, 210, 180, 190, 320, 320, 170, 160, 170, 200, 150, 150, 160, 150, 340, 370, 180, 380, 180, 390, 250, 240, 340, 200, 270, 200, 310, 160, 430, 210, 160, 190, 200, 280, 480	247
<i>Acacia harpophylla</i>	brigalow	530, 270, 320, 290, 210, 410, 220, 280, 280, 190, 280	273
Average DBH for non-eucalypts:			238

Plate 21 Vegetation assessment polygon 5





Polygon 7 (Vegetation assessment site 27) and representative of Polygons 1, 2 and 8

Mapped RE: Least concern, 10.3.4b/10.3.6a/10.3.3b/10.3.3a (40/40/10/10)

Observed RE: Least concern, 10.3.6a (100)

Polygon No.:	7	Recorder:	Jessica Newton	Date:	06/05/2013
Purpose:	Regional ecosystem verification and BioCondition assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	12	7 – 14	Mid-dense
T2	Absent	Absent	Absent
T3			
S1	3	1 – 6	Very sparse
S2			
G	0.6	0 - 1	Mid-dense
Structural formation:	Remnant eucalypt open-woodland		
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum	MGA55	Transect length (m):	100
Start point:	Zone	5 5 E 442939	N 7571336	
50 m point:	Zone	5 5 E 442895	N 7571312	

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
0.0 – 2.2	2.2	T1	<i>Eucalyptus brownii</i>	Reid River box
4.7 – 6.2	1.5	T1	<i>Eucalyptus brownii</i>	Reid River box
8.2 – 14.2	6.0	T1	<i>Eucalyptus brownii</i>	Reid River box
44.9 – 48.0	3.1	S1	<i>Carissa lanceolata</i>	conkerberry
45.2 – 48.7	3.5	T1	<i>Eucalyptus melanophloia</i>	silver-leaved ironbark
51.2 – 58.0	6.8	T1	<i>Eucalyptus brownii</i>	Reid River box
76.1 – 82.6	6.5	T1	<i>Eucalyptus brownii</i>	Reid River box
96.0 – 100.0	4.0	T1	<i>Corymbia dallachiana</i>	ghost gum

Summary:

Intercept of EDL 0 – 50 m:	13.2 m
Intercept of EDL 50 – 100 m:	17.3 m
Measured crown cover % of EDL 0 – 100 m:	30.5
Structural formation:	Remnant eucalypt open-woodland
Conclusions/notes:	
• Structure meets remnant status	



Summary:

- Species consistent with least concern RE 10.3.6a; no species consistent with the least concern REs 10.3.4b, 10.3.3b or 10.3.3a were recorded within the remnant polygon
- Site condition measured as moderate (VAST 2), with some cattle disturbance recorded throughout the study area
- Site is proposed as least concern RE 10.3.6a

Plant Species

Str.	Rel. ¹	Scientific name	Common name
T1	C	<i>Eucalyptus melanophloia</i>	silver-leaved ironbark
T1	C	<i>Eucalyptus brownii</i>	Reid River box
T1	A	<i>Corymbia clarksoniana</i>	Clarkson's bloodwood
T1	A	<i>Amyema quandang</i> var. <i>bancroftii</i>	grey mistletoe
T1	A	<i>Corymbia dallachiana</i>	ghost gum
S1	D	<i>Petalostigma pubescens</i>	quinine berry bush
S1	A	<i>Alstonia constricta</i>	bitter bark
S1	A	<i>Acacia salicina</i>	sally wattle
S1	A	<i>Carissa lanceolata</i>	conkerberry
G	A	<i>Arundinella nepalensis</i>	reed grass
G	A	<i>Rostellularia adscendens</i> var. <i>hispida</i>	pink tongues
G	A	<i>Sida</i> sp.	
G	A	<i>Perotis rara</i>	comet grass
G	A	<i>Sida trichopoda</i>	high sida
G	A	<i>Chrysopogon fallax</i>	golden beard grass
G	A	<i>Heteropogon contortus</i>	black spear grass
G	A	<i>Cenchrus ciliaris</i> *	buffel grass
G	A	<i>Themeda triandra</i>	kangaroo grass
G	A	<i>Aristida jerichoensis</i> var. <i>jerichoensis</i>	Jericho wiregrass
G	A	<i>Aristida calycina</i> var. <i>calycina</i>	dark wiregrass
G	A	<i>Eriachne mucronata</i>	mountain wanderrie
G	A	<i>Spermacoce brachystema</i>	
G	A	<i>Phyllanthus virgatus</i>	spurge
G	A	<i>Enneapogon avenaceus</i>	ridge grass
G	A	<i>Oxalis corniculata</i> *	yellow wood-sorrel

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH (from BioCondition Assessment)

Scientific name	Common name	DBH (mm)	Average DBH (mm)
Eucalypts			
<i>Eucalyptus melanophloia</i>	silver-leaved ironbark	300, 360, 330	330
<i>Eucalyptus brownii</i>	Reid River box	380, 350	365
Average DBH for eucalypts:			344

Scientific name	Common name	DBH (mm)	Average DBH (mm)
Non-eucalypts			
<i>Petalostigma pubescens</i>	quinine berry bush	270, 210	240
<i>Acacia salicina</i>	sally wattle	200	200
Average DBH for non-eucalypts			227

Plate 22 Vegetation assessment polygon 7





Polygon 9 (Vegetation assessment site 9) and representative of Polygons 1, 2 and 8

Mapped RE: Least concern, 10.3.4b/10.3.3b/10.3.6a (80/10/10)

Observed RE: Least concern, 10.3.6a (100)

Polygon No.:	9	Recorder:	Jessica Newton	Date:	02/05/2013
Purpose:	Regional ecosystem verification and BioCondition assessment				
Locality:	Lot 662 PH1491 Isaac Regional Council				

Stratum	Median height (m)	Height interval (m)	Est. cover density (D, M, S, V)
E			
T1	17	15 – 17	Very sparse
T2	12	9 – 15	Mid-dense
T3			
S1	4	1 – 6	Very sparse
S2	Absent	Absent	Absent
G	0.5	0 – 1	Dense
Structural formation:	Remnant eucalypt open-woodland		
Ecologically dominant layer:	T1		

Transect – Crown Cover Measured (Transect intercept method)

GPS coordinates:	Datum:	MGA55	Transect length (m):	100
Start point:	Zone	5 5	E 451712	N 7574630
50 m point:	Zone	5 5	E 451730	N 7574596

Interval (m)	Intercept (m)	Stratum	Scientific name	Common name
0 – 6.8	6.8	T2	<i>Acacia excelsa subsp. excelsa</i>	ironwood
14.1 – 17.8	3.7	S1	<i>Carissa ovata</i>	currant bush
33.2 – 39.0	5.8	T2	<i>Acacia salicina</i>	sally wattle
51.6 – 55.5	3.9	T2	<i>Acacia salicina</i>	sally wattle
85.6 – 100	14.4	T1	<i>Eucalyptus brownii</i>	Reid River box
95.5 – 100	4.5	T2	<i>Acacia excelsa subsp. excelsa</i>	ironwood

Summary:

Intercept of EDL 0 – 50 m:	0.0 m
Intercept of EDL 50 – 100 m:	14.4 m
Measured crown cover % of EDL 0 – 100 m:	14.4
Structural formation:	Remnant eucalypt open-woodland

Conclusions/notes:

- Structure meets remnant status
- Species consistent with least concern RE 10.3.6a; no species consistent with the least concern REs 10.3.3b or 10.4.3b were recorded within the remnant polygon
- Site condition measured as moderate (VAST 2), with some cattle disturbance recorded



Summary:

- throughout the study area
- Site is proposed as least concern RE 10.3.6a

Plant Species

Str.	Rel. ¹	Scientific name	Common name
T1	C	<i>Eucalyptus brownii</i>	Reid River box
T1	C	<i>Corymbia clarksoniana</i>	Clarkson's bloodwood
T1	S	<i>Eucalyptus camaldulensis</i> var. <i>obtusa</i>	river red gum
T2	D	<i>Acacia salicina</i>	sally wattle
T2	A	<i>Acacia excelsa</i> subsp. <i>excelsa</i>	ironwood
T2	A	<i>Amyema miraculosa</i> subsp. <i>boormanii</i>	fleshy mistletoe
S1	A	<i>Carissa ovata</i>	currant bush
S1	A	<i>Acacia excelsa</i> subsp. <i>excelsa</i>	ironwood
S1	A	<i>Petalostigma pubescens</i>	quinine berry bush
S1	A	<i>Stylosanthes scabra</i> *	stylo
S1	A	<i>Lysiphyllum carronii</i>	red bauhinia
S1	A	<i>Alstonia constricta</i>	bitter bark
G	A	<i>Perotis rara</i>	comet grass
G	A	<i>Sida cunninghamii</i>	ridge sida
G	A	<i>Chrysocephalum apiculatum</i>	billy-buttons
G	D	<i>Cenchrus ciliaris</i> *	buffel grass
G	S	<i>Aristida</i> sp.	
G	A	<i>Sida filiformis</i>	fine sida
G	A	<i>Eragrostis parviflora</i>	weeping lovegrass
G	A	<i>Chamaesyce dallachyana</i>	caustic weed
G	A	<i>Enneapogon robustissimus</i>	
G	A	<i>Tribulus terrestris</i>	caltrop

¹Rel. = Relative dominance: D, dominant; C, codominant; S, subdominant; A, associated

*indicates a non-native species

Vegetation DBH (from BioCondition Assessment)

Scientific name	Common name	DBH (mm)	Average DBH (mm)
Eucalypts			
<i>Eucalyptus brownii</i>	Reid River box	470, 300, 900, 850, 350, 500, 400, 320, 380, 400	487
<i>Eucalyptus camaldulensis</i> var. <i>obtusa</i>	river red gum	300, 500	400
<i>Corymbia clarksoniana</i>	Clarkson's bloodwood	300	300
Average DBH for eucalypts:			459
<i>Acacia salicina</i>	sally wattle	300	300
Average DBH for non-eucalypts:			300



Plate 23 Vegetation Assessment Polygon 9





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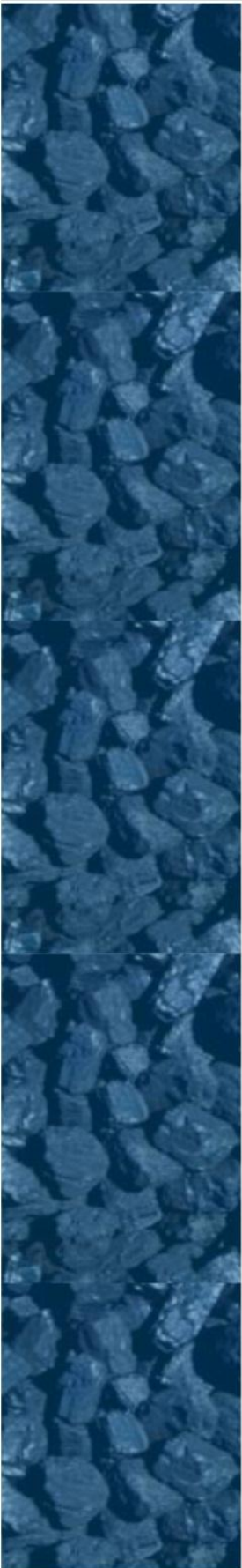


Appendix B: PVMP Application prepared by GHD



Adani Mining Pty Ltd

adaniTM



Carmichael Coal Mine and Rail Project SEIS

Offsite Infrastructure
Property Vegetation Management Plan

31 October 2013





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The services undertaken by GHD in connection with preparing the Report were limited to those specifically detailed in this Report.

The Report is based on conditions encountered and information reviewed, including assumptions made by GHD, at the time of preparing the Report.

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Table of contents

1.	Introduction.....	1
1.1	Project overview.....	1
1.2	Property details	2
1.3	Report purpose	2
1.4	Assumptions and limitations	3
1.5	Project need and justification.....	5
1.6	Vegetation Management Act 1999	5
2.	Existing environmental values.....	8
2.1	Project locality.....	8
2.2	Flora survey methodology	8
2.3	Regional ecosystem verification	8
3.	Clearing activities	16
3.1	Summary of offsite infrastructure	16
3.2	Proposed extent of clearing	16
3.3	Consideration of alternatives	17
3.4	Mitigation.....	18
4.	Brigalow Belt and Western Bioregion regional codes	19
4.1	Brigalow Belt bioregion regional code	19
4.2	Western Bioregions Regional code	27
5.	Conclusion.....	32
6.	References	33

Table index

Table 1	Property details	2
Table 2	Summary of regional ecosystem mapping changes.....	9
Table 3	Regional ecosystems recorded within the Study Area	10
Table 4	Clearing extent for offsite infrastructure works	16
Table 5	Clearing extent of regional ecosystems.....	17
Table 6	Proposed clearing extent of assessable vegetation	19
Table 7	Performance requirements and solutions for coordinated projects within the Brigalow Belt bioregion	21
Table 8	Proposed clearing extent of assessable vegetation	27



Table 9	Performance requirements and solutions for significant projects within the Desert Uplands bioregion	28
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Figure index

Figure 1	Offsite infrastructure Study Area.....	4
Figure 2	DEHP Certified Regional Ecosystem Mapping (v 6.1) and Study Area	7
Figure 3	Field verified Regional Ecosystems within the Project (Offsite) footprint	15

1. Introduction

1.1 Project overview

Adani Mining Pty Ltd (Adani, the Proponent), commenced an Environmental Impact Statement (EIS) process for the Carmichael Coal Mine and Rail Project (the Project) in 2010. On 26 November 2010, the Queensland (Qld) Office of the Coordinator General declared the Project a 'significant project' and the Project was referred to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (referral No. 2010/5736). The Project was assessed to be a controlled action on the 6 January 2011 under section 75 and section 87 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The controlling provisions for the Project include:

- World Heritage properties (sections 12 & 15A)
- National Heritage places (sections 15B & 15C)
- Wetlands (Ramsar) (sections 16 & 17B)
- Listed threatened species and communities (sections 18 & 18A)
- Listed migratory species (sections 20 & 20A)
- The Great Barrier Reef Marine Park (GBRMP) (sections 24B & 24C)

The Qld Government's EIS process has been accredited for the assessment under Part 8 of the EPBC Act in accordance with the bilateral agreement between the Commonwealth of Australia and the State of Queensland.

The Proponent prepared an EIS in accordance with the Terms of Reference (ToR) issued by the Qld Coordinator-General in May 2011 (Qld Government, 2011). The EIS process is managed under section 26(1) (a) of the *State Development and Public Works Act 1971* (SDPWO Act), which is administered by the Qld Government's Department of State Development, Infrastructure and Planning (DSDIP).

The EIS, submitted in December 2012, assessed the environmental, social and economic impacts associated with developing a 60 million tonne (product) per annum (Mtpa) thermal coal mine in the northern Galilee Basin, approximately 160 kilometres (km) north-west of Clermont, Central Queensland, Australia. Coal from the Project will be transported by rail to the existing Goonyella and Newlands rail systems, operated by Aurizon Operations Limited (Aurizon). The coal will be exported via the Port of Hay Point and the Point of Abbot Point over the 60 year (90 years in the EIS) mine life.

Project components are as follows:

- The Project (Mine): a greenfield coal mine over EPC 1690 and the eastern portion of EPC 1080, which includes both open cut and underground mining, on mine infrastructure and associated mine processing facilities (the Mine) and the Mine (offsite) infrastructure including a workers accommodation village and associated facilities, a permanent airport site, an industrial area and water supply infrastructure



- The Project (Rail): a greenfield rail line connecting to mine to the existing Goonyella and Newlands rail systems to provide for the export of coal via the Port of Hay Point (Dudgeon Point expansion) and the Port of Abbot Point, respectively including:
 - Rail (west): a 120 (km) dual gauge portion running west from the Mine site east to Diamond Creek
 - Rail (east): a 69 km narrow gauge portion running east from Diamond Creek connecting to the Goonyella rail system south of Moranbah
 - Quarries: five local quarries to extract quarry materials for construction and operational purposes

1.2 Property details

Table 1 provides a summary of the property details for which the Property Vegetation Management Plan (PVMP) applies.

Table 1 Property details

Address	Moray Carmichael Boundary Road, Moray Downs
Lot number	Lot 662 on PH1491
Application area	Approximately 7635.8 ha
Local government area	Isaac Regional Council
Local plan zoning	Rural
Existing land use	Grazing
Proposed land use	Accommodation village, industrial area, airport and water infrastructure to support development of the Carmichael Coal Mine
Land tenure	Leasehold

1.3 Report purpose

In April 2013, Adani commissioned the preparation of a PVMP which forms part of an application to clear native vegetation associated with project works described in Section 3.1. As the construction work will involve the use of heavy machinery, it will be necessary to remove vegetation mapped as regional ecosystems (REs) and small areas of high value regrowth vegetation. Full details regarding vegetation clearing are provided in Section 3.

The information contained within this PVMP is intended to demonstrate compliance with the performance requirements identified in Part S of Department of Environment and Heritage Protection (DEHP) (2012) *Regional Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions – Version 2.1* and the *Regional Vegetation Management Code for Western Bioregions – Version 2.1*.

This application will be submitted in conjunction with an application for a Property Map of Assessable Vegetation (PMAV). The PMAV requests amendment to the certified RE map covering the Project. This application for clearing is based on the results of the PMAV for Lot 662 on PH1491.

The location of investigations has been determined by the proposed design and location of the Project's key components. This application is for clearing associated with the offsite infrastructure. The area to be assessed in this application represents the footprint of proposed

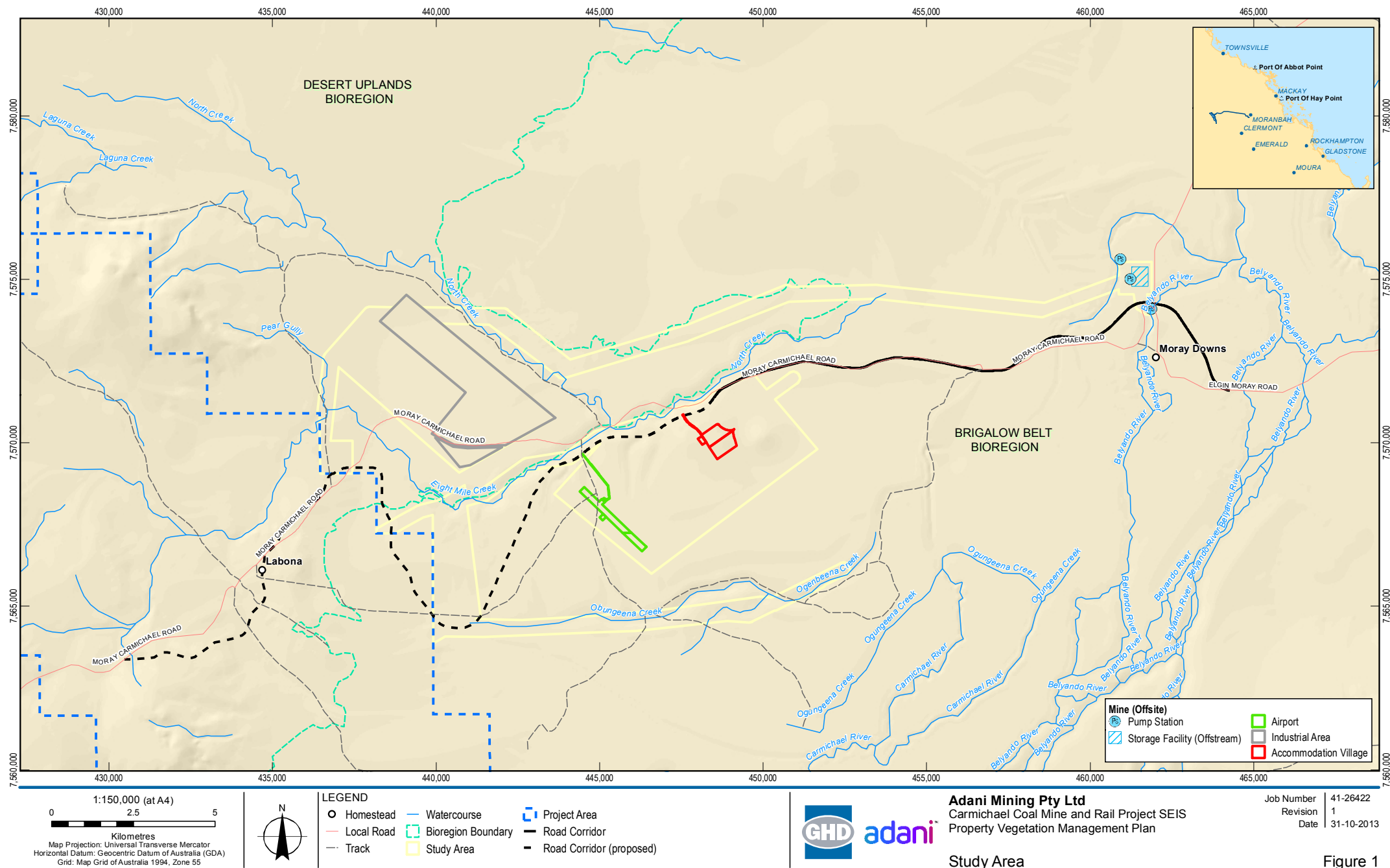


direct clearing of vegetation, and will hereafter be referred to as the 'Project (Offsite) footprint' (see Section 3.1 for a definition of this term).

The study area for this report was defined by the Project (Mine) Offsite footprint. At the time of reporting, the footprint included an offsite bore field and associated pipelines. The bore field is no longer a component of the Carmichael Coal Mine and Rail Project. As such, the study area for this report includes areas where the bore field was to be situated.

1.4 Assumptions and limitations

Field surveys were undertaken within the Study Area outlined in Figure 1. This assessment is based on the outcomes of the PMAV for the site.



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Data source: DME: EPC1690 (2010)/EPC1080 (2011); DNRM: Bioregion Boundary (2011); © Commonwealth of Australia (Geoscience Australia); Watercourse, Tracks (2007); Adani: Offsite Infrastructure (2013). Created by: AJ

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1.5 Project need and justification

Coal is Queensland's largest export industry. Queensland's saleable coal production in 2011–12 amounted to a total of 187.6 Million tonnes (Mt) (DNRM, 2013). Exports totalling 164 Mt, and valued at approximately \$4.7 billion were made to 30 countries, with Asia representing 27.73 percent of total exports (DNRM, 2013).

Queensland's world-class mining and petroleum industries are cornerstones of Queensland's economy. Queensland has a rich endowment of high-quality coal resources, with more than 32 billion tonnes (raw coal in-situ) identified by drilling operations (DSEWPac, 2011). Queensland has 58 per cent of Australia's recoverable black coal (DLGP, 2011). The Galilee Basin spans over 247,000 km² of land and contains coal resources that are largely high-volatile, low-sulphur thermal coal of Permian age.

In 2011–12, the resources sector directly contributed an estimated \$36 billion to the Queensland economy and \$69.7 billion in aggregate spending through supply chain opportunities. Mining in Queensland generated over \$3.4 billion in royalties last year which will be used to fund essential services, including schools, hospitals and emergency services. In 2012–13, the resource sector also created over 64,000 direct jobs for Queenslanders.

Adani is the largest private power generating company in India and the largest integrated coal management firm in India: it plays a critical role in the supply of power for India. Adani aims to generate 20,000 MW of power by 2020 from its power plants (including from those under construction and scheduled to be built) and sees supply from Queensland coal resources as key to meeting that aim.

1.6 Vegetation Management Act 1999

The proposed clearing detailed in this application is to comply with the *Vegetation Management Act 1999* (VM Act). This legislation governs the management of vegetation within the state of Queensland, and compliance with government regulations is required to obtain approval. The VM Act regulates vegetation clearing in Queensland and provides protection to remnant and regulated regrowth vegetation. The VM Act is relevant to all tenures.

Vegetation clearing approvals are triggered under the VM Act for the clearance of native vegetation falling within remnant RES. Under the VM Act, vegetation is defined as a:

".....native tree or plant other than the following:-

- a. grass or non woody herbage;*
- b. a plant within a grassland regional ecosystem prescribed under a regulation;*
- c. a mangrove"*

Vegetation clearing is required for the proposed offsite infrastructure. The extent of clearing is described in Section 3 and illustrated in Figure 3.

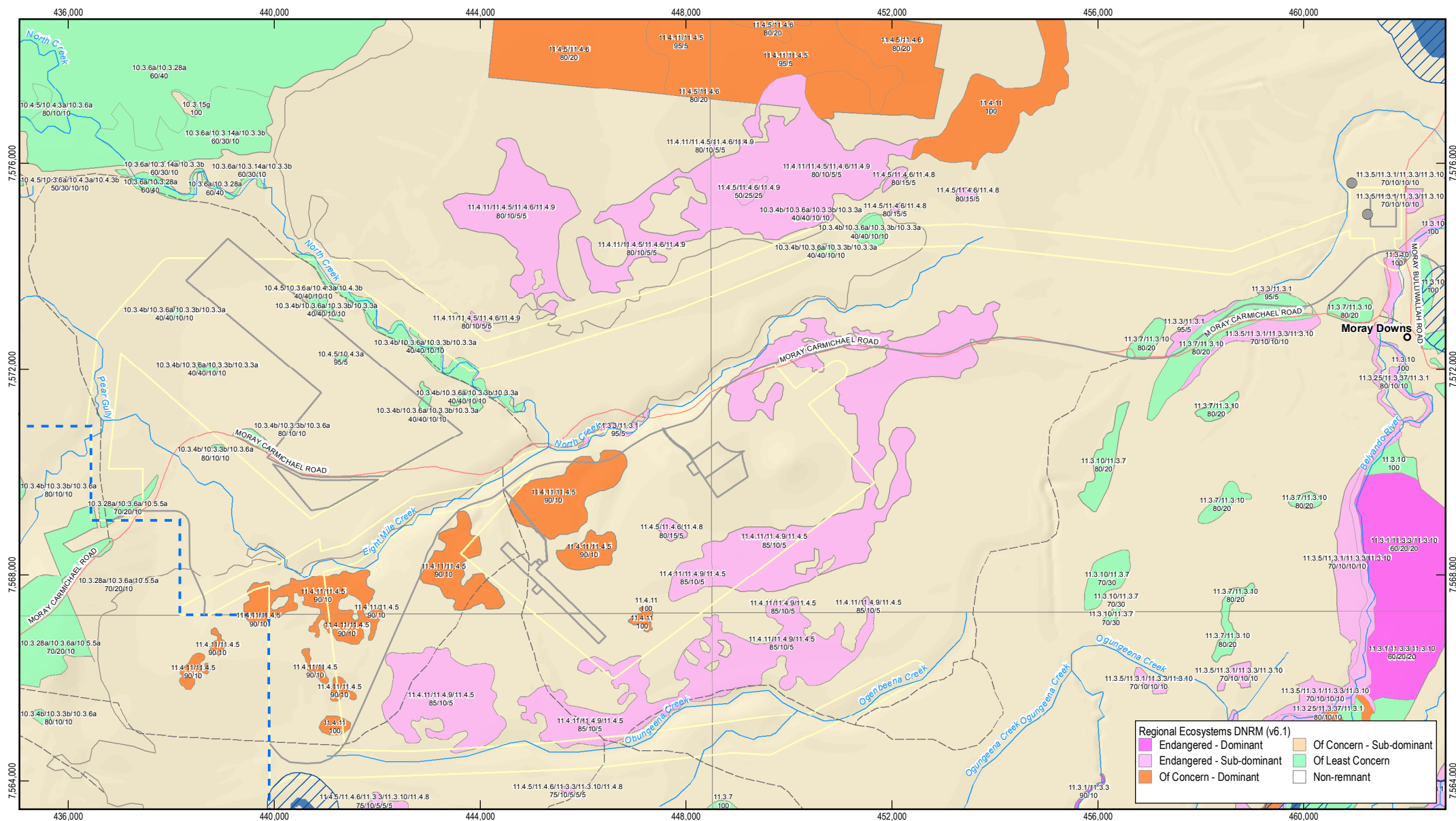
Schedule 3, Table 4 of the *Sustainable Planning Act 2009* identifies when a permit is required for the clearing of native vegetation. A permit for the removal of remnant native vegetation is required for freehold, road reserve, lease hold, trust land, unallocated State land or land subject to a licence or permit under the *Land Act 1994* unless otherwise exempt.

The proposed development is a component of a 'coordinated project' declared under section 26, of the SDPWO Act, as such it is a 'relevant purpose' under the VM Act.



Approximately 28.4 hectares (ha) of least concern, 13.9 ha of concern and 1.6 ha of endangered vegetation is likely to be impacted by clearing for the proposed offsite infrastructure. This area comprises 13 regional ecosystems (REs). The floristic composition of the 13 RE types impacted by the clearing is provided in Section 2.3.

Mapping showing the extent of REs over the Project (Offsite) footprint is provided in Figure 3.



Regional Ecosystems DNRM (v6.1)

Endangered - Dominant	Of Concern - Sub-dominant
Endangered - Sub-dominant	Of Least Concern
Of Concern - Dominant	Non-remnant

1:100,000 (at A4)

0 2 4

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 55



LEGEND

- Homestead
- Great Barrier Reef
- Wetland Protection Area
- Great Barrier Reef Wetland
- Protection Area Trigger
- Local Road
- Track
- Watercourse
- Mine (Onsite)
- Mine (Offsite)



Adani Mining Pty Ltd
Carmichael Coal Mine and Rail Project SEIS
Property Vegetation Management Plan
DNRM Certified Regional Ecosystems
Mapping (v6.1) and Study Area

Job Number 41-26422
Revision 1
Date 15-10-2013

Figure 2

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Data source: DME: EPC1690 (2010)/EPC1080 (2011); DNRM: Regional Ecosystems, GBR Wetland Protection Area (2011); © Commonwealth of Australia (Geoscience Australia): Watercourse, Tracks (2007); Adani: Offsite Infrastructure (2013). Created by: AJ

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2. Existing environmental values

2.1 Project locality

The Study Area is east of the proposed Mine and extends approximately 14 km to the east and 5 km north and south of the Carmichael Road. As such, the offsite infrastructure Project Area has the same regional context as the proposed Mine. The Study Area occurs within one pastoral lease (Lot 662 on PH1491) at the north-east of the mine. The land associated with the works is largely in a disturbed state associated with livestock grazing, with a number access tracks traversing the Study Area. The landscape has been heavily fragmented by historic land-clearing.

Environmental values were considered in the selection of suitable locations for offsite infrastructure to the Mine. Where possible, areas of native vegetation were avoided. As a result of this site selection process, the Project (Offsite) footprint has been located within an area which has been predominantly cleared of natural vegetation.

2.2 Flora survey methodology

Flora surveys were undertaken within the Study Area following the wet season from 29 April to 7 May 2013). The main objectives of the survey were to assess and document the flora species and vegetation communities present, the landforms on which they occurred, habitat condition and the level of incursion of exotic plants.

Floristic surveys were conducted using CORVEG Quaternary level site assessment methodologies recommended by the Queensland Herbarium for mapping REs and vegetation communities (Neldner et al., 2012). Flora surveys targeted areas of mapped remnant and non-remnant vegetation for the purposes of ground-truthing REs and identifying potential habitat for endangered, vulnerable or near threatened flora and fauna species.

2.3 Regional ecosystem verification

A total of 14 REs were field-verified to occur within the Study Area, comprising:

- 8 least concern REs
- 4 of concern REs
- 2 endangered REs

Descriptions of the RE communities that are mapped or that were field-verified within the Study Area are provided in Table 3. A total of seven Desert Uplands bioregion REs and 10 Brigalow Belt bioregion REs are mapped within the Study Area. Results from the flora surveys indicate that three Desert Uplands REs and one Brigalow Belt RE are not actually present within the Project (Offsite) footprint. Additionally, one desert upland RE was observed within the Study Area but is not mapped. In total, 14 REs were identified within the Study Area, five from the Desert Uplands and nine from the Brigalow Belt. These changes from the latest Department of Natural Resources and Mines (DNRM) certified RE mapping are summarised in Table 2. The field-verified RE map for the Study Area is shown in Figure 3.

Of the 14 REs identified within the Study Area, 6 were field verified within the Project (Offsite) footprint. Where field-verified REs occur within the Project (Offsite) footprint, these have been



assessed within this plan against the relevant clearing codes. For REs within the Project (Offsite) footprint, but outside the Study Area, field-verification surveys have not occurred. In these instances, certified RE mapping has been used in the assessment.

Table 2 Summary of regional ecosystem mapping changes

Bioregion	Officially mapped but not present	Observed but not officially mapped
Brigalow Belt	11.4.8 (1 RE)	
Desert Uplands	10.3.3, 10.3.4 and 10.4.3 (3 REs)	10.3.14 (1 RE)

Table 3 Regional ecosystems recorded within the Study Area

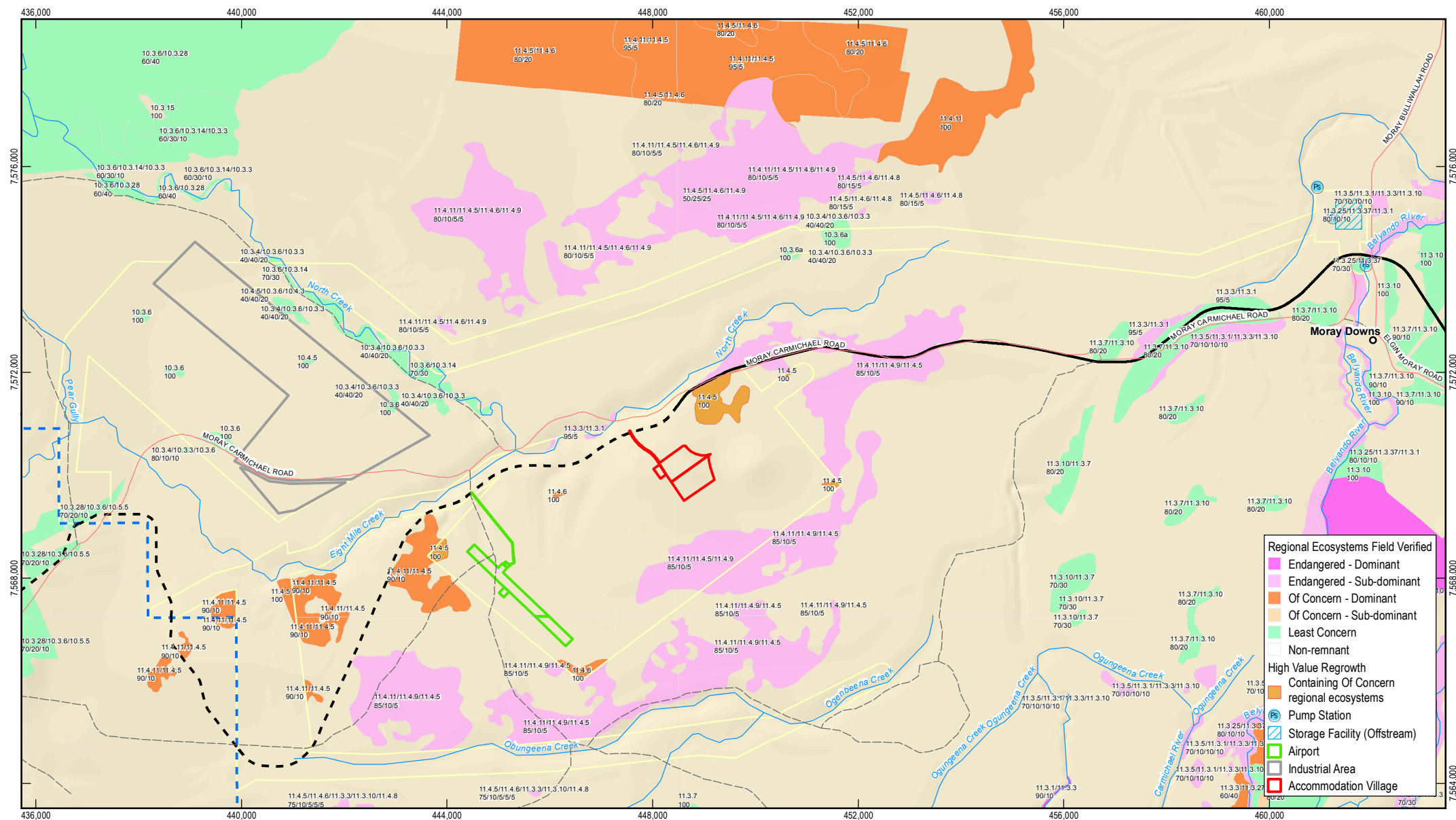
RE	VM Act class	Land form	Description	Extent within Project (Offsite) footprint (ha)
Desert Uplands REs				
10.3.3	least concern	Occurs on alluvial plains.	Low open-woodland of <i>Acacia harpophylla</i> +/- <i>Eucalyptus cambageana</i> emergents or open-woodland of <i>Eucalyptus cambageana</i> +/- understorey of <i>Acacia harpophylla</i> over a very open tussock grassland ground layer.	Mapped at eight locations across the Study Area as a single RE polygon and as a heterogeneous polygon with 10.3.14. Not observed within the Study Area. Not present within the Project (Offsite) footprint.
10.3.4	least concern	Occurs on heavy clay and texture contrast soils on alluvial plains.	Low open-woodland to woodland of <i>Acacia cambagei</i> with very open tussock grassland. Minor occurrences of <i>Acacia tephрина</i> woodland.	Mapped at eight locations across the Study Area as a heterogeneous polygon with 10.3.4 and 10.3.6. Not observed within the Study Area. Not present within the Project (Offsite) footprint.
10.3.6a	least concern	Occurs on alluvial plains with clays and texture contrast soils.	<i>Eucalyptus brownii</i> open-woodland to woodland.	One of the major vegetation communities in the Study Area, present on plains in small and often isolated patches. Approximately 2.9 ha occur within the Project (Offsite) footprint, based on field-verification. Approximately 0.1 ha occurs within the Project (Offsite) footprint, as officially mapped.
10.3.14	least concern	Occurs on channels, levees and flood plains with sandy to clayey soils along larger watercourses.	<i>Eucalyptus camaldulensis</i> and/or <i>E. coolabah</i> woodlands and open-woodlands on channels, levees and floodplains.	Present along North Creek in the northern section of the Study Area. Occurs as a heterogeneous polygon with 10.3.6. Not present within the Project (Offsite) footprint.
10.3.28	least concern	Occurs on sandy alluvial fans with yellow earth and duplex soils formed from outwash from sandstone hills.	Open-woodland to woodland of <i>Eucalyptus melanophloia</i> or <i>Eucalyptus crebra</i> .	Present within two small areas directly adjacent to the Project Mine at the western end of the Study Area. This RE occurs as a heterogeneous polygon with 10.3.6 and 10.5.5. Approximately 1.3 ha occurs within the Project (Offsite) footprint, based on field verification.

RE	VM Act class	Land form	Description	Extent within Project (Offsite) footprint (ha)
10.4.3	least concern	Occurs on clay and texture contrast soils, gently undulating downs and plains on Cainozoic lake deposits.	<i>Acacia harpophylla</i> and/or <i>Eucalyptus cambageana</i> open-woodland.	Mapped within a small and isolated patch of remnant vegetation on the western end of the Study Area as a heterogeneous polygon with 10.4.5. Not observed within the Study Area. Not present within the Project (Offsite) footprint.
10.4.5	least concern	Occurs on plains and gently undulating downs on Cainozoic lake deposits. Cracking clay soils, usually gilgaied, and minor areas of texture contrast soils.	<i>Acacia cambagei</i> low woodland sometimes with <i>A. harpophylla</i> .	Present within a small and isolated patch of remnant vegetation on the western end of the Study Area. Approximately 2.5 ha occur within the Project (Offsite) footprint, based on field verification.
10.5.5a	least concern	Occurs on loamy red and yellow earths on undulating sand plains.	Mostly <i>Eucalyptus melanophloia</i> open-woodland with open-grassland understorey of <i>Aristida</i> spp. and/or <i>Triodia</i> spp.	Present within two small areas directly adjacent to the Project Mine at the western end of the Study Area. This RE occurs as a heterogeneous polygon with 10.3.28 and 10.3.6. Approximately 0.2 ha occurs within the Project (Offsite) footprint, based on field verification. Approximately 0.1 ha occurs within the Project (Offsite) footprint, as officially mapped.
Brigalow Belt REs				
11.3.1	endangered	Associated with Cainozoic alluvial plains which may be occasionally flooded. Landforms range from level to very gently sloping plains, alluvial flats, drainage floors, back-swamps and abandoned channels. Associated soils are predominantly deep to very deep cracking clays, sometimes with gilgai or texture contrast soils with sandy surface.	Open-forest dominated by <i>Acacia harpophylla</i> and/or <i>Casuarina cristata</i> (particularly in southern parts), with or without scattered emergent <i>Eucalyptus</i> spp. such as <i>E. coolabah</i> , <i>E. largiflorens</i> , <i>E. populnea</i> , <i>E. orgadophila</i> , and <i>E. pilligaensis</i> .	Present in one narrow area along an ephemeral watercourse in the centre of the Study Area. Occurs as a heterogeneous polygon with 11.3.3. Not present within the Offsite footprint, based on field verification. Approximately 0.1 ha occur within the Project (Offsite) footprint, as officially mapped.

RE	VM Act class	Land form	Description	Extent within Project (Offsite) footprint (ha)
11.3.3	of concern	Occurs on Cainozoic alluvial plains or levees with clay or sometimes texture contrast soils.	<i>Eucalyptus coolabah</i> woodland to open-woodland with a grassy understorey.	Present in two narrow areas along both an ephemeral watercourse in the centre of the Study Area and the Belyando River at the eastern end of the Study Area. Occurs as a heterogeneous polygon with 11.3.1, 11.3.25 and 11.3.37. Not present within the Offsite footprint, based on field verification. Approximately 0.1 ha occur within the Project (Offsite) footprint, as officially mapped.
11.3.7	least concern	Occurs on levees and plains formed from Quaternary alluvial deposits.	<i>Corymbia clarksoniana</i> , <i>C. tessellaris</i> and <i>C. dallachiana</i> tall woodland to open-woodland (12 – 17 m high).	Present as three patches along the road corridor at the eastern end. Occurs as a heterogeneous polygon with 11.3.10. Not present within the Offsite footprint, based on field verification. Approximately 16.6 ha occur within the Project (Offsite) footprint, as officially mapped.
11.3.10	least concern	Occurs on Cainozoic alluvial plains.	<i>Eucalyptus brownii</i> grassy woodland.	Present as three patches along the road corridor at the eastern end. Occurs as a heterogeneous polygon with 11.3.7. Approximately 3.8 ha occur within the Project (Offsite) footprint, as officially mapped.
11.3.25	least concern	Occurs on fringing levees and banks of major rivers and drainage lines of alluvial plains throughout the region. Soils are very deep, alluvial, grey and brown cracking clays with or without some texture contrast. These are usually moderately deep to deep, soft or firm, acid, neutral or alkaline brown sands, loams or black cracking or non-cracking clays, and may be sodic	<i>Eucalyptus camaldulensis</i> or <i>E. tereticornis</i> open-forest to woodland.	Comprises the vegetation fringing the Belyando River, in the form of <i>E. camaldulensis</i> open forest with <i>Melaleuca leucadendra</i> and <i>M. trichostachya</i> lining the actual channel, and forming woodland along the south-western bank. Approximately 0.16 ha occur within the Project (Offsite) footprint, based on field verification. Approximately 0.8 ha occur within the Project (Offsite) footprint, as officially mapped.

RE	VM Act class	Land form	Description	Extent within Project (Offsite) footprint (ha)
		at depth.		
11.3.37	least concern	Includes larger waterholes and stream channels. Occurs on fringing stream channels, usually braided. Soils are bed loads of clay or silt with cobbles and boulders in some areas.	<i>Eucalyptus coolabah</i> with <i>Eucalyptus camaldulensis</i> forming a distinct but discontinuous woodland to low woodland.	Mapped along the Belyando River at the eastern extent of the Study Area. Occurs within a heterogeneous polygon with 11.3.25. Approximately 0.1 ha occurs within the Project (Offsite) footprint, based on field verification. Approximately 0.1 ha occurs within the Project (Offsite) footprint, as officially mapped.
11.4.5	of concern	Occurs on flat to gently undulating plains formed from unconsolidated Cainozoic deposits.	<i>Acacia argyrodendron</i> dominates the very sparse canopy (12 – 16 m high). There are usually scattered small trees (6-10 m high) including <i>A. argyrodendron</i> , <i>Terminalia oblongata</i> , <i>Owenia acidula</i> , <i>Lysiphyllum carroni</i> and <i>Eremophila mitchellii</i> .	Mapped within the centre of the Study Area in a large heterogeneous polygon with 11.4.11 and 11.4.9. Not present within Project (Offsite) footprint, based on field verification. Approximately 0.7 ha occur within the Project (Offsite) footprint, as officially mapped.
11.4.6	of concern	Occurs on gently undulating plains formed from Cainozoic sediments.	<i>Acacia cambagei</i> dominates the tree canopy (10 – 13 m high). There is a sparse to open low tree layer (7 – 9 m high) dominated by <i>Lysiphyllum carronii</i> , <i>Geijera parviflora</i> , <i>Acacia harpophylla</i> , and sometimes, <i>A. argyrodendron</i> , <i>Terminalia oblongata</i> , and <i>Eremophila mitchellii</i> . An open shrub layer (1 m high) dominated by species such as <i>Carissa ovata</i> , <i>Capparis lasiantha</i> , <i>Eremophila deserti</i> , <i>Apophyllum anomalum</i> and <i>Alectryon diversifolius</i> is also often present. The ground layer is sparse to open and dominated by grasses.	Present within a single small and isolated patch of remnant vegetation in the central part of the Study Area. Not present within the Project (Offsite) footprint.

RE	VM Act class	Land form	Description	Extent within Project (Offsite) footprint (ha)
11.4.9	endangered	Occurs on level to gently undulating Cainozoic plains, including weathered basalt. Associated soils are predominantly moderately deep to deep cracking clays that may be brown, red-brown or grey-brown, and with much surface gravel in some areas.	Open-forest, occasionally woodland, dominated by <i>Acacia harpophylla</i> usually with a low tree mid-storey of <i>Terminalia oblongata</i> and <i>Eremophila mitchellii</i> . <i>Casuarina cristata</i> sometimes replaces <i>Acacia harpophylla</i> in the over-storey and <i>Lysiphyllum cunninghamii</i> sometimes co-dominates.	Mapped within the centre of the Study Area in a large heterogeneous polygon with 11.4.11 and 11.4.5. Not present within the Offsite footprint, based on field verification. Approximately 1.5 ha occurs within the Project (Offsite) footprint, as officially mapped.
11.4.11	of concern	Occurs in shallow open valleys and poorly drained Cainozoic clay plains with deep cracking clay soils.	Grassland dominated by <i>Dichanthium sericeum</i> and forms a mosaic with clumps of <i>Acacia harpophylla</i> , <i>Lysiphyllum hookeri</i> and <i>L. carroni</i> (usually 8+/-5 m high).	Mapped within the centre of the Study Area in a large heterogeneous polygon with 11.4.5 and 11.4.9. Approximately 13.1 ha occur within the Project (Offsite) footprint, as officially mapped. Not present within the Offsite footprint, based on field verification.



1:100,000 (at A4)

0 2 4

Kilometres

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 55



LEGEND

- Homestead
- Watercourse
- Project Area
- Local Road
- Study Area
- Road Corridor
- Track
- Road Corridor (proposed)



Adani Mining Pty Ltd
Carmichael Coal Mine and Rail Project SEIS
Property Vegetation Management Plan
Field Verified Regional Ecosystems
within the Project (Offsite) Footprint

Job Number 41-26422
Revision 1
Date 15-10-2013

Figure 3

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Data source: DME: EPC1690 (2010) EPC1080 (2011); DNRM/CHD: Field Verified Regional Ecosystems (2011); © Commonwealth of Australia (Geoscience Australia); Watercourse, Tracks (2007);
Adani: Alignment (SP1 and 2)(2013), Offsite Infrastructure (2013). Created by: AJ

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3. Clearing activities

3.1 Summary of offsite infrastructure

The Mine (Offsite) infrastructure assessed in this report includes:

- Worker accommodation village and airport (126.8 ha): comprising a construction camp (Q4, 2013) and initial mine operations accommodation (2014) as part of a master planned community.
- Industrial precinct, including rail siding (964.8 ha) to facilitate services such as a fuel farm, rail siding, freight unloading terminal).
- An off-stream storage and pump station near Belyando River (0.04 ha)
- 2 gigalitres (GL) storage dam (51 ha)
- Moray-Carmichael Road (130.9 ha).

For the purposes of this report the following terminology is used:

- Study Area refers to the area of field investigation shown in Figure 1.
- 'Project (Offsite) footprint' refers to the actual area of direct clearing

The Project (Offsite) footprint covers an area of 1,157.7 ha (Figure 1). This comprises 7.1 ha of remnant vegetation (least concern REs) and 1,150.7 ha of non-remnant vegetation. Additional areas of officially mapped RE (36.9 ha) and non-remnant vegetation (78.7ha) are mapped within the Moray-Carmichael Road corridor.

3.2 Proposed extent of clearing

Vegetation clearing will be required in both non-remnant pasture lands and mapped remnant vegetation and will be kept to the minimum footprint required for the adequate and safe completion of works. A total of 1,157.7 ha of vegetation is likely to be directly impacted by clearing for the proposed works. Of this, a total of 7.1 ha of field verified remnant RE and 36.9 ha of officially mapped RE is to be cleared.

Table 4 details the total maximum clearing areas proposed within the Project (Offsite) footprint. A summary of REs to be cleared is provided in Table 5.

Table 4 Clearing extent for offsite infrastructure works

Offsite Infrastructure	Proposed clearing extent (ha)	Detailed clearing extent (ha)
Accommodation and airport	126.83	126.83 non-remnant 0.00 least concern 0.00 of concern 0.00 endangered
Industrial precinct, including rail siding	964.83	959.83 non-remnant 5.00 Least concern 0.00 of concern 0.00 endangered



Offsite Infrastructure	Proposed clearing extent (ha)	Detailed clearing extent (ha)
Water supply infrastructure	0.05	0.04 non-remnant 0.01 Least concern 0.00 of concern 0.00 endangered
Storage facility	51.00	51.00 non-remnant 0.00 Least concern 0.00 of concern 0.00 endangered
Road corridor	130.9	78.7 non-remnant 21.5 Least concern 13.9 of concern 1.6 endangered

Table 5 Clearing extent of regional ecosystems

Regional Ecosystem	Purpose for clearing	Proposed clearing extent (ha)
Endangered REs		
11.3.1	Road corridor	0.1
11.4.9	Road corridor	1.5
Total clearing extent for endangered REs:		1.6
Of concern REs		
11.3.3	Road corridor	0.1
11.4.11	Road corridor	13.1
11.4.5	Road corridor	0.7
Total clearing extent for of concern REs:		13.9
Least concern REs		
10.3.6a	Light industrial precinct	3
10.3.28	Road corridor	1.3
10.4.5	Light industrial precinct	2.5
10.5.5a	Road corridor	0.3
11.3.7	Road corridor	16.6
11.3.10	Road corridor	3.8
11.3.25	Road corridor, water infrastructure	0.96
11.3.37	Road corridor, water infrastructure	0.2
Total clearing extent for least concern REs:		28.66
Total		44.1

3.3 Consideration of alternatives

A careful site selection and design process was undertaken for the proposed offsite infrastructure. The selection process identified the preferred location and alignment of the various infrastructure proposed for the Project (Offsite). The selection process considered economic, social and environmental impacts while aiming to deliver the desired infrastructure outcomes. The proposed route selected avoids the majority of vegetation mapped as remnant vegetation (particularly of concern and endangered REs) and areas of high ecological value



where possible and the width of linear corridors has been reduced to the absolute minimum width necessary for construction. Proposed infrastructure has been located wherever possible in disturbed areas as mapped non-remnant vegetation. Where this is not possible they have been restricted to clearing to within non-remnant vegetation. Where this was not possible, clearing, especially of high conservation REs, has been selected as a last resort.

3.4 Mitigation

While clearing of non-remnant vegetation was deemed unavoidable for the Project (Offsite), mitigation measures have been developed to reduce the impact to environmental values within the Project Area. Environmental management and performance will be achieved through a number of mechanisms. This includes implementation of an Environmental Management Plan (EMP).

An EMP will be developed for the Project (Offsite) and will be implemented throughout the duration of construction and operation of the proposed offsite infrastructure. This plan contains Management Plans (MPs) designed to establish environmental issues, objectives, performance criteria, implementation, monitoring, reporting and corrective actions for each environmental value during the construction and operation phase of the Project (Offsite) as applicable. These environmental values include native flora and fauna, weeds and pests, revegetation, water quality, air quality, Aboriginal cultural heritage and erosion and sedimentation. The EMP identifies all reasonable steps or precautions to prevent environmental harm and/or contravention of the legislative and regulatory framework during construction and operation.

Permanent loss of vegetation will be offset in accordance with the Policy for Vegetation Management Offsets – Version 3 (DERM, 2011). An offset strategy is being developed for the Project which will meet the offset requirements associated with the Project.

4. Brigalow Belt and Western Bioregion regional codes

4.1 Brigalow Belt bioregion regional code

This section refers to clearing proposed for the construction of offsite infrastructure and assesses requirements against Part S of the *Regional Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions* (Brigalow Belt Regional Code) for the clearing for significant projects (DERM, 2009a). As detailed above, this application is to clear areas of remnant vegetation concerning least concern RE associated with wetlands and watercourses, of concern and endangered REs, and important vegetation for maintenance of connectivity across the landscape, that occur within the portion of the Project Area that falls within the Brigalow Belt bioregion. The REs proposed to be cleared are mapped in Figure 3. Table 7 provides a summary of Project (Offsite) compliance with the relevant performance requirements of the Brigalow Belt Regional Code.

Table 6 lists potentially impacted assessable vegetation under the VM Act that will require management during construction and operation phases to meet performance criteria listed in Part S of the *Regional Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions – version 2*

Table 6 Proposed clearing extent of assessable vegetation

Significant ecological feature	Description	Proposed extent of clearing (ha)
Wetland vegetation	The Project (Offsite) footprint intersects with a single Wetland Protection Trigger Area adjacent to Belyando Creek.	1.58
Watercourse vegetation	A single watercourse, assessable under the VM Act is intersected by the Project (Offsite) footprint and will be impacted by the Project. Watercourses have been defined in Regional Vegetation Management Code for Brigalow Belt and New England Bioregions (DERM, 2009a).	Stream order: 2: 0.25
Corridor vegetation	The Project (Offsite) footprint occurs within a highly-fragmented landscape. The footprint passes a number of remnant vegetation patches that vary in extent from 2 – 200 ha. A number of these will be further fragmented and/or reduced in size as a result of the Project.	Remnant extent: 37.1
Endangered REs	Two endangered REs occur within the Project (Offsite) footprint: 11.3.1 occurs within heterogeneous polygons at three locations 11.4.9, occurs within a heterogeneous polygon at a single location	1.6
Of concern REs	Three of concern REs occur within the Project (Offsite) footprint:	13.91



Significant ecological feature	Description	Proposed extent of clearing (ha)
	11.3.3 occurs within a heterogeneous polygon at one location 11.4.5 occurs within a heterogeneous polygon at two locations 11.4.11 occurs within a heterogeneous polygon at two locations	
Conservation status threshold RE	A single threshold RE, 11.4.11, occurs within the Desert Uplands region of the Project (Offsite) footprint as a heterogeneous polygon.	13.12

Table 7 Performance requirements and solutions for coordinated projects within the Brigalow Belt bioregion

Performance Requirement	Acceptable Solution (Applicant may propose an alternative solution to meet performance requirements)	Background	Proposed Solution
PR S.1: Limits to clearing To regulate the clearing of vegetation in a way that conserves remnant vegetation that are regional ecosystems, does not cause land degradation, prevents the loss of biodiversity and maintains ecological processes – subject to limitations required to meet PR S.2 to PR S.10.	Clearing is limited to the extent that is necessary for the project, any associated ancillary works, and the operation of works that comprise a project declared to be a significant project under the State Development and Public Works Organisation Act 1971, section 26.	The Project (Offsite) will require clearing of a small amount of remnant vegetation within the Brigalow Belt bioregion (37.50 ha) for the construction of the proposed offsite infrastructure (Figure 3). Clearing of remnant vegetation will be necessary for the construction of the following: • Rail loop • Light industrial precinct • Water supply infrastructure • Road corridor	A careful site selection and design process was undertaken for the Project (Offsite). The selection process identified the preferred location and alignment of the various infrastructure proposed for the Project (Offsite). The selection process considered economic, social and environmental impacts while aiming to deliver the desired infrastructure outcomes. The proposed route selected avoids the majority of vegetation mapped as remnant vegetation (particularly of concern and endangered REs) and areas of high ecological value where possible and the width of linear corridors has been reduced to the absolute minimum width necessary for construction. The proposed works are compliant with the performance requirement S.1: Limits to clearing through the acceptable solution
PR S.2: Wetlands To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and maintains ecological processes – maintain the current extent of assessable vegetation associated with and natural significant wetland and/or natural wetland to provide – maintain the current extent of assessable vegetation associated with any watercourse to provide – • Water quality by filtering sediments, nutrients and other pollutants; and • Aquatic habitat; and • Terrestrial habitat	AS S.2.1 Clearing does not occur – • In any natural wetland; and • Within 100 m from any natural wetland; and • In any natural significant wetland; and • Within 200 m from any natural significant wetland.	One GBR protection wetland is located south of the Obungeena Creek at the south western extent of the Project Area (Figure 2). The Trigger area is located within the Project (Offsite) footprint, at the eastern extent of the proposed road corridor.	Clearing within the wetland will be kept to the minimum (1.58 ha) necessary for the proposed works and an ecologist will be on site during clearing to guide clearing in such a way that minimises vegetation loss and protects important habitat features, in accordance with the site-based EMP. Erosion and sediment control devices will be installed prior to clearing at sites in and around wetlands. Large trees will be retained where they do not directly impede construction works. Where a tree is felled, the roots will be preserved where possible. Permanent loss of vegetation will be offset in accordance with the Policy for Vegetation Management Offsets – Version 3. An Offset Strategy is being developed for the Project which will meet the offset requirements associated with Project. The proposed works are compliant with the performance requirement S.2: Wetlands through an alternative solution.
PR S.3: Watercourses To regulate the clearing of vegetation in a way that does not cause land degradation, prevents the loss of biodiversity and maintains ecological processes—maintain the current extent of assessable vegetation associated with any watercourse to provide— • Bank stability by protecting against bank erosion; and • Water quality by filtering sediments, nutrients and other pollutants; and • Aquatic habitat; and • Terrestrial habitat.	AS S.3.1 Clearing does not occur – • In any watercourse; and • Within the relevant distance stipulated in Table 2 of the Code, of each high bank of each watercourse.	The Project (Offsite) footprint intersects the Belyando River at the eastern end of the footprint within the road corridor. A total area of 0.25 ha of remnant vegetation is expected to be cleared along the Belyando River. This is a second order stream.	The proposed Project (Offsite) footprint crosses a single watercourse as defined in the DERM (2009a) Brigalow Belt regional code – the Belyando River. Any potential impacts of clearing on the environment will be limited through the application of an EMP developed for the construction and operational phases. The solutions outlined in the EMP will seek to avoid any loss of connectivity between patches of remnant vegetation and maintain wildlife passage. Some of the management measures that will be implemented during works include: • Keep clearing to the minimum necessary for the proposed works to reduce the risk of erosion and sedimentation. • Install erosion and sediment control devices prior to clearing at sites adjacent to watercourses and promptly stabilise disturbed areas to prevent flow-related scouring of bed and banks of stream. • Locate clearing footprint to areas where riparian vegetation is already disturbed, or, if not possible, large trees at water crossings will be retained where they do not directly impede the construction. • Locate equipment parking and laydown areas outside riparian areas to minimise disturbance area within riparian areas. The area of disturbance within streams and riparian zones will be the minimum area required for safe working and the area of disturbance

Performance Requirement	Acceptable Solution (Applicant may propose an alternative solution to meet performance requirements)	Background	Proposed Solution
			for infrastructure installation clearly marked. - Reinstate disturbed areas as soon as possible, particularly for temporary infrastructure areas, such as lay down areas. - Permanent loss of vegetation will be offset in accordance with the Policy for Vegetation Management Offsets – Version 3. An offset strategy has been developed for the entire Project (Offsite) which will meet the offset requirements associated with the Project. - With the above measures in place, disturbance to watercourses impacted by the offsite infrastructure will be minimised and long term impacts avoided. The proposed works are compliant with the performance requirement S.3: watercourses through an alternative solution.
PR S.4: Connectivity To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and maintains ecological processes—areas of mapped remnant vegetation are— - Of sufficient size and configured in a way to maintain ecosystem functioning; and - Of sufficient size and configured in a way to remain in the landscape in spite of any threatening processes; and - Located on the lot(s) that are the subject of the application to maintain connectivity to mapped remnant vegetation on adjacent properties.	AS S.4.1 Where clearing is less than – 10 m wide in the coastal subregions of the Brigalow Belt Bioregion; or 2 ha in the coastal subregions of the Brigalow Belt Bioregions; or 25 m wide in the non-coastal subregions of the Brigalow Belt and the New England Tableland bioregion; or - Is less than 5 ha in the non-coastal subregions of the Brigalow Belt and the New England Tableland Bioregion; Clearing does not – - Reduce the width of mapped remnant vegetation to less than 200 m; and - Occur where the width of mapped remnant vegetation is less than 200 m; AND S.4.2 Clearing does not – - Reduce areas of contiguous mapped remnant vegetation to less than 10 ha, in the coastal subregions of the Brigalow Belt bioregion; and - Occur in areas of contiguous mapped remnant vegetation that are less than 10 ha in the coastal subregions of the Brigalow Belt bioregion; and - Reduce areas of contiguous mapped remnant vegetation to less than 50 ha, in the non-coastal subregions of the Brigalow Belt and the New England Tableland bioregion; and - Occur in areas of contiguous mapped remnant vegetation that are less than 50 hectares, in the non-coastal subregions of the Brigalow Belt and the New England Tableland Bioregion; and - Reduce the width of mapped remnant vegetation to less than 200 m; - Occur where the width of mapped remnant vegetation is less than 200 metres; and - Reduce the total extent of mapped remnant vegetation to less than 30%; and - Occur where the total extent of mapped remnant vegetation is less than 30%. AND S.4.3 - Where clearing is for a significant community project, maintain the current extent of mapped remnant vegetation where the vegetation is – - of sufficient size and configured in a way to maintain ecosystem functioning; and - of sufficient size and configured in a way to remain in the landscape in spite of any threatening processes; and - located on the lot(s) that are the subject of the application to maintain	The Project (Offsite) footprint is predominantly located within agricultural land and land that has been previously cleared or degraded by past land use practises. Small areas of remnant vegetation will be impacted within the Brigalow Belt region of the Project (Offsite) footprint. These areas of remnant vegetation comprise regional and state corridors of biodiversity significance. Several patches of remnant vegetation are intersected by the Project (Offsite) footprint. These vary in size from 2 ha to up to 200 ha. This vegetation is consistent with REs 11.3.3, 11.3.1, 11.3.7, 11.3.10, 11.4.15 and 11.4.11 and provides habitat connectivity across the landscape. A number of these patches will be fragmented and/or reduced in size as a result of the Project. The condition of vegetation within many of these remnant patches, and the value of these communities for fauna, has been compromised to some extent by historical and existing land use pressures. These pressures (historic and current) include clearing (i.e. for access tracks), weed invasion, feral animal activity and livestock grazing. Nonetheless, these vegetation communities may provide habitat for a range of common native fauna species.	The proposed investigative works will require the clearance of 37.1 ha of mapped Brigalow Belt RE. Any potential impacts of clearing on the environment will be limited through the application of an EMP developed for the construction and operational phases. The solutions outlined in the EMP will seek to avoid any loss of connectivity between patches of remnant vegetation and maintain wildlife passage. Some of the management measures that will be implemented during works include: - Minimising vegetation clearance by; - Utilising existing access tracks where possible and by clearing the minimal area for new access tracks. The clearing of corridor vegetation will predominately occur along the proposed road corridor; clearing will therefore be kept to a minimum and will not contribute greatly to further fragmenting habitat within the landscape... - Restricting vehicular traffic to a minimum to avoid inadvertent widening of any tracks (e.g. during overtaking or turning vehicles around). - Reinstating disturbed areas as soon as possible, particularly for temporary infrastructure areas, such as lay down areas With the above measures in place, disturbance to the connectivity of the landscape investigations will be minimised and long term impacts avoided. Permanent loss of vegetation will be offset in accordance with the Policy for Vegetation Management Offsets – Version 3. An Offset Strategy has been developed for the entire Project which will meet the offset requirements associated with the Project. The proposed works are compliant with the performance requirement S.4: Connectivity through an alternative solution.



Performance Requirement	Acceptable Solution (Applicant may propose an alternative solution to meet performance requirements)	Background	Proposed Solution
	connectivity to mapped remnant vegetation on adjacent properties.		
PR S.5: Soil Erosion To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes—the effect of clearing does not result in— - Mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scalding; and - Any associated loss of chemical, physical or biological fertility— including, but not limited to water holding capacity, soil structure, organic matter, soil biology, and nutrients, - within and/or outside the lot(s) that are the subject of the application.	AS S.5.1 Mechanical clearing only occurs on – - Very stable soils on a slope less than 15 %; and - Stable soils on a slope less than 12 %; and - unstable soils on a slope less than 8 %; and - very unstable soils on a slope less than 5 %. The proposed works are compliant with the performance requirement S.5: Soil Erosion the acceptable solution.	Soil erosion has the potential to threaten the integrity of structural foundations, and will need to be managed proactively throughout the lifetime of the Project. The Project Area occurs predominantly on gently undulating clay floodplains and alluvial soils, comprising kandosols, tenosols, rudosols and vertosols. Tenosols, which are often referred to as red and yellow sand-plains, typically have poor water retention and are mainly utilised for the livestock grazing of native pastures. Vertosols (cracking clays) are present in the alluvial areas around watercourses. Sodic soils are present and are supported by the presence of deep rutting and erosion gullies at a number of locations, which may be caused by overland flow. This indicates that the soils may be unstable when interacting with water and susceptible to dispersion and erosion. The Good Quality Agricultural Land (GQAL) classification is a Class C Pasture land. This land class is suitable for improved. At a preliminary assessment level this land is considered to be good quality as it is suitable for grazing and is situated in a region where pastoral enterprises are a major industry. <i>Soil Erodibility</i> Soil erodibility is determined by the rate of surface infiltration, permeability through the profile, and the coherence and structural stability of soil particles. The soils of the Study Area range in erodibility ratings from low to moderate. <i>Existing Slope Gradient and Length</i> Due to the low lying nature of the landscape, the slope gradients within the Project Area are generally low and are likely to have limited contribution to causing accelerated erosion.	The erodibility of the soils in the Brigalow Belt region of the Project Area is generally low to moderate (i.e. stable to very stable) and given the low lying nature of the landscape and scope of works it is not likely that the proposed works will contribute to erosion of the landscape. Further sampling and testing will be undertaken as part of the proposed works to confirm the anticipated soil erodibility conditions. Although the erosion potential of soils within the Project Area is low, erosion and sediment control will be undertaken as necessary throughout the construction and operation of site works to mitigate environmental incidents. An erosion and sediment control plan will be developed as part of the EMP for offsite infrastructure. Specifically, the following management actions will be implemented to avoid and mitigate impacts from erosion: - All clearing will be by mechanical means; - Erosion and sediment control devices will be installed prior to clearing where necessary and will remain maintained and in place until the area is stabilised; - There will be no storage of materials and spoil near watercourses; - Topsoil and subsoil will be reinstated in the original sequence to ensure the layers are compatible; - Native vegetation will be allowed to regenerate naturally from seed stock in topsoil; and - Each site will be assessed before leaving to ensure that soils have been replaced and erosion risk is reduced.



Performance Requirement	Acceptable Solution (Applicant may propose an alternative solution to meet performance requirements)	Background	Proposed Solution
PR S.6: Salinity To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes—clearing does not contribute to— • Waterlogging; or • The salinisation of groundwater, surface water or soil.	AS S.6.1 Where clearing is less than – • 2 ha; or • 10 m wide; • Clearing does not occur in any discharge area AND S.6.2 Where clearing is less than – • 5 ha; or • 50 m wide- clearing does not occur – • In any discharge area; and • Within 200 metres of any discharge area AND S.6.3 Clearing does not occur in areas greater than 5 ha.	The Natural Resource Management (NRM) Burdekin Basin Salinity Hazard Map indicates that the majority of the Project area falls within the ‘moderate’ and ‘high’ hazard areas for potential for salt mobilisation. Such biophysical features include groundwater depth and quality; relative position in landscape; potential salt in the soil and underlying geology; and the capacity for water to discharge. The extent of clearing of remnant vegetation for works within the Brigalow Belt bioregion will be 37.1 ha. This will include clearing on watercourse banks and other low-lying areas.	The extent of clearing within discharge areas is likely to exceed the acceptable amount according to the Regional Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions – version 2.4 given that the total maximum amount to be cleared will be 1,157.7 ha. However, clearing will be kept to the minimum necessary for construction of proposed infrastructure. Where possible, existing trees and shrubs in salt prone areas will be retained, which will help maintain the water table. Disturbed areas, where design allows, will be stabilised as soon as possible by reinstating topsoil and subsoil and compacting replaced soils. Through these measures the service provided by vegetation in relation to the management of salinity in these landscapes is expected be restored, and water logging and the salinisation of ground water, surface water and soil will be avoided. With the above measures in place, salinity impacts will be minimised and long term impacts avoided. The proposed works are compliant with the performance requirement S.6: Salinity through an alternative solution.



Performance Requirement	Acceptable Solution (Applicant may propose an alternative solution to meet performance requirements)	Background	Proposed Solution
PR S.7: Conserving Remnant Vegetation that are Endangered Regional Ecosystems and Of Concern Regional Ecosystems To regulate the clearing of vegetation in a way that conserves remnant vegetation that are endangered regional ecosystems and of concern regional ecosystems—maintain the current extent of endangered regional ecosystems and of concern regional ecosystems.	AS S.7.1 Clearing – - Does not occur in an endangered regional ecosystem or an of concern regional ecosystem that is listed in Table 4; and - In an endangered regional ecosystem or an of concern regional ecosystem that is not listed in Table 4 of the Code, only occurs where the clearing is less than 10 m wide or 0.5 ha.	Although site selection and design processes have minimised the amount of remnant vegetation impacted by the Project, construction of the offsite infrastructure will involve the clearing of endangered and of concern RE. A total of 1.6 ha of endangered RE (11.3.1 and 11.4.9) and 13.91 ha of of concern RE (11.3.3, 11.4.5 and 11.4.11) will be cleared for the Project.	The Project (Offsite) requires the clearing of endangered and of concern REs. Any potential impacts of clearing on the environment will be limited through the application of an EMP developed for the construction and operational phases. The solutions outlined in the EMP will seek to avoid any loss of extent of remnant vegetation and maintain connectivity between remnant patches. Some of the management measures that will be implemented during works include: - Minimise the clearing extent to the minimal amount necessary for the construction of the offsite infrastructure and wherever possible, existing cleared areas are to be utilised. - Clearly identify the extent of vegetation clearing on construction plans and in the field. Areas that must not be cleared or damaged are to also be clearly identified on construction plans and in the field. - Locate additional construction areas, such as site offices, construction stockpile locations, machinery/equipment laydown areas and storage where possible within existing cleared or disturbed areas - Reinstate disturbed areas as soon as possible, particularly for temporary infrastructure areas, such as lay down areas - Permanent loss of vegetation will be offset in accordance with the Policy for Vegetation Management Offsets – Version 3. An Offset Strategy is being developed for the Project which will meet the offset requirements associated with the Project. The proposed works are compliant with the performance requirement S.7: Conserving Remnant Endangered or Of Concern Regional Ecosystems through an alternative solution.
PR S.8: Essential Habitat To regulate the clearing of vegetation in a way that prevents the loss of biodiversity—maintain the current extent of essential habitat.	AS S.8.1 Clearing does not occur in an area shown as essential habitat on the essential habitat map. The proposed works are compliant with performance requirement S.8: Essential Habitat through the acceptable solution.	Essential habitat is vegetation in which a threatened species is believed to occur. No areas mapped by DEHP as essential habitat occur within the Brigalow Belt region of the Project (Offsite) footprint.	Not applicable

Performance Requirement	Acceptable Solution (Applicant may propose an alternative solution to meet performance requirements)	Background	Proposed Solution
PR S.9: Conservation Status Thresholds To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and conserves remnant vegetation that are regional ecosystems—maintain the current extent of regional ecosystems listed in Table 5 of the Code.	AS S.9.1 Clearing in a regional ecosystem listed in Table 5 of the Code, does not occur unless the clearing is less than – 10 metres wide; or 2 hectares	Although site selection and design processes have minimised the amount of remnant vegetation impacted by the Project (Offsite), construction of the offsite infrastructure will involve the clearing of a single conservation threshold RE. RE 11.4.11 is a listed RE that is at risk of falling below 30% of its pre-clearing extent, or having a remnant extent of less than 10 000 hectares. A total of 13.13 ha of RE 11.4.11 will be cleared for the Project (Offsite). The Project (Offsite) footprint intersects this RE at two locations in the central region of the Study Area. This RE occurs as a heterogeneous polygon with 11.4.5 and 11.4.9.	The Project (Offsite) requires the clearing of a single conservation status threshold RE, 11.4.11. Any potential impacts of clearing on the environment will be limited through the application of an EMP developed for the construction and operational phases. The solutions outlined in the EMP will seek to avoid any loss of extent of remnant vegetation and maintain connectivity between remnant patches. Some of the management measures that will be implemented during works include: - Minimise the clearing extent to the minimal amount necessary for the construction of the offsite infrastructure and wherever possible, existing cleared areas are to be utilised. - Clearly identify the extent of vegetation clearing on construction plans and in the field. Areas that must not be cleared or damaged are to also be clearly identified on construction plans and in the field. - Locate additional construction areas, such as site offices, construction stockpile locations, machinery/equipment laydown areas and storage where possible within existing cleared or disturbed areas - Reinstate disturbed areas as soon as possible, particularly for temporary infrastructure areas, such as lay down areas - Permanent loss of vegetation will be offset in accordance with the Policy for Vegetation Management Offsets – Version 3. An Offset Strategy is being developed for the Project which will meet the offset requirements associated with the Project. The proposed works are compliant with the performance requirement S.9: Conservation Status Thresholds through an alternative solution.
PR S.10: Acid Sulfate Soils (ASS) To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes in the coastal subregions of the Brigalow Belt bioregion, and the Marlborough Plains subregion (11.14)—clearing activities do not result in disturbance of acid sulfate soils or changes to the hydrology of the location that will either— - Aerate horizons containing iron sulfides; or - Mobilise acid and/or metals.	AS S.10.1 In the coastal subregions of the Brigalow Belt bioregion, and the Marlborough Plan is subregion (11.14), clearing in land zone 1, and land zone 2 or land zone 3 in areas below 5 metre Australian Height Datum – - Is carried out in accordance with an acid sulphate soils environmental management plan as outlined in the State Planning Policy 2/02 Guideline: Planning and Managing Development involving Acid Sulfate Soils; and - Follows management principles in accordance with the Soil Management Guidelines in the Queensland Acid Sulfate Soil Technical Manual. The proposed works are compliant with performance requirement S.10: Acid sulfate soils through the acceptable solution.	The Project (Offsite) footprint does not occur within the coastal subregions of the Brigalow Belt bioregion, and the Marlborough Plains subregion.	Not applicable

4.2 Western Bioregions Regional code

This section refers to clearing proposed for the construction of offsite infrastructure and assesses requirements against Part S of the *Regional Vegetation Management Code for Western Bioregions – Version 2.1* (Western Bioregions Regional Code) for the clearing for significant projects (DERM, 2009b). This application is to clear areas of remnant vegetation concerning least concern RE associated with wetlands and watercourses, and important vegetation for maintenance of connectivity across the landscape that occur within the Desert Uplands region of the Project Area. The REs proposed to be cleared are mapped in Figure 3. Table 9 provides a summary of the Project's compliance with the relevant performance requirements of the Western Bioregions Regional Code.

Table 8 lists potentially impacted assessable vegetation under the VM Act that will require management during construction and operation phases to meet performance criteria listed in Part S of the *Regional Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions – version 2*

Table 8 Proposed clearing extent of assessable vegetation

Significant Ecological Feature	Description	Proposed Extent of Clearing (ha)
Wetland vegetation	No natural or important wetland areas occur within the Desert Uplands region of the Project (Offsite) footprint.	0.0
Corridor vegetation	The Project (Offsite) footprint occurs within a highly-fragmented landscape. The footprint intersects with three small remnant vegetation patches. These are likely to be further fragmented and/or reduced in size as a result of the Project.	Remnant extent: 7.1

Table 9 Performance requirements and solutions for significant projects within the Desert Uplands bioregion

Performance Requirement	Acceptable Solution (Applicant may propose an alternative solution to meet performance requirements)	Background	Proposed Solution
PR S.1: Limits to clearing To regulate the clearing of vegetation in a way that conserves remnant vegetation that are regional ecosystems, does not cause land degradation, prevents the loss of biodiversity and maintains ecological processes – subject to limitations required to meet PR S.2 to PR S.10.	Clearing is limited to the extent that is necessary for the project, any associated ancillary works, and the operation of works that comprise a project declared to be a significant project under the State Development and Public Works Organisation Act 1971, section 26.	The Project (Offsite) will require clearing of a small amount of remnant vegetation within the Desert Uplands bioregion (7.1 ha) for the construction of the proposed offsite infrastructure (Figure 3). Clearing of remnant vegetation will be necessary for the construction of the following: • Water infrastructure • Rail loop • Light industrial precinct • Water supply infrastructure	A careful site selection and design process was undertaken for the Project (Offsite). The selection process identified the preferred location and alignment of the various infrastructure proposed for the Project (Offsite). The selection process considered economic, social and environmental impacts while aiming to deliver the desired infrastructure outcomes. The proposed route selected avoids the majority of vegetation mapped as remnant vegetation (particularly of concern and endangered REs) and areas of high ecological value where possible and the width of linear corridors has been reduced to the absolute minimum width necessary for construction. The proposed works are compliant with the performance requirement S.1: Limits to clearing through the acceptable solution.
PR S.2: Wetlands To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and maintains ecological processes – maintain the current extent of assessable vegetation associated with and natural significant wetland and/or natural wetland to provide – maintain the current extent of assessable vegetation associated with any watercourse to provide – • Water quality by filtering sediments, nutrients and other pollutants; and • Aquatic habitat; and • Terrestrial habitat	AS S.2.1 Clearing does not occur – • In any natural wetland; and • Within 100 m from any natural wetland; and • In any natural significant wetland; and • Within 200 m from any natural significant wetland.	No natural wetlands or natural significant wetlands are located within the Desert Uplands region of the Project Area.	The proposed works are compliant with the performance requirement S.2: Wetlands through the acceptable solution.
PR S.3: Watercourses To regulate the clearing of vegetation in a way that does not cause land degradation, prevents the loss of biodiversity and maintains ecological processes— maintain the current extent of assessable vegetation associated with any watercourse to provide— • Bank stability by protecting against bank erosion; and • Water quality by filtering sediments, nutrients and other pollutants; and • Aquatic habitat; and • Terrestrial habitat.	AS S.3.1 Clearing does not occur – • In any watercourse; and • Within 200 m from each high bank of each watercourse with a stream order 5 or greater; and • Within 100 m from each high bank of each watercourse with a stream order 3 or 4; and • Within 50 m from each high bank of each watercourse with a stream order 1 or 2.	The only watercourses occurring within the Desert Uplands region of the Project area are Eight Mile Creek and North Creek. Watercourses in this bioregion must be determined using the representation of a creek, stream, river or watercourse on the most recent 1:100,000, 1:250,000 or 1:25,000 topographic maps. Both of the Desert Uplands watercourses cross the alignment as undefined drainage channels with minimal to no vegetative cover. The vegetation associated with these watercourses is not mapped as remnant and is therefore not assessable under the regional management code.	The proposed works are compliant with the performance requirement S.3: Watercourses through the acceptable solution.
PR S.4: Connectivity To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and maintains ecological processes— areas of mapped remnant vegetation are— • Of sufficient size and configured in a way to maintain ecosystem functioning; and • Of sufficient size and configured in a way to remain in the landscape in spite of any threatening processes; and • Located on the lot(s) that are the subject of the application to maintain connectivity to mapped remnant vegetation on adjacent properties.	AS S.4.1 Where clearing is less than – • 25 m wide; or • 5 ha; or Clearing does not – • Reduce the width of mapped remnant vegetation to less than 200 m; and • Occur where the width of mapped remnant vegetation is less than 200 m; AND S.4.2 Clearing does not – • Reduce areas of contiguous mapped remnant vegetation to less than 50 ha; and • Occur in areas of contiguous mapped remnant vegetation that are less than 50 ha; and • Reduce the width of mapped remnant vegetation to less than 200 m; and • Occur where the width of mapped remnant vegetation is less than 200 m; and	The Project (Offsite) footprint is predominantly located within agricultural land and land that has been previously cleared or degraded by past land use practises. Small areas of remnant vegetation will be impacted within the Brigalow Belt region of the Project (Offsite) footprint. These areas of remnant vegetation comprise regional and state corridors of biodiversity significance. Several patches of remnant vegetation are intersected by the Project (Offsite) footprint. These vary in size from 2 ha to up to 200 ha. This vegetation is consistent with REs 10.3.6a, 10.3.28a, 10.4.5 and 10.5.5a, and provides habitat connectivity across the landscape. A number of these patches will be fragmented and/or reduced in size as a result of the Project. The condition of vegetation within many of these remnant patches, and the value of these communities for fauna, has been compromised to some extent by historical and existing land use pressures. These pressures (historic and current) include clearing (i.e. for access tracks), weed invasion, feral animal activity and livestock grazing.	The proposed investigative works will require the clearance of 7.1 ha of mapped Desert Uplands RE. Any potential impacts of clearing on the environment will be limited through the application of an EMP developed for the construction and operational phases. The solutions outlined in the EMP will seek to avoid any loss of connectivity between patches of remnant vegetation and maintain wildlife passage. Some of the management measures that will be implemented during works include: • Minimising vegetation clearance by: – Utilising existing access tracks where possible and by clearing the minimal area for new access tracks. The clearing of corridor vegetation will predominately occur along the proposed road corridor; clearing will therefore be kept to a minimum and will not contribute greatly to further fragmenting habitat within the landscape... – Restricting vehicular traffic to a minimum to avoid inadvertent widening of any tracks (e.g. during

Performance Requirement	Acceptable Solution (Applicant may propose an alternative solution to meet performance requirements)	Background	Proposed Solution
	- Reduce the total extent of mapped remnant vegetation to less than 30%; and - Occur where the total extent of mapped remnant vegetation is less than 30%. AND S.4.3 Where clearing is for a significant community project, maintain the current extent of mapped remnant vegetation where the vegetation is – - Of sufficient size and configured in a way to maintain ecosystem functioning; and - Of sufficient size and configured in a way to remain in the landscape in spite of any threatening processes; and - Located on the lot(s) that are the subject of the application to maintain connectivity to mapped remnant vegetation on adjacent properties.	Nonetheless, these vegetation communities may provide habitat for a range of common native fauna species.	- overtaking or turning vehicles around). - Reinstating disturbed areas as soon as possible, particularly for temporary infrastructure areas, such as lay down areas With the above measures in place, disturbance to the connectivity of the landscape investigations will be minimised and long term impacts avoided. Permanent loss of vegetation will be offset in accordance with the Policy for Vegetation Management Offsets – Version 3. An Offset Strategy has been developed for the entire Project which will meet the offset requirements associated with the Project. The proposed works are compliant with the performance requirement S.4: Connectivity through an alternative solution.
PR S.5: Soil Erosion To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes—the effect of clearing does not result in— - Mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion, or scalding; and - Any associated loss of chemical, physical or biological fertility— including, but not limited to water holding capacity, soil structure, organic matter, soil biology, and nutrients, - within and/or outside the lot(s) that are the subject of the application.	AS S.5.1 Mechanical clearing can only occur on – - Stable soils on a slope less than 10%; and - unstable soils on a slope less than 3%; and - very unstable soils on a slope less than 1%. The proposed works are compliant with the performance requirement S.5: Soil Erosion through the acceptable solution.	Soil erosion has the potential to threaten the integrity of structural foundations, and will need to be managed proactively throughout the lifetime of the Project. The Project Area occurs predominantly on gently undulating clay floodplains and alluvial soils, comprising kandosols, tenosols, rudosols and vertosols. Tenosols, which are often referred to as red and yellow sand-plains, typically have poor water retention and are mainly utilised for the livestock grazing of native pastures. Vertosols (cracking clays) are present in the alluvial areas around watercourses. Sodic soils are present and are supported by the presence of deep rutting and erosion gullies at a number of locations, which may be caused by overland flow. This indicates that the soils may be unstable when interacting with water and susceptible to dispersion and erosion. The Good Quality Agricultural Land (GQAL) classification is a Class C Pasture land. This land class is suitable for improved. At a preliminary assessment level this land is considered to be good quality as it is suitable for grazing and is situated in a region where pastoral enterprises are a major industry. <i>Soil Erodibility</i> Soil erodibility is determined by the rate of surface infiltration, permeability through the profile, and the coherence and structural stability of soil particles. The soils of the Study Area range in erodibility ratings from low to moderate. <i>Existing Slope Gradient and Length</i> Due to the low lying nature of the landscape, the slope gradients within the Project Area are generally low and are likely to have limited contribution to causing accelerated erosion.	The erodibility of the soils in the Desert Uplands region of the Project Area is generally low to moderate (i.e. stable to very stable) and given the low lying nature of the landscape and scope of works it is not likely that the proposed works will contribute to erosion of the landscape. Further sampling and testing will be undertaken as part of the proposed works to confirm the anticipated soil erodibility conditions. Although the erosion potential of soils within the Project Area is low, erosion and sediment control will be undertaken as necessary throughout the construction and operation of site works to mitigate environmental incidents. An erosion and sediment control plan will be developed as part of the EMP for offsite infrastructure. Specifically, the following management actions will be implemented to avoid and mitigate impacts from erosion: - All clearing will be by mechanical means; - Erosion and sediment control devices will be installed prior to clearing where necessary and will remain maintained and in place until the area is stabilised; - There will be no storage of materials and spoil near watercourses; - Topsoil and subsoil will be reinstated in the original sequence to ensure the layers are compatible; - Native vegetation will be allowed to regenerate naturally from seed stock in topsoil; and - Each site will be assessed before leaving to ensure that soils have been replaced and erosion risk is reduced.

Performance Requirement	Acceptable Solution (Applicant may propose an alternative solution to meet performance requirements)	Background	Proposed Solution
PR S.6: Salinity To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes—clearing does not contribute to— - Waterlogging; or - The salinisation of groundwater, surface water or soil.	AS S.6.1 Where clearing is less than – 2 ha; or 10 m wide; - Clearing does not occur in any discharge area AND S.6.2 Where clearing is less than – 5 ha; or 50 m wide- Clearing does not occur – - In any discharge area; and - Within 200 m of any discharge area AND S.6.3 Clearing does not occur in areas greater than 5 ha.	The Natural Resource Management (NRM) Burdekin Basin Salinity Hazard Map indicates that the majority of the Project area falls within the 'moderate' and 'high' hazard areas for potential for salt mobilisation. Such biophysical features include groundwater depth and quality; relative position in landscape; potential salt in the soil and underlying geology; and the capacity for water to discharge. The extent of clearing of remnant vegetation for works within the Desert Uplands bioregion will be 7.1 ha. This will include clearing on watercourse banks and other low-lying areas.	The extent of clearing within discharge areas is likely to exceed the acceptable amount according to the Western Bioregional Regional Code. 4 given that the total maximum amount to be cleared will be 1,157.7 ha. However, clearing will be kept to the minimum necessary for construction of proposed infrastructure. Where possible, existing trees and shrubs in salt prone areas will be retained, which will help maintain the water table. Disturbed areas, where design allows, will be stabilised as soon as possible by reinstating topsoil and subsoil and compacting replaced soils. Through these measures the service provided by vegetation in relation to the management of salinity in these landscapes is expected be restored, and water logging and the salinisation of ground water, surface water and soil will be avoided. With the above measures in place, salinity impacts will be minimised and long term impacts avoided. The proposed works are compliant with the performance requirement S.6: Salinity through the alternate solution.
PR S.7: Conserving Remnant Vegetation that are Endangered Regional Ecosystems and Of Concern Regional Ecosystems To regulate the clearing of vegetation in a way that conserves remnant vegetation that are endangered regional ecosystems and of concern regional ecosystems—maintain the current extent of endangered regional ecosystems and of concern regional ecosystems.	AS S.7.1 Clearing – - Does not occur in an endangered regional ecosystem or an of concern regional ecosystem that is listed in Table 3 of the Code; and - In an endangered regional ecosystem or an of concern regional ecosystem that is not listed in Table 3 of the Code, only occurs where the clearing is less than 10 m wide or 5 ha.	No clearing of endangered or of concern REs, or those listed in Table 3 of the Western Bioregions Regional Code, will occur within the Desert Uplands region of the Project (Offsite) footprint.	The proposed works are compliant with the performance requirement S.7: Conserving remnant Endangered and Of Concern REs through the acceptable solution.
PR S.8: Essential Habitat To regulate the clearing of vegetation in a way that prevents the loss of biodiversity—maintain the current extent of essential habitat.	AS S.8.1 Clearing does not occur in an area shown as essential habitat on the essential habitat map.	Essential habitat is vegetation in which a threatened species is believed to occur. No areas mapped by DEHP as essential habitat occur within the Desert Uplands region of the Project (Offsite) footprint.	No clearing of essential habitat is required for the Project. All works will be in compliance with the Project EMP, which will be developed for the proposed works. The aim of the EMP is to minimise impacts to environmental values and ensure management strategies are implemented. The proposed works are compliant with the performance requirement S.8: Essential Habitat through the acceptable solution.
PR S.9: Conservation Status Thresholds To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and conserves remnant vegetation that are regional ecosystems—maintain the current extent of regional ecosystems listed in Table 4 of the Code.	AS S.9.1 Clearing in a regional ecosystem listed in Table 4 of the Code, does not occur unless the clearing is less than – 10 m wide; or 2 ha	No threshold regional ecosystems listed in Table 4 of the Western bioregions Regional Code occur within the Desert Uplands region of the Project (Offsite) footprint	No clearing of a RE listed in Table 4 of the Western Bioregions Regional Code will occur. The proposed works are compliant with the performance requirement S.9: Conservation Status Threshold through the acceptable solution.



Performance Requirement	Acceptable Solution (Applicant may propose an alternative solution to meet performance requirements)	Background	Proposed Solution
PR S.10: Acid Sulfate Soils To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes — clearing activities do not result in disturbance of acid sulfate soils or changes to the hydrology of the location that will either— Aerate horizons containing iron sulfides; or Mobilise acid and/or metals.	AS S.10.1 Clearing in land zone 1, and land zone 2 or land zone 3 in areas below 5 m Australian Height Datum – - Is carried out in accordance with an acid sulphate soils environmental management plan as outlined in the State Planning Policy 2/02 Guideline: Planning and Managing Development involving Acid Sulfate Soils; and - Follows management principles in accordance with the Soil Management Guidelines in the Queensland Acid Sulfate Soil Technical Manual.	Clearing for the Project will not occur within land zones 1, 2 or 3, in areas less than 5 m AHD.	The proposed works are compliant with the performance requirement S.10 Acid Sulfate Soils through the acceptable solution.



5. Conclusion

The development of the proposed Offsite Infrastructure requires the clearing of assessable vegetation. The information contained within this PVMP demonstrates how the proposed works comply with the acceptable solutions outlined in the *Regional Vegetation Management Code for the Brigalow Belt and New England Tableland Bioregions – Version 2.4* and the *Regional Vegetation Management Code for the Western Bioregions – Version 2.4*, or nominates the proposed alternative solutions to meet the performance requirements.

Alternative solutions were proposed for PR S.2 (wetlands), PR S.3 (watercourses), PR S.4 Connectivity, and PR S.6 (salinity), PR S.7 Conserving endangered and of concern REs and PR S.9 Conservation status thresholds. This includes mitigation measures that will be included in the EMP to maintain overall standards of environmental protection set out by the Code. These measures will minimise the impact of the investigation works.

REs cleared will be offset according to the Policy for Vegetation Management Offsets (DEHP, 2009). An offset strategy is currently being developed for the Project which will meet the offset requirements associated with the offsite infrastructure outlined in Section 3. BioCondition assessments have been conducted within suitable sites within the Project Area.

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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	J. Newton	S. Danielsen	DRAFT	J. Keane	DRAFT	01/07/2013
0	J. Newton	S. Danielsen	On file	J. Keane	On file	24/07/2013
1	M. Goodall	J. Keane		J. Keane		31/10/2013

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Appendix C: Vegetation Removal Plan

NOTES:

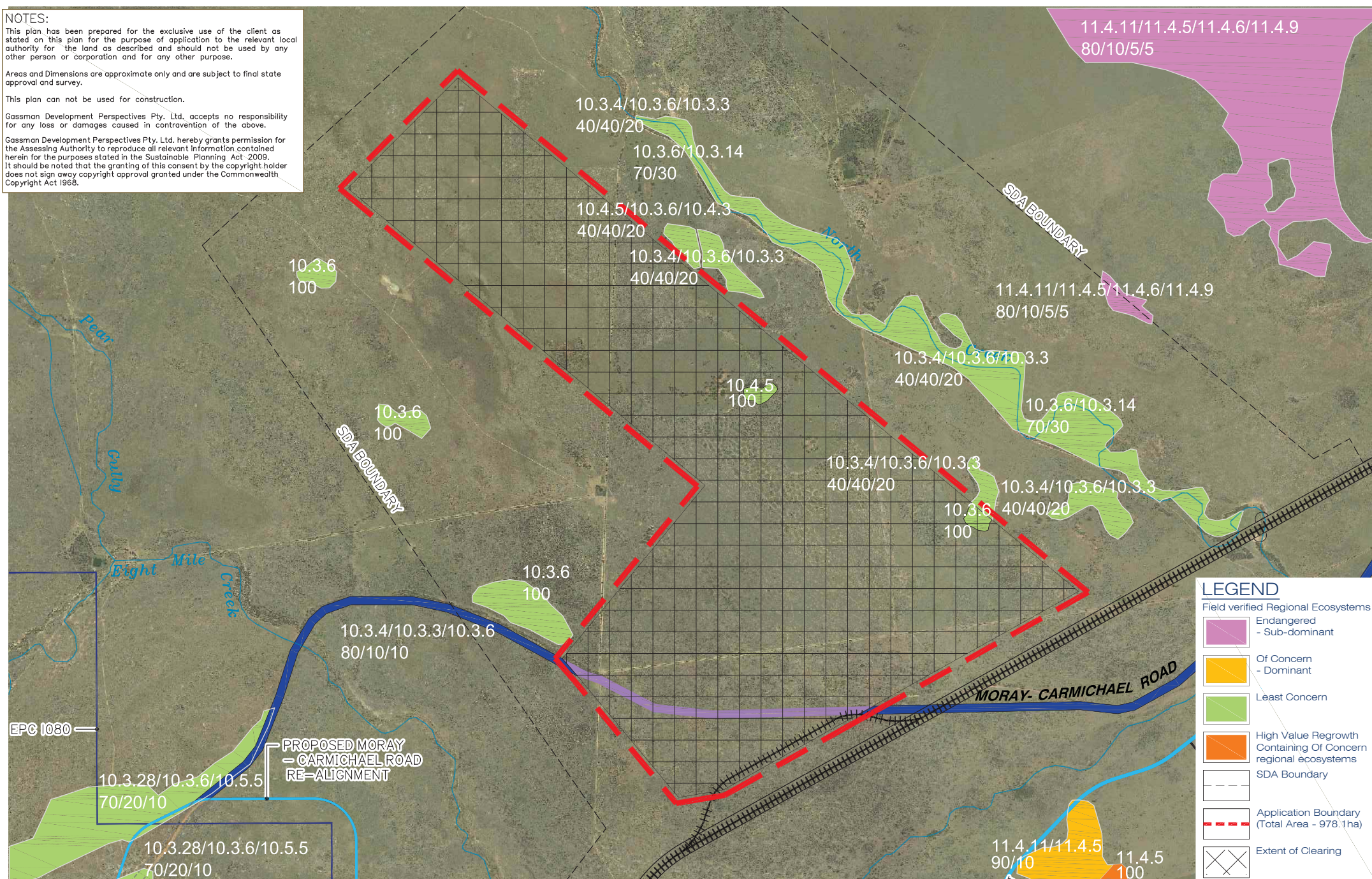
This plan has been prepared for the exclusive use of the client as stated on this plan for the purpose of application to the relevant local authority for the land as described and should not be used by any other person or corporation and for any other purpose.

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LEGEND

Field verified Regional Ecosystems

Endangered
- Sub-dominant

Of Concern
- Dominant

Least Concern

High Value Regrowth
Containing Of Concern
regional ecosystems

SDA Boundary

Application Boundary
(Total Area - 978.1ha)

Extent of Clearing

Appendix E: OPW Bulk Earthworks



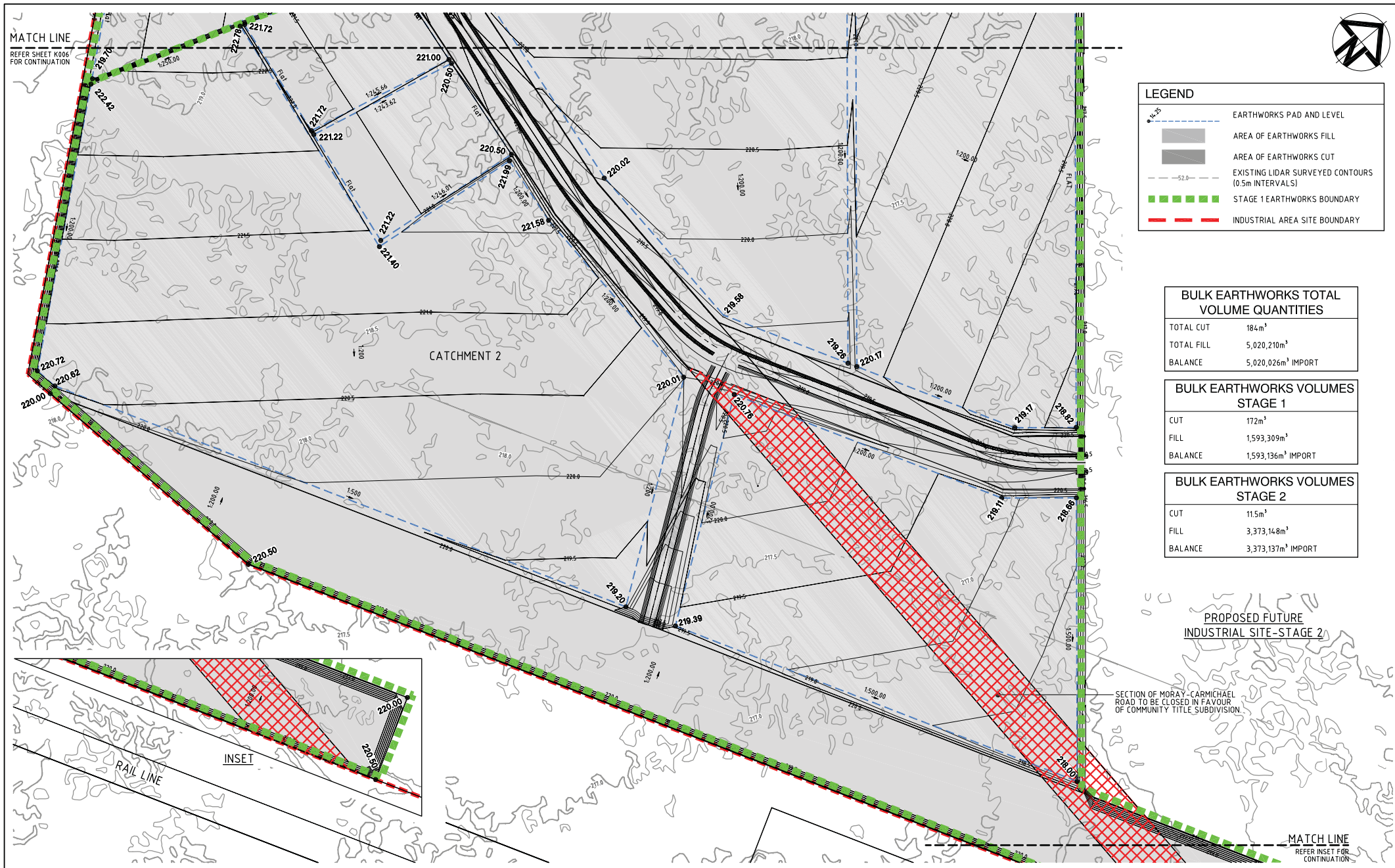
OPW Bulk Earthworks: Industry

17th July 2013



project coordination
urban + regional planning
landscape + urban design
environmental management
visualisation + spatial services
surveying services
advisory services

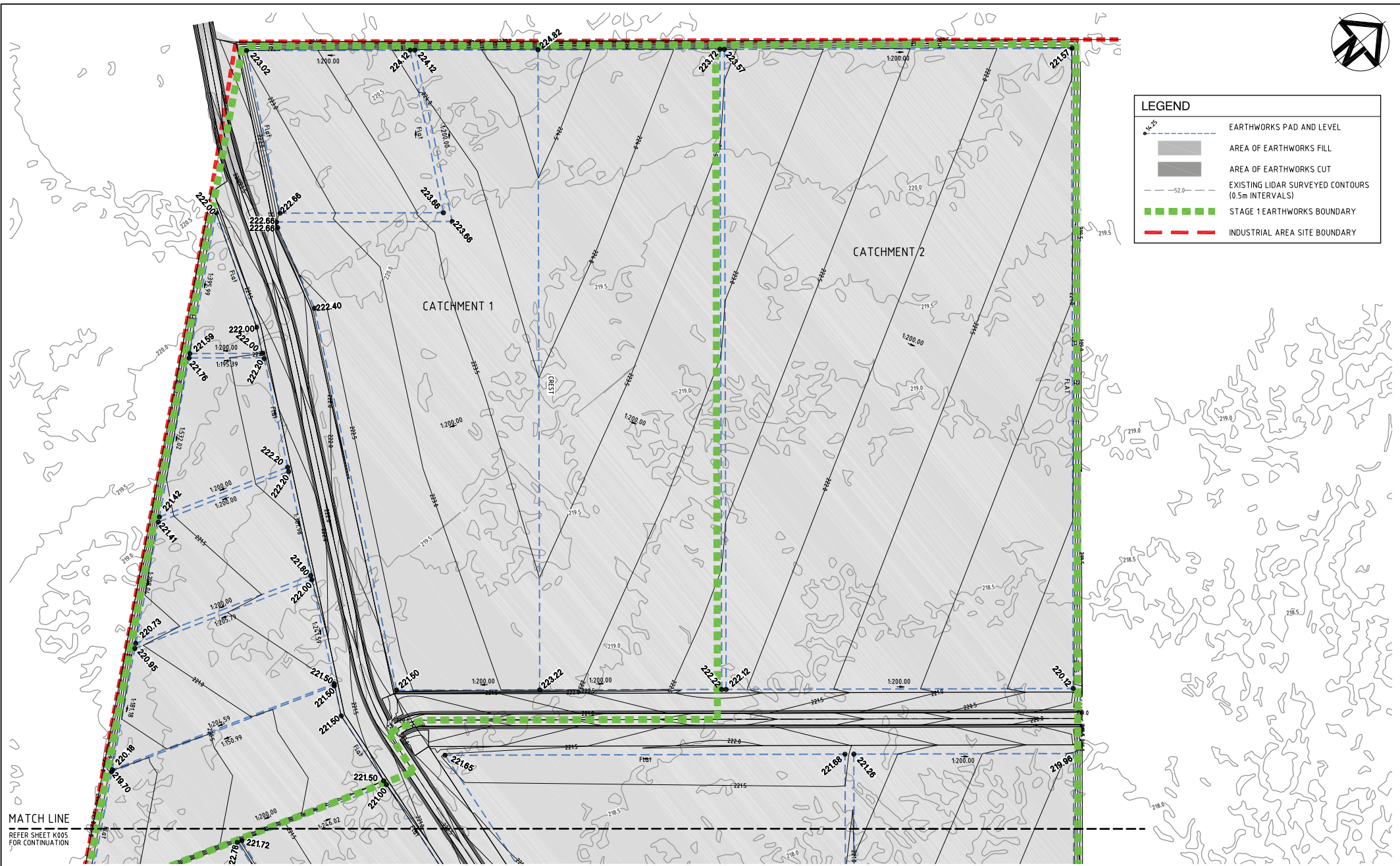




A ORIGINAL ISSUE				T.P. S.M. 26.06.2013							
Issue Description				By Cld Date							
Filename: K005-AA006158-AAAD-08-BULK INDUST.DWG											

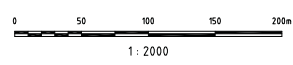


LEGEND	
	EARTHWORKS PAD AND LEVEL
	AREA OF EARTHWORKS FILL
	AREA OF EARTHWORKS CUT
	EXISTING LIDAR SURVEYED CONTOURS (0.5m INTERVALS)
	STAGE 1 EARTHWORKS BOUNDARY
	INDUSTRIAL AREA SITE BOUNDARY



MATCH LINE
REFER SHEET K005
FOR CONTINUATION

A ORIGINAL ISSUE		T.P.	S.M.	26.06.2019
Issue	Description	By	Chd	Date



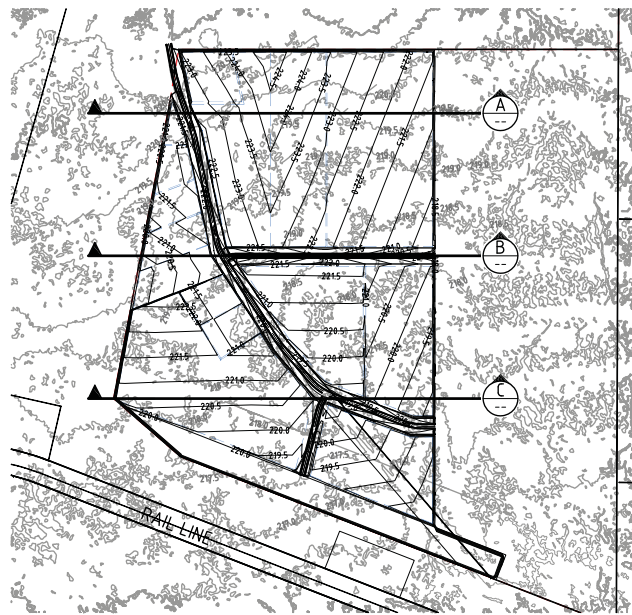
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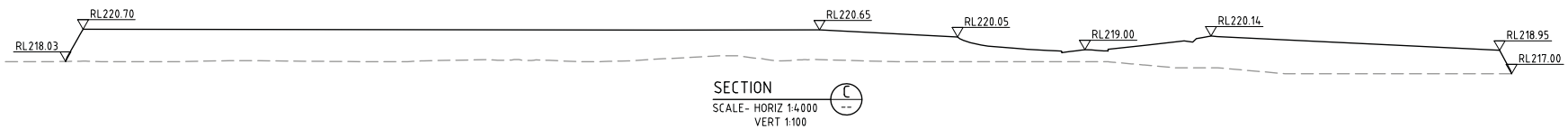
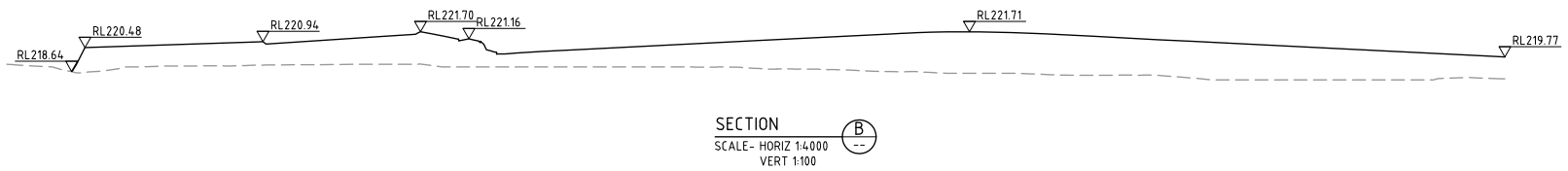
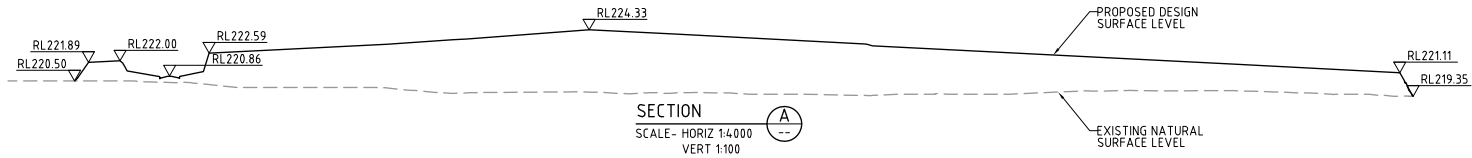
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Scales	1:2000	Current Issue Signatures
		Author T. PHAN
Original Size	A1	Designer S. EISEL
Height Datum	AHD	Reviewer C. HOWARD
Grid	GDA94	© Copyright reserved

Project	CARMICHAEL MINE DEVELOPMENT	
Title	INDUSTRIAL SITE - STAGE 1 BULK EARTHWORKS LAYOUT PLAN SHEET 2 OF 2	

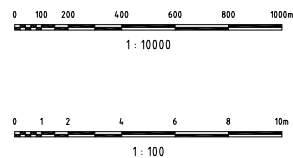
		HYDER CONSULTING Pty Ltd ABN 76 104 485 289 Level 7, 199 Grey Street Locked Bag 2017 South Brisbane, QLD 4101 Australia Tel: +61 7 3337 0000 Fax: +61 7 3337 0050 Web: www.hyderconsulting.com
Drawing No.	Project No.	Issue
K006	AA006158	A



LAYOUT PLAN
SCALE - 1:10,000



A		ORIGINAL ISSUE	T.P.	S.M.	26.06.2013
Issue	Description	By	Chd	Date	



Surveyor	
Client	
Filename	K041-AA006158-AA0-00-INDUST BULK SECTIONS.DWG



Status	PRELIMINARY NOT TO BE USED FOR CONSTRUCTION	
Approved	R.P.E.O No : - - - -	
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Original Size	A1	Author S. GORMAN
Height	AHD	Designer S. EISEL
Datum	GDA94	Reviewer C. HOWARD
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Project	CARMICHAEL MINE DEVELOPMENT	
Title	<u>INDUSTRIAL SITE STAGE 1</u> BULK EARTHWORKS SITE CROSS SECTIONS	

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Drawing No.	Project No.	Issue
K041	AA006158	A

Appendix F: MCU Concrete Batching



Site Based Management Plan (Concrete Batching Plant): Industry

17th July 2013



project coordination
urban + regional planning
landscape + urban design
environmental management
visualisation + spatial services
surveying services
advisory services



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No.	Author	Reviewer
V1.0 (internal DRAFT)	Mark Spears	Gary Savins
V2.0	Mark Spears	David Hansen

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Version	Name	Position	Signature	Date
V2.0	David Hansen	Director		17 th July, 2013

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Contents

1.0	INTRODUCTION	5
1.1	GOAL AND PURPOSE	5
1.2	SBMP OVERVIEW	6
1.3	RESPONSIBILITY AND TRAINING	7
1.4	INCIDENT REGISTER	8
2.0	PROCESS DETAILS.....	9
2.1	PROCESS.....	9
2.2	ENVIRONMENTAL ISSUES	9
2.3	SUMMARY AND CONCLUSION.....	10
3.0	ENVIRONMENTAL MANAGEMENT PLANS.....	11
3.1	AIR QUALITY MANAGEMENT PLAN.....	11
3.2	NOISE MANAGEMENT PLAN.....	14
3.3	WATER MANAGEMENT PLAN	17
3.4	WASTE MANAGEMENT	19
	ATTACHMENT 1 – SITE PLAN AND PROCESS DIAGRAM.....	20

List of Figures

Table 1 - Air Quality Management Plan.....	12
Table 2 - Noise Management Plan.....	14
Table 3 - Water Quality Management Plan	17

1.0 Introduction

1.1 Goal and Purpose

This Site Based Management Plan (SBMP) has been prepared to accompany a development application to be lodged with Isaac Regional Council for an Industrial Material Change of Use (MCU). This SBMP describes methods of production for a concrete batching plant.

The location of the activity in relation to the greater development proposal is shown in the below figure.

A proposed site layout plan is included in **Attachment 1**.

Key objectives of this Operational SBMP report are to:

- Address all relevant **environmental management issues** attached to the site;
- Develop **'life-of-proposal' control strategies** incorporating performance criteria to quantify acceptable levels of environmental harm;
- Provide evidence of **environmental responsibility** and **sustainable management** during the operation of the concrete batching plant;
- Establish **performance criteria** and **objectives** relating to environmental and social impacts which will include measurable indicators and standards;
- Outline **monitoring techniques** to be undertaken against the performance criteria;
- Detail **prevention, minimisation** and **mitigation** strategies for controlling anticipated environmental impacts from a range of sources;
- Define roles of onsite **responsibility** for environmental management;
- Detail the **timing** of environmental management initiatives proposed;
- Outline **reporting** and **auditing** responsibilities for meeting objectives;
- Outline proposed **corrective actions** to remedy environmental issues that may arise;
- Provide Isaac Regional Council with a framework to assess **compliance** with the relevant statutory regulations;
- Provide a platform for a **consistent approach** to environmental management at the site for the duration of the plant's operation.

NOTES:

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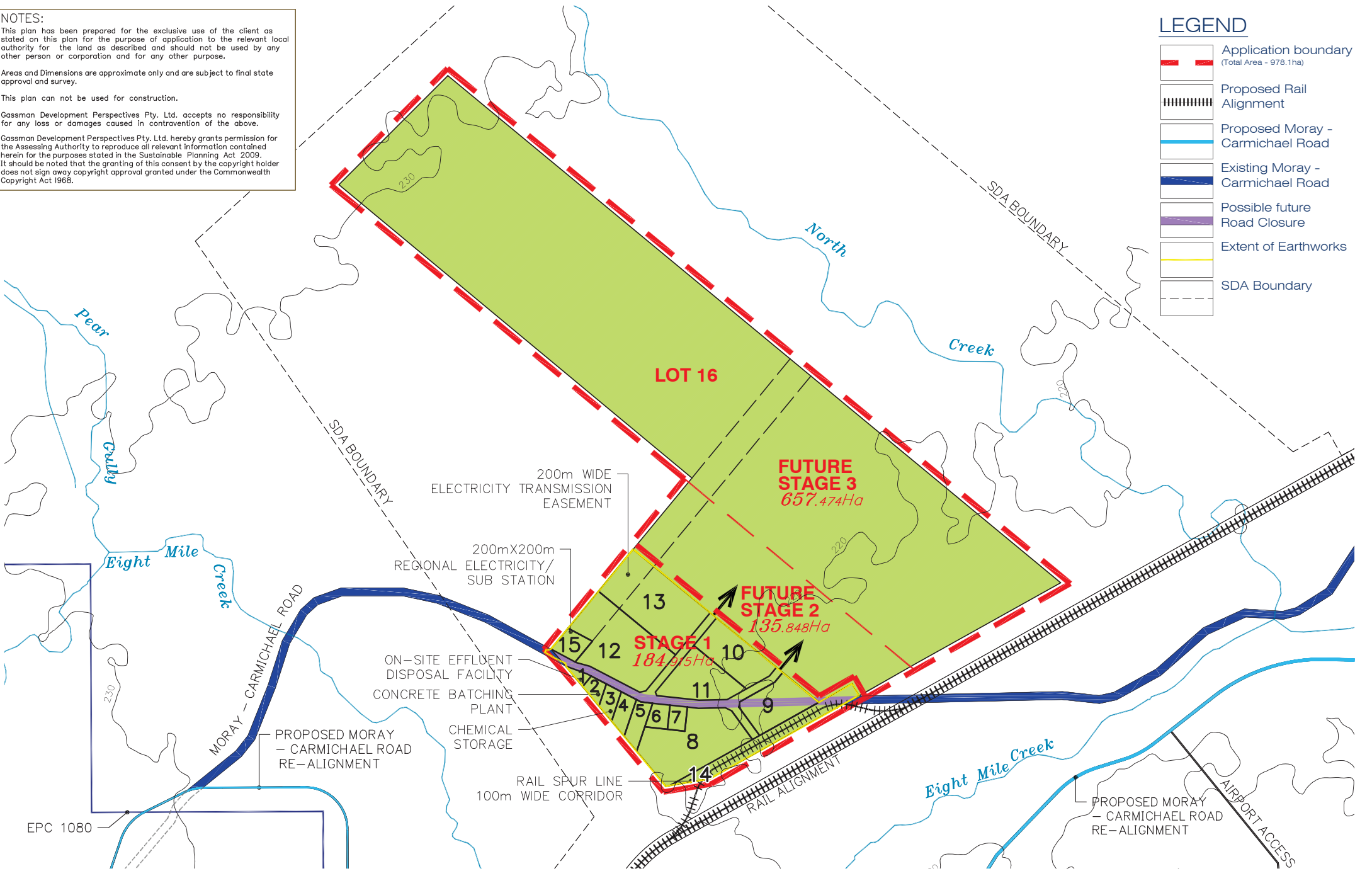
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LEGEND

Application boundary
(Total Area - 978.1ha)

Proposed Rail Alignment

- Provide a platform for a **consistent approach** to environmental management at the site for the duration of the plant's operation.

1.2 SBMP Overview

Adani Mining Pty Ltd is seeking approval to operate a plant for the production and batching of concrete to service the construction of various mine related infrastructure.

This SBMP has been prepared to provide the framework necessary to ensure that the recommended environmental control strategies identified are effectively implemented to minimise any actual or potential adverse environmental impacts during the plant's operation. Each of the site specific environmental issues are identified in **Section 2.3** and individually addressed in **Chapter 3** in accordance with the following structure:

Element/issue:

The aspect of the operation to be managed as it affects environmental values.

Performance Objectives:

The criteria against which the level of achievement of the stated objective shall be measured.

Operational Policy:

The management objective that applies to the potential source of environmental harm.

Performance criteria:

Measureable outcomes for each element of the operation as per available guidelines.

Implementation strategy:

Strategies that will be implemented in order to achieve the performance criteria.

Monitoring:

The monitoring requirements to measure performance and success of environmental protection measures.

Reporting/ Responsibility

Required reporting and review arrangements for each task and action (when and by whom).
Assign responsibility for carrying out each task or action to relevant person or organisation.

Corrective Actions:

Actions in the event of non-compliance with stated objectives/ targets including responsibility for remediation.

1.3 Responsibility and Training

The concrete batching plant operations manager is responsible for ensuring all personnel associated with the plant's operation are aware of the contents of this SBMP and act in accordance with the plan.

All staff employed at the concrete batching plant will be educated (as part of induction or ongoing staff training initiatives) on the environmental obligations of the SBMP and their general environmental duty of care. The organisational structure of the facility is yet to be determined but can be provided in response to conditions of approval.

This SBMP will be made available to all staff employed (directly or indirectly) within the concrete batching plant.

The operations manager of the concrete batching plant shall take responsibility for the effective implementation of this SBMP during the plant's ongoing operation.

The senior management of the site are committed to achieve the specified and relevant goals of this SBMP and are committed to continual environmental improvement.

Four times per year, senior management of the site will meet to review the environmental performance of the site and investigate and implement measures to achieve continual environmental improvement.

1.4 Incident Register

There will be particular adherence to prompt resolution of any environmental or safety incidents recorded in relation to the operation of the plant. Subsequently, emphasis will be placed on the development and implementation of corrective actions in response to non-compliance with the SBMP (as identified as part of the monitoring process).

The performance objective/ indicator regarding the resolution of these is for the issue to be resolved in such a manner that there will be a reduction in the risks of the incident occurring again.

The operations manager is to maintain an *Incidents and Complaints Register* which lists the date of the incident or complaint. In each instance, an incident/ complaint log is to be completed. This log will contain such information such as:

- Date of incident
- Nature of incident and subsequent information;
- Location;
- Name of person who reported the incident;
- Staff member who received notice of incident;
- Manager's review and comment;
- Recommended action to resolve the incident;
- List of organisations to be engaged if incident is warranted;
- Outcome of actions undertaken subsequent to incident being recorded; and
- Date of incident resolution.

In addition to the above log, each incident is to be registered on the Incidents and Complaints Register. Further, Isaac Regional Council is to be notified and directions sought with regard to corrective actions for incidents which have the potential for environmental harm.

2.0 Process Details

2.1 Process

Process Description

Ground receiver bins will be used to supply the plant via an infeed conveyor system. The plant will have one loading bay using standard dry mix technology and the other fitted with a stationary mixer. The plant will consist of the following.

- Large overhead bins incorporate aggregate storage and aggregate weighing of materials. Weighed loads will be transported via a covered conveyor belt system to holding hoppers at the centre of the plant core.
- The plant core consists of cement silos, cement weigh hoppers, storage of water and admixture, weighing devices, the plant control room (batchroom) and the truck loading bays. The loading bays are fitted on both sides with noise attenuating material and are fitted with a roller door for sealing the bay while loading. The bays are all fitted with dust extractors.
- The waste handling facility will include waste drying bays, settlement and agitator tanks. The facility will be fully covered and separated from the general pavement by downward sloping slab. It will also be completely bunded to prevent any uncontrolled water releases.
- Structures will be built to capture, treat and contain water contaminated by cement for recycling as batch water. These include inground pits at the slump stands and above ground storage tanks.
- Stormwater management devices will be installed to capture, treat and store run-off for recycling or discharge off site.

2.2 Environmental Issues

Chapter 3 of this SBMP contains descriptions of issues and management strategies for the ongoing operation of the concrete batching plant within the following environmental management areas:

- Air quality
- Noise management
- Water management
- Waste management

2.3 Summary and Conclusion

The above sections have outlined the goal and purpose of this Site Based Management Plan (SBMP). The format and structure of the subsequent specific environmental management plans for individual sources of environmental risk have been delineated in addition to an overview of procedures involved with the implementation of this Plan including training requirements and areas of accountability and responsibility. The formal process of recording and managing incidents and complaints has also been detailed.

A general overview description of the process involved in concrete batching has been included. Finally, a list of the potential environmental issues likely to affect the subject site and its surrounding environment has been discussed.

The following sections specifically address individual environmental risks identified on the subject site and outline methods of management and monitoring to ensure that the processes undertaken at the concrete batching plant site do not negatively affect the surrounding environment.

3.0 Environmental Management Plans

3.1 Air Quality Management Plan

The environmental hazards relating to air quality arise from dust and odour risks associated with the operation.

To ensure this SBMP is aligned with a Best Practice approach to environmental management, the following management plan will address actual and potential environmental issues.

The risks to air quality from this operation are from dust sources and other airborne contaminants resulting from the aggregate-receiving hoppers, conveyors, elevated storage bins, aggregate weigh hoppers, silos, cement /flyash weigh hoppers, truck loading bays, access roads and stockpiles and exposed areas of the site.

A water truck will be permanently located on site and deployed as often as it is required. Trucks will be washed down in roofed bays and the majority of material on the site is wet and not likely to be entrained as dust.

Odour risks are also negligible because no odour producing substances are used on the site. Additionally, because the site is located in a remote mining area in an industrial precinct, few sensitive receptors are likely to be impacted upon by the operation.

The objectives associated with air emissions for the storage plant are as follows:

Potential Impacts

The main potential source of emission to air is from site dust entrainment and odour risks resulting from the concrete batching operation.

The following Plan details specific measures and processes to manage potential issues associated with air emissions from the site.

Table 1 - Air Quality Management Plan

Policies:	
• Ensure that air emissions do not adversely affect the environment, health, welfare and amenity of adjacent land uses; and • All emissions must comply with the performance criteria contained in the <i>Environmental Protection (Air) Policy 2008</i>, or those by Council in the Planning Scheme.	
Performance Objective	• The activity will be operated in a way that protects the environmental values of air.
Operational Policy	• The management objective of air quality is to ensure that there are no dust or odour issues attributable to the operation which may affect the surrounding environment.
Actions/ Controls	• All areas within the plant that will be traversed by vehicles will be sealed. • All sealed areas will be kept clean and regularly monitored for dust build up. • Any spillage of aggregates or cement will be cleaned daily or immediately if the spillage is observed to be causing dust entrainment. • All conveyor belts will be equipped with spill trays and scrapers, and wherever practical will be partially enclosed. • Spill trays will be cleaned out daily to ensure build ups and spillovers do not occur. • Evacuate areas where air quality may cause adverse health effects. • All volatile chemicals will only be stored in covered and bunded areas. • Ensure regular monitoring of dust levels on site. • Ensure no odour emitting materials are brought onto, or produced on site.
Maintenance	• Water truck to be regularly deployed to reduce dust issues on the

	site. • Quality control of products received and produced on site to ensure that no odour emitting substances are accepted or produced.
Performance Indicators	• There is no discharge to air of contaminants that may cause an adverse effect on the environment from the operation of the activity.
Monitoring	• Regular auditing of dust levels present on the subject site. • Regular checks made of products received and produced on site to ensure no odour emitting products are received or produced.
Reporting / Responsibility	• All air quality related incidents and complaints are to be recorded in a Complaints Register (by the Operations Manager), which is to be held on site. • All incidents and complaints will be reported to the Operations Manager as they occur. Responsible person • All Staff • Operations Manager
Corrective Action	• If dust issues are detected on the site, the water truck will be immediately deployed to address the dust issues or other clean up techniques will be employed. • No odour producing substances will be allowed to enter the site.

3.2 Noise Management Plan

The objectives of noise management at the site are to minimise actual and potential noise disturbance to the surrounding environment and comply with the required noise standards in the *Environmental Protection (Noise) Policy 2008* and the Isaac Planning Scheme.

Due to the remote setting of the activity, it is considered that there are no significant noise issues likely to occur as a result of the activity. The day to day operation of the site is not considered to be particularly noisy and is primarily limited to vehicle noise and equipment noise. All equipment on site will be fitted with factory standard noise attenuation devices.

No sensitive receivers are considered to occur within the vicinity of the operation as it is located in a remote area within a surrounding industrial setting.

Notwithstanding the above, the following management plan has been prepared to comply with the best practice approach to environmental management.

Potential Impacts

Trucks and concrete producing machinery have the potential to generate noise which may be harmful to the health of workers and the surrounding environment.

The following Plan details specific measures and processes to manage potential issues associated with noise emitted from the site

Table 2 - Noise Management Plan

Policies: • To limit as much as possible noise related impacts on the surrounding environment. • To comply with the noise performance criteria contained in the Isaac Planning Scheme and the <i>Environmental Protection (Noise) Policy 2008</i>.	
Performance Objective	• No noise related incidents directly attributable to the concrete batching plant operation.
Operational Policy	• The management objective for noise control is to ensure that no noise complaints are recorded as a result of the operations.
Actions/	• Trafficked areas in the yard will be sealed and kept in good

Controls	condition to minimise noise from vehicle movement. - Compressors, pumps and valves, air pressure operated controls, and valves on silos and hoppers will be equipped with sound attenuating devices. - Aggregates storage bins will be enclosed wherever possible and the receiving hoppers will be lined with hard rubber or similar sound absorbing material. Conveyors to overhead aggregates storage bins and to the loading chute will be partly enclosed wherever possible. - Visual signals will be used to indicate when loading is completed in favour of aural cues. - The loading bay for concrete trucks will be enclosed on two sides with a third side comprising a roller door, to be closed when loading is in progress. The loading bay will be roofed. - The aggregates weighing hopper will be fitted with a self cleaning hopper lining of hard rubber or similar sound absorbing material.
Maintenance	- Reduce non-essential noise sources whenever possible. - Ensure machinery is regularly maintained and service to ensure minimal unnecessary noise production.
Performance Indicators	- Sound from the activity is not excessive outside the boundaries of the site. - The release of sound to the environment from the activity is managed so that adverse effects on environmental values including health and wellbeing and environmental impacts are prevented or minimised.
Monitoring	Regular assessment of noise by staff and management.
Reporting / Responsibility	- All excessive noise issues observed by staff and management are to be recorded in an Incidents Register (by the Operations Manager), which is to be maintained on site. - All complaints and incidents will be reported to the Operations Manager as they occur. Responsible person - All Staff - Operations Manager
Corrective Action	Corrective actions to be developed in consultation with Council and state agencies if required; and

	• In the event that nuisance noise becomes the basis of consistent environmental or health issues, further strategies will be considered and implemented where practical.
--	---

3.3 Water Management Plan

The objectives of water management at the site are to minimise actual and potential disturbance to the surrounding environment resulting from water discharges emanating from the site and to comply with the required water quality standards in the *Environmental Protection (Water) Policy 2009* and Isaac Planning Scheme.

Risks to receiving waters from the subject site include uncontrolled settling basin overflows, drainage from the sludge drying pad, runoff from stockpiles sprayed for dust suppression, truck washing area, spillage during truck loading, hose down drainage and contaminated stormwater runoff and concrete admixtures and fibres storage and batching.

Due to the relatively flat grades of the subject site, erosion risks to the receiving environment in times of discharge are not considered likely to occur. A Stormwater Management Plan for the operation has been prepared and submitted in conjunction with this application. This Plan contains additional detail on capture and treatment of stormwater on the subject site.

Potential Impacts

Detrimental impacts to the surrounding receiving environment attributable to water discharges from the site.

The following Plan details specific measures and processes to manage potential issues associated with water quality.

Table 3 - Water Quality Management Plan

Policy: To responsibly manage all water used on the site to ensure that offsite discharge does not result in detrimental impacts to surface or groundwaters.	
Performance Objective	The activity will be operated in a way that protects environmental values of any receiving waters.
Actions/ Controls	- Any spillages of waste products, contaminants or other materials will be cleaned up as soon as possible via methods other than hosing, sweeping or other means by which contaminants risk being discharged off site and into natural waterways. - Runoff from the site will be contained in sediment basins prior to discharge in accordance with the Stormwater Management Plan.

	- Any releases will not have any properties nor contain contaminants known to be capable of causing environmental harm or nuisance. - Any releases will not produce any slick or other visible evidence of oil or grease, nor contain visible floating oil, grease, scum, litter or other environmentally harmful matter. - It is the responsibility of Operations Manager to initiate procedures for remediating potentially detrimental water quality discharges.
Maintenance	All water storage tanks, channels and water treatment swales to be regularly checked for breaches and integrity to ensure that no leakages occur.
Performance Indicators	No harmful discharges of water from the subject site.
Monitoring	Periodic monitoring of water storage tanks, channels and water treatment swales to ensure no leakages or breaches.
Reporting / Responsibility	- All instances of actual or potential water quality discharge issues are reported and recorded. Responsible person - All Staff - Operations Manager
Corrective Action	Review and if necessary modify response procedures, equipment or facilities.

3.4 Waste Management

Wherever possible, concrete waste that is generated will be reused. In cases where it is not feasible to reuse waste, it will be disposed of at a suitably licensed landfill. Wastewater generated by the process of concrete batching will also be reused wherever possible. In cases where wastewater cannot be reused, the operations manager will arrange for it to be collected and disposed of by a suitably licensed waste contractor.

Any waste generated that is not directly usable in the operation will be stored in suitable receptacles and disposed of appropriately. The site will be regularly inspected by the operations manager or an authorised representative for the presence of waste which could be blown or washed away from the site. This waste will be collected and disposed of appropriately.

Solid wastes will be stored in suitable receptacles to ensure that it does not contaminate stormwater. Waste containers will be kept in accessible locations across the site for ready access by staff. Hazardous materials will not be disposed of into general waste bins. In situations where hazardous waste is produced, licensed hazardous waste contractors will be engaged to transport the materials off site.

The plant operators will have due regard for the waste management hierarchy. The waste management hierarchy outlines five waste management practices in descending order of implementation:

1. Waste avoidance
2. Waste re-use
3. Waste recycling
4. Energy recovery from waste
5. Waste disposal

Temporary bunding will be kept on site for deployment in cases where spillage of fuels, oils or other hazardous liquids are spilt. Spill kits will also be kept at convenient locations on site for deployment to neutralise any spills which may occur.

Attachment 1 – Site Plan and Process Diagram

NOTES:

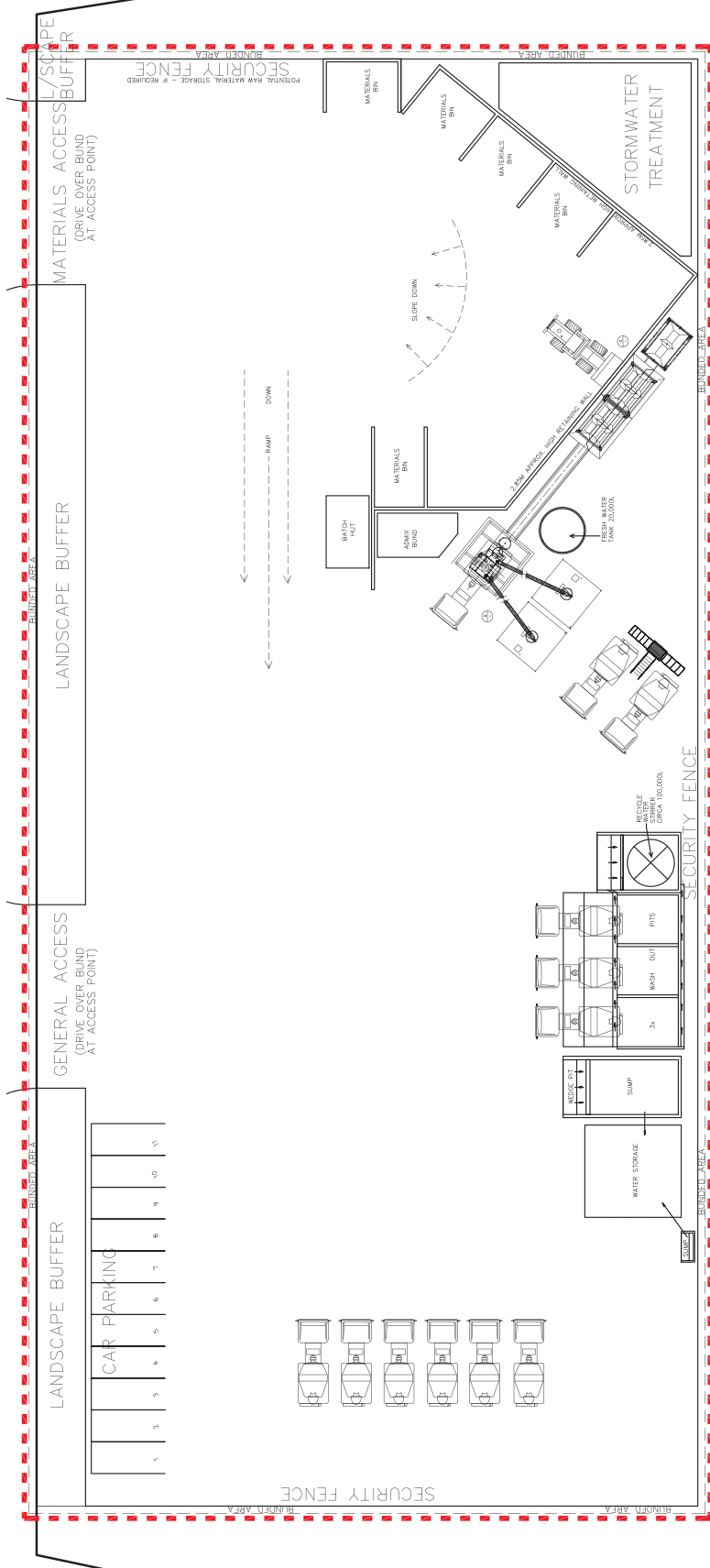
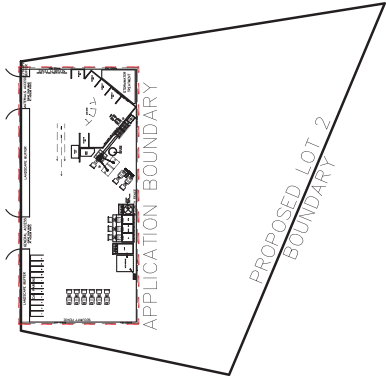
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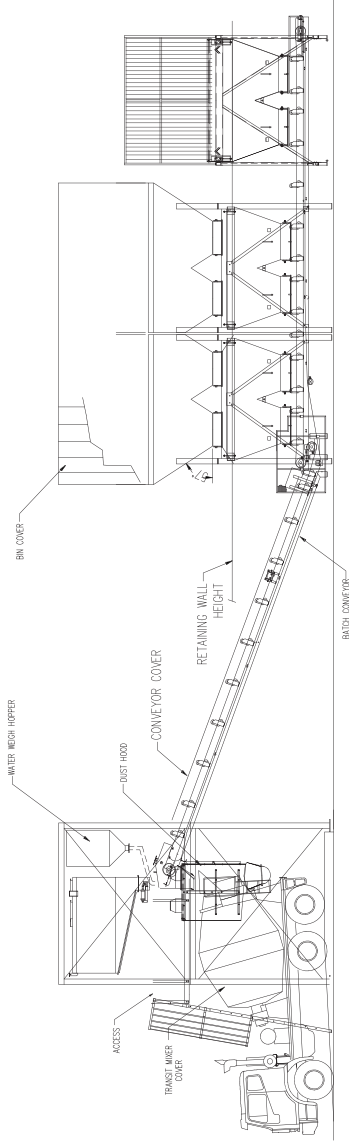
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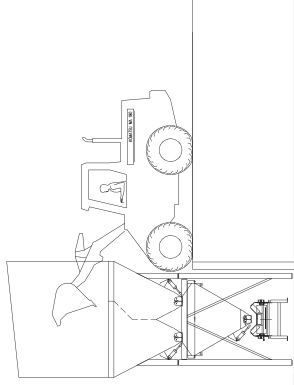
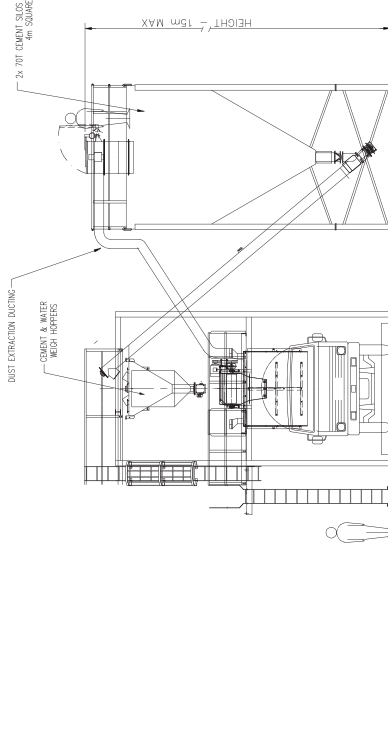
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VIEW A

VIEW C

VIEW B



Appendix G: ERA Chemical Storage



Site Based Management Plan (Chemical Storage): Industry

17th July 2013



project coordination
urban + regional planning
landscape + urban design
environmental management
visualisation + spatial services
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No.	Author	Reviewer
V1.0 (internal DRAFT)	Mark Spears	Gary Savins
V2.0	Mark Spears	David Hansen

Approval for Issue

Version	Name	Position	Signature	Date
V2.0	David Hansen	Director		17 th July, 2013

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Contents

1.0	INTRODUCTION	5
1.1	GOAL AND PURPOSE	5
1.2	SBMP OVERVIEW	6
1.3	RESPONSIBILITY AND TRAINING	7
1.4	INCIDENT REGISTER	7
2.0	SITE INFORMATION	9
2.1	DETAILS OF SITE OPERATION	9
2.2	ENVIRONMENTAL ISSUES	9
2.3	SUMMARY AND CONCLUSION.....	9
3.0	ENVIRONMENTAL MANAGEMENT PLANS.....	11
3.1	AIR QUALITY MANAGEMENT PLAN.....	11
3.2	NOISE MANAGEMENT PLAN	13
3.4	WATER AND LAND MANAGEMENT PLAN	15
3.5	WASTE MANAGEMENT	17
	ATTACHMENT 1 – SITE PLAN.....	18

List of Tables

Table 1 – Air Quality Management Plan.....	11
Table 2 - Noise Management Plan	13
Table 3 – Water and Land Management Plan.....	15

1.0 Introduction

1.1 Goal and Purpose

This Site Based Management Plan (SBMP) has been prepared to accompany a development application to be lodged with Isaac Regional Council for an Industrial Material Change of Use (MCU). This SBMP describes methods of production for a fuel storage farm.

Given the nature of site operations, a Material Change of Use (MCU) application lodged with Isaac Regional Council will need to be accompanied by another MCU component for Environmentally Relevant Activity 8 (c) – storage of 500m³ or more of chemicals of class C1 or C2 combustible liquids under AS 1940 or dangerous goods class 3.

The location of the activity and its associated ancillary works in relation to the greater development proposal is shown in the below figure.

A proposed site layout plan is included in **Attachment 1**.

Key objectives of this Operational SBMP report are to:

- Address all relevant **environmental management issues** attached to the site;
- Develop **'life-of-proposal' control strategies** incorporating performance criteria to quantify acceptable levels of environmental harm;
- Provide evidence of **environmental responsibility** and **sustainable management** during the operation of the fuel storage facility;
- Establish **performance criteria** and **objectives** relating to environmental and social impacts which will include measurable indicators and standards;
- Outline **monitoring techniques** to be undertaken against the performance criteria;
- Detail **prevention, minimisation and mitigation** strategies for controlling anticipated environmental impacts from a range of sources;
- Define roles of onsite **responsibility** for environmental management;
- Detail the **timing** of environmental management initiatives proposed;
- Outline **reporting** and **auditing** responsibilities for meeting objectives;
- Outline proposed **corrective actions** to remedy environmental issues that may arise;

NOTES:

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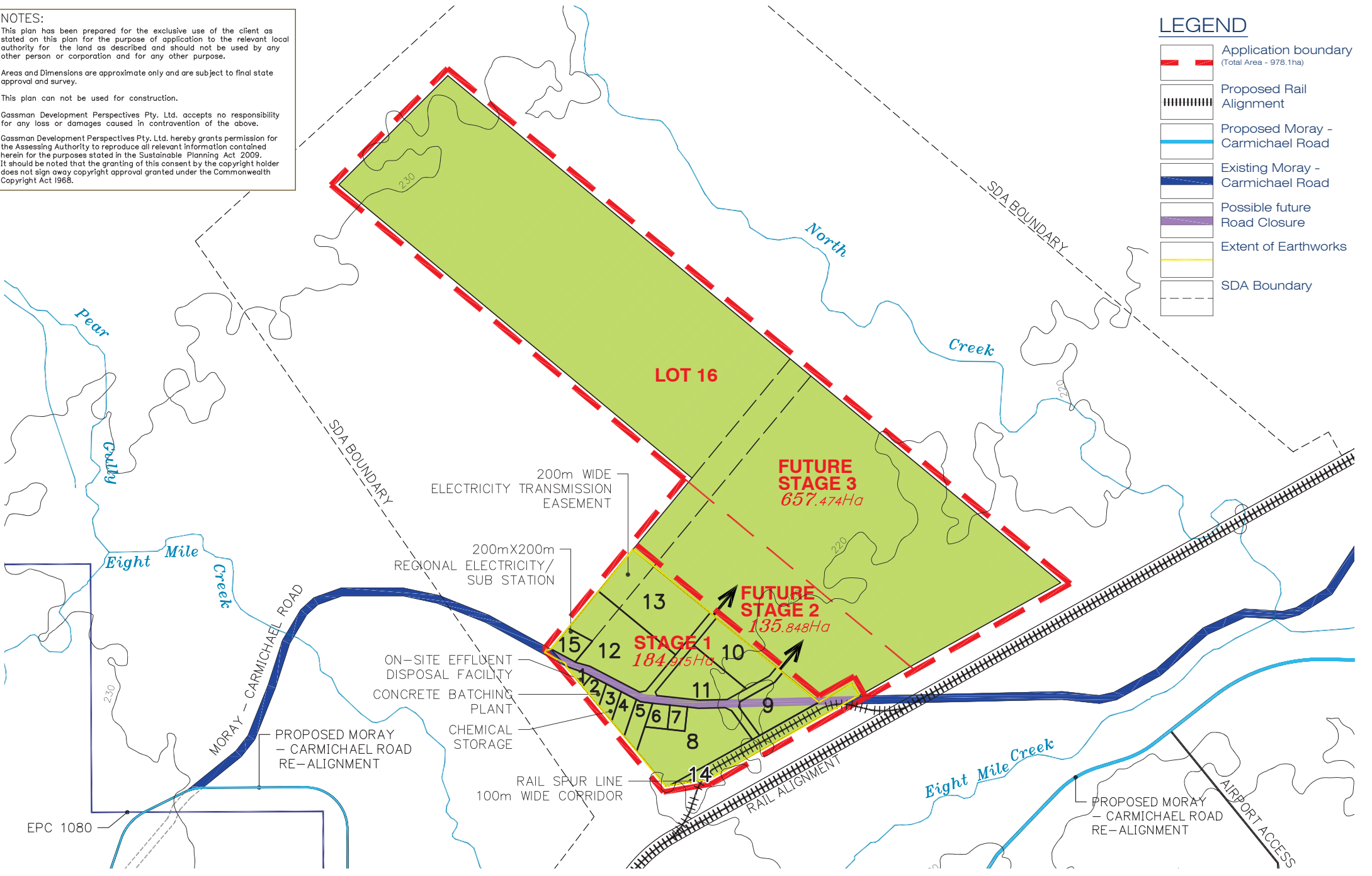
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LEGEND

Application boundary
(Total Area - 978.1ha)

Proposed Rail Alignment

- *Provide Isaac Regional Council with a framework to assess **compliance** with the relevant statutory regulations;*
- *Provide a platform for a **consistent approach** to environmental management at the site for the duration of the plant's operation.*

1.2 SBMP Overview

Adani Mining Pty Ltd is seeking approval to operate a plant for the storage and distribution of diesel fuel.

This SBMP has been prepared to provide the framework necessary to ensure that the recommended environmental control strategies identified are effectively implemented to minimise any actual or potential adverse environmental impacts during the operation of the site. Each of the site specific environmental issues are identified in **Section 2.3** and individually addressed in **Chapter 3** in accordance with the following structure:

Element/issue:

The aspect of the operation to be managed as it affects environmental values.

Performance Objectives:

The criteria against which the level of achievement of the stated objective shall be measured.

Operational Policy:

The management objective that applies to the potential source of environmental harm.

Performance criteria:

Measureable outcomes for each element of the operation as per available guidelines.

Implementation strategy:

Strategies that will be implemented in order to achieve the performance criteria.

Monitoring:

The monitoring requirements to measure performance and success of environmental protection measures.

Reporting/ Responsibility

Required reporting and review arrangements for each task and action (when and by whom).
Assign responsibility for carrying out each task or action to relevant person or organisation.

Corrective Actions:

Actions in the event of non-compliance with stated objectives/ targets including responsibility for remediation.

1.3 Responsibility and Training

The fuel storage facility ('the site') operations manager is responsible for ensuring all personnel associated with the plant's operation are aware of the contents of this SBMP and act in accordance with the plan.

All staff employed at the site will be educated (as part of induction or ongoing staff training initiatives) on the environmental obligations of the SBMP and their general environmental duty of care. The organisational structure of the facility is yet to be determined but can be provided in response to conditions of approval.

This SBMP will be made available to all staff employed (directly or indirectly) within the facility.

The operations manager of the site shall take responsibility for the effective implementation of this SBMP during the site's ongoing operation.

The senior management of the site are committed to achieve the specified and relevant goals of this SBMP and are committed to continual environmental improvement.

Four times per year, senior management of the site will meet to review the environmental performance of the site and investigate and implement measures to achieve continual environmental improvement.

1.4 Incident Register

There will be particular adherence to prompt resolution of any environmental or safety incidents recorded in relation to the operation of the site. Subsequently, emphasis will be

placed on the development and implementation of corrective actions in response to non-compliance with the SBMP (as identified as part of the monitoring process).

The performance objective/ indicator regarding the resolution of these incidents is for the issue to be resolved in such a manner that there will be a reduction in the risks of the incident occurring again.

The operations manager is to maintain an *Incidents and Complaints Register* which lists the date of the incident or complaint. In each instance, an incident/ complaint log is to be completed. This log will contain such information such as:

- Date of incident
- Nature of incident and subsequent information;
- Location;
- Name of person who reported the incident;
- Staff member who received notice of incident;
- Manager's review and comment;
- Recommended action to resolve the incident;
- List of organisations to be engaged if incident is warranted;
- Outcome of actions undertaken subsequent to incident being recorded; and
- Date of incident resolution.

In addition to the above log, each incident is to be registered on the Incidents and Complaints Register. Further, Isaac Regional Council is to be notified and directions sought with regard to corrective actions for incidents which have the potential for environmental harm.

2.0 Site Information

2.1 Details of site operation

The site is represented by a secure yard with capacity to store a total of 200,000L of diesel fuel in the form of two 100,000L T105 Transtank storage tanks in the north-eastern corner of the site. A large, drive through warehouse and servicing centre will be constructed which will also hold large shipping style containers to be used as offices, crib rooms and storage. A schematic depiction of the site layout is included in **Attachment 1**.

Bulk chemical loading and unloading areas will be dedicated for this purpose only. They will be entirely bunded to ensure no spillages can travel off site and will be on impervious areas only to allow retention and recovery of any chemicals being transferred within the bund. A ground sump will be installed in the chemical loading and unloading area with a graded floor falling towards it to ensure that any chemicals are collected into this sump. All bunded areas on the site will be roofed.

2.2 Environmental Issues

Chapter 3 of this SBMP contains descriptions of issues and management strategies for the ongoing operation of the site within the following environmental management areas:

- Air quality
- Noise management
- Water management
- Waste management

2.3 Summary and Conclusion

The above sections have outlined the goal and purpose of this Site Based Management Plan (SBMP). The format and structure of the subsequent specific environmental management plans for individual sources of environmental risk have been delineated in addition to an overview of procedures involved with the implementation of this Plan including training

requirements and areas of accountability and responsibility. The formal process of recording and managing incidents and complaints has also been detailed.

A general overview description of how the site operates has been included. Finally, a list of the potential environmental issues likely to affect the subject site and its surrounding environment has been discussed.

The following sections specifically address individual environmental risks identified on the subject site and outline methods of management and monitoring to ensure that the processes undertaken at the site do not negatively affect the surrounding environment.

3.0 Environmental Management Plans

3.1 Air Quality Management Plan

The environmental hazards relating to air quality arise from dust, odour and noxious emissions associated with the operation.

To ensure this SBMP is aligned with a Best Practice approach to environmental management, the following management plan will address actual and potential environmental issues.

Because the site is located in a remote mining area in an industrial precinct, few sensitive receptors are likely to be impacted upon by the operation.

The objectives associated with air emissions for the storage plant are as follows:

Potential Impacts

The main potential source of emission to air is from site dust entrainment, odour risks and noxious emissions resulting from the fuel and chemical storage operation.

The following Plan details specific measures and processes to manage potential issues associated with air emissions from the site.

Table 1 – Air Quality Management Plan

Policies:

- Ensure that air emissions do not adversely affect the environment, health, welfare and amenity of adjacent land uses; and
- All emissions must comply with the performance criteria contained in the *Environmental Protection (Air) Policy 2008*, or those by Council in the Planning

Scheme.	
Performance Objective	The activity will be operated in a way that protects the environmental values of air.
Operational Policy	The management objective of air quality is to ensure that there are no dust, odour and noxious emissions issues attributable to the operation which may affect the surrounding environment.
Actions/ Controls	- All areas within the plant that will be traversed by vehicles will be sealed. - Only storage vessels constructed to be compliant with Australian Standard 1940-2004: <i>The storage and handling of flammable and combustible liquids</i> will be acquired for use on the subject site. - All sealed areas will be kept clean and regularly monitored for dust build up. - Evacuate areas where air quality may cause adverse health effects. - All volatile chemicals will only be stored in covered and bunded areas. - Ensure regular monitoring of dust levels on site.
Maintenance	All storage vessels will be maintained as per factory specifications and faulty equipment replaced or repaired.
Performance Indicators	There is no discharge to air of contaminants that may cause an adverse effect on the environment or human health from the operation of the activity.
Monitoring	- Regular auditing of dust and potential noxious emissions from the site. - Regular audits of all storage vessels and bunding to ensure their integrity and safety.
Reporting / Responsibility	- All air quality related incidents and complaints are to be recorded in a Complaints Register (by the Operations Manager), which is to be held on site. - All incidents and complaints will be reported to the Operations Manager as they occur. Responsible person - All Staff - Operations Manager

Corrective Action	If air quality issues are detected on the site, the site manager will be made aware and appropriate corrective actions will be implemented as soon as is safe and practicable.
--------------------------	--

3.2 Noise Management Plan

The objectives of noise management at the site are to minimise actual and potential noise disturbance to the surrounding environment and comply with the required noise standards in the *Environmental Protection (Noise) Policy 2008* and the Isaac Planning Scheme.

Due to the remote setting of the activity, it is considered that there are no significant noise issues likely to occur as a result of the activity. The day to day operation of the site is not considered to be particularly noisy and is primarily limited to vehicle noise and equipment noise. All equipment on site will be fitted with factory standard noise attenuation devices.

No sensitive receivers are considered to occur within the vicinity of the operation as it is located in a remote area within a surrounding industrial setting.

Notwithstanding the above, the following management plan has been prepared to comply with the best practice approach to environmental management.

Potential Impacts

Cumulative noise effects of have the potential to generate noise which may be harmful to the health of workers and the surrounding environment.

The following Plan details specific measures and processes to manage potential issues associated with noise emitted from the site

Table 2 - Noise Management Plan

Policies: - To limit as much as possible noise related impacts on the surrounding environment. - To comply with the noise performance criteria contained in the Isaac Planning Scheme and the <i>Environmental Protection (Noise) Policy 2008</i>.

Performance Objective	No noise related incidents directly attributable to the site's operation.
Operational Policy	The management objective for noise control is to ensure that no noise complaints are recorded as a result of the operations.
Actions/ Controls	- Trafficked areas in the yard will be sealed and kept in good condition to minimise noise from vehicle movement. - Compressors, pumps and valves will be equipped with sound attenuating devices. - All pumps associated with machinery will not be modified from manufacturer's instruction.
Maintenance	- Reduce non-essential noise sources whenever possible. - Ensure machinery is regularly maintained and service to ensure minimal unnecessary noise production.
Performance Indicators	- Sound from the activity is not excessive outside the boundaries of the site. - The release of sound to the environment from the activity is managed so that adverse effects on environmental values including health and wellbeing and environmental impacts are prevented or minimised.
Monitoring	Regular assessment of noise by staff and management.
Reporting / Responsibility	- All excessive noise issues observed by staff and management are to be recorded in an Incidents Register (by the site Operations Manager), which is to be maintained on site. - All complaints and incidents will be reported to the Operations Manager as they occur. Responsible person - All Staff - Operations Manager
Corrective Action	- Corrective actions to be developed in consultation with Council and state agencies if required; and - In the event that nuisance noise becomes the basis of consistent environmental or health issues, further strategies will be considered and implemented where practical.

3.4 Water and Land Management Plan

The objectives of water and land management at the site are to minimise actual and potential disturbance to the surrounding environment resulting from liquid discharges emanating from the site and to comply with the required water quality standards in the *Environmental Protection (Water) Policy 2009* and Isaac Planning Scheme.

The main risk to surrounding water quality and land is by runoff that has been contaminated by the fuels stored on the site. Due to the relatively flat grades of the subject site, erosion risks to the receiving environment in times of discharge are not considered likely to occur. A Stormwater Management Plan for the operation has been prepared and submitted in conjunction with this application. This Plan contains additional detail on capture and treatment of stormwater on the subject site.

Potential Impacts

Detrimental impacts to the surrounding receiving environment attributable to liquid discharges from the site.

The following Plan details specific measures and processes to manage potential issues associated with water quality.

Table 3 – Water and Land Management Plan

Policy: To responsibly manage the site to ensure that offsite discharge does not result in detrimental impacts to surface or groundwaters or surrounding land.	
Performance Objective	The activity will be operated in a way that protects environmental values of any receiving waters.
Actions/ Controls	- Any spillages of waste products, contaminants or other materials will be cleaned up as soon as possible via methods other than hosing by which contaminants risk being discharged off site and into natural waterways. - Any releases will not have any properties nor contain contaminants known to be capable of causing environmental harm or nuisance. - Any releases will not produce any slick or other visible evidence of oil or grease, nor contain visible floating oil, grease, scum, litter or

	other environmentally harmful matter. • It is the responsibility of the site Operations Manager to initiate procedures for remediating potentially detrimental water quality discharges. • The entire site will be appropriately bunded to ensure that any leakages do not travel off site. • All fuels present on site will be stored in secured and bunded areas with capacity to store at least 100% of the design storage of the largest storage vessel in each area. • Storage vessels will be constructed on impervious areas. • A collection sump will be installed in each bunded area to facilitate the removal of liquids and sites are graded to fall towards that area. • Empty tanks, drums and containers are stored in a bunded concrete hardstand area with their closures in places. • Appropriate stormwater management measures will be installed as part of the construction of the entire site. • Adequate spill kits and temporary emergency bunding will be well stocked and readily available on site
Maintenance	• All storage vessels and bunding measures will be regularly checked and maintained for integrity and functionality.
Performance Indicators	• No harmful discharges of contaminated water from the subject site.
Monitoring	• All storage vessels and bunding measures will be regularly checked and maintained to ensure that no leaks or breaches are observed.
Reporting / Responsibility	• All instances of actual or potential water quality discharge issues are reported and recorded. Responsible person • All Staff • Operations Manager
Corrective Action	• Review and if necessary modify response procedures, equipment or facilities.

3.5 Waste Management

The primary waste product that will be generated on the site will be waste oils and waste coolants resulting from the servicing and upkeep of mine related vehicles. These wastes will be regularly transported from the site by a certified regulated waste contractor and disposed of in a safe and appropriate manner.

A record of all regulated waste will be kept and will include the following information:

- Date of pickup of waste;
- Description of waste;
- Quantity of waste;
- Origin of the waste; and
- Destination of the waste

The plant operators will have due regard for the waste management hierarchy. The waste management hierarchy outlines five waste management practices in descending order of implementation:

1. Waste avoidance
2. Waste re-use
3. Waste recycling
4. Energy recovery from waste
5. Waste disposal

Operators of the site will be constantly aware of opportunities to identify and implement procedures to improve the waste management services employed on the site. The performance of the waste management practices will be assessed twice per year.

Temporary bunding will be kept on site for rapid deployment in cases where spillage of fuels, oils or other hazardous liquids occur. Spill kits will also be kept at convenient locations on site for deployment to neutralise any spills which may occur.

Attachment 1 – Site Plan

NOTES:

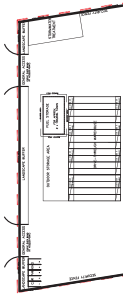
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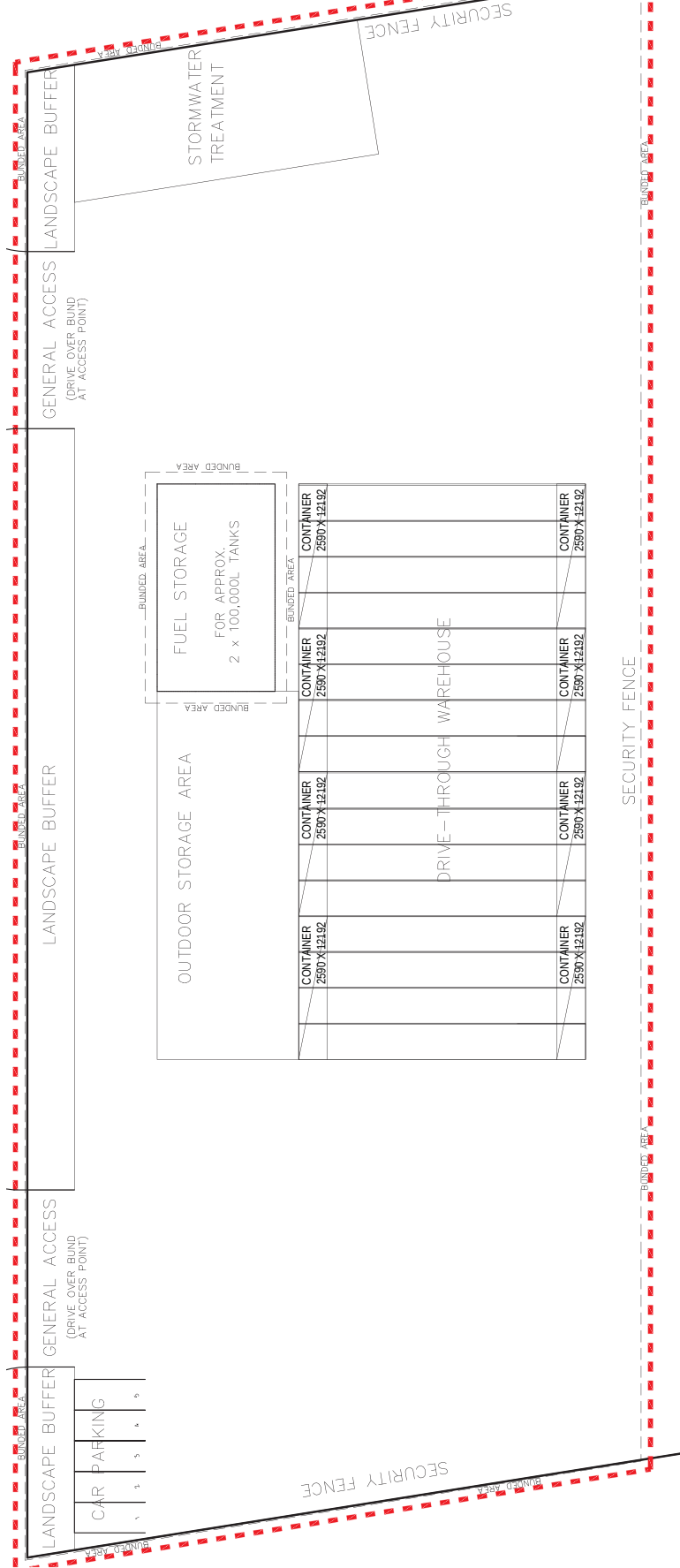
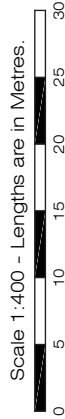
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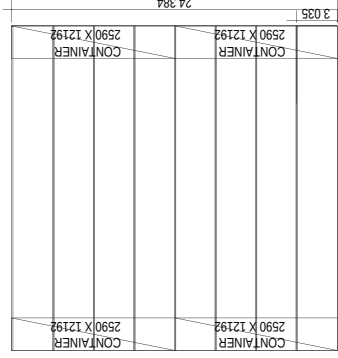


APPLICATION BOUNDARY

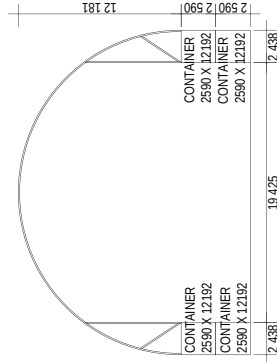
PROPOSED LOT 3
BOUNDARY



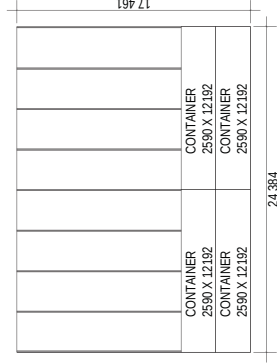
DRIVE - THROUGH WAREHOUSE & OFFICE



TOP VIEW



FRONT ELEVATION



SIDE ELEVATION

Appendix H: ERA Sewage Treatment



Site Based Management Plan (Sewage): Industry

17th July 2013



project coordination
urban + regional planning
landscape + urban design
environmental management
visualisation + spatial services
surveying services
advisory services



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GDP Document Control

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No.	Author	Reviewer
V1.0 (internal DRAFT)	Paul Creighton	Gary Savins
V2.0	Gary Savins	David Hansen

Approval for Issue

Version	Name	Position	Signature	Date
V2.0	David Hansen	Director		17 th July, 2013

Final Distribution

Adani Mining Pty Ltd	1 electronic copy
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Contents

1.0	INTRODUCTION	5
1.1	GOAL AND PURPOSE	5
1.2	SBMP OVERVIEW	6
1.3	RESPONSIBILITY AND TRAINING	7
1.4	INCIDENT REGISTER	8
2.0	PROCESS DETAILS.....	9
2.1	PROCESS.....	9
2.2	ENVIRONMENTAL ISSUES	10
2.3	SUMMARY AND CONCLUSION.....	11
3.0	ENVIRONMENTAL MANAGEMENT PLANS.....	12
3.1	AIR QUALITY MANAGEMENT PLAN.....	12
3.2	NOISE MANAGEMENT PLAN.....	15
3.3	WATER MANAGEMENT PLAN	17
3.4	WASTE MANAGEMENT	19
	ATTACHMENT 1 – SITE PLAN AND PROCESS DIAGRAM	20

List of Tables

Table 1 - Air Quality Management Plan.....	12
Table 2 - Noise Management Plan	15
Table 3 - Water Quality Management Plan	17

1.0 Introduction

1.1 Goal and Purpose

This Site Based Management Plan (SBMP) has been prepared to support the application material prepared for the industrial area which is to be included within the Supplementary Environmental Impact Statement (SEIS) submission for the project. This SBMP describes methods of operation for a sewage treatment plant.

Given the nature of site operations, a Material Change of Use (MCU) component for Environmentally Relevant Activity 63 (1c) – Sewage treatment: more than more than 1500 but not more than 4000EP (equivalent persons) is an applicable and relevant approval to be obtained. The total number of EP's estimated for this operation is 2180.

The sewage treatment plant will be constructed to produce A+ standard effluent. A more detailed sustainability study demonstrating the suitability of various post-treatment releases to the environment and various methods and locations of discharge may be conditioned in approval conditions including soil testing.

The location of the activity and its associated ancillary works in relation to the greater development proposal is shown in the figure below.

Key objectives of this Operational SBMP report are to:

- Address all relevant **environmental management issues** attached to the site;
- Develop **'life-of-proposal' control strategies** incorporating performance criteria to quantify acceptable levels of environmental harm;
- Provide evidence of **environmental responsibility** and **sustainable management** during the operation of the sewage treatment plant;
- Establish **performance criteria** and **objectives** relating to environmental and social impacts which will include measurable indicators and standards;
- Outline **monitoring techniques** to be undertaken against the performance criteria;
- Detail **prevention, minimisation** and **mitigation** strategies for controlling anticipated environmental impacts from a range of sources;
- Define roles of onsite **responsibility** for environmental management;

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LEGEND

Application boundary
(Total Area - 978.1ha)

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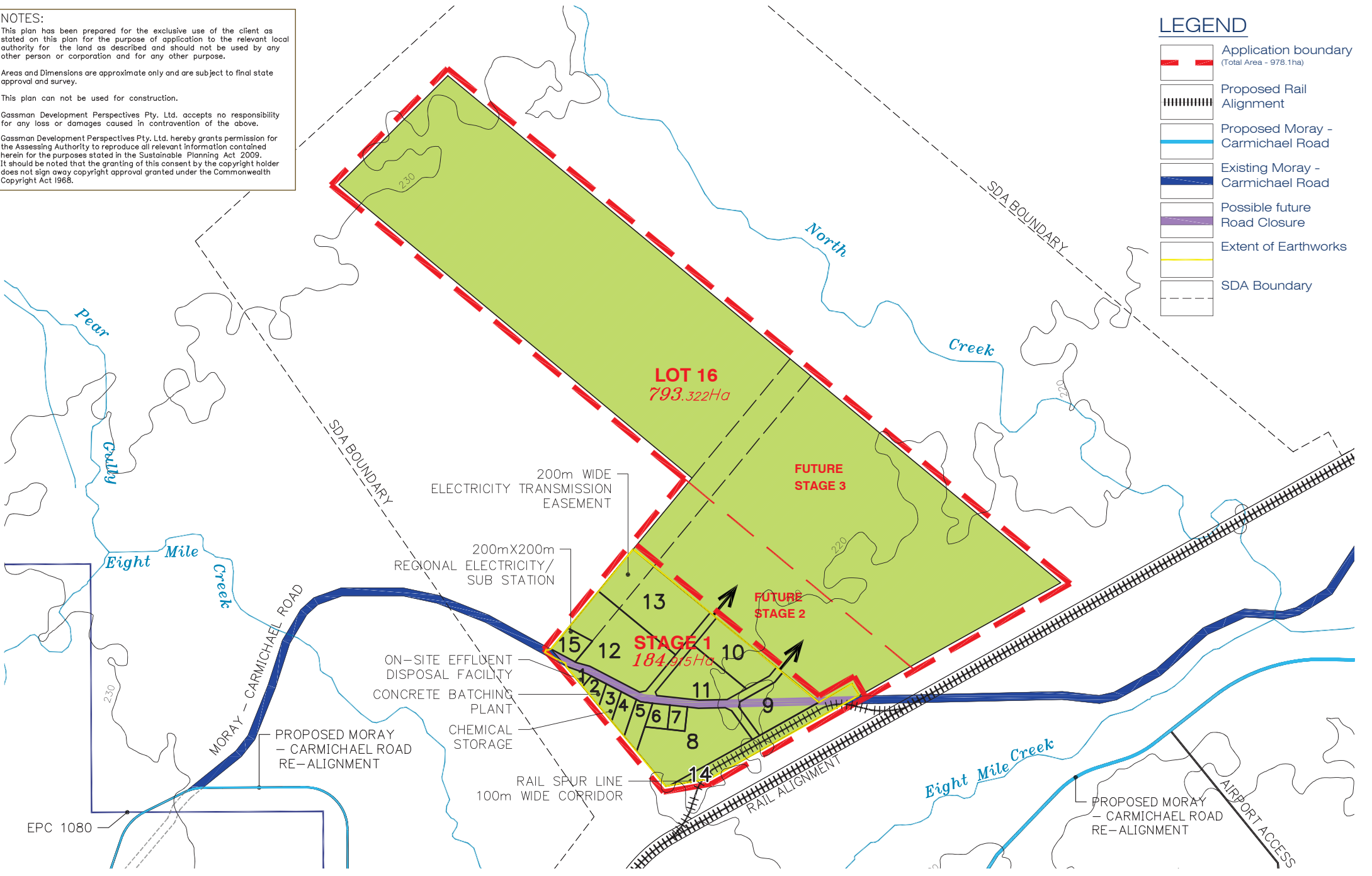
Proposed Moray - Carmichael Road

Existing Moray - Carmichael Road

Possible future Road Closure

Extent of Earthworks

SDA Boundary



- Detail the **timing** of environmental management initiatives proposed;
- Outline **reporting** and **auditing** responsibilities for meeting objectives;
- Outline proposed **corrective actions** to remedy environmental issues that may arise;
- Provide Isaac Regional Council with a framework to assess **compliance** with the relevant statutory regulations; and
- Provide a platform for a **consistent approach** to environmental management at the site for the duration of the plant's operation.

1.2 SBMP Overview

Adani Mining Pty Ltd is seeking approval to operate a sewage treatment plant for the treatment and processing of wastewater resulting from the proposed Industrial Precinct (Stage 1).

This SBMP has been prepared to provide the framework necessary to ensure that the recommended environmental control strategies identified are effectively implemented to minimise any actual or potential adverse environmental impacts during the plant's operation. Each of the site specific environmental issues are identified in **Section 2.3** and individually addressed in **Chapter 3** in accordance with the following structure:

Element/issue:

The aspect of the operation to be managed as it affects environmental values.

Performance Objectives:

The criteria against which the level of achievement of the stated objective shall be measured.

Operational Policy:

The management objective that applies to the potential source of environmental harm.

Performance criteria:

Measureable outcomes for each element of the operation as per available guidelines.

Implementation strategy:

Strategies that will be implemented in order to achieve the performance criteria.

Monitoring:

The monitoring requirements to measure performance and success of environmental protection measures.

Reporting/ Responsibility

Required reporting and review arrangements for each task and action (when and by whom). Assign responsibility for carrying out each task or action to relevant person or organisation.

Corrective Actions:

Actions in the event of non-compliance with stated objectives/ targets including responsibility for remediation.

1.3 Responsibility and Training

The sewage treatment plant operations manager is responsible for ensuring all personnel associated with the plant's operation are aware of the contents of this SBMP and act in accordance with the plan.

All staff employed at the sewage treatment plant will be educated (as part of induction or ongoing staff training initiatives) on the environmental obligations of the SBMP and their general environmental duty of care. The organisational structure of the facility is yet to be determined but can be provided in response to conditions of approval.

This SBMP will be made available to all staff employed (directly or indirectly) within the sewage treatment plant.

The operations manager of the sewage treatment plant shall take responsibility for the effective implementation of this SBMP during the plant's ongoing operation.

The senior management of the site are committed to achieve the specified and relevant goals of this SBMP and are committed to continual environmental improvement.

Four times per year, senior management of the site will meet to review the environmental performance of the site and investigate and implement measures to achieve continual environmental improvement.

1.4 Incident Register

There will be particular adherence to prompt resolution of any environmental or safety incidents recorded in relation to the operation of the plant. Subsequently, emphasis will be placed on the development and implementation of corrective actions in response to non-compliance with the SBMP (as identified as part of the monitoring process).

The performance objective/ indicator regarding the resolution of these incidents is for the issue to be resolved in such a manner that there will be a reduction in the risks of the incident re-occurring.

The operations manager is to maintain an *Incidents and Complaints Register* which lists the date of the incident or complaint. In each instance, an incident/ complaint log is to be completed. This log will contain information such as:

- Date of incident
- Nature of incident and subsequent information;
- Location;
- Name of person who reported the incident;
- Staff member who received notice of incident;
- Manager's review and comment;
- Recommended action to resolve the incident;
- List of organisations to be engaged if incident is warranted;
- Outcome of actions undertaken subsequent to incident being recorded; and
- Date of incident resolution.

In addition to the above log, each incident is to be registered on the Incidents and Complaints Register. Further, Isaac Regional Council and any other relevant authority is to be notified and directions sought with regard to corrective actions for incidents which have the potential for environmental harm.

2.0 Process Details

2.1 Process

The process description below is a general outline of the process according to information available at the time of preparation. It is anticipated that more detailed information regarding the sewage treatment process including exclusion of hazardous waste, capacity information equipment-specific methods of treatment, expected water quality characteristics for treated effluent, and emergency contingency plans may be provided in response to development approval conditions at a later time. At such a time that a suitably qualified contractor is engaged to construct the sewage treatment plant, a list of persons and companies including qualifications can be provided. It is anticipated that appropriately worded approval conditions could require this information. A flow diagram depicting the process has been included in **Attachment 1**.

Process Description

1. As this method of sewage reticulation will be in the form of a pressure style system, smaller individual grinder pumps will be located at each lot it services. These individual grinder pumps will grind effluent into a fine slurry and pump it under pressure through a network of polyethylene pipes to the sewer treatment plant.
2. The initial step of the sewage treatment process is that the wastewater is screened through a mechanical fine screen with a 5mm diameter. This allows for a rate of 80L/s to be screened. During wet weather, influent flows in excess of this capacity will flow over a weir to a 20mm diameter screen.
3. Screened wastewater flows via a gravity system to a biological nutrient removal plant. Excess flows experienced during wet weather overflows to polishing lagoons in the case where the flow balancing tank has reached capacity after which it is pumped back through the treatment process.
4. The biological nutrient removal plan is comprised of the following components:
 - An anaerobic and flow balancing tank which facilitates phosphorous removal

- Two anaerobic/anoxic basins with surface aerators and internal recycling rotate between aerobic and anoxic conditions to reach complete biological oxidation of organic matter, complete nitrification and significant denitrification of the wastewater. Wastewater is then pumped to the polishing ponds, and then subsequently through a filtration facility through a UV disinfection device via the secondary sedimentation tank.
 - Waste activated sludge is pumped to clay lined sludge drying pans which facilitate natural air drying of surplus biological sludge. Excess water is controlled from the pans via a drainage system which then flows to a pump which moves it to the anaerobic tank at the top of the sewage treatment plant. Sludge is allowed to air dry before it is excavated and stockpiled for future reuse as soil conditioner.
5. Excess water still present after the material has naturally dried is pumped to the aerobic polishing lagoons prior to its reuse in irrigation and dust suppressants in other areas of the mine and living areas. Following the treatment process, it will be processed to an A+ standard prior to its use.

2.2 Environmental Issues

Chapter 3 of this SBMP contains descriptions of issues and management strategies for the ongoing operation of the sewage treatment plant within the following environmental management areas:

- Air quality
- Noise management
- Water management
- Waste management

The closest residential sensitive receiver is the Mine Workers Accommodation Village which is located approximately 8260m to the south east from the sewage treatment plant associated with the airport. The closest ecologically sensitive receiver is Eight Mile Creek and is located approximately 1125m to the south west from the sewage treatment plant. These distances are considered sufficient to ensure that no detrimental effects are caused by the sewage treatment plant on these sensitive receivers.

2.3 Summary and Conclusion

The above sections have outlined the goal and purpose of this Site Based Management Plan (SBMP). The format and structure of the subsequent specific environmental management plans for individual sources of environmental risk have been delineated in addition to an overview of procedures involved with the implementation of this Plan including training requirements and areas of accountability and responsibility. The formal process of recording and managing incidents and complaints has also been detailed.

A general overview description of the process involved in sewage treatment has been included. Finally, a list of the potential environmental issues likely to affect the subject site and its surrounding environment has been discussed.

The following sections specifically address individual environmental risks identified on the subject site and outline methods of management and monitoring to ensure that the processes undertaken at the sewage treatment plant site do not negatively affect the surrounding environment.

3.0 Environmental Management Plans

3.1 Air Quality Management Plan

The environmental hazards relating to air quality arise from dust and odour emissions associated with the operation.

To ensure this SBMP is aligned with a Best Practice approach to environmental management, the following management plan will address actual and potential environmental issues.

The objectives associated with air emissions for the storage plant are as follows:

Potential Impacts

The main potential source of emission to air is from odour emanating from the processed materials on the site and dust issues associated with the site's operations.

The following Plan details specific measures and processes to manage potential issues associated with air emissions from the site.

Table 1 - Air Quality Management Plan

Policies:	
• Ensure that air emissions do not adversely affect the environment, health, welfare and amenity of adjacent land uses; and • All emissions must comply with the performance criteria contained in the <i>Environmental Protection (Air) Policy 2008</i>, or those by Council in the Planning Scheme.	
Performance Objective	• The activity will be operated in a way that protects the environmental values of air.
Operational	• The management objective of air quality is to ensure that there

Policy	are no dust or odour issues attributable to the operation which may affect the surrounding environment.
Actions/ Controls	• All areas within the plant that will be traversed by vehicles will be sealed. • All sealed areas will be kept clean and regularly monitored for dust build up. • Contents of sludge pans will be kept saturated in the winter to minimise odours. • Anaerobic/flow attenuation will be covered and ventilated with extracted air treated in a wet packed bio-scrubber followed by a biofilter. • A two stage odour scrubber/filter odour attenuation facility will be installed. Ventilated air will be continuously drawn from the covered anaerobic/flow attenuation tank under a negative pressure of up to 20 Pa and blown through a wet packed scrubber in order to remove present hydrogen sulphide. Water will be sprayed over the packed media, in the opposite direction to the air used for ventilation, to be regularly recirculated. Ventilated air will subsequently be directed through biofilters to remove remaining hydrogen sulphide and any other present odours. An automatic top water sprinkling/drip irrigation system with moisture sensors will ensure the bed remains moist at all times.
Maintenance	• All machinery on the subject site will be kept in good working order as per the manufacturer's specifications. Faulty machinery will be immediately repaired by appropriately qualified staff.
Performance Indicators	• There is no discharge to air of odour or dust that may cause an adverse effect on the health of humans or the surrounding environment resulting from the operation of the activity.
Monitoring	• Regular auditing of odour and dust levels present on the subject site by staff and operations manager.
Reporting / Responsibility	• All air quality related incidents and complaints are to be recorded in a Complaints Register (by the operations manager), which is to be held on site. • All incidents and complaints will be reported to the operations manager as they occur.

	<i>Responsible person</i> • All Staff • Operations Manager
<i>Corrective Action</i>	• If odour issues are detected on site, the source of the odour must be isolated and treated in accordance with appropriate measures depending on its source. • If dust issues are detected on site, the areas from where the dust is emanating must be immediately watered down or cleaned up to prevent further dust entrainment.

3.2 Noise Management Plan

The objectives of noise management at the site are to minimise actual and potential noise disturbance to the surrounding environment and comply with the required noise standards in the *Environmental Protection (Noise) Policy 2008* and the Isaac Planning Scheme.

Due to the remote setting of the activity, it is considered that there are no significant noise issues likely to occur as a result of the activity. The day to day operation of the site is not considered to be particularly noisy and is predominantly limited to vehicle noise and equipment noise, primarily pumps and aerators operating at below 40DB. All equipment on site will be maintained as per factory standards to ensure excessive noise generation is avoided.

No sensitive receivers are considered to occur within the vicinity of the operation as it is located in a remote area within a surrounding industrial setting.

Notwithstanding the above, the following management plan has been prepared to comply with the best practice approach to environmental management.

Potential Impacts

Trucks and sewage treatment plant equipment have the potential to generate noise, particularly if they are not properly maintained.

The following Plan details specific measures and processes to manage potential issues associated with noise emitted from the site

Table 2 - Noise Management Plan

Policies: • To limit as much as possible noise related impacts on the surrounding environment. • To comply with the noise performance criteria contained in the Isaac Planning Scheme and the <i>Environmental Protection (Noise) Policy 2008</i>.	
Performance Objective	• No noise related incidents directly attributable to the sewage treatment plant operation.
Operational Policy	• The management objective for noise control is to ensure that no noise incidents or complaints are recorded as a result of the

	operations.
Actions/ Controls	• All equipment will be checked and maintained to ensure that it is not excessively or unnecessarily noisy • Reduce non-essential noise sources whenever possible.
Maintenance	• Ensure machinery is regularly maintained and service to ensure minimal unnecessary noise production.
Performance Indicators	• Sound from the operation is not excessive outside the boundaries of the site. • The release of sound to the environment from the activity is managed so that adverse effects on environmental values including health and wellbeing and environmental impacts are prevented or minimised.
Monitoring	• Regular assessment of noise by staff and management.
Reporting / Responsibility	• All excessive noise issues observed by staff and management are to be recorded in an Incidents Register (by the Operations Manager), which is to be maintained on site. • All complaints and incidents will be reported to the Operations Manager as they occur. Responsible person • All Staff • Operations Manager
Corrective Action	• Corrective actions to be developed in consultation with Council and state agencies if required; and • In the event that nuisance noise becomes the basis of consistent environmental or health issues, further strategies will be considered and implemented where practical.

3.3 Water Management Plan

The objectives of water management at the site are to minimise actual and potential disturbance to the surrounding environment resulting from water discharges emanating from the site and to comply with the required water quality standards in the *Environmental Protection (Water) Policy 2009* and Isaac Planning Scheme.

No discharges to existing water courses are planned for this sewage treatment plant. Excess treated water will be used as dust attenuation and irrigation in other areas of the mine and workers accommodation and recreation areas. Due to the relatively flat grades of the subject site, erosion risks to the receiving environment in times of discharge are not considered likely to occur. A Stormwater Management Plan for the operation has been prepared and submitted in conjunction with this application material to accompany the SEIS submission. This Plan contains additional detail on capture and treatment of stormwater on the subject site.

The sewage treatment plant will be constructed to produce A+ standard effluent. A more detailed sustainability study demonstrating the suitability of various post-treatment releases to the environment and various methods and locations of discharge may be conditioned in approval conditions including soil testing.

Potential Impacts

Detrimental impacts to the surrounding receiving environment attributable to water discharges from the site.

The following Plan details specific measures and processes to manage potential issues associated with water quality.

Table 3 - Water Quality Management Plan

Policy: To responsibly manage all water used on the site to ensure that offsite discharge does not result in detrimental impacts to surface or groundwaters.	
Performance Objective	The activity will be operated in a way that protects environmental values of any receiving waters.
Actions/ Controls	Water treated in the sewage treatment plant will be monitored for a range of water quality parameters prior to its transportation off site for use in dust attenuation and irrigation purposes. No

	wastewater will be discharged to surface or groundwater on or near the subject site.
Maintenance	All wastewater storage basins, tanks and lagoons to be regularly checked for breaches and integrity to ensure that no leakages occur.
Performance Indicators	No uncontrolled discharges of any water from the subject site.
Monitoring	Periodic monitoring of wastewater storage basins, tanks and lagoons to ensure no leakages or breaches.
Reporting / Responsibility	- All instances of actual or potential water quality discharge issues are reported and recorded. Responsible person - All Staff - Operations Manager
Corrective Action	Review and if necessary modify response procedures, equipment or facilities.

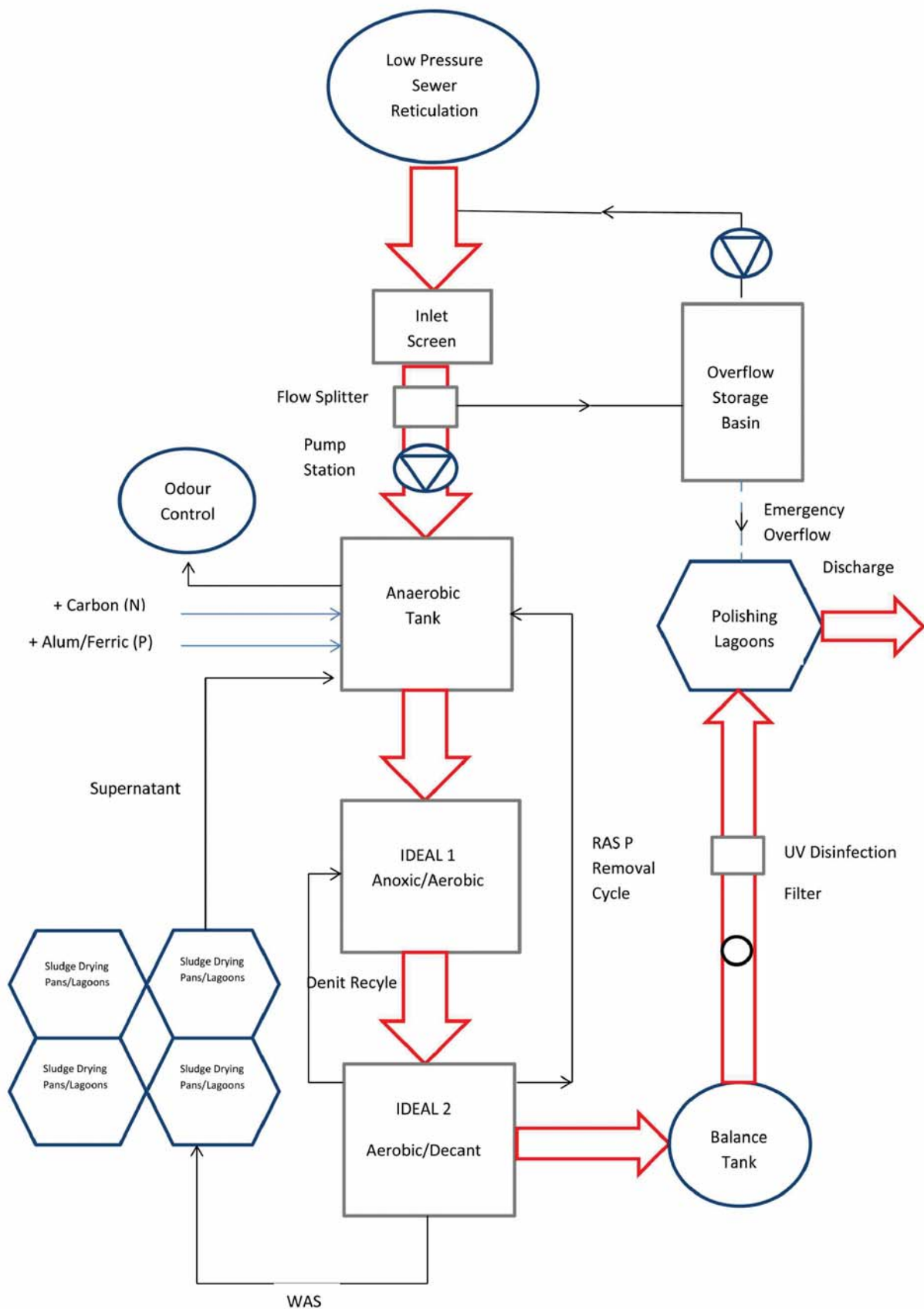
3.4 Waste Management

The primary waste generated from this operation will be sludge. The wastewater will be entirely used on the mine and living and recreation areas of the site and will not require management in terms of discharge.

Sludge is proposed to be used as a soil conditioner where its physical and chemical parameters allow. However, in situations where the sludge is not suitable for this use, it will be stockpiled and appropriately disposed of in landfill.

Appropriate refuse receptacles will be provided for incidental wastes that are generated via other means in conjunction with the use of the site. However, it is not anticipated that significant amounts of other wastes will be generated as part of this operation.

Attachment 1 – Site Plan and Process Diagram



		AMENDMENT DETAILS	DATE
REVISION	F		
	E		
	D		
	C		
	B		
	A	FINAL RELEASE	16-07-2013

Appendix I: Preliminary Servicing



Adani Carmichael Mine - Industrial Area Stage 1

Preliminary Services Report

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Adani Carmichael Mine - Industrial Area Stage 1 Preliminary Services Report

Industrial Area Stage 1

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Approver Chris Howard

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Report No F0002-AA006158-AAR-01

Date July 2013

This report has been prepared for Adani Mining Pty Ltd in accordance with the terms and conditions of appointment for engineering services dated 13th June 2013. Hyder Consulting Pty Ltd (ABN 76 104 485 289) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

CONTENTS

1	EXECUTIVE SUMMARY	1
2	INTRODUCTION.....	2
3	SITE CHARACTERISTICS.....	2
	3.1 EXISTING SITE	2
	3.2 PROPOSED DEVELOPMENT.....	2
4	SEWER	3
	4.1 SEWER STRATEGY.....	3
	4.2 LOADING	3
	4.3 RETICULATION.....	4
	4.4 SEWER TREATMENT PLANT	5
5	WATER.....	6
6	ELECTRICAL SERVICES	6
7	ROADS AND ACCESS	6
8	EARTHWORKS	7
9	CONCLUSION	8

Appendices

Appendix A
Engineering Drawings

1 EXECUTIVE SUMMARY

Gassman Development Perspectives have appointed Hyder consulting on behalf of Adani Mining Pty Ltd (Adani) to undertake an assessment of the preliminary services and key infrastructure required to service the proposed Industrial Area Stage 1 associated with the planned Carmichael Coal Mine. The site is located approximately 160kms west of Moranbah, Central Queensland on land described as Lot 662 on Crown Plan PH1491

This Preliminary Engineering Services Report details the civil services component of the development and the engineering planning considerations associated with a Development Approval. The proposed development is located within the Isaac Regional Council (IRC). The site is currently being used as cattle grazing property colloquially known as 'Moray Downs'.

This report demonstrates that the proposed development can be adequately serviced by potable water, sewerage, electrical services and vehicle access infrastructure. A Site Based Stormwater Management Plan (Refer document A0005-AA006158-AAR-01-SMP Industrial Stage 1) has been prepared by Hyder Consulting to specifically address the stormwater quantity and quality measures associated with the development.

2 INTRODUCTION

The proposed Industrial Area Stage 1 is located approximately 160kms west of Moranbah and is situated adjacent to the existing Moray-Carmichael Road approximately 1 km to the north of Eight Mile Creek. The Moray Carmichael Road reserve passes through Stage 1 and will form part of the proposed road network which will connect the industrial area to the future Accommodation Village, Airport and the Mine sites.

3 SITE CHARACTERISTICS

3.1 EXISTING SITE

The site is located approximately 160kms west of Moranbah, Queensland in the Isaac Regional Council. The development area is approximately 184.9 Ha and is situated within Lot 662 on PH1491, close to the Moray Carmichael Road.

Contours obtained from Lidar survey reveals that the proposed Industrial Area Stage 1 site is situated at levels between RL 216 m AHD and 221 m AHD. The existing site topography naturally forms into two separate catchments with one catchment grading to the north-east and the other catchment grading to the south-eastern corner of the lot.

3.2 PROPOSED DEVELOPMENT

It is proposed to establish the Industrial Area Stage 1 to support the mine workers working at the Carmichael Coal Mine. The developed site is considered likely to contain a range of industrial and infrastructure components, including warehouses, plant and machinery storage areas, concrete batching and chemical storage facilities, sewerage treatment plan, and electrical substation.

The proposed development will be constructed in fill in order to incorporate the proposed stormwater catchment strategy. Refer to Engineering Drawings K005 and K006-AA006158 in Appendix A for details of proposed Bulk Earthworks Layout.

The proposed development has incorporated water sensitive urban design measures throughout the early planning phase to ensure that all necessary stormwater quality and quantity objectives are met.

4 SEWER

4.1 SEWER STRATEGY

The proposed sewer strategy for the Industrial Area Stage 1 will involve collection of waste effluent from the Stage 1 Lots via low pressure sewer reticulation and conveyance to a package sewage treatment plant on site. Drawing K036-AA006158 in Appendix A shows the Industrial Area Stage 1 layout and the proposed location of the sewage treatment plant at the western corner of the site, within proposed Lot 1.

Due to the location and nature of the site, it is proposed that a low pressure sewage system be implemented to convey the effluent to the package treatment system. This eliminates the need to construct deep sewer systems to convey the effluent as is the case with gravity systems and only requires shallow trenching. This approach therefore results in minimal earthworks fill quantities and has a positive effect on the overall bulk earthworks strategy.

4.2 LOADING

The industrial area stage 1 is made up of 15 Lots of varying sizes. It is to be noted that Lot 14 is proposed to be used as a rail siding corridor for the industrial area. Table 4.1 below lists the contribution estimates in EP's (Equivalent Person).

Table 4.1 – EP contributions per Lot

Lot Number	EP	Demand	Typical Use
1	22	Moderate	Warehousing
2	43	Moderate	Warehousing
3	55	Moderate	Warehousing
4	70	Moderate	Warehousing
5	88	Moderate	Warehousing
6	49	High	General industrial
7	50	High	General industrial
8	990	High	General industrial
9	505	High	General industrial
10	0	Low	Laydown, open air storage
11	0	Low	Laydown, open

			air storage
12	0	Low	Laydown, open air storage
13	0	Low	Laydown, open air storage
14	308	Moderate	Rail Siding
15	0	Low	Electrical Substation
Total	2180		

Effluent contributed from Lots 6 – 9 shall be considered to be high in volume. These Lots are being designated for general industry usage with higher occupancy rates. A conversion rate of 12 ET's (equivalent Tenantment) per Hectare of Lot size was applied to calculate the required EP's for these Lots.

Effluent contributed from Lots 1 – 5 and Lot 14 shall be considered to be moderate in volume. It is envisaged that these Lots will be utilised as general warehousing and will not be highly trafficked. A conversion rate of 8 ET's per Hectare of Lot size was applied to calculate the required EP's for these Lots.

It is envisaged that Lots 10, 11, 12, 13 and 15 shall be used as set-down to park plant and machinery only, or as an electrical substation. Therefore a value of 0 EP's has been applied for these Lots.

The above ET/Ha rates have been adopted from Gold Coast City Council Planning Scheme Policies and have been reduced/adjusted accordingly based on the designated industrial usage demands outlined above.

The equivalent ET's were converted to EP by applying a multiplier of 2.7EP to 1 ET as is generally applied by Queensland Urban Utilities in their assessments of flow sewer demands.

4.3 RETICULATION

It is to be noted that the loading flow rates from each Lot shall be addressed as part of the detailed design process. Use of a low pressure sewer system is recommended for the Industrial Stage 1 Precinct given the flat nature of the existing site and in order to achieve minimal earthworks fill quantities. A pressure sewer system consists of a series of positive displacement grinder pumps moving finely ground effluent material along a network of small diameter polyethylene pipes. It is envisaged that each industrial lot within the system will have a below ground tank and pump unit. The effluent is delivered to the tank by traditional gravity drainage methods. This is then ground into fine slurry and pumped under pressure through a network of polyethylene pipes to the sewer treatment plant (STP). Operation of the system is fully automatic, much like a traditional gravity system.

Use of a 'MONO'-type (or similar approved) low pressure system is recommended.

The MONO collection tank sizes shall be based upon the EP per Lot. An allowance of 6 hours storage shall be designed for each tank. It is proposed that each dry well tank be connected to 2

EMS-160 MONO pumps that can operate individually, on standby or in tandem. Each pump has a flow rate capacity of 1 L/s and will pump the effluent under pressure to the treatment plant on site.

The sewer reticulation network shall be comprised of the following pipes:

1. Gravity drainage (within Lots) – uPVC Class 9 pipes; and
2. MONO Low pressure system – HDPE lines compliant to AS/NZ 4130, or a similar product.

4.4 SEWER TREATMENT PLANT

The sewer treatment plant (STP) shall be a proprietary package provided by an external supplier. The supplier shall be provided with loadings and treatment effluent quality targets they will need to meet.

4.4.1 Location

Drawing K036-AA006158 in Appendix A shows the preliminary concept design of the Industrial Area Stage 1 and the location of the sewage treatment plant (STP) to the west of the site. The STP will be located adjacent to the power substation, at the western entry to the Industrial Estate.

4.4.2 Treatment Quality

It is proposed that treated effluent shall be recycled and used for irrigation and non-potable re-use within the Industrial Area Stage 1. The target of Class A+ as requested by Adani Mining Pty Ltd will need to be achieved from the STP. This is the second highest quality of recycled water and is for non-drinking purposes. Table 4.2 summarises the various uses for Class A+ recycled water.

Table 4.2 – Some uses for treated Class A+ effluent

Suitable uses	Class A+
Irrigation of residential gardens and lawns – below ground	Y
Irrigation of public open spaces – above ground uncontrolled access	Y
Dust suppression, compaction	Y
Watering parks, playing fields, footpaths and roadside plants	Y
Filling fenced ponds, lagoons and dams (not used for recreational purposes)	Y
Road works	Y
Hydraulic testing of sewer infrastructure	Y

Irrigation of landscaping on construction sites	Y
Toilet flushing	Y
Fire sprinkler/prevention systems	Y

5 WATER

It is anticipated that water for consumption purposes could be sourced from a range of various means, which may include local bore water wells, rain water capture, and external bulk water delivery. Where necessary, water shall be treated onsite and conveyed to the various buildings within the Industrial Area Stage 1.

It is also considered likely that temporary interim solutions may need to be implemented on site until more permanent and sustainable water supply strategies are activated in accordance with the wider project. Either way, potable water will be required at all times within the Industrial Area Stage 1, and conditions to that effect will be accepted by the Applicant.

Treated effluent from the sewerage treatment plant (STP) shall be recycled to Class A+ grade and used for onsite irrigation and non-potable re-use purposes.

6 ELECTRICAL SERVICES

The proposed Industrial Area Stage 1 will consist of a range of uses with varying electrical supply needs. It is anticipated that the occupancy across the Industrial Area Stage 1 will vary throughout the day/week dependant on the split between shifts, etc.

It is acknowledged that the Industrial Area Stage 1 will require a continuous power supply from the commencement of specific uses, and the source of supply will likely reflect the strategies in place for the broader project supply.

The long term power supply is likely to be sourced from the electrical substation to be located within Lot 15 of the estate itself, however until such time as this permanent supply is available a range of interim measures, including diesel gensets, will be used.

The nominal location of the short and long term supply for the Industrial Area Stage 1 is shown on drawing K036-AA006158 in Appendix A

A 200m wide electrical transmission easement has been proposed within future Lots 12 and 13 to allow for electrical connections to the broader project.

7 ROADS AND ACCESS

Access to the Industrial Area Stage 1 shall be via the Moray Carmichael Road. Industrial Area Stage 1 is situated such that the existing Moray Carmichael Road alignment runs through the proposed development. An internal road network is proposed to provide access to each of the Industrial Lots and the Railway siding within proposed Lot 14. It is proposed that this internal network will also provide access to the future Industrial Area Stages 2 and 3.

A new Moray Carmichael Road alignment is proposed to the south and west of the Industrial Area. It is proposed that this new alignment will loop around the proposed railway line to the south. Following construction of this new alignment, part of the existing Moray Carmichael Road located within the development site will be closed in favour of Community Title Subdivision. Details of the existing and proposed road networks are presented in drawing K036-AA006158 in Appendix A.

8 EARTHWORKS

The existing site is located on a generally flat area of land with a minor slope falling towards to the south-east at grades of approximately 0.06%. The proposed development will be constructed in fill. In order to incorporate the proposed stormwater catchment strategy the earthworks will be split up such that a portion of the site falls towards the south-west and the remaining towards the south-east. It is envisaged that detailed bulk earthworks modelling will be undertaken as part of the detailed design stage. Refer to Hyder drawing K005-AA006158 for details of Preliminary Bulk Earthworks Layout.

It is envisaged that earthworks fill import material will be sourced locally from existing and planned quarry sites in the region.

9 CONCLUSION

This report has demonstrated that the proposed Industrial Area Stage 1 has undergone responsible planning with regards to the provision of all necessary engineering services, including sewer, water and electrical infrastructure.

Additional engineering issues such as road access and earthworks have also been discussed within the report. The Moray Carmichael Road will be the main access road to the Industrial Area Stage 1. Bulk earthworks have been identified to occur on site as a result of the proposed development.

It is anticipated that there will not be any detrimental effects of the proposed development to the existing site and that it is possible for all engineering services to be catered for.

Appendix A

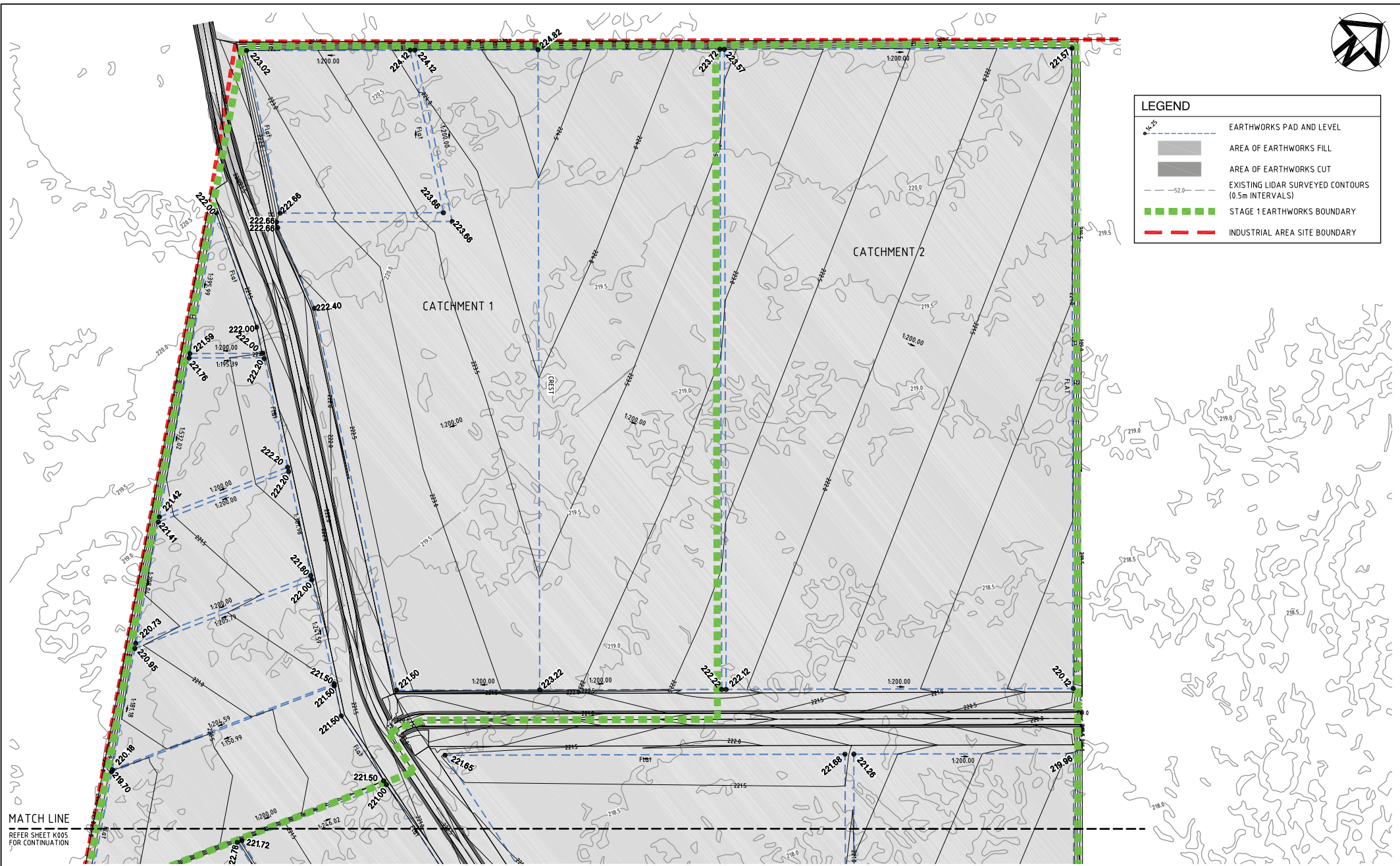
Engineering Drawings



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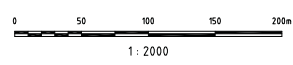


LEGEND	
	EARTHWORKS PAD AND LEVEL
	AREA OF EARTHWORKS FILL
	AREA OF EARTHWORKS CUT
	EXISTING LIDAR SURVEYED CONTOURS (0.5m INTERVALS)
	STAGE 1 EARTHWORKS BOUNDARY
	INDUSTRIAL AREA SITE BOUNDARY



MATCH LINE
REFER SHEET K005
FOR CONTINUATION

A	ORIGINAL ISSUE	T.P.	S.M.	26.06.2019
Issue	Description	By	Chd	Date



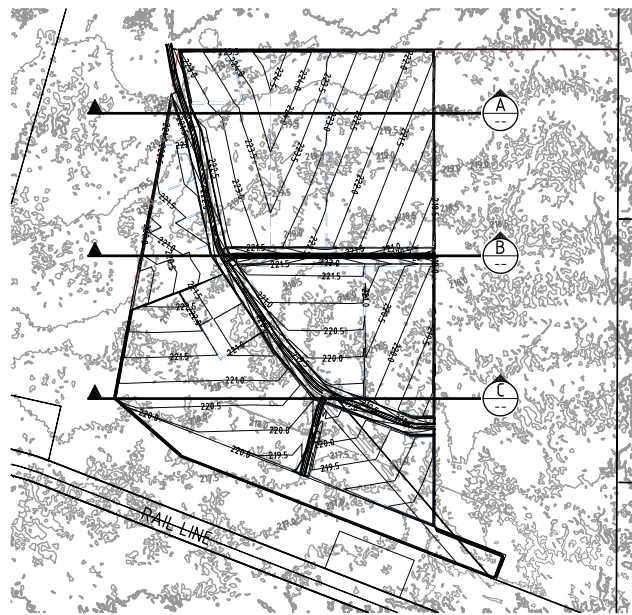
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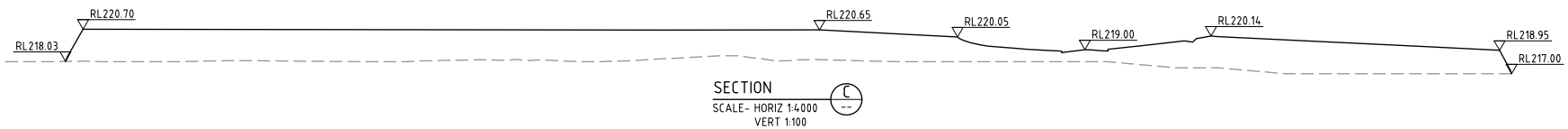
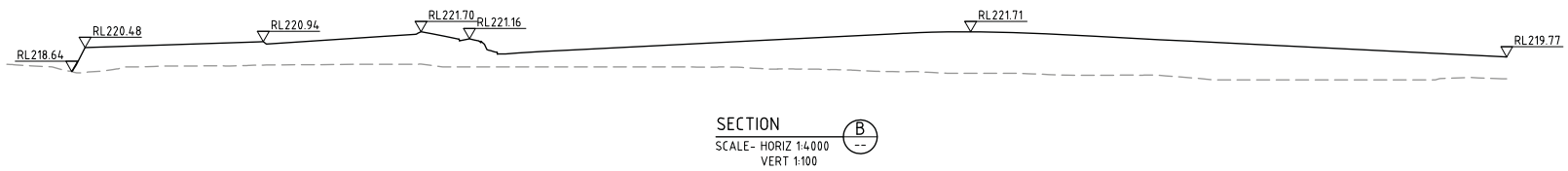
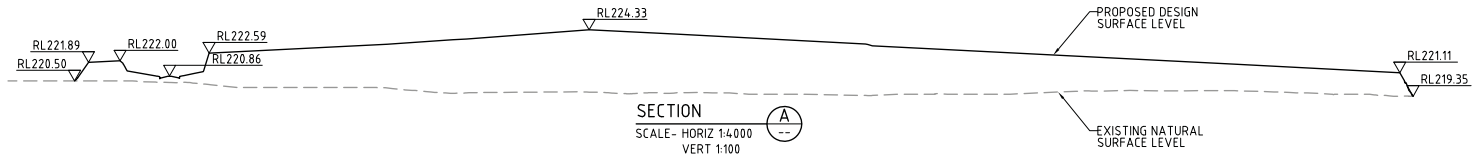
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Scales	1 : 2000	Current Issue Signatures
Original Size	A1	Author T.PHAN
Height	AHD	Designer S. EISEL
Grid	GDA94	Reviewer C. HOWARD
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Project	CARMICHAEL MINE DEVELOPMENT	
Title	INDUSTRIAL SITE - STAGE 1 BULK EARTHWORKS LAYOUT PLAN SHEET 2 OF 2	

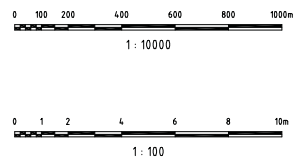
		HYDER CONSULTING Pty Ltd ABN 76 104 485 289 Level 7, 199 Grey Street Locked Bag 2017 South Brisbane, QLD 4101 Australia Tel: +61 7 3337 0000 Fax: +61 7 3337 0050 Web: www.hyderconsulting.com
Drawing No.	Project No.	Issue
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LAYOUT PLAN
SCALE - 1:10,000



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Issue	Description	By	Chd	Date



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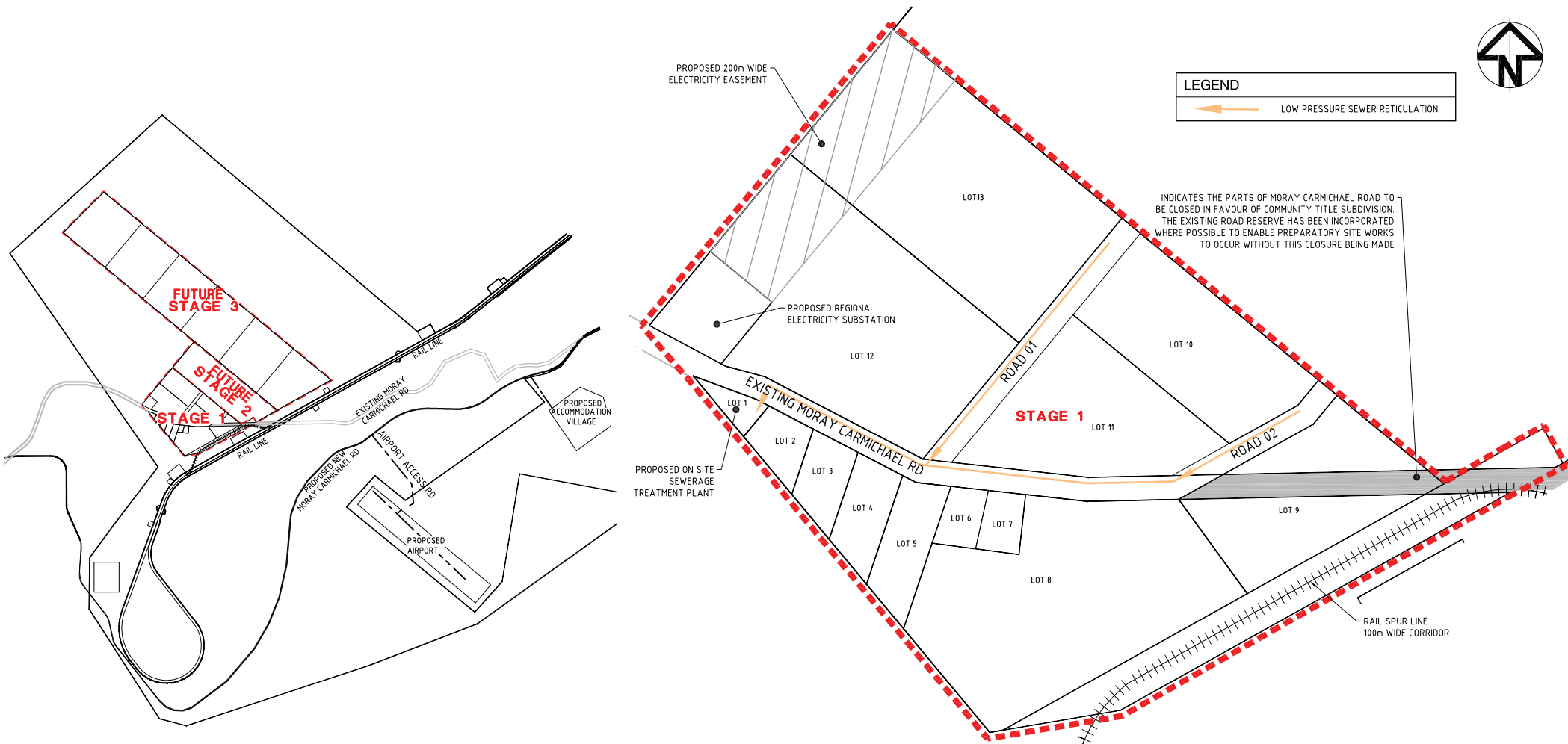
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Original Size	A1	Author: S. GORMAN
Height	AHD	Designer: S. EISEL
Grid	GDA94	Reviewer: C. HOWARD
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Project	CARMICHAEL MINE DEVELOPMENT	
Title	<u>INDUSTRIAL SITE STAGE 1</u> BULK EARTHWORKS SITE CROSS SECTIONS	

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Drawing No.	Project No.	Issue
K041	AA006158	A



LEGEND	
	LOW PRESSURE SEWER RETICULATION



PROPOSED INDUSTRIAL
AREA LAYOUT PLAN
SCALE-1:40 000

PROPOSED INDUSTRIAL AREA STAGE 1
LAYOUT PLAN
SCALE-1:5000

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Issue Description		By	Chd	Date									ENGINEERING SERVICES LAYOUT PLAN							

Appendix J: Stormwater Management



Adani Carmichael Mine - Industrial Area Stage 1

Site Based Stormwater Management Plan

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ADANI MINING PTY LTD

CARMICHAEL MINE - INDUSTRIAL AREA STAGE 1

Site Based Stormwater Management Plan

Industrial Area Stage 1

Author Sunny Seshadri

Checker Shane Miley

Approver Chris Howard

Report No F0005-AA006158-AAR-01

Date July 2013

This report has been prepared for Adani Mining Pty Ltd in accordance with the terms and conditions of appointment for engineering services dated 13th June 2013. Hyder Consulting Pty Ltd (ABN 76 104 485 289) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

CONTENTS

1	EXECUTIVE SUMMARY	1
2	SITE CHARACTERISTICS.....	2
2.1	Existing Topography and Site Drainage	2
2.2	Proposed Development	2
3	STORMWATER QUANTITY.....	3
3.1	Objectives.....	3
3.2	Existing Condition	3
3.3	Developed Condition.....	3
3.4	Preliminary Onsite Detention.....	4
3.5	Flood Immunity	5
4	STORMWATER QUALITY	6
4.1	Environmental Values and Water Quality Objectives (WQO).....	6
4.2	Proposed Stormwater Improvement Devices (Operational Phase)	7
4.3	Stormwater Quality Modelling (MUSIC).....	9
4.4	Construction Phase.....	13
4.5	Water Quality Monitoring Program.....	14
5	CONCLUSION	16

APPENDICES

- Appendix A** **Engineering Drawings**
- Appendix B** **Site Specific IFD Charts**
- Appendix C** **MUSIC Modelling Layout**
- Appendix D** **Calculations**

1 EXECUTIVE SUMMARY

Gassman Development Perspectives have appointed Hyder consulting on behalf of Adani Mining Pty Ltd (Adani) to undertake an assessment of the stormwater management strategy required to service the proposed Industrial Area Stage 1 associated with the planned Carmichael Coal Mine. The site is located approximately 160kms west of Moranbah, Central Queensland on land described as Lot 662 on Crown Plan PH1491

This Site Based Stormwater Management Plan details the stormwater quality and quantity measures with respect to the engineering planning considerations associated with a Development Approval. The proposed development is located within the Isaac Regional Council (IRC). The site is currently being used as cattle grazing property colloquially known as 'Moray Downs'.

A Preliminary Engineering Services Report (Refer document A0002-AA006158-AAR-01-ESR Accommodation village) has also been prepared by Hyder Consulting to specifically address the engineering services and infrastructure requirements associated with the development.

2 SITE CHARACTERISTICS

2.1 EXISTING TOPOGRAPHY AND SITE DRAINAGE

The site of the Industrial Area Stage 1 is located approximately 160kms west of Moranbah, Queensland in the Isaac Regional Council. The development area is approximately 184.9 Ha and is situated within Lot 662 on PH1491, close to the Moray Carmichael Road.

Contours obtained from Lidar survey reveals that the proposed Industrial Area Stage 1 site is situated at levels between RL 216 m AHD and 221 m AHD. The existing site topography naturally forms into two separate catchments with one catchment grading to the north-east and the other catchment grading to the south-eastern corner of the site.

2.2 PROPOSED DEVELOPMENT

It is proposed to establish the Industrial Area Stage 1 to support the mine workers working at the Carmichael Coal Mine. The developed site is considered likely to contain a range of industrial and infrastructure components, including warehouses, plant and machinery storage areas, concrete batching and chemical storage facilities, sewerage treatment plan, and electrical substation.

The proposed development will be constructed in fill in order to incorporate the proposed stormwater catchment strategy. Refer to Engineering Drawings K005, K006 & K033-AA006158 in Appendix A for details of proposed Bulk Earthworks & Stormwater Drainage Layout.

The proposed development has incorporated water sensitive urban design measures throughout the early planning phase to ensure that all necessary stormwater quality and quantity objectives are met.

3 STORMWATER QUANTITY

3.1 OBJECTIVES

The main objective of this assessment is to demonstrate that the proposed development will not exceed pre-development peak discharge rates for a range of storm frequencies.

Appropriate stormwater detention measures are required for the developed catchment to ensure that there is no increase in peak discharge flow rates downstream. On-site detention will be designed for all storm events up to and including Q100 year ARI for the catchment. This will be done via the sizing of detention volumes and assessment using methods outlined in the Queensland Urban Drainage Manual 2008 (QUDM) and detailed below.

As discussed above, due to existing site topography, the existing site and proposed development will be split into 2 separate catchments 1 and 2 (refer to drawing K033-AA006158 in Appendix A for catchment details).

It is proposed to convey stormwater flows above ground in open channel drainage reserves. Drawing K033-AA006158 indicates the locations and dimensions of these proposed open channel reserves. Appendix D also includes open channel drainage design calculations for Catchment 1 and Catchment 2 of the development.

3.2 EXISTING CONDITION

In the existing case analysis the time of concentration for the above sub-catchment areas has been derived in accordance with QUDM (Section 4.06.6). The method used requires parameters including the length of the flow path, the catchment area and the slope of surface.

The Coefficient of Discharge for each of the sub-catchments was determined by assessing the fraction impervious of each catchment (Table 4.05.3(a) of QUDM). Using the above parameters, a combination of Friends equation and Argue (1986) (QUDM figure 4.09) was adopted to determine the time of concentration for the determination of flow rates for the catchment.

The rational method, as prescribed by QUDM Section 4.03 was then used to determine discharging flow rates for each sub-catchment for standard Average Return Intervals (ARI's) of 1, 2, 5, 10, 20, 50 and 100 years. Table 3.1 below shows a summary of results for discharge flow rates for catchment 1 and 2. Detailed Rational Method calculations are also included in Appendix D.

Table 3.1 – Existing condition Discharge Flow rates

Catchment	Area (m ²)	Q1 (m ³ /s)	Q2 (m ³ /s)	Q5 (m ³ /s)	Q10 (m ³ /s)	Q20 (m ³ /s)	Q50 (m ³ /s)	Q100 (m ³ /s)
1	54	1.25	1.72	2.51	3.01	3.66	4.75	5.55
2	131	3.48	4.79	6.97	8.36	10.19	13.21	15.44

3.3 DEVELOPED CONDITION

Similar to the existing condition, the Rational Method was used to estimate the peak flow rates discharging from the developed condition sub catchment areas of Industrial Area Stage 1. As

discussed above, the Coefficient of Discharge value for the developed site conditions was determined from Table 4.05.3(a) of QUDM.

In the developed case analysis a combined application of standard inlet times for rural residential and flow time through piped reticulation has been employed to determine the time of concentration (QUDM Sections 4.06.5 and 4.06.7).

Due to the flat grades expected across the development area of Industrial Area Stage 1, pipe drainage is expected to be limited to cross culverts utilised under roadways and footpaths to maintain trafficability during lower ARI events.

A summary of the results of the 1, 2, 5, 10, 20, 50 and 100 year ARI developed peak flow rates (without detention) from the contributing sub catchment areas 1 and 2 of the Industrial Area Stage 1 are provided in Table 3.2 below.

Table 3.2 – Developed condition Discharge Flow rates

Catchment	Area (m ²)	Q1 (m ³ /s)	Q2 (m ³ /s)	Q5 (m ³ /s)	Q10 (m ³ /s)	Q20 (m ³ /s)	Q50 (m ³ /s)	Q100 (m ³ /s)
1	54	2.12	2.92	4.25	5.10	6.21	7.96	8.92
2	131	5.15	7.09	10.32	12.38	15.08	19.32	21.64

In the absence of adequate controls, urban development can increase stormwater runoff volume and peak discharge rates. Such increases can aggravate downstream flooding, initiate creek erosion and cause the degradation of downstream environmental values. One of the main objectives is to limit property flooding to acceptable levels. The use of stormwater detention/retention systems is one means of achieving this objective (QUDM 2008).

3.4 PRELIMINARY ONSITE DETENTION

A preliminary assessment of the on-site detention storage requirements for the proposed Industrial Area Stage 1 development area has been carried out using the initial sizing techniques outlined in Section 5.05.1 of QUDM. Based on the comparison of results outlined in Section 3.2 and 3.3 above, it will be necessary to incorporate on-site detention storage in order to maintain peak outflows equivalent to the existing conditions.

The on-site detention storage proposed for the site will be sized to maintain the equivalent pre-developed condition peak flows for local catchment rainfall events up to and including the 100 year ARI rainfall event. To control the peak rates of discharge from the nominated storage volume it will be necessary for the outlet arrangements to be designed to maintain the existing peak flows.

A comparison of the existing and developed condition peak flows for the Industrial Area Stage 1 indicated that the 100 year ARI storm event resulted in the greatest increase in peak discharge. The results of the preliminary on-site detention analysis indicate that a minimum detention storage volume of approximately 20,500 m³ for catchment 1 and 36,500 m³ catchment 2 will be required to detain the increase in the 100 year ARI discharge and maintain the equivalent pre-developed 100 year ARI peak flow discharging off site.

It should be noted that the volume outlined may be subject to change if the final catchment areas differ from those adopted for this assessment. The stage storage characteristics and

outlet configuration of the detention basin will also be verified as part of the detailed design of the civil works for Industrial Area Stage 1.

In accordance with Section 5.11 of QUDM it is recommended that any ponding within the basin should be limited to 1.2 metres at the deepest point above the basin invert. For deeper basins, suitable safety provisions (such as refuge mounds within large basins, fences and warning signs) should be provided.

Detailed stormwater detention calculations are included in Appendix D.

3.5 FLOOD IMMUNITY

Detailed hydrologic and hydraulic modelling has been completed for the floodplains and all watercourses that are crossed by the proposed Carmichael Rail Alignment based on the design and available data in the Front End Engineering Design Report – RAIL by Calibre (Dec 2012)

As confirmed in the above report, the top of the proposed rail line adjacent to the Industrial Area – Stage 1 has been set at level which achieves 100yr ARI flood immunity – Approximately 218m AHD.

Due to the requirement for the Industrial Area Stage 1 to service the proposed rail siding within Lot 14, the above 100yr flood-immune level of 218m AHD has been adopted in the proposed bulk earthworks strategy and grading layout as a minimum earthworks level at this location. Therefore, as a result of this and in order to accommodate the existing site topography and stormwater strategy, the entire site earthworks formation level within Stage 1 will sit above the 100yr ARI flood immunity level indicated in the abovementioned report.

4 STORMWATER QUALITY

4.1 ENVIRONMENTAL VALUES AND WATER QUALITY OBJECTIVES (WQO)

Water quality parameters and the proposed limits applicable for this site have been selected in accordance with the State Planning Policy Healthy Waterways (4/10). The Water Quality Indicator Values stipulated by Council are as follows:

Table 4.1: Construction Phase Performance Criteria

Pollutant	Criteria
Total Suspended Solids	90 th %ile <50mg/L
pH	6.5 – 8.5
Dissolved Oxygen	90 th %ile > 6mg/L
Hydrocarbons	No visible sheen on receiving waters
Litter	No visible litter washed from site

Table 4.2 Water Quality Operational Phase Performance Criteria

The Queensland State Planning Policy for Healthy Waters (SPP 4/10) (2011) is the statutory instrument that expresses the State's interest in protecting water quality environmental values and provides guidelines for planning, assessment and approval of proposed development. The SPP 4/10 identifies the procedures provided in Chapter 2 of the Urban Stormwater Quality Planning Guidelines (2010) as the required approach to stormwater planning. Therefore, in accordance with Table 2.2 of the Urban Stormwater Quality Planning Guidelines(2010), the design objectives for the management of Stormwater quality for the operational phase of development have been identified as per Table 12.2 below: ▪ 85% reduction in Total Suspended Sediment (TSS); ▪ 45% reduction in Total Nitrogen (TN); ▪ 70% reduction in Total Phosphorus (TP); and ▪ 90% reduction in litter or Gross Pollutants sized 5 mm or greater (GP).

Water quality parameters which are to be protected during the construction and operational phase of this development have been adopted to match the Water Quality Objectives listed above.

During the construction phase, the most significant water quality objective will be that of suspended solids. To eliminate any environmental harm that may occur it is proposed that

runoff from the disturbed areas will be directed to the proposed detention basins which will act as temporary sediment basins. These temporary works will be installed at the start of construction to contain most of the treatment within the site.

During the operational phase, the most significant pollutant for a development will be litter, oils and nutrients namely phosphorous and nitrogen. A combined treatment train of rainwater tanks and bio-retention systems is proposed to appropriately control the quality of the stormwater runoff from the site.

4.2 PROPOSED STORMWATER IMPROVEMENT DEVICES (OPERATIONAL PHASE)

Water Sensitive Urban Design (WSUD) aims to minimise the impact of a development on the natural water cycle by reducing the export of pollutants, sediments and nutrients from the site into the natural watercourse. The following section provides general details of the stormwater treatment concepts of devices proposed to be employed within the development. Details of the specific modelling inputs and required dimensions and specifications of the devices are provided in Section 4.3.

4.2.1 TURF BUFFER STRIPS / VERGES

Buffers are usually fully turfed areas that are constructed between the road pavement, allotment, swales or bio-retention systems. These areas provide treatment of the stormwater runoff by primarily removing suspended solids, litter and gross pollutants. These devices also have ability to remove some oils and greases.

Figure 4.1 – Turfed Buffer Strips



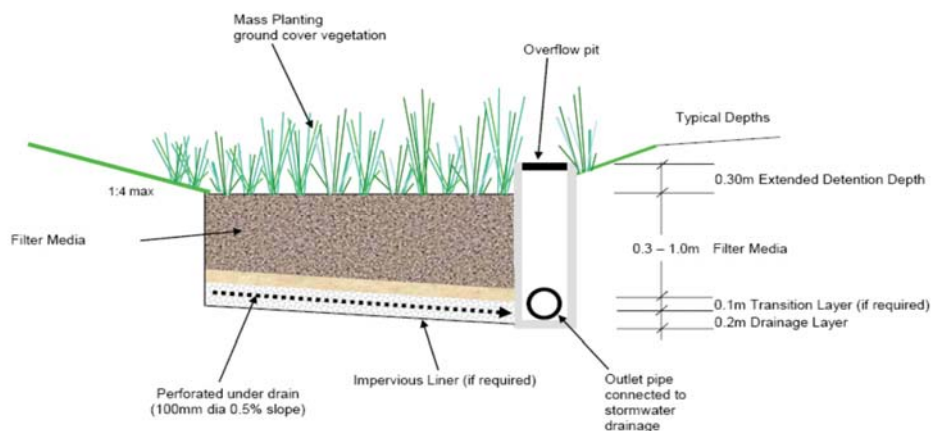
Where possible, buffer strips are to be included in landscaping areas to receive lateral sheet flow from impervious areas prior to collection by the stormwater reticulation. Buffer strips have not been included in the stormwater quality modelling of the subject site, as the exact locations and efficiency are subject to detailed landscape design.

4.2.2 BIO-RETENTION AREAS

A bio-retention basin is a vegetated area where runoff is filtered through a filter media layer (e.g. sandy loam) as it percolates downwards. It is then collected via perforated under-drains and flows to downstream waterways or to storages for re-use. Bio-retention basins operate by filtering stormwater runoff through densely planted surface vegetation and then percolating runoff through a prescribed filter media.

The type of filter media determines the effectiveness of the pollutant removal, with material of lower hydraulic conductivity providing the most efficient pollutant removal. Bio-retention systems aid in the removal of suspended solids, total Phosphorus and total Nitrogen.

Figure 4.2 – Bio-Retention Typical Cross Section (courtesy of Healthy Waterways)



The stormwater treatment efficiency of the proposed bio-retention areas has been modelled as part of the overall treatment train. Details of the modelling inputs and specifications of the bio-retention areas are presented in Section 4.3.

4.2.3 RAINWATER TANKS

Rainwater tanks behave as stormwater quality improvement devices by removing stormwater from the treatment train which is used for irrigation, toilet flushing and various other non-potable uses. It is therefore considered appropriate to assume and model a volume of rainwater capture and re-use in the assessment of stormwater quality and treatment train effectiveness.

4.2.4 STORMWATER QUALITY IMPROVEMENT DEVICES (SQID)

Proprietary stormwater quality improvement devices are predominantly used to remove gross pollutants and most suspended solids. They are most useful in circumstances where usable space is restricted for the treatment of stormwater on site. SQID devices have not been included in the stormwater quality modelling of the proposed development.

4.3 STORMWATER QUALITY MODELLING (MUSIC)

Modelling of the site was undertaken using the 'Model for Urban Stormwater Improvement Conceptualisation (MUSIC)' as promoted by the South East Queensland Healthy Waterways Partnership. An appropriate type of land use was applied to the developed catchment and a treatment system was assigned within the relevant modelling treatment parameters.

Meteorological data for input to MUSIC was obtained from the Bureau of Meteorology. Six-minute time step rainfall data was obtained from the year 1997 to 2006.

The catchment parameters of the MUSIC modelling were amended in accordance with the South East Queensland Healthy Waterways Partnerships' Water by Design MUSIC Modelling Guidelines for South East Queensland Version 1 (2010).

4.3.1 POLLUTANT SOURCE NODE DETAILS

Table 4.3 and 4.4 below show the pollutant source node parameters which were input in the MUSIC model.

Table 4.3 Rainfall – Runoff Parameters

	Industrial
Rainfall Threshold (mm)	1
Soil Storage Capacity (mm/day)	18
Initial Storage (%)	10
Field Capacity (mm)	80
Infiltration Capacity Coefficient - a	243
Infiltration Capacity Coefficient - b	0.6
Initial Depth (mm)	50
Daily Recharge Rate (%)	0
Daily Baseflow Rate (%)	31
Daily Seepage rate (%)	0

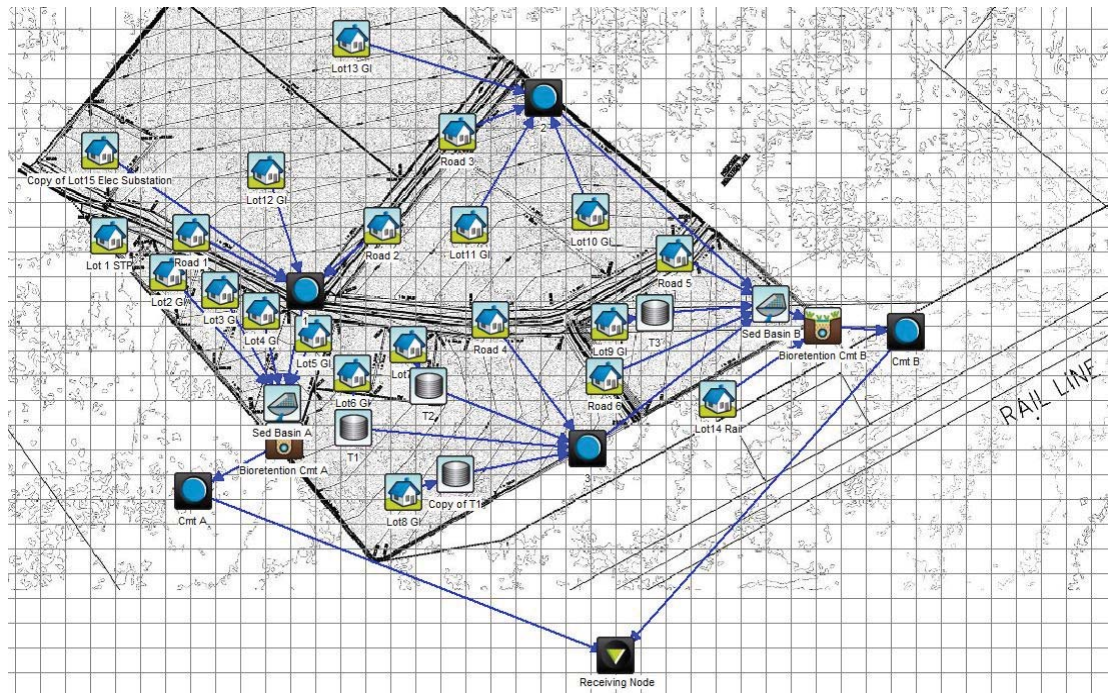
Table 4.4 Rainfall – Lumped Runoff Parameters

		Industrial
TSS Base Flow	Mean (log mg/L)	0.78
	Std Dev (log mg/L)	0.45
TSS Storm Flow	Mean (log mg/L)	1.92
	Std Dev (log mg/L)	0.44
TP Base Flow	Mean (log mg/L)	-1.11
	Std Dev (log mg/L)	0.48
TP Storm Flow	Mean (log mg/L)	-0.59
	Std Dev (log mg/L)	0.36
TN Base Flow	Mean (log mg/L)	0.14
	Std Dev (log mg/L)	0.20
TN Storm Flow	Mean (log mg/L)	0.25
	Std Dev (log mg/L)	0.32

4.3.2 TREATMENT TRAIN DETAILS

Once the site is fully developed, the stormwater run-off from the developed site will be collected via a series of drainage systems and overland flow paths, eventually discharging into the bio-retention area. The layout of the site and the proposed drainage pattern were considered in the creation of the MUSIC model. Figure 4.3 below presents the layout of source, treatment and receiving nodes used in the modelling.

Figure 4.3 – MUSIC Model Layout



4.3.2.1 Rainwater Tank Details

Rainwater tanks are proposed to collect all stormwater runoff from roof areas within the development for re-use in toilet flushing and irrigation for Lots that have been highlighted as High Demand Lots. Lots 6, 7, 8 and 9 have been identified during planning of the Industrial Areas as being High Use/Demand Lots with higher roofwater collection potential.

At the conceptual stage of planning, a simple re-use strategy for harvested rainwater has been modelled into the MUSIC. A base approach of 8.5KL tank per Hectare of high use Lots has been implemented to accommodate for rainwater reuse. This is based upon experience with similar sites for industrial developments. A daily demand reuse of 1.31KL/day/Ha for each high use Lot 6, 7, 8 and 9 has been applied based on previous developments of a similar nature.

Rainwater tank sizing and rainwater re-use levels should be confirmed at detailed design stage of this project.

4.3.2.2 Bio-Retention Basin Details

A bio-retention basin is proposed within each catchment of the development. It is proposed that these basins treat the stormwater runoff from the car parking areas, hardstand areas and roof areas within the Industrial Area Stage 1. The modelled parameters of the bio basin for MUSIC are as follows:

Table 4.5 Bio-Retention Basin Details

	Surface Area (m ²)	Ext Detention Depth (m)	Filter Area (m ²)	Filter Media Depth (m)
Bio Basin 1	11,500	0.2	11,500	0.6
Bio Basin 2	26,500	0.2	26,500	0.6

The basins sides shall be battered at max. 1:4 (V:H). Landscaping of the basin areas shall be in accordance with a suitably approved Landscape Design.

The bio-retention basin is made up of the following layers (from the bottom of the basin to the top of the batters):

1. 200mm drainage layer with 100mm slotted drainage pipes;
2. 100mm transition layer;
3. 600mm filter media layer (100 mm/hour saturate hydraulic conductivity);
4. 200mm extended detention layer;
5. 300mm freeboard to the top of batters; and
6. All batters are to be at 1:4.
7. Total Nitrogen content in filter media – 800 mg/kg
8. Total orthophosphate content in filter media – 45 mg/kg

4.3.2.3 Coarse Sediment Forebays

Due to the site location and nature of dispersive soils in the area, coarse sediment forebays have been implemented to assist in achieving the water quality objectives. Table 4.6 below summarises the parameters of the sediment forebays:

Table 4.6 – Coarse Sediment Forebays Details

Catchment	Area (m ²)	Depth (mm)	Extended detention (mm)	Permanent Pool volume (m ³)	Exfiltration rate (mm/hour)	Evaporative Loss	Outlet pipe diameter (mm)	Weir width (m)
1	300	300	500	90	0	125	375	2
2	300	300	500	90	0	125	375	2

4.3.3 MUSIC MODELLING RESULTS

The proposed stormwater treatment train has been modelled in MUSIC to assess the load reduction achievements and to ensure that the operational phase performance criteria is met in accordance with Table 4.2. The results of the of the MUSIC modelling exercise are presented below:

Figure 4.4 – MUSIC Model Results

Treatment Train Effectiveness - Receiving Node			
	Sources	Residual Load	% Reduction
Flow (ML/yr)	674	612	9.2
Peak Flow (m3/s)	20.4	35.2	-72.9
Total Suspended Solids (kg/yr)	103E3	9.92E3	90.4
Total Phosphorus (kg/yr)	256	73.4	71.3
Total Nitrogen (kg/yr)	1.57E3	706	55.1
Gross Pollutants (kg/yr)	12.5E3	0.00	100.0

The above table shows that the load-reduction targets shown for the development have been achieved. Therefore, sufficient consideration of stormwater controls has been made at this conceptual stage of the development to demonstrate:

- Compliance with QUDM;
- Compliance with the State Planning Policy 4/10 Healthy Waterways; and
- Ecological sustainability in terms of the development's impact upon receiving waters; and the viability of the proposed site development.

4.4 CONSTRUCTION PHASE

During the construction phase of the development, an Erosion and Sediment Control Program will be implemented to minimise water quality impacts. A detailed Erosion and Sediment Control Program will be employed throughout the site. The sediment control measures shall include a temporary sediment basin, silt fences and diversion channels for clean stormwater run-off.

The following sections details the construction phase requirements to ensure the protection of stormwater quality.

4.4.1 PRE-CONSTRUCTION

- Designating and delineating buffer strips adjacent to the existing vegetation to be retained and Protected Vegetation Zones. No plant operations will occur within the buffer strips.
- Sediment fences are to be constructed on the upstream edges of the designated buffer strips and at the base of fill embankments.
- Areas for plant and construction material storage are to be designated along with associated diversion drains and spillage holding ponds.
- Diversion banks are to be created at the upstream boundary of construction activities to ensure upstream runoff is diverted around any exposed areas. Catch drains are to be created at the downstream boundary of construction activities.

- Silt fences and/or sand bags are to be placed along the catch drains to slow runoff, reduce scour and capture some sediment from runoff.
- Construction of a temporary sediment basin at the location of the prescribed bio-retention and detention basins.
- Site personnel are to be educated on the sediment and erosion control measures implemented on site.

4.4.2 DURING CONSTRUCTION

- Progressive re-vegetation of filled areas and batters.
- Construction activities are to be confined to the necessary construction areas.
- The provision of a 'vehicle shakedown' to prevent the tracking of debris from tyres of vehicles onto public roads. Only one construction exit will be nominated to limit the movement of construction equipment.
- The topsoil stockpile location will be nominated to coincide with areas previously disturbed. A sediment fence is to be constructed around the bottom of the stockpile to trap sediment. A diversion drain is to be installed upstream of the stockpile if required.
- Regular inspection and maintenance of silt fences, sediment basins and other erosion control measures. Following rainfall events greater than 50mm inspection of erosion control measures and removal of collected material should be undertaken. Replacement of any damaged equipment should be performed immediately.

It is important to note that the proposed bio-retention and detention basins can serve as a temporary sediment basin during the construction stage of the development.

4.4.3 POST CONSTRUCTION

The Contractor/Developer will be responsible for the maintenance of erosion and sediment control devices from the possession of the site until stabilisation has occurred to the satisfaction of the superintendent and Council. Key stormwater quality improvement devices requiring maintenance during the operational phase of the project following construction are the grassed buffer areas and the bio-retention areas.

Maintenance requirements for these devices consist of:

- Regular inspections;
- Ensure sufficient vegetation within verges, swales and bio-retention areas;
- No erosion has occurred;
- Regular mowing/harvesting to ensure vegetation is maintained at acceptable levels; and
- Removal of litter within verges, swales and bio-retention areas;

4.5 WATER QUALITY MONITORING PROGRAM

This development does propose the use of water sensitive practices and the associated stormwater quality management practices at the outlet areas.

In compliance with the State Planning Policy 4/10 Healthy Waters the proposed development must achieve the objectives outlined above during the construction phase of development.

By adopting the recommended actions and responses to specific activities, the monitoring and reporting, and the construction of the control measures as outlined in this report, these objectives should be suitably achieved by the Contractor.

Records of release of sediment-laden stormwater from the site and inspection records will be developed. It is intended that each release resulting from a storm event generating more than 100mm in a twenty-four hour period shall be recorded to ensure ongoing monitoring, management and reporting of releases from the site.

5 CONCLUSION

The Site Based Stormwater Management Plan has been prepared to provide a design proposal and guide to the stormwater quantity and quality management techniques for the proposed Industrial Area Stage 1. This report includes details for the stormwater modelling that predicts the peak runoff within the site. Sufficient consideration for stormwater controls has been made at this preliminary design stage of the development to demonstrate the three main objectives of this SMP, being:

1. The existing stormwater runoff from catchments 1 and 2 are maintained and where necessary, suitable measures are incorporated in the development to ensure that there is no environmental impacts resulting from an increase to peak discharging stormwater flow rates as a result of the development.
2. Details of the proposed stormwater quality treatment are provided to ensure the discharge of stormwater from the site is of adequate quality to comply with the requirements of State Planning Policy Urban Development pollutant reduction targets.
3. The proposed works do not risk flooding to the proposed Industrial development during the operational phase.

The hydrological assessment determined that there would be an increase in stormwater runoff as a result of the development. The resultant increase will be negated by the use of a detention basin as specified within this report. As such, the developed site will not affect the peak flows on the downstream infrastructure.

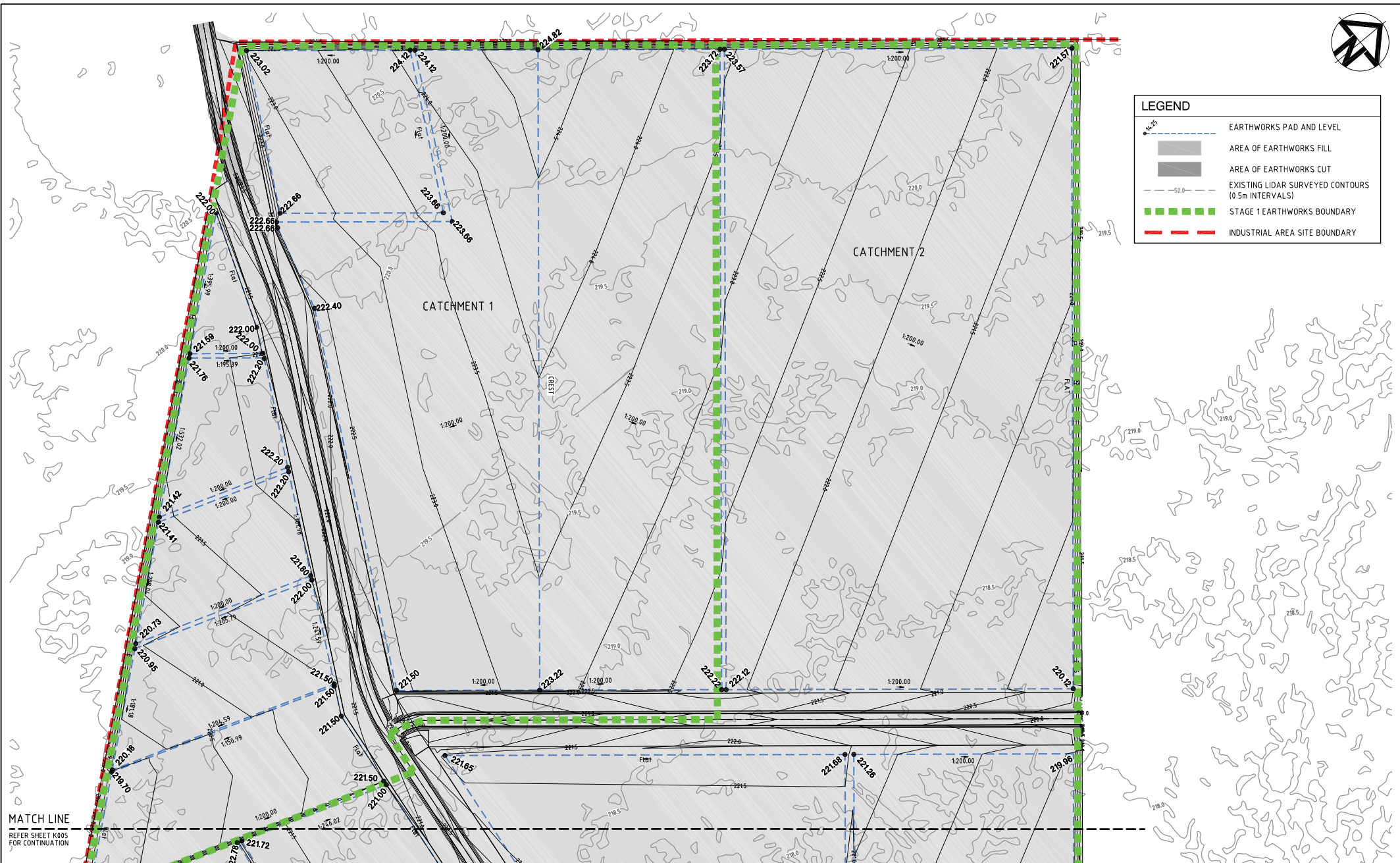
This document illustrates that sufficient treatment of stormwater runoff for quality requirements in accordance with Water Sensitive Urban Design principles will be achieved through the use of various treatment devices at different phases of the development.

APPENDIX A

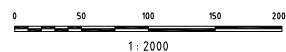
ENGINEERING DRAWINGS



LEGEND	
	EARTHWORKS PAD AND LEVEL
	AREA OF EARTHWORKS FILL
	AREA OF EARTHWORKS CUT
	EXISTING LIDAR SURVEYED CONTOURS (0.5m INTERVALS)
	STAGE 1 EARTHWORKS BOUNDARY
	INDUSTRIAL AREA SITE BOUNDARY



A ORIGINAL ISSUE		T.P.	S.M.	26.06.2019
Issue	Description	By	Chd	Date



Surveyor	
Client	
Filename	K005-AA006158-AA0-00-BULK INDUST.DWG



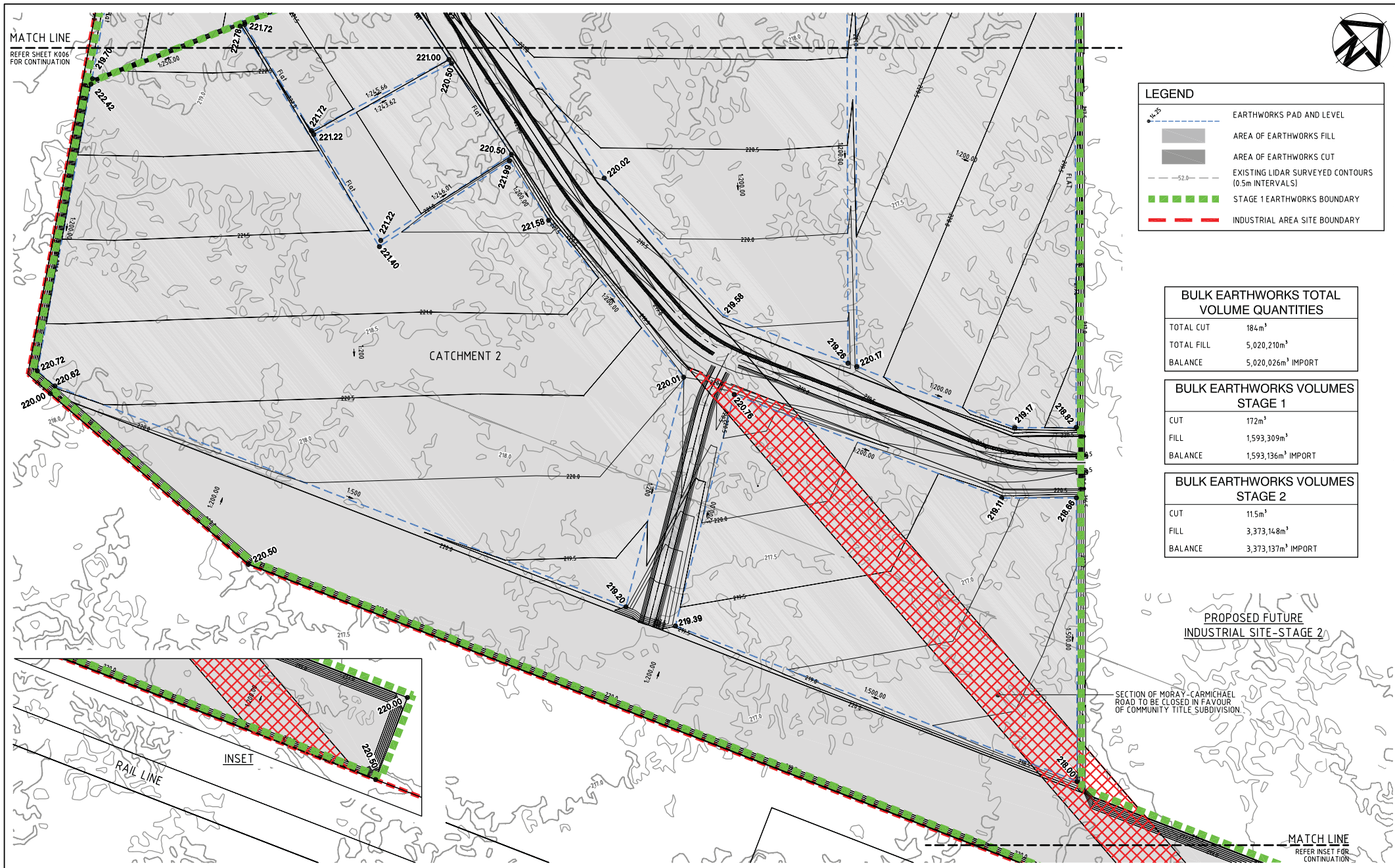
Status	PRELIMINARY NOT TO BE USED FOR CONSTRUCTION	
Approved	R.P.E.O. No. : - - - -	
Scales	1 : 2000	Current Issue Signatures
		Author T. PHAN
Original Size	A1	Designer S. EISEL
Height Datum	AHD	Reviewer C. HOWARD
Grid	GDA94	© Copyright reserved

Project	CARMICHAEL MINE DEVELOPMENT	
Title	INDUSTRIAL SITE - STAGE 1 BULK EARTHWORKS LAYOUT PLAN SHEET 2 OF 2	



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Drawing No.	Project No.	Issue
K006	AA006158	A



BULK EARTHWORKS TOTAL VOLUME QUANTITIES	
TOTAL CUT	184m ³
TOTAL FILL	5,020,210m ³
BALANCE	5,020,026m ³ IMPORT

BULK EARTHWORKS VOLUMES STAGE 1	
CUT	172m ³
FILL	1,593,309m ³
BALANCE	1,593,136m ³ IMPORT

BULK EARTHWORKS VOLUMES STAGE 2	
CUT	115m ³
FILL	3,373,148m ³
BALANCE	3,373,137m ³ IMPORT

A ORIGINAL ISSUE		T.P	S.M	26.06.2019
Issue	Description	By	Chd	Date

0 50 100 150 200m
1:2000

Surveyor

Client

adani

Status
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Approved

R.P.E.O No. : - - - -

Scales
1:2000

Original Size
A1

Height
AHD

Grid
GDA94

Current Issue Signatures
Author
T.PHAN
Designer
S. EISEL
Reviewer
C. HOWARD

Project
CARMICHAEL MINE DEVELOPMENT

Title
INDUSTRIAL SITE STAGE 1
BULK EARTHWORKS
LAYOUT PLAN
SHEET 1 OF 2

Hyder

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K005

Project No.
AA006158

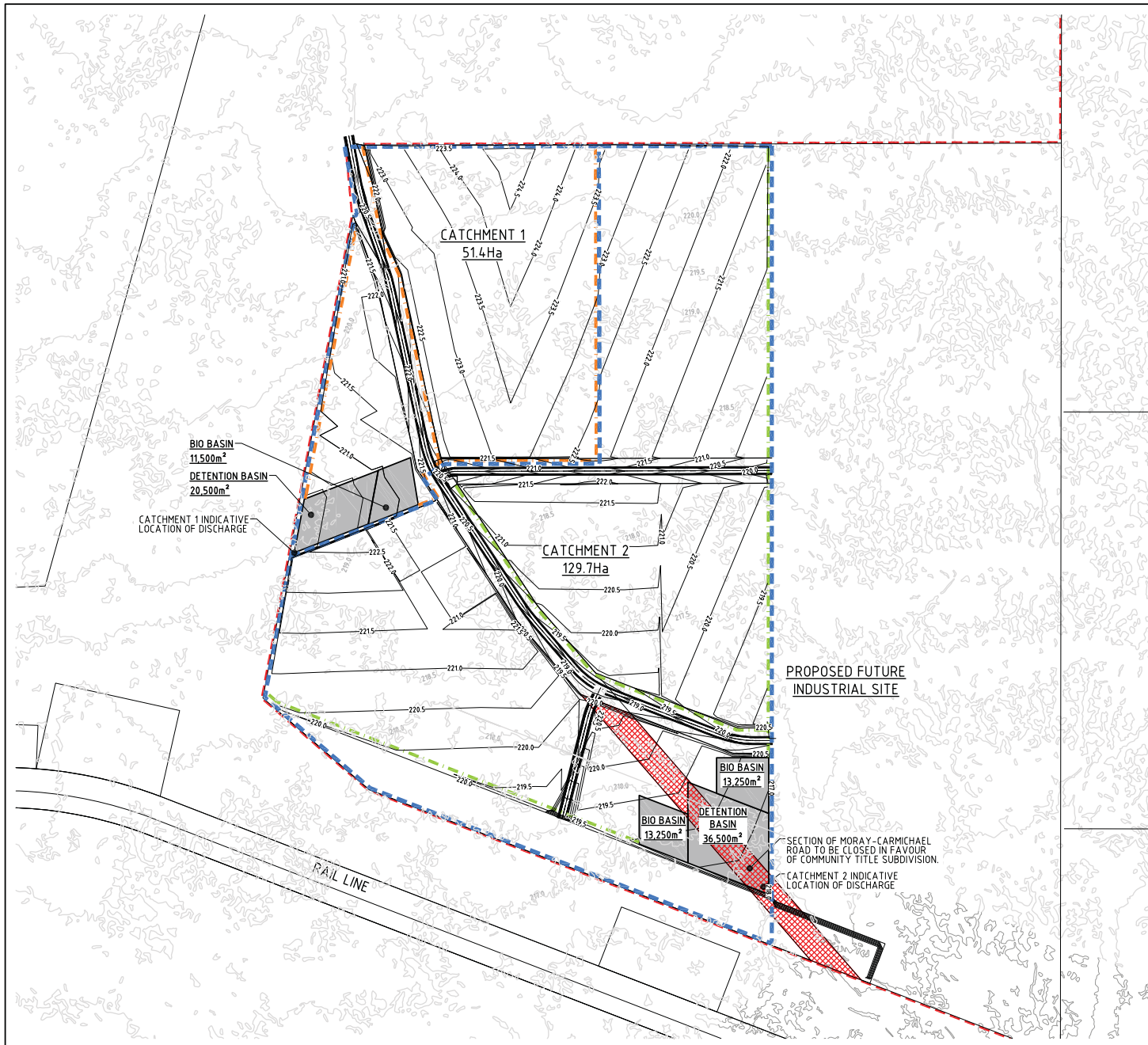
Issue
A

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V1



			 1 : 5000			Surveyor			Client 			Status PRELIMINARY NOT TO BE USED FOR CONSTRUCTION Approved R.P.E.Q No : ---- Scales 1 : 5000 Original Size A1 Height AHD Grid GDA94 Current Issue Signatures Author T PHAN Designer S. EISEL Reviewer C. HOWARD © Copyright reserved			Project CARMICHAEL MINE DEVELOPMENT Title INDUSTRIAL SITE STAGE 1 STORMWATER MANAGMENT LAYOUT PLAN			HYDER CONSULTING Pty Ltd ABN 76 104 485 289 Level 7, 199 Gray Street Locked Bag 2017 South Brisbane, QLD 4101 Australia Tel: +61 7 3337 0000 Fax: +61 7 3337 0050 Web: www.hyderconsulting.com Drawing No. K033Project No. AA006158Issue A		
A ORIGINAL ISSUE			T.P S.M 26.06.2013																	
IssueDescription			ByChdDate																	
																				

APPENDIX B

SITE SPECIFIC IFD CHARTS

Intensity-Frequency-Duration Table

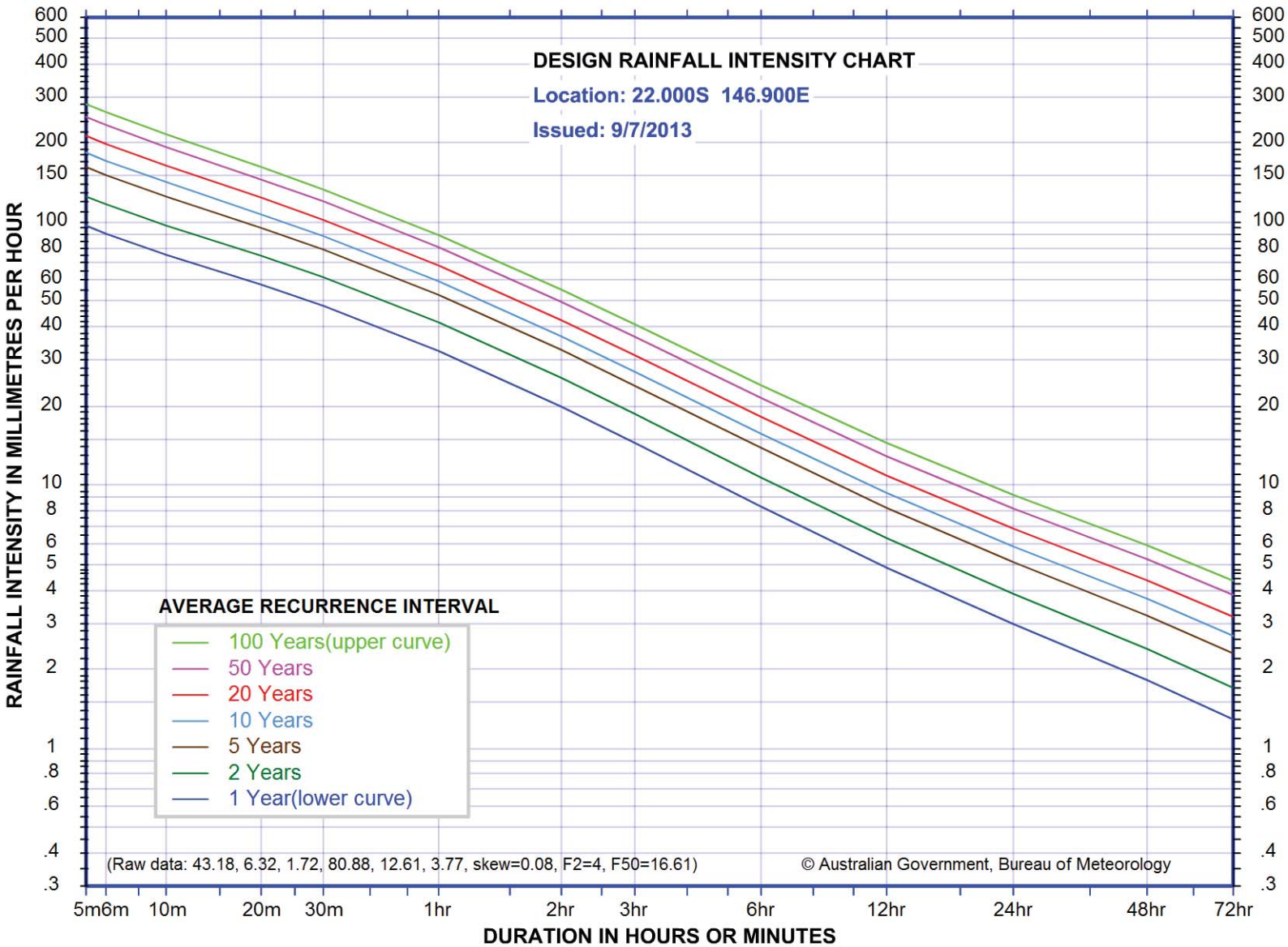
Location: 22.000S 146.900E Issued: 9/7/2013

Rainfall intensity in mm/h for various durations and Average Recurrence Interval

Average Recurrence Interval

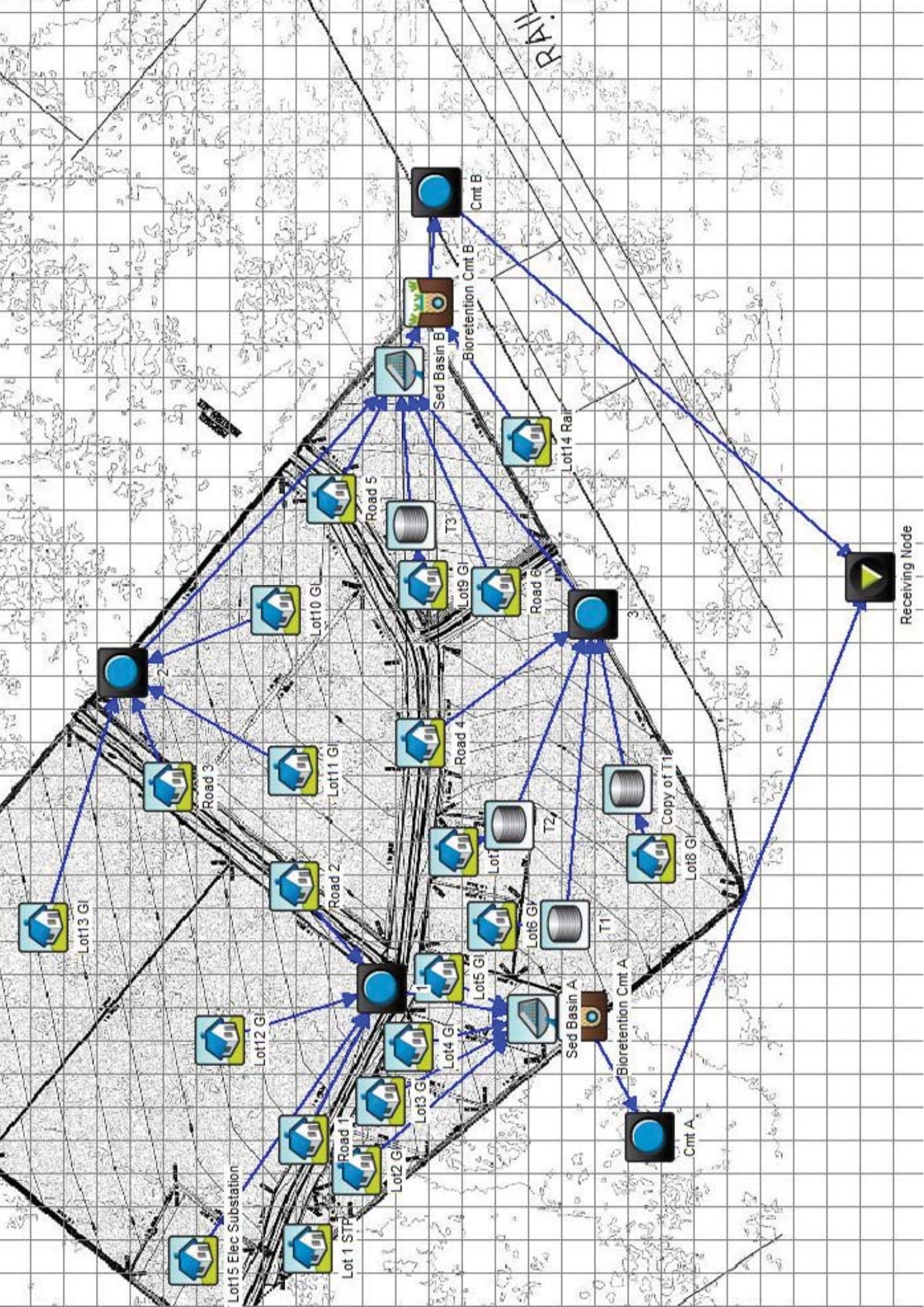
Duration	1 YEAR	2 YEARS	5 YEARS	10 YEARS	20 YEARS	50 YEARS	100 YEARS
5Mins	97.0	125	162	184	213	251	281
6Mins	90.3	117	151	171	198	234	262
10Mins	75.2	97.1	125	142	164	193	216
20Mins	57.9	74.5	95.1	107	124	145	162
30Mins	48.1	61.8	78.7	88.6	102	120	133
1Hr	32.4	41.6	52.9	59.6	68.5	80.3	89.3
2Hrs	19.9	25.6	32.7	36.8	42.4	49.8	55.4
3Hrs	14.5	18.7	23.9	27.0	31.2	36.7	40.9
6Hrs	8.31	10.7	13.9	15.7	18.2	21.5	24.0
12Hrs	4.86	6.30	8.21	9.36	10.9	12.9	14.5
24Hrs	2.97	3.87	5.11	5.86	6.85	8.17	9.20
48Hrs	1.82	2.39	3.20	3.71	4.35	5.24	5.92
72Hrs	1.29	1.70	2.30	2.68	3.17	3.83	4.34

(Raw data: 43.18, 6.32, 1.72, 80.88, 12.61, 3.77, skew=0.08, F2=4, F50=16.61) © Australian Government, Bureau of Meteorology



APPENDIX C

MUSIC MODELLING LAYOUT



APPENDIX D

CALCULATIONS



Project: Adani Carmichael
Project No.: AA006158
Designer: SM
Date: 2/07/2013

Rational Method Calculations

Project

Description

Time of Concentration minutes

Area of Catchment Hectares

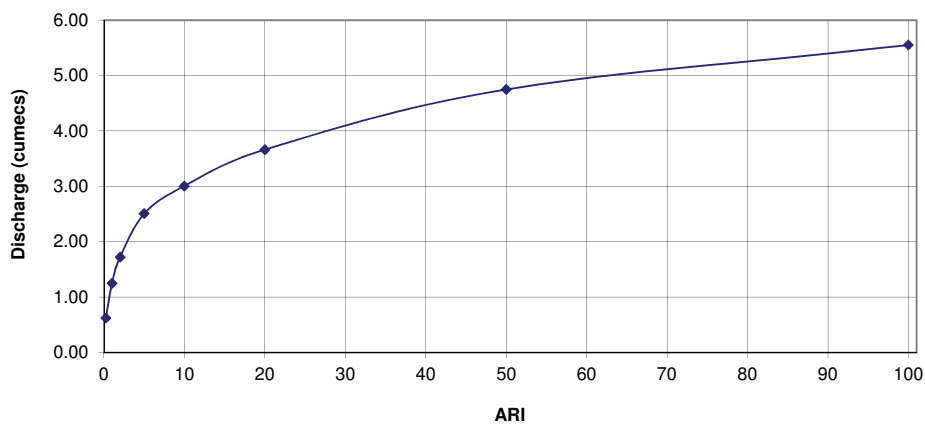
Fraction Impervious

Council Chart No.

Council Name

ARI	C value	Rainfall Intensity (mm/hr)	Discharge (m ³ /s)	Comments
3 _{month}			0.63	Write anything here that is applicable to the analysis
1 _{year}	0.48	17.37	1.25	
2 _{year}	0.51	22.51	1.72	
5 _{year}	0.57	29.32	2.51	
10 _{year}	0.60	33.39	3.01	
20 _{year}	0.63	38.74	3.66	
50 _{year}	0.69	45.86	4.75	
100 _{year}	0.72	51.36	5.55	

ARI vs Discharge





Project: Adani Carmichael
Project No.: AA006158
Designer: SM
Date: 2/07/2013

Rational Method Calculations

Project

Description

Time of Concentration minutes

Area of Catchment Hectares

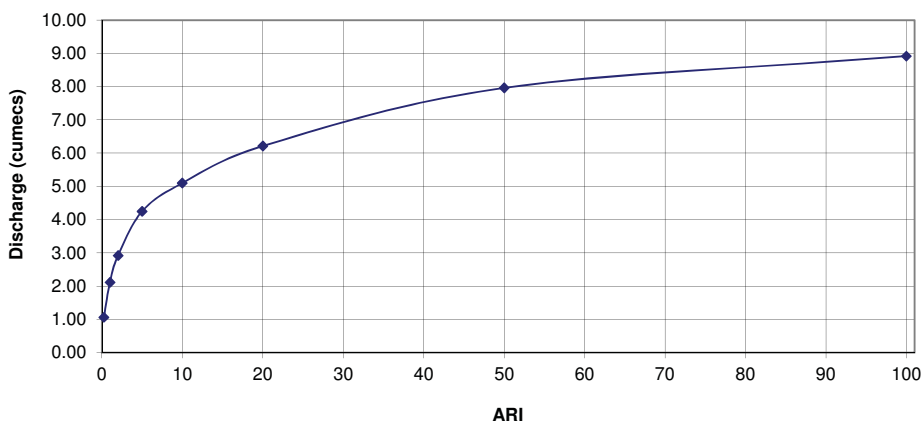
Fraction Impervious

Council Chart No.

Council Name

ARI	C value	Rainfall Intensity (mm/hr)	Discharge (m ³ /s)	Comments
3 _{month}			1.06	Write anything here that is applicable to the analysis
1 _{year}	0.70	20.07	2.12	
2 _{year}	0.75	26.02	2.92	
5 _{year}	0.84	33.90	4.25	
10 _{year}	0.88	38.61	5.10	
20 _{year}	0.92	44.80	6.21	
50 _{year}	1.00	53.05	7.96	
100 _{year}	1.00	59.42	8.92	

ARI vs Discharge





CATCHMENT 1

PRELIMINARY SIZING OF DETANTION BASIN

PRELIMINARY SIZING

Time of Concentration=	109
Q2	7960
Q5	11532
Q10	13855
Q20	16912
Q50	21205
Q100	21958

Project: Adani Carmichael Mine
Project No.: AA006158
Designer: SM
Date: 4/07/2013

Q2 Estimation of Detention Basin Size

		Qi=peak inflow rate "Post-dev" =	2.92
		Qo=desired peak outflow rate "Pre-dev"=	1.72
		tc=time of peak "Post-dev" (min)=	109
r=(Qi-Qo)/Qi		r =	0.4109589
Vi = 4tcQi/3		Vi =	25462.4
Culp 1948			
$V_s/V_i = r(1+2r)/3 =$	0.2495778	$V_s=$	6355 m ³
Boyd 1989			
$V_s/V_i = r =$	0.4109589	$V_s=$	10464 m ³
Carroll 1990			
$V_s/V_i = r(3+5r)/8 =$	0.2596641	$V_s=$	6612 m ³
Basha 1994			
$V_s/V_i = r(2+r)/3 =$	0.3302683	$V_s=$	8409 m ³
Average Vs =			7960 m³

Q5 Estimation of Detention Basin Size

		Qi=peak inflow rate "Post-dev" =	4.25
		Qo=desired peak outflow rate "Pre-dev"=	2.51
		tc=time of peak "Post-dev" (min)=	109
r=(Qi-Qo)/Qi		r =	0.40941176
Vi = 4tcQi/3		Vi =	37060
Culp 1948			
$V_s/V_i = r(1+2r)/3 =$	0.2482159	$V_s=$	9199 m ³
Boyd 1989			
$V_s/V_i = r =$	0.4094118	$V_s=$	15173 m ³
Carroll 1990			
$V_s/V_i = r(3+5r)/8 =$	0.2582907	$V_s=$	9572 m ³
Basha 1994			
$V_s/V_i = r(2+r)/3 =$	0.3288138	$V_s=$	12186 m ³
Average Vs =			11532 m³

Q10 Estimation of Detention Basin Size

		Qi=peak inflow rate "Post-dev" =	5.1
		Qo=desired peak outflow rate "Pre-dev"=	3.01
		tc=time of peak "Post-dev" (min)=	109
r=(Qi-Qo)/Qi		r =	0.40980392
Vi = 4tcQi/3		Vi =	44472
Culp 1948			
$V_s/V_i = r(1+2r)/3 =$	0.248561	$V_s=$	11054 m ³
Boyd 1989			
$V_s/V_i = r =$	0.409804	$V_s=$	18225 m ³
Carroll 1990			
$V_s/V_i = r(3+5r)/8 =$	0.258639	$V_s=$	11502 m ³
Basha 1994			
$V_s/V_i = r(2+r)/3 =$	0.329182	$V_s=$	14639 m ³
		Average Vs =	13855 m³

Q20 Estimation of Detention Basin Size

		Qi=peak inflow rate "Post-dev" =	6.21
		Qo=desired peak outflow rate "Pre-dev"=	3.66
		tc=time of peak "Post-dev" (min)=	109
r=(Qi-Qo)/Qi		r =	0.41062802
Vi = 4tcQi/3		Vi =	54151.2
Culp 1948			
$V_s/V_i = r(1+2r)/3 =$	0.249286	$V_s=$	13499 m ³
Boyd 1989			
$V_s/V_i = r =$	0.410628	$V_s=$	22236 m ³
Carroll 1990			
$V_s/V_i = r(3+5r)/8 =$	0.25937	$V_s=$	14045 m ³
Basha 1994			
$V_s/V_i = r(2+r)/3 =$	0.329957	$V_s=$	17868 m ³
		Average Vs =	16912 m³

Q50 Estimation of Detention Basin Size

Qi=peak inflow rate "Post-dev" =		7.96
Qo=desired peak outflow rate "Pre-dev"=		4.75
tc=time of peak "Post-dev" (min)=		109
r=(Qi-Qo)/Qi		r = 0.403266332
Vi = 4tcQi/3		Vi = 69411.2
Culp 1948		
Vs/Vi = r(1+2r)/3 =	0.242838	Vs= 16856 m ³
Boyd 1989		
Vs/Vi = r =	0.403266	Vs= 27991 m ³
Carroll 1990		
Vs/Vi = r(3+5r)/8 =	0.252865	Vs= 17552 m ³
Basha 1994		
Vs/Vi = r(2+r)/3 =	0.323052	Vs= 22423 m ³
Average Vs =		21205 m³

Q100 Estimation of Detention Basin Size

Qi=peak inflow rate "Post-dev" =		8.92
Qo=desired peak outflow rate "Pre-dev"=		5.55
tc=time of peak "Post-dev" (min)=		109
r=(Qi-Qo)/Qi		r = 0.377802691
Vi = 4tcQi/3		Vi = 77782.4
Culp 1948		
Vs/Vi = r(1+2r)/3 =	0.221091	Vs= 17197 m ³
Boyd 1989		
Vs/Vi = r =	0.377803	Vs= 29386 m ³
Carroll 1990		
Vs/Vi = r(3+5r)/8 =	0.230885	Vs= 17959 m ³
Basha 1994		
Vs/Vi = r(2+r)/3 =	0.299447	Vs= 23292 m ³
Average Vs =		21958 m³

Job: Adani Carmichael
Job No: AA006158
Designer: SM
Date: 19/06/2013

Open Channel Design (Flood level check)

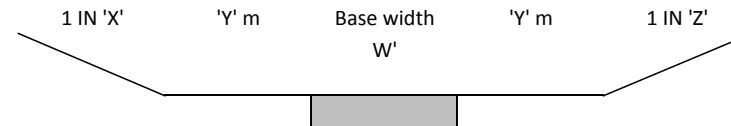
Location: Catchment 1 Channel Design

Q1 - Q100

100 **8.92** m³/s

Max. Channel Width = 13.000 m
 Max. Channel Depth = 1.000 m
 Base Width 'W' = 4.000 m
 Side Slopes 1 IN X = 4.0
 Side Slopes 1 IN Z = 4.0
 Distance 'Y' = 0.000 m
 nbase = 0.013
 nsides = 0.013

Trial Depth = **0.700** m
 Trial Slope = **0.20** %



TYPICAL SECTION

MANNINGS FORMULAR CALCS.

Base Area (wetted)	Base Perim. (wetted)	Slope Area (wetted)	Slope Perim. (wetted)	HR Base	HR Slope	Q base (m ³ /s)	Q slope (m ³ /s)	Q _{Total} (m ³ /s)	Vel. (m/s)	d.V < 0.6	Freeboard (m)
2.800	4.000	1.960	5.772	0.700	0.340	7.59	3.28	10.88	2.28	1.60	0.300



Project: Adani Carmichael
Project No.: AA006158
Designer: SM
Date: 2/07/2013

Rational Method Calculations

Project

Description

Time of Concentration minutes

Area of Catchment Hectares

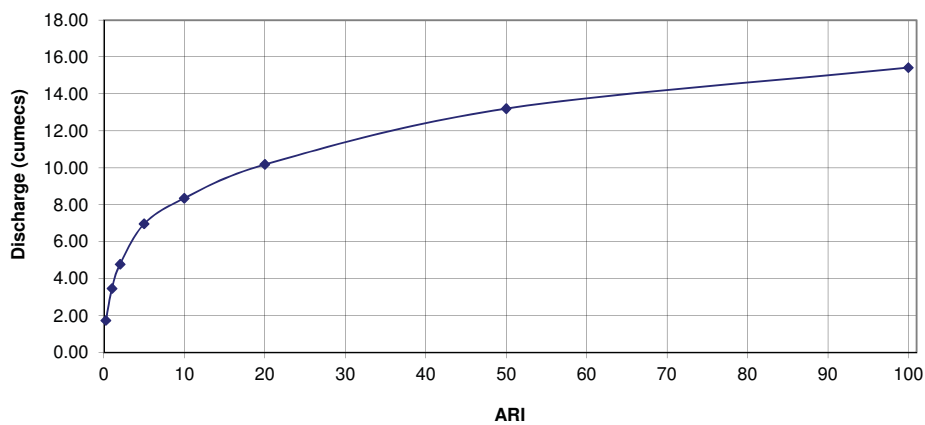
Fraction Impervious

Council Chart No.

Council Name

ARI	C value	Rainfall Intensity (mm/hr)	Discharge (m ³ /s)	Comments
3 _{month}			1.74	Write anything here that is applicable to the analysis
1 _{year}	0.48	19.89	3.48	
2 _{year}	0.51	25.79	4.79	
5 _{year}	0.57	33.59	6.97	
10 _{year}	0.60	38.26	8.36	
20 _{year}	0.63	44.40	10.19	
50 _{year}	0.69	52.57	13.21	
100 _{year}	0.72	58.88	15.44	

ARI vs Discharge





Project: Adani Carmichael
Project No.: AA006158
Designer: SM
Date: 2/07/2013

Rational Method Calculations

Project

Description

Time of Concentration minutes

Area of Catchment Hectares

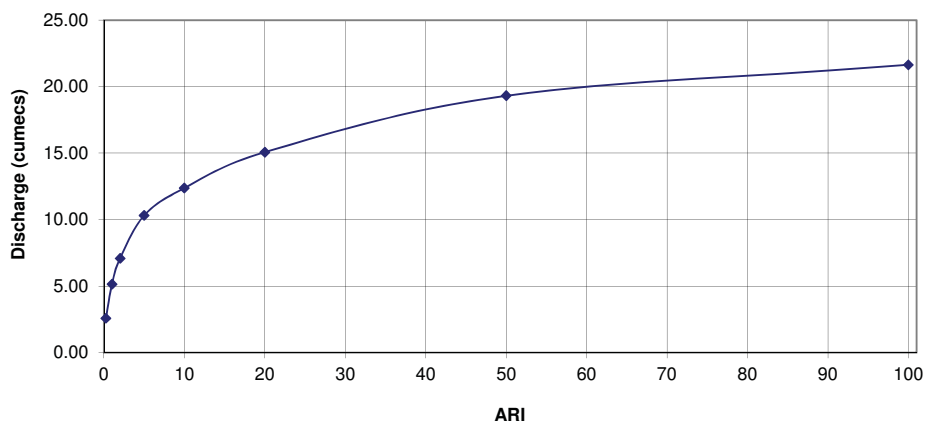
Fraction Impervious

Council Chart No.

Council Name

ARI	C value	Rainfall Intensity (mm/hr)	Discharge (m ³ /s)	Comments
3 _{month}			2.57	Write anything here that is applicable to the analysis
1 _{year}	0.70	20.07	5.15	
2 _{year}	0.75	26.02	7.09	
5 _{year}	0.84	33.90	10.32	
10 _{year}	0.88	38.61	12.38	
20 _{year}	0.92	44.80	15.08	
50 _{year}	1.00	53.05	19.32	
100 _{year}	1.00	59.42	21.64	

ARI vs Discharge





CATCHMENT 2
PRELIMINARY SIZING OF DETENTION BASIN

PRELIMINARY SIZING

Time of Concentration=	109
Q2	14551
Q5	21197
Q10	25438
Q20	30935
Q50	38480
Q100	38393

Project: Adani Carmichael Mine
Project No.: AA006158
Designer: SM
Date: 4/07/2013

Q2 Estimation of Detention Basin Size

		Qi=peak inflow rate "Post-dev" =	7.09
		Qo=desired peak outflow rate "Pre-dev"=	4.79
		tc=time of peak "Post-dev" (min)=	109
$r=(Q_i-Q_o)/Q_i$		r =	0.32440056
$V_i = 4tcQ_i/3$		Vi =	61824.8
Culp 1948			
$V_s/V_i = r(1+2r)/3 =$	0.178291	Vs=	11023 m ³
Boyd 1989			
$V_s/V_i = r =$	0.324401	Vs=	20056 m ³
Carroll 1990			
$V_s/V_i = r(3+5r)/8 =$	0.187423	Vs=	11587 m ³
Basha 1994			
$V_s/V_i = r(2+r)/3 =$	0.251346	Vs=	15539 m ³
		Average Vs =	14551 m³

Q5 Estimation of Detention Basin Size

		Qi=peak inflow rate "Post-dev" =	10.32
		Qo=desired peak outflow rate "Pre-dev"=	6.97
		tc=time of peak "Post-dev" (min)=	109
$r=(Q_i-Q_o)/Q_i$		r =	0.3246124
$V_i = 4tcQ_i/3$		Vi =	89990.4
Culp 1948			
$V_s/V_i = r(1+2r)/3 =$	0.178453	Vs=	16059 m ³
Boyd 1989			
$V_s/V_i = r =$	0.324612	Vs=	29212 m ³
Carroll 1990			
$V_s/V_i = r(3+5r)/8 =$	0.187588	Vs=	16881 m ³
Basha 1994			
$V_s/V_i = r(2+r)/3 =$	0.251533	Vs=	22636 m ³
		Average Vs =	21197 m³

Q10 Estimation of Detention Basin Size

		Qi=peak inflow rate "Post-dev" =	12.38
		Qo=desired peak outflow rate "Pre-dev"=	8.36
		tc=time of peak "Post-dev" (min)=	109
r=(Qi-Qo)/Qi		r =	0.32471729
Vi = 4tcQi/3		Vi =	107953.6
Culp 1948			
$V_s/V_i = r(1+2r)/3 =$	0.178533	$V_s=$	19273 m ³
Boyd 1989			
$V_s/V_i = r =$	0.324717	$V_s=$	35054 m ³
Carroll 1990			
$V_s/V_i = r(3+5r)/8 =$	0.18767	$V_s=$	20260 m ³
Basha 1994			
$V_s/V_i = r(2+r)/3 =$	0.251625	$V_s=$	27164 m ³
		Average Vs =	25438 m³

Q20 Estimation of Detention Basin Size

		Qi=peak inflow rate "Post-dev" =	15.08
		Qo=desired peak outflow rate "Pre-dev"=	10.19
		tc=time of peak "Post-dev" (min)=	109
r=(Qi-Qo)/Qi		r =	0.32427056
Vi = 4tcQi/3		Vi =	131497.6
Culp 1948			
$V_s/V_i = r(1+2r)/3 =$	0.178191	$V_s=$	23432 m ³
Boyd 1989			
$V_s/V_i = r =$	0.324271	$V_s=$	42641 m ³
Carroll 1990			
$V_s/V_i = r(3+5r)/8 =$	0.187321	$V_s=$	24632 m ³
Basha 1994			
$V_s/V_i = r(2+r)/3 =$	0.251231	$V_s=$	33036 m ³
		Average Vs =	30935 m³

Q50 Estimation of Detention Basin Size

		Qi=peak inflow rate "Post-dev" =	19.32
		Qo=desired peak outflow rate "Pre-dev"=	13.21
		tc=time of peak "Post-dev" (min)=	109
r=(Qi-Qo)/Qi		r =	0.316252588
Vi = 4tcQi/3		Vi =	168470.4
Culp 1948			
$V_s/V_i = r(1+2r)/3 =$	0.172095	Vs=	28993 m ³
Boyd 1989			
$V_s/V_i = r =$	0.316253	Vs=	53279 m ³
Carroll 1990			
$V_s/V_i = r(3+5r)/8 =$	0.181105	Vs=	30511 m ³
Basha 1994			
$V_s/V_i = r(2+r)/3 =$	0.244174	Vs=	41136 m ³
		Average Vs =	38480 m³

Q100 Estimation of Detention Basin Size

		Qi=peak inflow rate "Post-dev" =	21.64
		Qo=desired peak outflow rate "Pre-dev"=	15.44
		tc=time of peak "Post-dev" (min)=	109
r=(Qi-Qo)/Qi		r =	0.28650647
Vi = 4tcQi/3		Vi =	188700.8
Culp 1948			
$V_s/V_i = r(1+2r)/3 =$	0.150226	Vs=	28348 m ³
Boyd 1989			
$V_s/V_i = r =$	0.286506	Vs=	54064 m ³
Carroll 1990			
$V_s/V_i = r(3+5r)/8 =$	0.158744	Vs=	29955 m ³
Basha 1994			
$V_s/V_i = r(2+r)/3 =$	0.218366	Vs=	41206 m ³
		Average Vs =	38393 m³

Job: Adani Carmichael
Job No: AA006158
Designer: SM
Date: 19/06/2013

Open Channel Design (Flood level check)

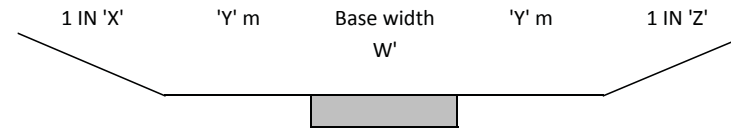
Location: Catchment 2 Channel Design

Q1 - Q100

100 **21.64** m³/s

Max. Channel Width = 17.000 m
 Max. Channel Depth = 1.000 m
 Base Width 'W' = 10.000 m
 Side Slopes 1 IN X = 4.0
 Side Slopes 1 IN Z = 4.0
 Distance 'Y' = 0.000 m
 nbase = 0.013
 nsides = 0.013

Trial Depth = **0.700** m
 Trial Slope = **0.20** %



TYPICAL SECTION

MANNINGS FORMULAR CALCS.

Base Area (wetted)	Base Perim. (wetted)	Slope Area (wetted)	Slope Perim. (wetted)	HR Base	HR Slope	Q base (m ³ /s)	Q slope (m ³ /s)	Q _{Total} (m ³ /s)	Vel. (m/s)	d.V < 0.6	Freeboard (m)
7.000	10.000	1.960	5.772	0.700	0.340	18.98	3.28	22.27	2.49	1.74	0.300

Appendix K: Statutory Forms

IDAS form 1—Application details

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This form must be used for **ALL** development applications.

You **MUST** complete **ALL** questions that are stated to be a mandatory requirement unless otherwise identified on this form.

For all development applications, you must:

- complete this form (*IDAS form 1—Application details*)
- complete any other forms relevant to your application
- provide any mandatory supporting information identified on the forms as being required to accompany your application.

Attach extra pages if there is insufficient space on this form.

All terms used on this form have the meaning given in the *Sustainable Planning Act 2009* (SPA) or the Sustainable Planning Regulation 2009.

This form and any other IDAS form relevant to your application must be used for development applications relating to strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994* and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008*. Whenever a planning scheme is mentioned, take it to mean land use plan for the strategic port land, Brisbane core port land or airport land.

PLEASE NOTE: This form is not required to accompany requests for compliance assessment.

This form can also be completed online using MyDAS at www.dsdip.qld.gov.au/MyDAS

Mandatory requirements

Applicant details (Note: the applicant is the person responsible for making the application and need not be the owner of the land. The applicant is responsible for ensuring the information provided on all IDAS application forms is correct. Any development permit or preliminary approval that may be issued as a consequence of this application will be issued to the applicant.)

Name/s (individual or company name in full)	Adani Mining Pty Ltd			
For companies, contact name	Melinda Bergmann - Manager, Approvals			
Postal address	GPO Box 2569			
	Suburb	Brisbane		
	State	Queensland	Postcode	4001
	Country	Australia		
Contact phone number	07 3037 5510			
Mobile number (non-mandatory requirement)	-			
Fax number (non-mandatory requirement)	-			

Email address (non-mandatory requirement)

melinda.bergmann

@adani.com

Applicant's reference number (non-mandatory requirement)

-

1. What is the nature of the development proposed and what type of approval is being sought?

Table A—Aspect 1 of the application (If there are additional aspects to the application please list in Table B—Aspect 2.)

- a) What is the nature of the development? (Please only tick one box.)
- ☒ Material change of use ☐ Reconfiguring a lot ☐ Building work ☐ Operational work
- b) What is the approval type? (Please only tick one box.)
- ☐ Preliminary approval under s241 of SPA ☐ Preliminary approval under s241 and s242 of SPA ☒ Development permit
- c) Provide a brief description of the proposal, including use definition and number of buildings or structures where applicable (e.g. six unit apartment building defined as a *multi-unit dwelling*, 30 lot residential subdivision etc.)
- Industrial Activities (Concrete Batching & Chemical Storage), ERA's (#8 Chemical Storage & #63 Sewage Treatment)
- d) What is the level of assessment? (Please only tick one box.)
- ☒ Impact assessment ☐ Code assessment

Table B—Aspect 2 of the application (If there are additional aspects to the application please list in Table C—Additional aspects of the application.)

- a) What is the nature of development? (Please only tick one box.)
- ☐ Material change of use ☒ Reconfiguring a lot ☐ Building work ☐ Operational work
- b) What is the approval type? (Please only tick one box.)
- ☐ Preliminary approval under s241 of SPA ☐ Preliminary approval under s241 and s242 of SPA ☒ Development permit
- c) Provide a brief description of the proposal, including use definition and number of buildings or structures where applicable (e.g. six unit apartment building defined as a *multi-unit dwelling*, 30 lot residential subdivision etc.)
- Community Title Subdivision (1 into 16 lots with common property)
- d) What is the level of assessment?
- ☐ Impact assessment ☒ Code assessment

Table C—Additional aspects of the application (If there are additional aspects to the application please list in a separate table on an extra page and attach to this form.)

- ☒ Refer attached schedule ☐ Not required

2. Location of the premises (Complete Table D and/or Table E as applicable. Identify each lot in a separate row.)

Table D—Street address and lot on plan for the premises or street address and lot on plan for the land adjoining or adjacent to the premises (Note: this table is to be used for applications involving taking or interfering with water). (Attach a separate schedule if there is insufficient space in this table.)

- ☒ Street address **and** lot on plan (All lots must be listed.)
- ☐ Street address **and** lot on plan for the land adjoining or adjacent to the premises (Appropriate for development in water but adjoining or adjacent to land, e.g. jetty, pontoon. All lots must be listed.)

Street address					Lot on plan description		Local government area (e.g. Logan, Cairns)
Lot	Unit no.	Street no.	Street name and official suburb/ locality name	Post-code	Lot no.	Plan type and plan no.	
i)		5509	Elgin Road, Clermont	4721	Part 662	PH1491	Isaac
ii)							
iii)							

Planning scheme details (If the premises involves multiple zones, clearly identify the relevant zone/s for each lot in a separate row in the below table. Non-mandatory)

Lot	Applicable zone / precinct	Applicable local plan / precinct	Applicable overlay/s
i)	Rural	--	Land Char. - Features / GQAL
ii)			
iii)			

Table E—Premises coordinates (Appropriate for development in remote areas, over part of a lot or in water not adjoining or adjacent to land e.g. channel dredging in Moreton Bay.) (Attach a separate schedule if there is insufficient space in this table.)

Coordinates (Note: place each set of coordinates in a separate row)				Zone reference	Datum	Local government area (if applicable)
Easting	Northing	Latitude	Longitude			
		-21.959957	146.433635		☒ GDA94 ☐ WGS84 ☐ other	

3. Total area of the premises on which the development is proposed (indicate square metres)

978.1 hectares

4. Current use/s of the premises (e.g. vacant land, house, apartment building, cane farm etc.)

Vacant pastoral land

5. Are there any current approvals (e.g. a preliminary approval) associated with this application? (Non-mandatory requirement)

☒ No ☐ Yes—provide details below

List of approval reference/s	Date approved (dd/mm/yy)	Date approval lapses (dd/mm/yy)
-	-	-

6. Is owner's consent required for this application? (Refer to notes at the end of this form for more information.)

☐ No
☒ Yes—complete either Table F, Table G or Table H as applicable

Table F

Name of owner/s of the land	
I/We, the above-mentioned owner/s of the land, consent to the making of this application.	
Signature of owner/s of the land	
Date	

Table G

Name of owner/s of the land	The State of Queensland (consent to be provided post EIS approval)
☒ The owner's written consent is attached or will be provided separately to the assessment manager.	

Table H

Name of owner/s of the land	
☐ By making this application, I, the applicant, declare that the owner has given written consent to the making of the application.	

7. Identify if any of the following apply to the premises (Tick applicable box/es.)

- ☒ Adjacent to a water body, watercourse or aquifer (e.g. creek, river, lake, canal)—complete Table I
- ☐ On strategic port land under the *Transport Infrastructure Act 1994*—complete Table J
- ☐ In a tidal water area—complete Table K
- ☐ On Brisbane core port land under the *Transport Infrastructure Act 1994* (No table requires completion.)
- ☐ On airport land under the *Airport Assets (Restructuring and Disposal) Act 2008* (no table requires completion)

Table I

Name of water body, watercourse or aquifer
Belyando River, Carmichael River, Dyllingo Creek, Mistake Creek

Table J

Lot on plan description for strategic port land	Port authority for the lot

Table K	
Name of local government for the tidal area (if applicable)	Port authority for the tidal area (if applicable)

8. Are there any existing easements on the premises? (e.g. for vehicular access, electricity, overland flow, water etc)

☒ No ☐ Yes—ensure the type, location and dimension of each easement is included in the plans submitted

9. Does the proposal include new building work or operational work on the premises? (Including any services)

☐ No ☒ Yes—ensure the nature, location and dimension of proposed works are included in plans submitted

10. Is the payment of a portable long service leave levy applicable to this application? (Refer to notes at the end of this form for more information.)

☐ No—go to question 12 ☒ Yes

11. Has the portable long service leave levy been paid? (Refer to notes at the end of this form for more information.)

☒ No

☐ Yes—complete Table L and submit with this application the yellow local government/private certifier's copy of the receipted QLeave form

Table L		
Amount paid	Date paid (dd/mm/yy)	QLeave project number (6 digit number starting with A, B, E, L or P)

12. Has the local government agreed to apply a superseded planning scheme to this application under section 96 of the *Sustainable Planning Act 2009*?

☒ No

☐ Yes—please provide details below

Name of local government	Date of written notice given by local government (dd/mm/yy)	Reference number of written notice given by local government (if applicable)
-	-	-

13. List below all of the forms and supporting information that accompany this application (Include all IDAS forms, checklists, mandatory supporting information etc. that will be submitted as part of this application. Note: this question does not apply for applications made online using MyDAS)

Description of attachment or title of attachment	Method of lodgement to assessment manager
IDAS Forms 5,6,7,8,11	Electronic
Planning - Gassman Development Perspectives' 'Planning Assessment Report'	Electronic
Ecology - Vegetation Management Plan	Electronic
Engineering - Bulk Earthworks Design, Stormwater Managenet Plan, Service Strategy	Electronic
Environmental Management - Site Based Management Plans for proposed ERA's	Electronic

14. Applicant's declaration

☒ By making this application, I declare that all information in this application is true and correct (Note: it is unlawful to provide false or misleading information)

Notes for completing this form

- Section 261 of the *Sustainable Planning Act 2009* prescribes when an application is a properly-made application. Note, the assessment manager has discretion to accept an application as properly made despite any non-compliance with the requirement to provide mandatory supporting information under section 260(1)(c) of the *Sustainable Planning Act 2009*

Applicant details

- Where the applicant is not a natural person, ensure the applicant entity is a real legal entity.

Question 1

- Schedule 3 of the Sustainable Planning Regulation 2009 identifies assessable development and the type of assessment. Where schedule 3 identifies assessable development as "various aspects of development" the applicant must identify each aspect of the development on Tables A, B and C respectively and as required.

Question 6

- Section 263 of the *Sustainable Planning Act 2009* sets out when the consent of the owner of the land is required for an application. Section 260(1)(e) of the *Sustainable Planning Act 2009* provides that if the owner's consent is required under section 263, then an application must contain, or be accompanied by, the written consent of the owner, or include a declaration by the applicant that the owner has given written consent to the making of the application. If a development application relates to a state resource, the application is not required to be supported by evidence of an allocation or entitlement to a state resource. However, where the state is the owner of the subject land, the written consent of the state, as landowner, may be required. Allocation or entitlement to the state resource is a separate process and will need to be obtained before development commences.

Question 11

- The *Building and Construction Industry (Portable Long Service Leave) Act 1991* prescribes when the portable long service leave levy is payable.
- The portable long service leave levy amount and other prescribed percentages and rates for calculating the levy are prescribed in the Building and Construction Industry (Portable Long Service Leave) Regulation 2002.

Question 12

- The portable long service leave levy need not be paid when the application is made, but the *Building and Construction Industry (Portable Long Service Leave) Act 1991* requires the levy to be paid before a development permit is issued.
- Building and construction industry notification and payment forms are available from any Queensland post office or agency, on request from QLeave, or can be completed on the QLeave website at www.qleave.qld.gov.au. For further information contact QLeave on 1800 803 481 or visit www.qleave.qld.gov.au.

Privacy—The information collected in this form will be used by the Department of State Development, Infrastructure and Planning (DSDIP), assessment manager, referral agency and/or building certifier in accordance with the processing and assessment of your application. Your personal details should not be disclosed for a purpose outside of the IDAS process or the provisions about public access to planning and development information in the *Sustainable Planning Act 2009*, except where required by legislation (including the *Right to Information Act 2009*) or as required by Parliament. This information may be stored in relevant databases. The information collected will be retained as required by the *Public Records Act 2002*.

OFFICE USE ONLY

Date received

Reference numbers

NOTIFICATION OF ENGAGEMENT OF A PRIVATE CERTIFIER

To

Council. I have been engaged as the private certifier for the building work referred to in this application

Date of engagement	Name	BSA Certification license number	Building classification/s

QLEAVE NOTIFICATION AND PAYMENT (For completion by assessment manager or private certifier if applicable.)

Description of the work	QLeave project number	Amount paid (\$)	Date paid	Date receipted form sighted by assessment manager	Name of officer who sighted the form

The *Sustainable Planning Act 2009* is administered by the Department of State Development, Infrastructure and Planning. This form and all other required application materials should be sent to your assessment manager and any referral agency.

IDAS form 5—Material change of use assessable against a planning scheme

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This form must be used for development applications for a material change of use assessable against a planning scheme.

You **MUST** complete **ALL** questions that are stated to be a mandatory requirement unless otherwise identified on this form.

For all development applications, you must:

- complete *IDAS form 1—Application details*
- complete any other forms relevant to your application
- provide any mandatory supporting information identified on the forms as being required to accompany your application.

Attach extra pages if there is insufficient space on this form.

All terms used on this form have the meaning given in the Sustainable Planning Act 2009 (SPA) or the Sustainable Planning Regulation 2009.

This form must also be used for material change of use on strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994* and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008* that requires assessment against the land use plan for that land. Whenever a planning scheme is mentioned, take it to mean land use plan for the strategic port land, Brisbane core port land or airport land.

This form can also be completed online using MyDAS at www.dsdip.qld.gov.au/MyDAS

Mandatory requirements

- 1. Describe the proposed use.** (Note: this is to provide additional detail to the information provided in question 1 of *IDAS form 1—Application details*. Attach a separate schedule if there is insufficient space in this table.)

General explanation of the proposed use	Planning scheme definition (include each definition in a new row) (non-mandatory)	No. of dwelling units (if applicable) or gross floor area (if applicable)	Days and hours of operation (if applicable)	No. of employees (if applicable)
Proposed Concrete Batching Plant	Industrial Activities	see report	see report	see report
Proposed Chemical Storage	Industry Activities	see report	see report	see report

- 2. Are there any current approvals associated with the proposed material change of use?** (e.g. a preliminary approval.)

☐ No ☒ Yes—provide details below

List of approval reference/s	Date approved (dd/mm/yy)	Date approval lapses (dd/mm/yy)
-	-	-

3. Does the proposed use involve the following? (Tick all applicable boxes.)

The reuse of existing buildings on the premises	☐ No	☐ Yes
New building work on the premises	☐ No	☒ Yes
The reuse of existing operational work on the premises	☒ No	☐ Yes
New operational work on the premises	☐ No	☒ Yes

Mandatory supporting information

4. Confirm that the following mandatory supporting information accompanies this application

Mandatory supporting information	Confirmation of lodgement	Method of lodgement
All applications		
A site plan drawn to an appropriate scale (1:100, 1:200 or 1:500 are recommended scales) which shows the following: - the location and site area of the land to which the application relates (<i>relevant land</i>) - the north point - the boundaries of the relevant land - any road frontages of the relevant land, including the name of the road - the location and use of any existing or proposed buildings or structures on the relevant land (note: where extensive demolition or new buildings are proposed, two separate plans [an existing site plan and proposed site plan] may be appropriate) - any existing or proposed easements on the relevant land and their function - the location and use of buildings on land adjoining the relevant land - all vehicle access points and any existing or proposed car parking areas on the relevant land. Car parking spaces for persons with disabilities and any service vehicle access and parking should be clearly marked - for any new building on the relevant land, the location of refuse storage - the location of any proposed retaining walls on the relevant land and their height - the location of any proposed landscaping on the relevant land - the location of any stormwater detention on the relevant land.	☒ Confirmed	Electronic
A statement about how the proposed development addresses the local government's planning scheme and any other planning instruments or documents relevant to the application.	☒ Confirmed	Electronic
A statement about the intensity and scale of the proposed use (e.g. number of visitors, number of seats, capacity of storage area etc.).	☒ Confirmed	Electronic
Information that states: - the existing or proposed floor area, site cover, maximum number of storeys and maximum height above natural ground level for existing or new buildings (e.g. information regarding existing buildings but not being reused) - the existing or proposed number of on-site car parking bays, type of vehicle cross-over (for non-residential uses) and vehicular servicing arrangement (for non-residential uses).	☒ Confirmed ☐ Not applicable	Electronic

A statement addressing the relevant part(s) of the State Development Assessment Provisions (SDAP).	☒ Confirmed ☐ Not applicable	Electronic
When the application involves the reuse of existing buildings		
Plans showing the size, location, existing floor area, existing site cover, existing maximum number of storeys and existing maximum height above natural ground level of the buildings to be reused.	☐ Confirmed ☒ Not applicable	
When the application involves new building work (including extensions)		
Floor plans drawn to an appropriate scale (1:50, 1:100 or 1:200 are recommended scales) which show the following: - the north point - the intended use of each area on the floor plan (for commercial, industrial or mixed use developments only) - the room layout (for residential development only) with all rooms clearly labelled - the existing and the proposed built form (for extensions only) - the gross floor area of each proposed floor area.	☒ Confirmed	Electronic
Elevations drawn to an appropriate scale (1:100, 1:200 or 1:500 are recommended scales) which show plans of all building elevations and facades, clearly labelled to identify orientation (e.g. north elevation)	☒ Confirmed	Electronic
Plans showing the size, location, proposed site cover, proposed maximum number of storeys, and proposed maximum height above natural ground level of the proposed new building work.	☒ Confirmed ☐ Not applicable	Electronic
When the application involves reuse of other existing work		
Plans showing the nature, location, number of on-site car parking bays, existing area of landscaping, existing type of vehicular cross-over (non-residential uses), and existing type of vehicular servicing arrangement (non-residential uses) of the work to be reused.	☐ Confirmed ☒ Not applicable	
When the application involves new operational work		
Plans showing the nature, location, number of new on-site car parking bays, proposed area of new landscaping, proposed type of new vehicle cross-over (non-residential uses), proposed maximum new vehicular servicing arrangement (non-residential uses) of the proposed new operational work.	☒ Confirmed ☐ Not applicable	Electronic

Privacy—Please refer to your assessment manager, referral agency and/or building certifier for further details on the use of information recorded in this form.

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Department of State Development, Infrastructure and Planning

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IDAS form 5—Material change of use assessable
against a planning scheme
Version 3.0—1 July 2013

IDAS form 6—Building or operational work assessable against a planning scheme

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This form must be used for development applications for building work or operational work assessable against a planning scheme.

You **MUST** complete **ALL** questions that are stated to be a mandatory requirement unless otherwise identified on this form.

For all development applications, you must:

- complete *IDAS form 1—Application details*
- complete any other forms relevant to your application
- provide any mandatory supporting information identified on the forms as being required to accompany your application.

Attach extra pages if there is insufficient space on this form.

All terms used on this form have the meaning given in the *Sustainable Planning Act 2009* (SPA) or the Sustainable Planning Regulation 2009.

This form must be used for building work or operational work relating on strategic port land and Brisbane core port land under the *Transport Infrastructure Act 1994* and airport land under the *Airport Assets (Restructuring and Disposal) Act 2008* that requires assessment against the land use plan for that land. Whenever a planning scheme is mentioned, take it to mean land use plan for the strategic port land, Brisbane core port land or airport land.

This form can also be completed online using MyDAS at www.dsdiqld.gov.au/MyDAS

Mandatory requirements

1. What is the nature of the work that requires assessment against a planning scheme? (Tick all applicable boxes.)

- ☐ Building work—complete Table A ☒ Operational work—complete Table B

Table A

a) What is the nature of the building work (e.g. building, repairing, altering, underpinning, moving or demolishing a building)?

Melinda Bergmann - Manager, Approvals

b) Are there any current approvals associated with this application? (e.g. material change of use.)

- ☐ No ☐ Yes— provide details below

List of approval reference/s	Date approved (dd/mm/yy)	Date approval lapses (dd/mm/yy)
-	-	-

Table B

a) What is the nature of the operational work? (Tick all applicable boxes.)

- ☐ Road works
 ☐ Stormwater
 ☐ Water infrastructure
☐ Drainage works
 ☒ Earthworks
 ☐ Sewerage infrastructure
☐ Landscaping
 ☐ Signage
 ☐ Clearing vegetation under the planning scheme
☐ Other—provide details

b) Is the operational work necessary to facilitate the creation of new lots? (E.g. subdivision.)

- ☒ No
 ☒ Yes—specify the number of lots being created

c) Are there any current approvals associated with this application? (E.g. material change of use.)

- ☐ No
 ☐ Yes—provide details below

List of approval reference/s	Date approved (dd/mm/yy)	Date approval lapses (dd/mm/yy)

2. What is the dollar value of the proposed building work?
(Inc GST, materials and labour.)

\$

3. What is the dollar value of the proposed operational work?
(Inc GST, materials and labour.)

\$ approx. \$144M

Mandatory supporting information

4. Confirm that the following mandatory supporting information accompanies this application

Mandatory supporting information	Confirmation of lodgement	Method of lodgement
All applications involving building work or operational work		
A site plan drawn to an appropriate scale (1:100, 1:200 or 1:500 are recommended scales) which shows the following: - the location and site area of the land to which the application relates (<i>relevant land</i>) - the north point - the boundaries of the relevant land - the allotment layout showing existing lots, any proposed lots (including the dimensions of those lots), existing or proposed road reserves, building envelopes and existing or proposed open space (note: numbering is required for all lots) - any existing or proposed easements on the relevant land and their function - any access limitation strips - all existing and proposed roads and access points on the relevant land.	☒ Confirmed	Electronic

A statement about how the proposed development addresses the local government's planning schemes and any other planning documents relevant to the application.	☒ Confirmed	Electronic
A statement addressing the relevant part(s) of the State Development Assessment Provisions (SDAP).	☒ Confirmed ☐ Not applicable	Electronic
Applications for building work (including extensions and demolition that is assessable development)		
Floor plans drawn to an appropriate scale (1:50, 1:100 or 1:200 are recommended scales) which show the following: - the north point - the intended use of each area on the floor plan (for commercial, industrial or mixed use developments only) - the room layout (for residential development only) with all rooms clearly labelled - the existing and the proposed built form (for extensions only) - the gross floor area of each proposed floor area.	☐ Confirmed ☐ Not applicable	Electronic
Elevations drawn to an appropriate scale (1:100, 1:200 or 1:500 are recommended scales) which show plans of all building elevations and facades, clearly labelled to identify orientation (e.g. north elevation).	☒ Confirmed ☒ Not applicable	
Plans showing the size, location, proposed site cover, proposed maximum number of storeys, and proposed maximum height above natural ground level of the proposed new building work.	☒ Confirmed ☐ Not applicable	Electronic
Plans showing the extent of any demolition that is assessable development.	☐ Confirmed ☒ Not applicable	
Applications for operational work involving earthworks (filling and excavating)		
Drawings showing: - existing and proposed contours - areas to be cut and filled - the location and level of any permanent survey marks or reference stations used as datum for the works - the location of any proposed retaining walls on the relevant land and their height - the defined flood level (if applicable) - the fill level (if applicable).	☒ Confirmed ☐ Not applicable	Electronic
Applications for operational work involving roadworks		
Drawings showing: - existing and proposed contours - the centreline or construction line showing chainages, bearings, offsets if the construction line is not the centreline of the road and all intersection points - information for each curve including tangent point chainages and offsets, curve radii, arc length, tangent length, superelevation (if applicable) and curve widening (if applicable) - kerb lines including kerb radii (where not parallel to centreline) and tangent point changes (where not parallel to centreline) - edge of pavement where kerb is not constructed - position and extent of channelisation - location and details of all traffic signs, guideposts, guardrail and other street furniture - pavement markings including details on raised pavement markers	☐ Confirmed ☒ Not applicable	

• catchpit, manhole and pipeline locations • drainage details (if applicable) • cross road drainage culverts (if applicable) • concrete footpaths and cycle paths • location and details for access points, ramps and invert crossings • changes in surfacing material.		Industrial Activities (Concrete Batching & Chemical Storage), ERA's (#8
Applications for operational work involving stormwater drainage		
Drawings showing: • existing and proposed contours • drainage locations, diameters and class of pipe, open drains and easements • manhole location, chainage and offset or coordinates and inlet and outlet invert levels • inlet pit locations, chainage and offset or coordinates and invert and kerb levels.	☒ Confirmed ☒ Not applicable	
Applications for operational work involving water reticulation		
Drawings showing: • kerb lines or edge of pavement where kerb is not constructed • location and levels of other utility services where affected by water reticulation works • pipe diameter, type of pipe and pipe alignment • water main alignments • water supply pump station details (if applicable) • minor reservoir details (if applicable) • conduits • location of valves and fire hydrants • location of house connections (if applicable) • location of bench marks and reference pegs.	☐ Confirmed ☒ Not applicable	
Applications for operational work involving sewerage reticulation		
Drawings showing: • location of all existing and proposed services • location of all existing and proposed sewer lines and manhole locations • location of all house connection branches • kerb lines or edge of pavement where kerb is not constructed • chainages • design sewer invert levels • design top of manhole levels • type of manhole and manhole cover • pipe diameter, type of pipe and pipe alignment • location of house connections (if applicable) • sewer pump station details (if applicable).	☒ Confirmed ☒ Not applicable	
Applications for operational work involving street lighting		
Drawings showing: • location of all light poles and service conduits • location of all other cross road conduits • type of wattage and lighting • any traffic calming devices • additional plans for roundabouts and major roads (if applicable) • details of any variations to normal alignment	☐ Confirmed ☒ Not applicable	

• details of lighting levels.		
Applications for operational work involving public utility services		
Drawings showing: • any existing light poles and power poles • any existing underground services • details of proposed services • alteration to existing services.	☒ Confirmed ☒ Not applicable	
Applications for operational work involving landscaping works		
Drawings showing: • the location of proposed plant species • a plant schedule indicating common and botanical names, pot sizes and numbers of plants • planting bed preparation details including topsoil depth, subgrade preparation, mulch type and depth, type of turf, pebble, paving and garden edge • the location and type of any existing trees to be retained • construction details of planter boxes, retaining walls and fences • the proposed maintenance period • irrigation system details.	☐ Confirmed ☒ Not applicable	

Privacy—Please refer to your assessment manager, referral agency and/or building certifier for further details on the use of information recorded in this form.

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IDAS form 7—Reconfiguring a lot

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This form must be used for development applications or requests for compliance assessment for reconfiguring a lot.

You **MUST** complete **ALL** questions that are stated to be a mandatory requirement unless otherwise identified on this form.

For all development applications, you must:

- complete *IDAS form 1—Application details*
- complete any other forms relevant to your application
- provide any mandatory supporting information identified on the forms as being required to accompany your application.

For requests for compliance assessment, you must:

- complete IDAS form 32—Compliance assessment
- Provide any mandatory supporting information identified on the forms as being required to accompany your request

Attach extra pages if there is insufficient space on this form.

All terms used on this form have the meaning given in the *Sustainable Planning Act 2009* (SPA) or the Sustainable Planning Regulation 2009.

This form can also be completed online using MyDAS at www.dsdip.qld.gov.au/MyDAS

Mandatory requirements

1. What is the total number of existing lots making up the premises?

1

2. What is the nature of the lot reconfiguration? (Tick all applicable boxes.)

- ☒ subdivision—complete questions 3–6 and 11
- ☐ boundary realignment—complete questions 8, 9 and 11
- ☐ creating an easement giving access to a lot from a constructed road—complete questions 10 and 11
- ☐ dividing land into parts by agreement—please provide details below and complete questions 7 and 11

3. Within the subdivision, what is the number of additional lots being created and their intended final use?

Intended final use of new lots	Residential	Commercial	Industrial	Other—specify
Number of additional lots created			15	

4. What type of approval is being sought for the subdivision?

- ☒ Development permit
- ☐ Preliminary approval
- ☐ Compliance permit

5. Are there any current approvals associated with this subdivision application or request?
(E.g. material change of use.)

☒ No ☒ Yes—provide details below

List of approval reference/s	Date approved (dd/mm/yy)	Date approval lapses (dd/mm/yy)
-	-	-

6. Does the proposal involve multiple stages?

☐ No—complete Table A ☐ Yes—complete Table B

Table A

- a) What is the total length of any new road to be constructed? (metres)
- b) What is the total area of land to be contributed for community purposes? (square metres)
- c) Does the proposal involve the construction of a canal or artificial waterway?
☒ No ☐ Yes
- d) Does the proposal involve operational work for the building of a retaining wall?
☒ No ☒ Yes

2.89km private rd

nil

Table B—complete a new Table B for every stage if the application involves more than one stage

- a) What is the proposed estate name? (if known and if applicable)
- b) What stage in the development does this table refer to?
- c) If a development permit is being sought for this stage, will the development permit result in additional residential lots?
☐ No ☐ Yes—specify the total number
- d) What is the total area of land for this stage? (square metres)
- e) What is the total length of any new road to be constructed at this stage? (metres)
- f) What is the total area of land to be contributed for community purposes at this stage? (square metres)
- g) Does the proposal involve the construction of a canal or artificial waterway?
☐ No ☒ Yes
- h) Does the proposal involve operational work for the building of a retaining wall?
☐ No ☒ Yes

7. Lease/agreement details—how many parts are being created and what is their intended final use?

Intended final use of new parts	Residential	Commercial	Industrial	Other—specify
Number of additional parts created				

8. What are the current and proposed dimensions following the boundary realignment for each lot forming the premises?

Current lot			Proposed lot		
Lot plan description	Area (square metres)	Length of road frontage	Lot number	Area (square metres)	Length of road frontage

9. What is the reason for the boundary realignment?

--

10. What are the dimensions and nature of the proposed easement? (If there are more than two easements proposed please list in a separate table on an extra page and attach to this form.)

Width (m)	Length (m)	Purpose of the easement (e.g. pedestrian access)?	What land is benefitted by the easement?

Mandatory supporting information

11. Confirm that the following mandatory supporting information accompanies this application or request

Mandatory supporting information	Confirmation of lodgement	Method of lodgement
All applications and requests for reconfiguring a lot		
Site plans drawn to an appropriate scale (1:100, 1:200 or 1:500 are the recommended scales) which show the following: - the location and site area of the land to which the application or request relates (relevant land) - the north point - the boundaries of the relevant land - any road frontages of the relevant land, including the name of the road - the contours and natural ground levels of the relevant land - the location of any existing buildings or structures on the relevant land - the allotment layout showing existing lots, any proposed lots (including the dimensions of those lots), existing or proposed road reserves, building envelopes and existing or proposed open space (note: numbering is required for all lots) - any drainage features over the relevant land, including any watercourse, creek, dam, waterhole or spring and any land subject to a flood with an annual exceedance probability of 1% - any existing or proposed easements on the relevant land and their function - all existing and proposed roads and access points on the relevant land - any existing or proposed car parking areas on the relevant land - the location of any proposed retaining walls on the relevant land and their height - the location of any stormwater detention on the relevant land - the location and dimension of any land dedicated for community	☒ Confirmed	Electronic

purposes the final intended use of any new lots.		
For a development application – A statement about how the proposed development addresses the local government's planning scheme and any other planning documents relevant to the application. For a request for compliance assessment – A statement about how the proposed development addresses the matters or things against which the request must be assessed.	☒ Confirmed	Electronic
A statement addressing the relevant part(s) of the State Development Assessment Provisions (SDAP).	☒ Confirmed ☐ Not applicable	Electronic
For an application involving assessable development in a wild river area		
Documentation that: - describes how the development to which the application relates is not prohibited development and - demonstrates how the proposed development will meet the requirements set out in the relevant wild river declaration and any applicable code mentioned in the relevant wild river declaration under the <i>Wild Rivers Act 2005</i>.	☐ Confirmed ☐ Not applicable	Electronic
A map showing the proposed location of the development in relation to any nominated waterways under the <i>Wild Rivers Act 2005</i> and wild river management areas. (a map may be produced digitally at www.ehp.qld.gov.au/wildrivers/wildrivers-map.php). Wild river management area means any of the following areas under the <i>Wild Rivers Act 2005</i> : - special floodplain management area - preservation area - high preservation area - floodplain management area - subartesian management area - designated urban area. Editor's note: A floodplain management area, subartesian management area or designated urban area may be over all or part of a high preservation area or preservation area. A subartesian management area or designated urban area may be over all or part of a special floodplain management area.	☒ Confirmed ☒ Not applicable	

Notes for completing this form

- For supporting information requirements for requests for compliance assessment, please refer to the relevant matters for which compliance assessment will be carried out against. To avoid an action notice, it is recommended that you provide as much of the mandatory information listed in this form as possible.

Privacy—Please refer to your assessment manager, referral agency and/or building certifier for further details on the use of information recorded in this form.

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IDAS form 7—Reconfiguring a lot
Version 3.0—1 July 2013

IDAS form 8—Environmentally relevant activity

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This form must be used for development applications for an environmentally relevant activity.

You **MUST** complete **ALL** questions that are stated to be a mandatory requirement unless otherwise identified on this form.

For all development applications, you must:

- complete *IDAS form 1—Application details*
- complete any other forms relevant to your application
- provide any mandatory supporting information identified on the forms as being required to accompany your application.

Attach extra pages if there is insufficient space on this form.

All terms used on this form have the meaning given in either the *Sustainable Planning Act 2009* (SPA), the Sustainable Planning Regulation 2009, the *Environmental Protection Act 1994* or the Environmental Protection Regulation 2008.

This form can also be completed online using MyDAS at www.dsdip.qld.gov.au/MyDAS

Mandatory requirements

1. **What is the nature of the proposed environmentally relevant activity (ERA)?** (complete a new Table A for each proposed ERA—including ERAs that are not concurrence ERAs)

Table A

ERA number and name	63 (1d)
ERA threshold	4000 - 10000 EP
Applicable fees	\$ 19,651.20
Proposed scale/capacity	4485 EP
Type of approval sought	☒ Development permit and environmental authority (see notes) ☐ Preliminary approval
Is the proposed ERA a concurrence ERA?	☐ No ☐ Yes

2. **Are there any existing ERAs on or associated with the premises?**

- ☒ No
☐ Yes—complete a new Table B for each existing ERA

Table B

ERA number and name	
ERA threshold	
Existing scale/capacity	
Is the ERA proposed to continue on site?	☐ No ☐ Yes

3. Does the proposed activity involve any of the following? (Tick all applicable boxes.)

- ☐ Release of water or waste to a wetland for treatment
- ☐ Release of waste directly to groundwater

Mandatory supporting information

4. Confirm that the following mandatory supporting information accompanies this application

About the subject land	Confirmation of lodgement	Method of lodgement
Description of the site, including site maps showing vegetation, topography and any areas of cultural or heritage significance.	☒ Confirmed	Electronic
Details of any known acid sulphate soils within or adjoining the premises.	☐ Confirmed ☐ Not applicable	
Details about how the choice of the site, at which the activity is to be carried out, minimises serious environmental harm on areas of high conservation value and special significance and sensitive land uses at adjacent places.	☒ Confirmed	Electronic
Details about how the location for the activity on a site protects all environmental values relevant to adjacent sensitive uses.	☐ Confirmed	Electronic
Details about how the design of the facility permits the operation of the site, at which the activity is to be carried out, in accordance with best practice environmental management.	☒ Confirmed	Electronic
About the proposed ERA		
Attachment to IDAS form 8—application for an environmental authority (EM941) completed and required information provided.	☐ Confirmed	Electronic
A statement addressing the relevant part(s) of the State Development Assessment Provisions (SDAP).	☒ Confirmed ☐ Not applicable	Electronic

Notes for completing this form:

- An environmental authority is required to operate an ERA.
- A development approval is only required if at least one of the ERAs to be operated is a concurrence ERA.
- Schedule 2 of the *Environmental Protection Regulation 2008* states the aggregate environmental scores, the thresholds that apply to ERAs, and which ERAs are concurrence ERAs (denoted by a 'C' in schedule 2, column 3).
- This development application is taken to be an application for an environmental authority. This application is not properly made unless it includes the [Attachment to IDAS form 8—application for an environmental authority \(EM941\)](#).
- There are annual fees associated with the operation of an ERA. These fees are initially payable 20 business days after the environmental authority takes effect. After this initial payment, annual fees will be payable on the anniversary of the take effect day. Chapter 8 and Schedule 10 of the *Environmental Protection Regulation 2008* contain all information about the applicable fees and how they are calculated.

Privacy—Please refer to your assessment manager, referral agency and/or building certifier for further details on the use of information recorded in this form.

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IDAS form 8—Environmentally relevant activity

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This form must be used for development applications for an environmentally relevant activity.

You **MUST** complete **ALL** questions that are stated to be a mandatory requirement unless otherwise identified on this form.

For all development applications, you must:

- complete *IDAS form 1—Application details*
- complete any other forms relevant to your application
- provide any mandatory supporting information identified on the forms as being required to accompany your application.

Attach extra pages if there is insufficient space on this form.

All terms used on this form have the meaning given in either the *Sustainable Planning Act 2009* (SPA), the Sustainable Planning Regulation 2009, the *Environmental Protection Act 1994* or the Environmental Protection Regulation 2008.

This form can also be completed online using MyDAS at www.dsdip.qld.gov.au/MyDAS

Mandatory requirements

1. **What is the nature of the proposed environmentally relevant activity (ERA)?** (complete a new Table A for each proposed ERA—including ERAs that are not concurrence ERAs)

Table A

ERA number and name	63 (1d)
ERA threshold	4000 - 10000 EP
Applicable fees	\$ 19,651.20
Proposed scale/capacity	4485 EP
Type of approval sought	☒ Development permit and environmental authority (see notes) ☐ Preliminary approval
Is the proposed ERA a concurrence ERA?	☐ No ☐ Yes

2. **Are there any existing ERAs on or associated with the premises?**

- ☒ No
☐ Yes—complete a new Table B for each existing ERA

Table B

ERA number and name	
ERA threshold	
Existing scale/capacity	
Is the ERA proposed to continue on site?	☐ No ☐ Yes

3. Does the proposed activity involve any of the following? (Tick all applicable boxes.)

- ☐ Release of water or waste to a wetland for treatment
- ☐ Release of waste directly to groundwater

Mandatory supporting information

4. Confirm that the following mandatory supporting information accompanies this application

About the subject land	Confirmation of lodgement	Method of lodgement
Description of the site, including site maps showing vegetation, topography and any areas of cultural or heritage significance.	☒ Confirmed	Electronic
Details of any known acid sulphate soils within or adjoining the premises.	☐ Confirmed ☐ Not applicable	
Details about how the choice of the site, at which the activity is to be carried out, minimises serious environmental harm on areas of high conservation value and special significance and sensitive land uses at adjacent places.	☒ Confirmed	Electronic
Details about how the location for the activity on a site protects all environmental values relevant to adjacent sensitive uses.	☐ Confirmed	Electronic
Details about how the design of the facility permits the operation of the site, at which the activity is to be carried out, in accordance with best practice environmental management.	☒ Confirmed	Electronic
About the proposed ERA		
Attachment to IDAS form 8—application for an environmental authority (EM941) completed and required information provided.	☐ Confirmed	Electronic
A statement addressing the relevant part(s) of the State Development Assessment Provisions (SDAP).	☒ Confirmed ☐ Not applicable	Electronic

Notes for completing this form:

- An environmental authority is required to operate an ERA.
- A development approval is only required if at least one of the ERAs to be operated is a concurrence ERA.
- Schedule 2 of the *Environmental Protection Regulation 2008* states the aggregate environmental scores, the thresholds that apply to ERAs, and which ERAs are concurrence ERAs (denoted by a 'C' in schedule 2, column 3).
- This development application is taken to be an application for an environmental authority. This application is not properly made unless it includes the [Attachment to IDAS form 8—application for an environmental authority \(EM941\)](#).
- There are annual fees associated with the operation of an ERA. These fees are initially payable 20 business days after the environmental authority takes effect. After this initial payment, annual fees will be payable on the anniversary of the take effect day. Chapter 8 and Schedule 10 of the *Environmental Protection Regulation 2008* contain all information about the applicable fees and how they are calculated.

Privacy—Please refer to your assessment manager, referral agency and/or building certifier for further details on the use of information recorded in this form.

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Reference numbers

The *Sustainable Planning Act 2009* is administered by the Department of State Development, Infrastructure and Planning. This form and all other required application materials should be sent to your assessment manager and any referral agencies.

IDAS form 11—Clearing native vegetation

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This form must be used for development applications that involve the clearing of native vegetation.

You **MUST** complete **ALL** questions that are stated to be a mandatory requirement unless otherwise identified on this form.

For all development applications, you must:

- complete *IDAS form 1—Application details*
- complete any other forms relevant to your application
- provide any mandatory supporting information identified on the forms as being required to accompany your application
- include the relevant application fee, noting that referral agency fees (where applicable) are to be paid to the referral agency

Attach extra pages if there is insufficient space on this form.

All terms used on this form have the meaning given in the *Sustainable Planning Act 2009* (SPA) or the Sustainable Planning Regulation 2009.

This form can also be completed online using MyDAS at www.dsdip.qld.gov.au/MyDAS

Mandatory requirements

1. What type of development is proposed?

- ☒ Operational work for clearing vegetation made assessable under Schedule 3 of the Sustainable Planning Regulation 2009
- ☐ Material change of use of the premises
- ☐ Reconfiguring a lot

2. What type of approval is being sought?

- ☒ Development permit
- ☐ Preliminary approval
- ☐ Both—provide details below

Mandatory supporting information

3. Confirm that the following mandatory supporting information accompanies this application

For ALL applications	Confirmation of lodgement	Method of lodgement
A property vegetation management plan including as defined under the Vegetation Management Act 1999 schedule. Note: A property vegetation management plan must show the matters prescribed in s.11 of the Vegetation Management Regulation 2012.	☒ Confirmed	Electronic
A statement addressing the relevant part(s) of the State Development Assessment Provisions (SDAP).	☐ Confirmed ☐ Not applicable	

For ALL applications	Confirmation of lodgement	Method of lodgement
For an operational work application for which the assessment manager is the local government		
Written confirmation that the chief executive of the Department of Natural Resources and Mines is satisfied the proposed clearing is for a relevant purpose under the <i>Vegetation Management Act 1999</i> , section 22A.	☒ Confirmed ☐ Not applicable	Electronic
For an operational work application where the assessment manager is the Department of Natural Resources and Mines		
Either of the following: - written confirmation that the chief executive of the Department of Natural Resources and Mines is satisfied the proposed clearing is for a relevant purpose under the <i>Vegetation Management Act 1999</i>, section 22A; or - information identifying the relevant purpose under the <i>Vegetation Management Act 1999</i>, section 22A and demonstrating how the proposed clearing is for that purpose.	☐ Confirmed ☒ Not applicable	Electronic
For applications for a material change of use or reconfiguring a lot		
The following additional detail to be included in the property vegetation management plan: - details of the location and extent of: - infrastructure, including buildings, fences, roads and electrical, telecommunication or sewerage services; and - firebreaks and fire management lines; and - details of the way the proposed clearing complies with the applicable concurrence agency policy under the <i>Vegetation Management Act 1999</i>.	☒ Confirmed ☐ Not applicable	

Notes for completing this form

- The Department of Natural Resource and Mines (DNRM) website contains a comprehensive range of information about the *Vegetation Management Act 1999*, including assessment codes and policies, as well as the *Landholder's guide to vegetation clearing applications*.
- Question 3 for operational work applications —Under the *Vegetation Management Act 1999*, the proposed vegetation clearing is only for a relevant purpose if the applicant satisfies the chief executive of the Department of Natural Resources and Mines (DNRM) that the development applied for is one of the purposes listed in section 22A of that Act. If the assessment manager is the local government, the applicant must obtain confirmation from the chief executive of DNRM that the proposed clearing is for a relevant purpose and provide this with the application. However, if DNRM is the assessment manager, the applicant has the choice of either obtaining this confirmation before making the application, or providing adequate information for DNRM to make the decision on whether the proposed clearing is for a relevant purpose at the time the application is received.

Privacy—Please refer to your assessment manager, referral agency and/or building certifier for further details on the use of information recorded in this form.

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Date received

Reference numbers

The *Sustainable Planning Act 2009* is administered by the Department of State Development, Infrastructure and Planning. This form and all other required application materials should be sent to your assessment manager and any referral agency.

Schedule 3 Assessable Development

Checklist 1—Various aspects of development

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This checklist applies to the carrying out of various aspects of development, as specified in the Sustainable Planning Regulation 2009, Schedule 3, Part 1, Table 5.

You may complete this checklist as part of your development application. The checklist will:

- help you identify whether you need to make a development application for the proposed development
- help you identify the relevant Integrated Development Assessment System (IDAS) form you need to complete as part of your application
- assist in identifying the assessment manager or referral agency for development that is assessable development under schedule 3 of the Sustainable Planning Regulation 2009.

If your development involves a material change of use, reconfiguring a lot, operational work or building work, it is recommended you complete the relevant checklists: *Checklist 2—Material change of use*, *Checklist 3—Reconfiguring a lot*, *Checklist 4—Operational work*, or *Checklist 5—Building work*.

If you are unsure how to answer any questions on this checklist, phone or visit your local government, or go to the Department of State Development, Infrastructure and Planning's (DSDIP) website at www.dsdiip.qld.gov.au.

All terms used in this checklist have the meaning given in the *Sustainable Planning Act 2009* or the Sustainable Planning Regulation 2009.

Part 1—General questions

1.1 Does the proposal involve removing quarry material from a watercourse or lake for which an allocation notice is required under the *Water Act 2000*, other than within a priority development area or on a premises to which structure plan arrangements apply?

- | | |
|---|-------------------------------------|
| ☒ No | • Continue to question 1.2 |
| ☒ Yes | • Complete part 2 of this checklist |

1.2 Is any part of the proposed development intended to be carried out on a Queensland heritage place under the *Queensland Heritage Act 1992*?

- | | |
|------------------------------|-------------------------------------|
| ☐ No | • Continue to question 1.3 |
| ☐ Yes | • Complete part 3 of this checklist |

1.3 Does the proposal involve development on a local heritage place?

- | | |
|--|-------------------------------------|
| ☒ No | • Continue to question 1.4 |
| ☐ Yes | • Complete part 4 of this checklist |

1.4 Is any part of the development on strategic port land or airport land (other than development for a material change of use that is inconsistent with the land use plan for the strategic port land or airport land mentioned in the Sustainable Planning Regulation 2009, Schedule 3, Part 1, Table 2, item 3 or 4)?

- | | |
|-----------------------------|--|
| ☐ No | • End of checklist – A development permit is not required for this aspect of development under Sustainable Planning Regulation 2009, Schedule 3, Part 1, Table 5 |
|-----------------------------|--|

☐ Yes	Complete part 5 of this checklist
------------------------------	---

Part 2—Removing quarry material

2.1 Is any part of the quarry material which is intended to be removed, located within a wild river area under the *Wild Rivers Act 2005*?

☒ No	- A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Sustainable Management of Water Resources State Code</i> in the State Development Assessment Provisions (SDAP). - Your application must include <i>IDAS form 18—Removal of quarry material from a watercourse or lake</i>.
☐ Yes	Continue to question 2.2

2.2 Will the development be carried out on land to which a property development plan under the *Wild Rivers Act 2005* applies?

☐ No	A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Sustainable Management of Water Resources State Code</i> in the SDAP. Your application must include <i>IDAS form 18—Removal of quarry material from a watercourse or lake</i>.
☐ Yes	Continue to question 2.3

2.3 Is the development consistent with the property development plan?

☐ Yes	A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Sustainable Management of Water Resources State Code</i> in the SDAP. Your application must include <i>IDAS form 18—Removal of quarry material from a watercourse or lake</i>.
☐ No	This aspect of development is prohibited development. A development application for this development cannot be made.

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 5, item 1
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 12
- Sustainable Planning Act 2009*, schedule 1, item 2

Part 3—Queensland heritage place

3.1 Do any of the following apply to the proposal?

The proposed development is only ongoing maintenance or minor work permitted by a general exemption certificate issued under section 75 of the <i>Queensland Heritage Act 1992</i> .	☐ Yes	☐ No
An exemption certificate has been issued under the <i>Queensland Heritage Act 1992</i> .	☐ Yes	☐ No
The proposed development is liturgical development under section 78 of the <i>Queensland Heritage Act 1992</i> .	☐ Yes	☐ No
The work is being carried out by the state.	☐ Yes	☐ No
The work is being carried out in a priority development area.	☐ Yes	☐ No
The development is mentioned in schedule 4 of the Sustainable Planning Regulation 2009.	☐ Yes	☐ No

- If you answered **no** to all of the above, a development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the *Queensland Heritage Place State Code* in the SDAP.
- Your application must include *IDAS form 3—Queensland heritage place*.
- If you answered **yes** to any of the above, a development permit is not required. End of part 3 of this checklist.

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 5, item 2
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 19

Part 4—Local heritage place

4.1 Do any of the following apply to the proposal?

The development is building works to be carried out by or on behalf of the state, a public sector entity or a local government	☐ Yes ☐ No
The development is for public housing	☐ Yes ☐ No
The development is to be carried out by the state on land designated for community infrastructure under the <i>Sustainable Planning Act 2009</i> .	☐ Yes ☐ No
The development is mentioned in schedule 4 of the Sustainable Planning Regulation 2009.	☐ Yes ☐ No
The local heritage place is on an airport lessee's airport land under the <i>Airport Assets (Restructuring and Disposal) Act 2008</i> .	☐ Yes ☐ No

- If you answered **no** to all of the above, a development permit is required and your application to the local government, as assessment manager, must include *IDAS form 4—Local heritage place*.
- If you answered **yes** to any of the above, a development permit is not required.

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 5, item 3
- Sustainable Planning Regulation 2009, schedule 3, part 2, table 1, item 1
- *Airports Assets (Restructuring and Disposal) Act 2008*, section 54

Part 5—Strategic port land or airport land

5.1 Does the land use plan for the strategic port land or airport land state that the development is assessable development?

☐ No	• A development permit is not required for this aspect of development; end of this checklist.
☐ Yes	• A development permit is required and your application may include, where applicable: • for a material change of use—<i>IDAS form 5—Material change of use assessable against a planning scheme</i> • for building or operational work—<i>IDAS form 6—Building or operational work assessable against a planning scheme</i> • for reconfiguring a lot—<i>IDAS form 7—Reconfiguring a lot</i> • The assessment manager will either be the local government or the port authority or DSDIP.

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, 1part , table 5, items 6 and 7

Privacy—Please refer to your assessment manager for further details on the use of information recorded in this checklist.

Disclaimer:

While the DSDIP believes that the information contained on this checklist and provided as part of this process will be of assistance to you, it is provided on the basis that you will not rely on the information. It is your responsibility to make your own enquiries regarding the interpretation and application of the applicable legislation to your circumstances.

To the full extent permitted by law, DSDIP expressly disclaims all liability (including but not limited to liability for negligence) for errors or omissions of any kind or for any loss (including direct and indirect losses), damage or other consequence which may arise from your reliance on this process and the information contained on this checklist.

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Date received

Reference numbers

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Schedule 3 Assessable Development

Checklist 2—Material change of use

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This checklist only applies when the development application seeks approval for a material change of use of premises. Before completing this checklist, please complete *Checklist 1—Various aspects of development*.

You may complete this checklist as part of your development application. The checklist will:

- help you identify whether you need to make a development application for the proposed development
- help you identify the relevant Integrated Development Assessment System (IDAS) forms you need to complete as part of your application
- assist in identifying the assessment manager or referral agency for development that is assessable development under schedule 3 of the Sustainable Planning Regulation 2009.

If your development involves reconfiguring a lot, building work or operational work, it is recommended you complete the relevant checklists: *Checklist 3—Reconfiguring a lot*, *Checklist 4—Operational* or *Checklist 5—Building work*, where relevant.

If you are unsure how to answer any questions on this checklist, phone or visit your local government, or go to the Department of State Development, Infrastructure and Planning's (DSDIP) website at www.dsdip.qld.gov.au

All terms used in this checklist have the meaning given in the *Sustainable Planning Act 2009* or the Sustainable Planning Regulation 2009.

Part 1—General questions

1.1 Is the proposed material change of use of premises for a brothel?

- | | |
|---|-------------------------------------|
| ☒ No | • Continue to question 1.2 |
| ☒ Yes | • Complete part 2 of this checklist |

1.2 Is the proposed material change of use of premises on strategic port land?

- | | |
|------------------------------|-------------------------------------|
| ☐ No | • Continue to question 1.3 |
| ☐ Yes | • Complete part 3 of this checklist |

1.3 Is the proposed material change of use of premises on airport land?

- | | |
|--|-------------------------------------|
| ☒ No | • Continue to question 1.4 |
| ☐ Yes | • Complete part 4 of this checklist |

1.4 Is the proposed material change of use of premises for a major hazard facility or proposed major hazard facility?

- | | |
|-----------------------------|----------------------------|
| ☐ No | • Continue to question 1.5 |
|-----------------------------|----------------------------|

☐ Yes	- A development permit is required. - The chief executive of DSDIP will be assessment manager or concurrence agency for the development application. - You must complete <i>IDAS form 22—Major hazard facility</i>.
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Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 2, item 5
- Sustainable Planning Regulation 2009, schedule 6, table 3, item 4
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 8

1.5 Is the proposed material change of use of a potentially affected premises?

☒ No	Continue to question 1.6
☐ Yes	Complete part 5 of this checklist

1.6 Is the proposed development a potentially sensitive material change of use of premises?

☒ No	Continue to question 1.7
☐ Yes	Complete part 6 of this checklist

1.7 Is the proposed material change of use of premises for aquaculture?

☒ No	Continue to question 1.8
☐ Yes	Complete part 7 of this checklist

1.8 Is the proposed material change of use of premises in a wild river area and is the proposed use for agricultural activities or animal husbandry activities (as defined under the *Wild Rivers Act 2005*)?

☐ No	Continue to question 1.9
☐ Yes	Complete part 8 of this checklist

1.9 Is the proposed material change of use of premises for an environmentally relevant activity that, under the Environmental Protection Regulation 2008, section 16, is identified as a concurrence ERA (the relevant ERA)?

☐ No	End of part 1 of checklist
☒ Yes	Complete part 9 of this checklist

Part 2—Brothel

2.1 Do any of the following apply?

More than five rooms in the proposed brothel are proposed to be used for providing prostitution.	☐ Yes ☐ No
Any land, the subject of the development, is in, or within 200 metres of the closest point on any boundary of, a primarily residential area, or an area approved for residential development or intended to be residential in character (measured according to the shortest route a person may reasonably and lawfully take, by vehicle or on foot, between the land the subject of the development and the other land).	☐ Yes ☐ No

Any land, the subject of the development, is within 200 metres of the closest point on any boundary of land on which there is a residential building, place of worship, hospital, school, kindergarten or any other facility or place regularly frequented by children for recreational or cultural activities (measured according to the shortest route a person may reasonably and lawfully take, by vehicle or on foot, between the land the subject of the development and the other land).	☐ Yes ☐ No
Any land, the subject of the development, is within 100 metres of the closest point on any boundary of land on which there is a residential building, place of worship, hospital, school, kindergarten or any other facility or place regularly frequented by children for recreational or cultural activities, measured in a straight line.	☐ Yes ☐ No
The land, the subject of the development, is in a town with a population of less than 25 000, the local government for the local government area has required that all material changes of use for such development within the area be prohibited, and the Minister has agreed that the development should be prohibited.	☐ Yes ☐ No

- If **yes** to any of the above, this aspect of the development is prohibited development and a development application cannot be made.
- If **no** to all of the above, a development permit is required. You must complete *IDAS form 9—Brothel*, and submit your application to the local government if the development is completely in a single local government area.

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 2, item 2
- Sustainable Planning Regulation 2009, schedule 6, table 1, item 1(a)(iv)
- *Sustainable Planning Act 2009*, schedule 1, item 5

Part 3—Strategic port land

3.1 Do any of the following apply?

The proposed material change of use of premises is inconsistent with the land use plan approved under the <i>Transport Infrastructure Act 1994</i> .	☐ Yes ☐ No
The proposed material change of use of premises is assessable development under the land use plan approved under the <i>Transport Infrastructure Act 1994</i> , but is not inconsistent with it.	☒ Yes ☐ No

- If **yes** to either of the above, a development permit is required. The port authority may be the assessment manager for the development application (see schedule 6 of the Sustainable Planning Regulation 2009).
- If the proposed material change of use of premises is inconsistent with the land use plan, you are also required to refer the application to the Minister under the *Transport Infrastructure Act 1994* as concurrence agency.
- You must complete *IDAS Form 10—Inconsistent development on strategic port land or Brisbane core port land*.

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 2, item 3
- Sustainable Planning Regulation 2009, schedule 3, part 1, table 5, item 6
- Sustainable Planning Regulation 2009, schedule 6
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 6

Part 4—Airport land

4.1 Do any of the following apply?

The proposed material change of use of premises is inconsistent with the land use plan approved under the <i>Airport Assets (Restructuring and Disposal) Act 2008</i> .	☒ Yes ☐ No
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The proposed material change of use of premises is assessable development under the land use plan approved under the <i>Airport Assets (Restructuring and Disposal) Act 2008</i> for the airport land, but is not inconsistent with it.	☐ Yes ☐ No
---	--

- If **yes** to either of the above, a development permit is required for this aspect of development. The chief executive of DSDIP may be the assessment manager (see schedule 6 of the Sustainable Planning Regulation 2009).
- If the proposed material change of use of premises is inconsistent with the land use plan approved under the *Airport Assets (Restructuring and Disposal) Act 2008*, you are also required to refer the application to the chief executive of DSDIP as concurrence agency, if the chief executive of DSDIP is not the assessment manager.
- You must complete *IDAS Form 5—Material change of use assessable against a planning scheme*.

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 2, item 4
- Sustainable Planning Regulation 2009, schedule 3, part 2, table 5, item 7
- Sustainable Planning Regulation 2009, schedule 6
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 7

Part 5—Potentially affected premises

5.1 Do any of the following apply?

A suitability statement has been given for the premises, a site management plan has been approved in relation to the proposed use and the material change of use only involves: • the fit-out of a building, or • minor site excavation (e.g. post holes for open-sided non-habitable structures).	☐ Yes ☐ No
The proposed use is industrial and only involves minor site excavation (e.g. post holes for open-sided non-habitable structures).	☐ Yes ☐ No

- If **no** to both of the above:
 - A development permit is required for this aspect of development
 - The development application will require assessment by the chief executive of DSDIP, as assessment manager or concurrence agency
 - You must complete *IDAS form 24—Contaminated land*
- If **yes** to either of the above, this aspect of development is not assessable development but it is recommended that you provide a copy of any suitability statement or approved site management plan to the assessment manager to support your claim for exemption if any other aspects of your proposed use are assessable development.

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 2, item 6
- Sustainable Planning Regulation 2009, schedule 6
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 23

Part 6—Potentially sensitive material change of use

6.1 Do either of the following apply?

All or part of the premises is used for, or if there is no existing use, was last used for, an industrial activity (other than a mining activity or chapter 5A activity).	☐ Yes ☐ No
All or part of the premises is in an area for which an area management advice has been given for natural mineralisation or industrial activity (other than for a mining activity or a chapter 5A activity).	☐ Yes ☐ No

- If **yes** to either of the above:
 - A development permit is required
 - The development application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency
 - You must complete *IDAS form 24—Contaminated land*
- If **no** to all of the above, this aspect of development does not require a development permit.

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 2, item 7
- Sustainable Planning Regulation 2009, schedule 6
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 23

Part 7—Aquaculture

7.1 Will the proposed material change of use of premises for aquaculture cause discharge of waste into Queensland waters (as defined in section 36 of the *Acts Interpretation Act 1954*)?

- | | |
|------------------------------|----------------------------|
| ☐ No | • Continue to question 7.2 |
| ☐ Yes | • Go to question 7.3 |

7.2 Do any of the following apply?

The aquaculture is: • of indigenous freshwater fish species mentioned in the Fisheries Regulation 2008, schedule 10C • in a catchment listed in that schedule for that species for aquarium display or human consumption only • carried out in ponds, or using above-ground tanks, that have a total water surface area of no more than five hectares.	☐ Yes ☐ No
The aquaculture is of indigenous freshwater fish for aquarium display or human consumption only, or non-indigenous freshwater fish for aquarium display only, and is carried out using only above-ground tanks that have: • a floor area, excluding water storage area, of no more than 50m² • a roof impervious to rainwater.	☐ Yes ☐ No
The aquaculture is of indigenous marine fish for aquarium display only and is carried out using only above-ground tanks that have a total floor area, excluding water storage areas, of no more than 50m ² .	☐ Yes ☐ No

- If **no** to all of the above, continue to question 7.3
- If **yes** to any of the above, a development permit is not required for this aspect of development, but the proposed material change of use will be self assessable development and must comply with applicable codes

7.3 Is any part of the proposed material change of use of premises for aquaculture intended to be located in a wild river area?

- | | |
|-----------------------------|--|
| ☐ No | <ul style="list-style-type: none"> • A development permit is required for this aspect of development and this aspect of development requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency • You must complete <i>IDAS form 25—Aquaculture</i> • End of part 7 of this checklist |
|-----------------------------|--|

☐ Yes	Continue to question 7.4
------------------------------	--

7.4 Is the proposed material change of use of premises for aquaculture in a wild river high preservation area or wild river special floodplain management area?

☐ No	Continue to question 7.5
☐ Yes	To the extent the development is in a wild river high preservation area or wild river special floodplain management area, this aspect of development is prohibited development and a development application cannot be made. If this is the only aspect of development, then that is the end of part 7 of this checklist, otherwise continue to question 7.5

7.5 Is any part of the proposed material change of use of premises on land to which a property development plan under the *Wild Rivers Act 2005* applies?

☐ No	- A development permit is required for this aspect of development and this aspect of development requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency - You must complete <i>IDAS form 25—Aquaculture</i> - End of part 7 of this checklist
☐ Yes	Continue to question 7.6

7.6 Is the proposed material change of use inconsistent with the property development plan under the *Wild Rivers Act 2005*?

☐ No	- A development permit is required for this aspect of development and this aspect of development requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency - You must complete <i>IDAS form 25—Aquaculture</i> - End of part 7 of this checklist
☐ Yes	- This aspect of development is prohibited development and a development application can not be made for this aspect of development - End of part 7 of this checklist

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 2, item 10
- Sustainable Planning Regulation 2009, schedule 3, part 2, table 2, item 1
- Sustainable Planning Regulation 2009, schedule 6
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 28
- Sustainable Planning Act 2009*, schedule 1, items 2 and 6

Part 8—Agriculture and animal husbandry activities

8.1 Is the proposed material change of use of premises for animal husbandry activities in a wild river high preservation area or wild river special floodplain management area?

☐ No	Continue to question 8.2
☐ Yes	To the extent the development is in a wild river high preservation area or wild river special floodplain management area, it is prohibited development and a development application cannot be made. If this is the only aspect of development, end of part 8 of this checklist, otherwise continue to question 8.2

8.2 Is the proposed material change of use of premises for agricultural activities in any of the following?

• A wild river high preservation area	☐ Yes ☐ No
• A wild river preservation area or wild river special floodplain management area and the development involves the production of a high risk species	☐ Yes ☐ No
• A wild river special floodplain management area and the development is for agricultural activities that involve irrigation	☐ Yes ☐ No

- If **yes** to any of the above, this aspect of development is prohibited development and a development application cannot be made. If this is the only aspect of development, end of part 8 of checklist, otherwise continue to question 8.3
- If **no** to all of the above, continue to question 8.3

8.3 Will the development be carried out on land to which a property development plan under the *Wild Rivers Act 2005* applies?

☐ No	• A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency • Your application must include <i>IDAS form 29—Agricultural activities in a wild river area</i> or <i>IDAS form 30—Animal husbandry activities in a wild river area</i>
☐ Yes	• Continue to question 8.4

8.4 Is the development inconsistent with any property development plan that applies to the land?

☐ Yes	• This aspect of the development is prohibited development and a development application cannot be made. End of part 8 of checklist
☐ No	• A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or referral agency • Your application must include <i>IDAS form 29—Agricultural activities in a wild river area</i> or <i>IDAS form 30—Animal husbandry activities in a wild river area</i>

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 2, item 11
- Sustainable Planning Regulation 2009, schedule 6
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 41
- *Sustainable Planning Act 2009*, schedule 1, items 1 and 2

Part 9—Environmentally relevant activities (ERA)**9.1 Has an environmental authority to carry out a concurrence ERA been approved for the premises?**

☒ No	• Continue to question 9.4
☐ Yes	• Continue to question 9.2

9.2 Is the relevant ERA and the concurrence ERA approved under the environmental authority to be carried out under the environmental authority?

☐ No	• Continue to question 9.4
☐ Yes	• Continue to question 9.3

9.3 Does the relevant ERA have a lower aggregate environmental score than the concurrence ERA approved under the environmental authority, under the Environmental Protection Regulation 2008, section 14(1)?

☐ No	• Continue to question 9.4
☐ Yes	• This aspect of development does not require a development permit. End of checklist

9.4 Do all of the following apply?

The environmentally relevant activity is to be carried out in the North Stradbroke Island Region.	☐ Yes ☒ No
The environmentally relevant activity is mentioned in the Environmental Protection Regulation 2008, schedule 2, part 4, section 16.	☐ Yes ☐ No
The environmentally relevant activity involves dredging or extracting more than 10 000 tonnes of material a year.	☐ Yes ☐ No

- If **yes** to all of the above, this aspect of development is prohibited development (to the extent it involves dredging or extracting more than 10000 tonnes of material a year) and a development application cannot be made. If this is the only aspect of development, end of checklist, otherwise continue to question 9.5
- If **no** to any of the above, continue to question 9.5

9.5 Is any part of the proposed material change of use of premises for an environmentally relevant activity intended to be located in a wild river area?

☒ No	• Go to question 9.14
☐ Yes	• Continue to question 9.6

9.6 Does the proposed development involve development in waters in a wild river area that is for an extraction ERA?

☒ No	• Go to question 9.8
☐ Yes	• Continue to question 9.7

9.7 Will the development application for the proposed development be accompanied by an allocation notice?

☐ No	• This aspect of development is prohibited development and a development application cannot be made. If this is the only aspect of development, end of checklist, otherwise continue to question 9.8
☐ Yes	• Continue to question 9.8

9.8 Does the proposed development involve development in a wild river high preservation area or a wild river special floodplain management area?

☒ No	• Go to question 9.10
☐ Yes	• Continue to question 9.9

9.9 Is the proposed development any of the following?

A sewage ERA under the <i>Environmental Protection Act 1994</i> , section 174(4)	☐ Yes ☐ No
A water treatment ERA under the <i>Environmental Protection Act 1994</i> , section 174(4)	☐ Yes ☐ No

A dredging ERA	☐ Yes ☐ No
An extraction ERA, if the activity is a low impact activity carried out outside waters and is for specified works, residential complexes, or another commercial, industrial or residential purpose in a designated urban area, in the wild river high preservation area or a wild river special floodplain management area	☐ Yes ☐ No
A screening ERA, if the activity is carried out outside waters and is for specified works, or residential complexes, in the wild river high preservation area or a wild river special floodplain management area	☐ Yes ☐ No
A crude oil or petroleum product storage ERA, if the activity is for residential complexes in the wild river high preservation area or a wild river special floodplain management area, and is carried out outside a designated urban area	☐ Yes ☐ No
An exempt prescribed ERA under the <i>Environmental Protection Act 1994</i> , section 174(4), in a designated urban area	☐ Yes ☐ No

- If **yes** to any of the above, continue to question 9.10
- If **no** to all of the above, this aspect of development is prohibited development and a development application cannot be made. If this is the only aspect of development, end of checklist, otherwise continue to question 9.10

9.10 Does the proposed development involve an extraction ERA in a wild river floodplain management area?

☒ No	• Go to question 9.12
☐ Yes	• Continue to question 9.11

9.11 Is the proposed development either of the following?

A low impact activity carried out outside waters	☐ Yes ☐ No
For specified works, residential complexes, or another commercial, industrial or residential purpose in a designated urban area, in the wild river floodplain management area	☐ Yes ☐ No

- If **yes** to either of the above, continue to question 9.12
- If **no** to all of the above, this aspect of development is prohibited development and a development application cannot be made. If this is the only aspect of development, end of checklist, otherwise continue to question 9.12

9.12 Will the development be carried out on land to which a property development plan under the *Wild Rivers Act 2005* applies?

☒ No	• Go to question 9.14
☐ Yes	• Continue to question 9.13

9.13 Is the development inconsistent with any property development plan that applies to the land?

☐ Yes	• This aspect of the development is prohibited development and a development application cannot be made. End of checklist
☐ No	• Continue to question 9.14

9.14 Is the concurrence ERA devolved to local government under the *Environmental Protection Regulation 2008*?

☒ No	- A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency - Your application must include <i>IDAS form 8—Environmentally relevant activity</i> - End of checklist
☐ Yes	- A development permit is required and this application requires assessment by the local government as assessment manager or concurrence agency - End of checklist

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 2, item 1
- Sustainable Planning Regulation 2009, schedule 6
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 1
- Sustainable Planning Act 2009*, schedule 1, items 2, 9, 10, 11 and 13

Privacy—Please refer to your assessment manager, referral agency and/or building certifier for further details on the use of information recorded in this form.

Disclaimer:

While DSDIP believes that the information contained on this checklist and provided as part of this process will be of assistance to you, it is provided on the basis that you will not rely on the information. It is your responsibility to make your own enquiries regarding the interpretation and application of the applicable legislation to your circumstances.

To the full extent permitted by law, DSDIP expressly disclaims all liability (including but not limited to liability for negligence) for errors or omissions of any kind or for any loss (including direct and indirect losses), damage or other consequence which may arise from your reliance on this process and the information contained on this checklist.

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The Sustainable Planning Act 2009 is administered by DSDIP. This checklist and all other required application materials should be sent to your assessment manager and any referral agency.

Schedule 3 Assessable Development

Checklist 3—Reconfiguring a lot

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This checklist only applies when the development application seeks approval for reconfiguring a lot. Before completing this checklist, it is recommended you complete *Checklist 1—Various aspects of development*.

You may complete this checklist as part of your development application. The checklist will:

- help you identify whether you need to make a development application for the proposed development
- help you identify the relevant Integrated Development Assessment System (IDAS) form you need to complete as part of your application
- assist in identifying the assessment manager or referral agency for development that is assessable development under schedule 3 of the Sustainable Planning Regulation 2009.

If your development involves a material change of use, operational work or building work, it is recommended you complete the relevant checklists: *Checklist 2—Material change of use*, *Checklist 4—Operational work* or *Checklist 5—Building work* where relevant.

If you are unsure how to answer any questions on this checklist, phone or visit your local government, or go to the Department of State Development, Infrastructure and Planning's (DSDIP) website at www.dsdip.qld.gov.au

All terms used in this checklist have the meaning given in the *Sustainable Planning Act 2009* or the Sustainable Planning Regulation 2009.

Part 1—General questions

1.1 Does the proposal involve reconfiguring a lot under the *Land Title Act 1994* or reconfiguring a lot that is assessable development under the planning scheme, a temporary local planning instrument, a preliminary approval to which section 242 of the *Sustainable Planning Act 2009* applies, or a state planning regulatory provision?

☒ No	End of checklist
☒ Yes	Complete part 2 of this checklist

Part 2—Reconfiguring a lot under the *Land Title Act 1994*

2.1 Do any of the following apply?

The reconfiguration requires compliance assessment under schedule 18 of the Sustainable Planning Regulation 2009, or	☐ Yes	☐ No
the reconfiguration is under a relevant instrument of lease, or	☐ Yes	☒ No
the plan of subdivision necessary for the reconfiguration:		
• is a building format plan of subdivision that does not subdivide land on or below the surface of the land, or	☐ Yes	☐ No
• is for amalgamation of 2 or more lots, or	☐ Yes	☒ No
• is for the incorporation, under the <i>Body Corporate and Community Management Act 1997</i> , section 41, of a lot with common property for a community titles scheme, or	☐ Yes	☒ No
• is for the conversion, under the <i>Body Corporate and Community Management Act 1997</i> , section 43, of lessee common property within the meaning of that Act to a lot in a community titles scheme, or	☐ Yes	☒ No

- is in relation to the acquisition, including by agreement, under the <i>Acquisition of Land Act 1967</i> or otherwise, of land by: i) a constructing authority, as defined under that Act, for a purpose set out in parts 1 to 13 (other than part 10, second dot point) of the schedule to that Act, or ii) an authorised electricity entity, or	☐ Yes ☒ No
is for land held by the state, or a statutory body representing the state, and the land is being subdivided for a purpose set out in the <i>Acquisition of Land Act 1967</i>, schedule, parts 1 to 13 (other than part 10, second dot point) whether or not the land relates to an acquisition, or	☐ Yes ☐ No
is for reconfiguring a lot comprising strategic port land, or	☐ Yes ☐ No
is for reconfiguring a South Bank lot within the corporation area under the <i>South Bank Corporation Act 1989</i>, or	☐ Yes ☐ No
is for the <i>Transport Infrastructure Act 1994</i>, section 240, or	☐ Yes ☒ No
is in relation to the acquisition of land for a water infrastructure facility, or	☐ Yes ☒ No
is for land in a priority development area.	☐ Yes ☒ No

- If **yes** to any of the above, and this is the only aspect of your development, then you do not require a development permit. End of checklist.
- If **no** to all of the above, then your development requires a development permit, and you must submit a development application to your local government as assessment manager. Please contact your local government for further information. End of checklist.

Privacy—Please refer to your assessment manager or referral agency for further details on the use of information recorded in this form.

Disclaimer:

While DSDIP believes that the information contained on this form and provided as part of this process will be of assistance to you, it is provided on the basis that you will not rely on the information. It is your responsibility to make your own enquiries regarding the interpretation and application of the applicable legislation to your circumstances.

To the full extent permitted by law, DSDIP expressly disclaims all liability (including but not limited to liability for negligence) for errors or omissions of any kind or for any loss (including direct and indirect losses), damage or other consequence which may arise from your reliance on this process and the information contained on this form.

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The *Sustainable Planning Act 2009* is administered by DSDIP. This checklist and all other required application materials should be sent to your assessment manager and any referral agency.

Schedule 3 Assessable Development

Checklist 4—Operational work

(Sustainable Planning Act 2009 version 3.0 effective 1 July 2013)

This checklist only applies when the development application seeks approval for operational work. Before completing this checklist, please complete *Checklist 1—Various aspects of development*.

You may complete this checklist as part of your development application. The checklist will:

- help you identify whether you need to make a development application for the proposed development
- help you identify the relevant Integrated Development Assessment System (IDAS) form you need to complete as part of your application
- assist in identifying the assessment manager or referral agency for development that is assessable development under schedule 3 of the Sustainable Planning Regulation 2009.

If your development involves reconfiguring a lot, building work or material change of use, it is recommended you complete *Checklist 2—Material change of use*, *Checklist 3—Reconfiguring a lot*, or *checklist 5—Building work*, where relevant.

If you are unsure of any answers to questions, phone or visit your local government, or go to the Department of State Development, Infrastructure and Planning's website at www.dsdip.qld.gov.au.

All terms used in this checklist have the meaning given in the *Sustainable Planning Act 2009* or the Sustainable Planning Regulation 2009.

Part 1—General questions

1.1 Is the operational work clearing native vegetation on:

- freehold land
- indigenous land
- any of the following under the Land Act 1994:
 - land subject to a lease
 - a road
 - trust land, other than indigenous land
 - land subject to a licence or permit?

- | | |
|---|-------------------------------------|
| ☒ No | • Continue to question 1.2 |
| ☒ Yes | • Complete part 2 of this checklist |

1.2 Is any of the proposed operational work associated with reconfiguring a lot and the reconfiguration is also assessable development?

- | | |
|------------------------------|-------------------------------------|
| ☐ No | • Continue to question 1.3 |
| ☐ Yes | • Complete part 3 of this checklist |

1.3 Does any of the proposed operational work involve taking or interfering with:	
• water from a watercourse, lake or spring, or from a dam constructed on a watercourse or lake • artesian water as defined under the <i>Water Act 2000</i>, schedule 4 • overland flow water • subartesian water	
☒ No	• Continue to question 1.4
☐ Yes	• Complete part 4 of this checklist
1.4 Is the operational work the construction of a dam, or carried out in relation to a dam, and, because of the works, the dam must be failure impact assessed?	
☐ No	• Continue to question 1.5
☐ Yes	• Complete part 5 of this checklist
1.5 Is any of the proposed operational work for agricultural activities or animal husbandry activities (as defined in the <i>Wild Rivers Act 2005</i>) in a wild river area?	
☒ No	• Continue to question 1.6
☐ Yes	• Complete part 6 of this checklist
1.6 Is any of the proposed operational work tidal works?	
☒ No	• Continue to question 1.7
☐ Yes	• Complete part 7 of this checklist
1.7 Is any of the operational work proposed to be carried out completely or partly within a coastal management district?	
☒ No	• Continue to question 1.8
☐ Yes	• Complete part 8 of this checklist
1.8 Is any of the proposed operational work for constructing or raising waterway barrier works as defined under the <i>Fisheries Act 1994</i>?	
☐ No	• Continue to question 1.9
☐ Yes	• Complete part 9 of this checklist
1.9 Is any of the proposed operational work to be carried out completely or partly within a declared fish habitat area as defined under the <i>Fisheries Act 1994</i>?	
☐ No	• Continue to question 1.10
☐ Yes	• Complete part 10 of this checklist
1.10 Is any of the proposed operational work removing, destroying or damaging marine plants as defined under the <i>Fisheries Act 1994</i>?	
☒ No	• Continue to question 1.11

☒ Yes	Complete part 11 of this checklist
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1.11 Does the proposal involve operational works that are high impact earthworks in the Great Barrier Reef Wetland Protection Area?

☐ No	End of checklist
☐ Yes	Complete part 12 of this checklist

Part 2—Clearing native vegetation

2.1 Do any of the following apply?

The clearing is on premises to which structure plan arrangements apply.	☐ Yes ☒ No
The clearing is clearing, or for another activity or matter, mentioned in schedule 24, part 1 of the Sustainable Planning Regulation 2009.	☐ Yes ☐ No
The clearing is mentioned in schedule 24, part 2 of the Sustainable Planning Regulation 2009, as clearing for the particular land.	☐ Yes ☐ No

- If you answered **yes** to any of the above, this aspect of your operational work is not assessable development
- If you answered **no** to ALL of the above, continue to question 2.2

2.2 Is the proposed vegetation clearing for a relevant purpose under the *Vegetation Management Act 1999*, section 22A for one or more of the following?

A project declared to be a coordinated project under the <i>State Development and Public Works Organisation Act 1971</i> , section 26 outside of a wild river high preservation area under the <i>Wild Rivers Act 2005</i>	☒ Yes ☐ No
Necessary to control non-native plants or declared pests	☐ Yes ☒ No
To ensure public safety	☐ Yes ☒ No
For establishing a necessary fence, firebreak, road or vehicular track, or for constructing necessary built infrastructure, (each 'relevant infrastructure') and the clearing for the relevant infrastructure can not reasonably be avoided or minimised	☐ Yes ☐ No
A natural and ordinary consequence of other assessable development for which a development approval was given under the repealed <i>Integrated Planning Act 1997</i> , or a development application was made under that Act, before 16 May 2003 and is outside an area declared to be a declared area part 2, division 4, subdivision 2 of the <i>Vegetation Management Act 1999</i> .	☐ Yes ☒ No
For fodder harvesting outside an area declared to be a declared area part 2, division 4, subdivision 2 of the <i>Vegetation Management Act 1999</i> :	☐ Yes ☐ No
For thinning	☐ Yes ☒ No
For clearing of encroachment	☐ Yes ☒ No
For an extractive industry outside: - a wild river high preservation area under the <i>Wild Rivers Act 2005</i>, or - an area declared to be a declared area part 2, division 4, subdivision 2 of the <i>Vegetation Management Act 1999</i>	☐ Yes ☒ No
For clearing regrowth vegetation on freehold land, indigenous land or leases issued under the <i>Land Act 1994</i> for agriculture or grazing purposes, in an area shown as a registered area of agriculture on a registered area of agriculture map in a wild river high preservation area under the <i>Wild River Act 2000</i>	☐ Yes ☒ No

The Minister responsible for administering the <i>Vegetation Management Act 1999</i> is satisfied the development applied for is a for special indigenous purpose under the <i>Cape York Peninsula Heritage Act 2007</i> outside: - a wild river high preservation area under the <i>Wild Rivers Act 2000</i>, or - an area declared to be a declared area part 2, division 4, subdivision 2 of the <i>Vegetation Management Act 1999</i>	☐ Yes ☒ No
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- If you answered **no** to ALL of the above, then the clearing is not for a relevant purpose and this aspect of the development is prohibited development. If this is the only aspect of vegetation clearing then that is the end of part 2 of this checklist, otherwise continue to question 2.3
- If **yes** to any of the above, continue to question 2.3

2.3 Is any part of the vegetation clearing on land to which a property development plan under the *Wild Rivers Act 2005* applies?

☐ No	Go to question 2.5
☐ Yes	Continue to question 2.4

2.4 Is the proposed vegetation clearing consistent with the property development plan under the *Wild Rivers Act 2005*?

☐ No	- This aspect of development is prohibited development and a development application can not be made for this aspect of development. - If this is the only aspect of vegetation clearing then that is the end of part 2 of this checklist, otherwise continue to question 2.5.
☐ Yes	Continue to question 2.5

2.5 Is the proposed vegetation clearing associated with a material change of use or reconfiguring a lot for which referral is required in relation to clearing vegetation under schedule 7, table 3, item 10 and table 2, item 4 of the Sustainable Planning Regulation 2009?

☐ No	- The proposed operational work for clearing native vegetation is assessable development and a development permit is required. - This application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Clearing native vegetation state code</i> in the State Development Assessment Provisions (SDAP). - You must complete <i>IDAS Form 11—Clearing native vegetation</i> - End of part 2 of this checklist
☒ Yes	- This aspect of development is assessable development. DSDIP may be a concurrence agency for the application (see schedule 7, table 2, item 4 and table 3, item 10 of the Sustainable Planning Regulation 2009) and will assess the application against the <i>Clearing native vegetation state code</i> in the SDAP. - If DSDIP is a concurrence agency for the application, you must refer a copy of your application to DSDIP. - End of part 2 of this checklist

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 4, item 1
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 5 and schedule 7, table 3, item 10
- Vegetation Management Act 1999*, section 22A

Part 3—Operational work for reconfiguring a lot

3.1 Is any part of the operational work for reconfiguring a lot in a priority development area?

☐ No	Continue to question 3.2
☐ Yes	- This aspect of the development is not assessable development. - End of part 3 of this checklist

3.2 Do all of the following apply:

- the land is in the area of a local government that, under the *South East Queensland Water (Distribution and Retail Restructuring) Act 2009*, is a participating local government for a distributor-retailer
- the participating local government is the assessment manager
- the development application is made before 1 March 2014

☐ No	- This aspect of the development is assessable development and you will need a development permit. - The local government will be the assessment manager for the application. - End of part 3 of this checklist
☐ Yes	- This aspect of the development is assessable development and you will need a development permit - The local government will be the assessment manager for the application and the distributor-retailer (or SARA) will be a concurrence agency for the application. - End of part 3 of this checklist

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 4, item 2
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 47

Part 4—Taking or interfering with water

4.1 Is the proposed operational work to be carried out in a priority development area or on premises to which structure plan arrangements apply?

☐ No	Continue to question 4.2
☐ Yes	- This aspect of development is not assessable development and does not require a development permit. - End of part 4 of this checklist.

4.2 Does any of the proposed operational work involve taking or interfering with water from a watercourse, lake or spring or from a dam constructed on a watercourse or lake?

☐ No	Go to question 4.17
☐ Yes	Continue to question 4.3

4.3 Are the proposed works for any of the following purposes?

Taking water from a watercourse, lake or spring in an emergency situation for a public purpose or fighting a fire destroying, or threatening to destroy, a dwelling house	☐ Yes ☐ No
Taking water from a watercourse, lake or spring if: - the water is taken by the owner of land adjoining the watercourse, lake or spring - the water is taken for domestic purposes or stock purposes	☐ Yes ☐ No

Taking water from a watercourse, lake or spring for camping purposes or for watering travelling stock	☐ Yes ☐ No
Using a water truck to pump water	☐ Yes ☐ No

- If **no** to all of the above, continue to question 4.4
- If **yes** to any of the above, this aspect of development does not require a development permit.
 - If this is the only aspect of taking or interfering with water proposed then that is the end of part 4 of this checklist
 - If there are other aspects of taking or interfering with water proposed, continue to question 4.4

4.4 Are the proposed works self-assessable development under schedule 3, part 2, table 4, item 1 of the Sustainable Planning Regulation 2009?

☐ No	• Go to question 4.5
☐ Yes	• This aspect of development is self-assessable development and must comply with any relevant self assessable code • If the proposal involves more than one aspect of operational work for taking or interfering with water, and the other aspect is not self-assessable development, then continue to question 4.5

4.5 Is any of the proposed operational work to be carried out in a wild river area under the *Wild Rivers Act 2005*?

☒ No	• Go to question 4.12
☐ Yes	• Continue to question 4.6

4.6 Do both of the following apply:

- The proposed operational work is to be carried out in a wild river high preservation area or a wild river special floodplain management area
- the work interferes with the flow of water in a watercourse, lake or spring in the area

☐ No	• Go to question 4.8
☐ Yes	• Continue to question 4.7

4.7 Do any of the following apply?

The works are for the maintenance of works as defined under the <i>Water Act 2000</i>	☐ Yes ☐ No
The works increase the interference with water in Lake Eyre Basin to the extent necessary for taking water for town water supply demands	☐ Yes ☐ No
The work is authorised wild river operational work for the area	☐ Yes ☐ No

- If **no** to all of the above, then this aspect of the development is prohibited development
 - If this is the only aspect of taking and interfering with water proposed, then that is the end of part 4 of this checklist
 - If other aspects of taking and interfering with water are proposed, continue to question 4.8
- If **yes** to any of the above, continue to question 4.8

4.8 Does the proposed operational work involve interfering with the flow of water in a nominated waterway, as defined under the *Wild Rivers Act 2005*, in a wild river preservation area?

☒ No	• Go to question 4.10
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☐ Yes	Continue to question 4.9
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4.9 Does the proposed work involve any of the following?

The waterway being interfered with is a dam or weir as defined under the <i>Water Act 2000</i> .	☐ Yes ☐ No
The proposed work is authorised wild river operational work for the area	☐ Yes ☐ No

- If **no** to all of the above, then this aspect of the development is prohibited development
 - If this is the only aspect of taking and interfering with water proposed, then that is the end of part 4 of this checklist
 - If other aspects of taking and interfering with water are proposed, continue to question 4.12
- If **yes** to any of the above, continue to question 4.10

4.10 Is any part of the proposed works on land to which a property development plan under the *Wild Rivers Act 2005* applies?

☒ No	Go to question 4.12
☐ Yes	Continue to question 4.11

4.11 Is the proposed works consistent with the property development plan under the *Wild Rivers Act 2005*?

☐ No	- This aspect of development is prohibited development and a development application can not be made for this aspect of development. - If this is the only aspect of taking or interfering with water then that is the end of part 4 of this checklist, otherwise Continue to question 4.12.
☐ Yes	Continue to question 4.12

4.12 Is the work for a water pump?

☐ No	Continue to question 4.13
☐ Yes	- A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. - You must complete <i>IDAS form 13—Watercourse pump</i> - If this is the only aspect of taking or interfering with water proposed, then that is the end of part 4 of this checklist - If there are other aspects of taking or interfering with water proposed, then continue to question 4.13

4.13 Is the work for water storage (other than for a dam requiring failure impact assessment)?

☐ No	Continue to question 4.14
☐ Yes	- A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. - You must complete <i>IDAS form 14—Water storage</i> - If this is the only aspect of taking or interfering with water proposed, then that is the end of part 4 of this checklist - If there are other aspects of taking or interfering with water proposed, then continue to question 4.14

4.14 Is the work for gravity diversion from a watercourse?

☒ No	Continue to question 4.15
☐ Yes	- A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. - You must complete <i>IDAS form 15—Gravity diversion from a watercourse</i> - If this is the only aspect of taking or interfering with water proposed, then that is the end of part 4 of this checklist - If there are other aspects of taking or interfering with water proposed, then continue to question 4.15

4.15 Is the work for a watercourse diversion?

☐ No	Continue to question 4.16
☐ Yes	- A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. - You must complete <i>IDAS form 17—Watercourse diversion</i> - If this is the only aspect of taking or interfering with water proposed, then that is the end of part 4 of this checklist - If there are other aspects of taking or interfering with water proposed, then continue to question 4.16

4.16 Is the work for other work for taking or interfering with water?

☒ No	Continue to question 4.17
☐ Yes	- A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. - You must complete <i>IDAS form 21—Other work in a watercourse</i> - If this is the only aspect of taking or interfering with water proposed, then that is the end of part 4 of this checklist - If there are other aspects of taking or interfering with water proposed, then continue to question 4.17

4.17 Does any of the proposed operational work involve taking or interfering with artesian water as defined under the *Water Act 2000*, schedule 4 (other than using a water truck to pump water)?

☐ No	Go to question 4.20
☐ Yes	Continue to question 4.18

4.18 Is any part of the proposed works on land to which a property development plan under the *Wild Rivers Act 2005* applies?

☒ No	- A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. - You must complete <i>IDAS form 12—Taking or interfering with artesian or sub-artesian water</i> - If this is the only aspect of taking or interfering with water proposed, then that is the end of part 4 of this checklist - If there are other aspects of taking or interfering with water proposed, then continue to question 4.20
☐ Yes	Continue to question 4.19

4.19 Is the proposed works consistent with the property development plan under the *Wild Rivers Act 2005*?

☐ No	• This aspect of development is prohibited development and a development application can not be made for this aspect of development. • If this is the only aspect of taking or interfering with water then that is the end of part 4 of this checklist, otherwise continue to question 4.20.
☐ Yes	• A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. • You must complete <i>IDAS form 12—Taking or interfering with artesian or sub-artesian water</i> • If this is the only aspect of taking or interfering with water proposed, then that is the end of part 4 of this checklist • If there are other aspects of taking or interfering with water proposed, then continue to question 4.20

4.20 Does the proposed operational work involve taking or interfering with overland flow water (other than using a water truck to pump water)?

☐ No	• Go to question 4.29
☐ Yes	• Continue to question 4.21

4.21 Is the proposed taking or interfering :

Mentioned as assessable development in a wild river declaration under the <i>Wild Rivers Act 2005</i>	☐ Yes ☐ No
In an area declared under the <i>Water Act 2000</i> to be a drainage and embankment area and the operations are declared under that Act to be assessable development	☐ Yes ☐ No
In a wild river floodplain management area and the operations are: • specified works; or • stated in the wild river declaration for the area to be assessable development	☐ Yes ☐ No
Mentioned as assessable development in a water resource plan, or prescribed as assessable development under a regulation under the <i>Water Act 2000</i>	☐ Yes ☐ No

- If **yes** to any of the above, continue to question 4.22.
- If **no** to all of the above and there are no other aspects of taking or interfering with water proposed, then that is the end of part 4 of this checklist. If other aspects of taking or interfering with water are proposed, go to question 4.29

4.22 Is any of the proposed operational work to be carried out in a wild river area under the *Wild Rivers Act 2005*?

☐ No	• A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. - You must complete <i>IDAS form 19—Taking overland flow</i> • If this is the only aspect of taking or interfering with water proposed, then that is the end of part 4 of this checklist • If there are other aspects of taking or interfering with water proposed, then continue to question 4.29
☐ Yes	• Continue to question 4.23

4.23 Is any part of the proposed works on land to which a property development plan under the *Wild Rivers Act 2005* applies?

☐ No	Go to question 4.25
☐ Yes	Continue to question 4.24

4.24 Is the proposed works consistent with the property development plan under the *Wild Rivers Act 2005*?

☐ No	- This aspect of development is prohibited development and a development application can not be made for this aspect of development. - If this is the only aspect of taking or interfering with water then that is the end of part 4 of this checklist, otherwise go to question 4.25.
☐ Yes	Go to question 4.25

4.25 For operational work that is the taking of overland flow water, is any of the proposed works to be carried out in a wild river high preservation area or a wild river special floodplain management area?

☐ No	Go to question 4.27
☐ Yes	Continue to question 4.26
☐ N/A	Go to question 4.27

4.26 Is the proposed taking of overland flow water stated in a wild river declaration for the area to be assessable development for which a development application can be made?

☐ No	- This aspect of the development is prohibited development - If this is the only aspect of taking and interfering with water proposed, then that is the end of part 4 of this checklist - If other aspects of taking and interfering with water are proposed, continue to question 4.27
☐ Yes	- A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. - If there are no other aspects of taking or interfering proposed, then this is the end of part 4 of this checklist - If there are other aspects of taking or interfering with water proposed, continue to question 4.27

4.27 For operational work that is interfering with overland flow water, is any of the proposed works to be carried out in a wild river floodplain management area or a wild river special floodplain management area?

☐ No	- A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. - If there are no other aspects of taking or interfering proposed, then this is the end of part 4 of this checklist - If there are other aspects of taking or interfering with water proposed, Go to question 4.29
☐ Yes	Continue to question 4.28
☐ N/A	Go to question 4.29

4.28 Do both of the following apply:

The operations are declared under the <i>Water Act 2000</i> or the wild river declaration for the area to be assessable development	☐ Yes ☐ No
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The operational work is not for specified works in the area and is not stated in the wild river declaration for the area to be assessable development for which a development application may be made	☐ Yes ☐ No
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- If **yes** to all of the above, the development is prohibited development and a development application cannot be made.
- If **no** to all of the above, a development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the *Sustainable management of water resources state code* in the SDAP.
- If there are no other aspects of taking or interfering with water proposed, then that is the end of part 4 of this checklist.
- If other aspects of taking or interfering with water are proposed, continue to question 4.29

4.29 Does the proposed operational work involve taking or interfering with subartesian water (other than using a water truck to pump water)?

☐ No	• End of part 4 of this checklist.
☐ Yes	• Continue to question 4.30

4.30 Is the proposed taking or interfering with subartesian water mentioned or prescribed as assessable development in any of the following?

A water resource plan under the <i>Water Act 2000</i>	☐ Yes ☐ No
A wild river declaration under the <i>Wild Rivers Act 2005</i>	☐ Yes ☐ No
A regulation under the <i>Water Act 2000</i>	☐ Yes ☐ No

- If **yes** to any of the above, continue to question 4.31
- If **no** to all of the above, end of part 4 of this checklist.

4.31 Is any part of the proposed works on land to which a property development plan under the *Wild Rivers Act 2005* applies?

☐ No	• A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. • You must complete <i>IDAS form 12—Taking or interfering with artesian or sub-artesian water</i> • End of part 4 of this checklist
☐ Yes	• Continue to question 4.32

4.32 Is the proposed works consistent with the property development plan under the *Wild Rivers Act 2005*?

☐ No	• This aspect of development is prohibited development and a development application can not be made for this aspect of development. • End of part 4 of this checklist
☐ Yes	• A development permit is required and this application will be assessed by DSDIP's SARA as assessment manager or concurrence agency against the <i>Sustainable management of water resources state code</i> in the SDAP. • You must complete <i>IDAS form 12—Taking or interfering with artesian or sub-artesian water</i> • End of part 4 of this checklist

Part 5—For particular dams

5.1 Is the proposed operational work for the following?

The construction of a dam more than ten metres in height and having a storage capacity of more than 1 500 megalitres	☐ Yes ☐ No
The construction of a dam more than ten metres in height and having a storage capacity of more than 750 megalitres and a catchment area that is more than three times its maximum surface area at full supply level	☐ Yes ☐ No
Work carried out in relation to an existing non-referable dam that will result in the dam being more than ten metres in height and having a storage capacity of more than 1 500 megalitres	☐ Yes ☐ No
Work to an existing non-referable dam that will result in the dam being more than ten metres in height and having a storage capacity of more than 750 megalitres and a catchment area that is more than three times its maximum surface area at full supply level	☐ Yes ☐ No
Works that involve the increase of capacity of a non-referable dam by more than 10 per cent if the dam is: - more than ten metres in height and having a storage capacity of more than 1 500 megalitres, or - more than ten metres in height and having a storage capacity of more than 750 megalitres and a catchment area that is more than three times its maximum surface area at full supply level	☐ Yes ☐ No
Works carried out in relation to a referable dam if, because of the works, the storage capacity of the dam will increase by more than 10% after the works are carried out.	☐ Yes ☐ No
Constructing a dam for which the chief executive under the <i>Water Supply (Safety and Reliability) Act 2008</i> has given a notice to have the dam failure impact assessed.	☐ Yes ☐ No

- If **no** to all of the above, the proposed operational work is not required to be failure impact assessed and is therefore not assessable development. This is the end of part 5 of this checklist
- If **yes** to any of the above, this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the *Referrable dams state code* in the SDAP.
 - You must complete *IDAS form 16—Particular dams*
 - End of part 5 of this checklist

Part 6—For a wild river area

6.1 Is the proposed operational work declared to be assessable development under the wild river declaration for the area?

☐ No	This aspect of development is not assessable development and no development permit is required End of part 6 of this checklist
☐ Yes	Continue to question 6.2

6.2 Does the proposed work involve any of the following?

Any part of the operational work is located in a wild river high preservation area	☐ Yes ☐ No
The work is for agricultural activities in a wild river preservation area or a wild river special floodplain management area in relation to the production of a high risk species as defined under the <i>Wild Rivers Act 2005</i>	☐ Yes ☐ No
The work is for animal husbandry activities in a wild river special floodplain management area	☐ Yes ☐ No

- If **yes** to any of the above, this aspect of development is prohibited development and a development application can not be made. This is the end of part 6 of this checklist
- If **no** to all of the above, continue to question 6.3

6.3 Will the proposed operational work be carried out on land to which a property development plan applies?

☐ No	• This application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Agricultural or animal husbandry activities in a wild river area state code</i> in the SDAP. • You must complete <i>IDAS form 29—Agricultural activities in a wild river area</i> if the operational work is for agricultural activities • You must complete <i>IDAS form 30—Animal husbandry activities in a wild river area</i> if the operational work is for animal husbandry activities • End of part 6 of this checklist
☐ Yes	• Continue to question 6.4

6.4 Is the proposed development consistent with the property development plan?

☐ No	• This aspect of development is prohibited development and a development application cannot be made • End of part 6 of this checklist
☐ Yes	• This application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Agricultural or animal husbandry activities in a wild river area state code</i> in the SDAP. • You must complete <i>IDAS form 29—Agricultural activities in a wild river area</i> if the operational work is for agricultural activities • You must complete <i>IDAS form 30—Animal husbandry activities in a wild river area</i> if the operational work is for animal husbandry activities • End of part 6 of this checklist

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 4, item 9
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 42
- *Sustainable Planning Act 2009*, schedule 1, items 1 and 2

Part 7—Tidal work

7.1 Is the proposed tidal work any of the following:

Excluded work	☐ Yes ☐ No
Work that is self-assessable development under schedule 3, part 2, table 4, item 8 of the Sustainable Planning Regulation 2009	☐ Yes ☐ No
Work carried out in a priority development area	☐ Yes ☐ No
Work carried out on premises to which structure plan arrangements apply	☐ Yes ☐ No

- If **no** to all of the above, continue to question 7.2.
- If **yes** to any of the above, this aspect of development is not assessable development and a development permit is not required.

7.2 Is any of the proposed tidal work to be carried out in a wild river area under the *Wild Rivers Act 2005*?

- | | |
|------------------------------|--|
| ☐ No | <ul style="list-style-type: none">Go to question 7.6 |
| ☐ Yes | <ul style="list-style-type: none">Continue to question 7.3 |

7.3 Is the proposed tidal work for any of the specified works under the *Wild Rivers Act 2005*?

Infrastructure and works prescribed under a regulation to be necessary for disaster management	☐ Yes ☐ No
De-snagging that is the minimum necessary to allow safe navigation of a marked navigable channel	☐ Yes ☐ No
Infrastructure that is roads, railways, pipelines conveyor belts and cables	☐ Yes ☐ No
Jetties and boat ramps for use by the public	☐ Yes ☐ No
Works for rehabilitation of land (e.g. rehabilitation of abandoned mines)	☐ Yes ☐ No
Infrastructure for the transmission or distribution of electricity	☐ Yes ☐ No
Other infrastructure, prescribed under a regulation that relates to the transportation, movement, transmission or flow of anything through a wild river area including, for example, goods, materials, substances, matter, particles with or without charge, light, energy, information and anything generated or produced	☐ Yes ☐ No

- If **no** to all of the above, this aspect of development is prohibited development and a development application cannot be made. End of part 7 of this checklist
- If **yes** to any of the above, continue to question 7.4

7.4 Will the proposed operational work be carried out on land to which a property development plan applies?

- | | |
|------------------------------|--|
| ☐ No | <ul style="list-style-type: none">Go to question 7.6 |
| ☐ Yes | <ul style="list-style-type: none">Continue to question 7.5 |

7.5 Is the proposed development consistent with the property development plan?

- | | |
|------------------------------|---|
| ☐ No | <ul style="list-style-type: none">This aspect of development is prohibited development and no application can be madeEnd of part 7 of this checklist |
| ☐ Yes | <ul style="list-style-type: none">Continue to question 7.6 |

7.6 Is any of the proposed tidal work prescribed tidal work?

☐ No	- This application requires assessment by the chief executive of DSDIP as assessment manager or concurrence against the <i>Tidal works, or development in a coastal management district state code</i> in the SDAP. - You must complete <i>IDAS form 23—Tidal works and development within coastal management districts</i> - End of part 7 of this checklist
☐ Yes	- You must complete <i>IDAS form 23—Tidal works and development within coastal management districts</i> - This application requires assessment by the local government as assessment manager and the chief executive of DSDIP will be a concurrence agency for the application; you must refer a copy of the application to DSDIP - End of part 7 of this checklist

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 4, item 5
- Sustainable Planning Regulation 2009, schedule 7, table 2, items 13 to 18
- *Sustainable Planning Act 2009*, schedule 1, items 2 and 4

Part 8—Coastal management

8.1 Is the proposed operational work any of the following:

Excluded works	☐ Yes ☐ No
Work that is self-assessable development under schedule 3, part 2, table 4, item 8 of the Sustainable Planning Regulation 2009	☐ Yes ☐ No
Work carried out in a priority development area	☐ Yes ☐ No
Work carried out on premises to which structure plan arrangements apply	☐ Yes ☐ No

- If **no** to all of the above, continue to question 8.2.
- If **yes** to any of the above, this aspect of development is not assessable development and a development permit is not required. End of part 8 of this checklist.

8.2 Is the proposed operational work for any of the following?

Interfering with quarry material as defined under the <i>Coastal Protection and Management Act 1995</i> on state coastal land above high-water mark	☐ Yes ☐ No
Disposing of dredge spoil or other solid waste material in tidal water	☐ Yes ☐ No
Constructing an artificial waterway	☐ Yes ☐ No
Removing or interfering with coastal dunes on land, other than State coastal land, that is in an erosion prone area as defined in the <i>Coastal Protection and Management Act 1995</i> and above high-water mark	☐ Yes ☐ No

- If you answered **no** to all of the above, a development permit is not required for this aspect of development and that is the end of part 8 of this checklist
- If you answered **yes** to any of the above, continue to question 8.3

8.3 Is any of the proposed work to be carried out in a wild river area under the *Wild Rivers Act 2005*?

☐ No	• This application may require assessment by DSDIP's SARA as assessment manager or concurrence agency against the <i>Tidal works, or development in a coastal management district state code</i> in the SDAP. • You must complete <i>IDAS form 23—Tidal works and development within coastal management districts</i> • End of part 8 of this checklist
☐ Yes	• Continue to question 8.4

8.4 Is all of the proposed operational work for specified works under the *Wild Rivers Act 2005*?

☐ No	• This aspect of the development is prohibited development and a development application cannot be made • End of part 8 of this checklist
☐ Yes	• Continue to question 8.5

8.5 Will the proposed operational work be carried out on land to which a property development plan applies?

☐ No	- This application may require assessment by DSDIP's SARA as assessment manager or concurrence agency against the <i>Tidal works, or development in a coastal management district state code</i> in the SDAP. - You must complete <i>IDAS form 23—Tidal works and development within coastal management districts</i> - End of part 8 of this checklist
☐ Yes	Continue to question 8.6

8.6 Is the proposed development consistent with the property development plan?

☐ No	- This aspect of development is prohibited development and a development application cannot be made - End of part 8 of this checklist
☐ Yes	- This application may require assessment by DSDIP's SARA as assessment manager or concurrence agency against the <i>Tidal works, or development in a coastal management district state code</i> in the SDAP. - You must complete <i>IDAS form 23—Tidal works and development within coastal management districts</i> - This aspect of development will be subject to the relevant wild river declaration for the area and assessment may be required for the purpose of the <i>Wild Rivers Act 2005</i> - End of part 8 of this checklist

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 4, item 5
- Sustainable Planning Regulation 2009, schedule 7, table 2, items 13 to 18
- Sustainable Planning Act 2009*, schedule 1, items 2 and 4

Part 9—Waterway barrier works

9.1 Is the proposed operational work any of the following:

Work that is self-assessable development under schedule 3, part 2 of the Sustainable Planning Regulation 2009	☐ Yes ☐ No
Work carried out on premises to which structure plan arrangements apply	☐ Yes ☐ No

- If **no** to all of the above, continue to question 9.2.
- If **yes** to any of the above, this aspect of development is not assessable development and a development permit is not required. End of part 9 of this checklist.

9.2 Is any of the proposed operational work to be carried out in a wild river area under the *Wild Rivers Act 2005*?

☐ Yes	- A development permit is required for this aspect of development. This application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Constructing or raising waterway barrier works in fish habitats state code</i> in the SDAP. - You must complete <i>IDAS form 27—Waterway barrier works</i>
☐ Yes	Continue to question 9.3

9.3 Is any of the proposed operational work to be carried out in a wild river high preservation area or a wild river special floodplain management area?

☐ No	Go to question 9.5
☐ Yes	Continue to question 9.4

9.4 Is the works for any of the following?

Specified works in the area	☐ Yes ☐ No
Maintenance of existing waterway barrier works	☐ Yes ☐ No
Constructing or raising temporary waterway barrier works associated with the carrying out of specified works or the maintenance of existing waterway barrier works	☐ Yes ☐ No
Constructing new waterway barrier works, or raising of an existing waterway barrier works, within the Lake Eyre Basin for storing water for town water supply demands	☐ Yes ☐ No
Authorised wild river operational work for the area	☐ Yes ☐ No

- If **no** to all of the above, this aspect of development is prohibited development and a development application cannot be made. That is the end of part 9 of this checklist
- If **yes** to any of the above, continue to question 9.5

9.5 Will the proposed operational work be carried out on land to which a property development plan applies?

☐ No	- A development permit is required for this aspect of development. This application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Constructing or raising waterway barrier works in fish habitats state code</i> in the SDAP. - You must complete <i>IDAS form 27—Waterway barrier works</i>
☐ Yes	Continue to question 9.6

9.6 Is the proposed development consistent with the property development plan?

☐ No	- This aspect of development is prohibited development and a development application cannot be made - End of part 9 of this checklist
☐ Yes	- A development permit is required for this aspect of development. This application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Constructing or raising waterway barrier works in fish habitats state code</i> in the SDAP. - You must complete <i>IDAS form 27—Waterway barrier works</i>

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 4, item 6
- Sustainable Planning Regulation 2009, schedule 3, part 2
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 29
- Sustainable Planning Act 2009*, schedule 1, items 2 and 6

Part 10—Declared fish habitat area

10.1 Is the operational work reasonably necessary for any of the following?

The maintenance of existing structures, including for example the following structures, if the structures were constructed in compliance with all the requirements under any Act relating to a structure of that type: • boat ramps, boardwalks, drains, fences, jetties, roads, safety signs, swimming enclosures and weirs • powerlines or associated powerline infrastructure.	☐ Yes ☐ No
Educational or research purposes relating to the declared fish habitat area	☐ Yes ☐ No
Monitoring the impact of development on the declared fish habitat area	☐ Yes ☐ No
The construction or placement of structures, including for example, safety signs, swimming enclosures and aids to navigation, if: • the impact on the area is minor • the structures are constructed in compliance with all the requirements, under any Act relating to a structure of that type.	☐ Yes ☐ No
Public benefit works, including, for example, the construction of runnels for mosquito control, the removal of Lyngbya and seed collection for site rehabilitation, if the impact on the area is minor	☐ Yes ☐ No

- If **yes** to any of the above, a permit is not required for this aspect of development but the proposed work must comply with any applicable self assessable codes
- If **no** to all of the above, continue to question 10.2

10.2 Is the proposed operational work to be carried out in a wild river area under the *Wild Rivers Act 2005*?

☐ No	• A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Development completely or partially in a declared fish habitat area state code</i> in the SDAP. • You must complete <i>IDAS form 27—Waterway barrier works</i> • End of part 10 of this checklist.
☐ Yes	• Continue to question 10.3

10.3 Is the proposed operational work to be carried out in a wild river high preservation area?

☐ No	• Go to question 10.5
☐ Yes	• Continue to question 10.4

- If **no**, this aspect of development is prohibited development and that is the end of part 10 of this checklist
- If **yes**, continue to question 10.5

10.5 Will the proposed operational work be carried out on land to which a property development plan applies?

☐ No	• A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency, against the <i>Development completely or partially in a declared fish habitat area state code</i> in the SDAP. • You must complete <i>IDAS form 27—Waterway barrier works</i> • End of part 10 of this checklist.
☐ Yes	• Continue to question 10.6

10.6 Is the proposed development consistent with the property development plan?

☐ No	- This aspect of development is prohibited development and a development application cannot be made - End of part 10 of this checklist
☐ Yes	- A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency, against the <i>Development completely or partially in a declared fish habitat area state code</i> in the SDAP. - You must complete <i>IDAS form 27—Waterway barrier works</i> - End of part 10 of this checklist

Section reference:

- Sustainable Planning Act 2009, schedule 1, items 2 and 8
- Sustainable Planning Regulation 2009, schedule 3, part 1, table 4, item 7
- Sustainable Planning Regulation 2009, schedule 3, part 2, table 4, item 3
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 26

Part 11—Removal, destruction or damage of a marine plant

11.1 Is the proposed operational work any of the following?

For reconfiguring a lot that is assessable development under table 3, item 1, if there is a development permit in effect for the reconfiguration	☐ Yes ☒ No
For a material change of use that is assessable development, if there is a development permit in effect for the change of use	☐ Yes ☐ No
Self-assessable development under schedule 3, part 2 of the Sustainable Planning Regulation 2009	☐ Yes ☐ No
Carried out in a priority development area	☐ Yes ☐ No
Carried out on premises to which structure plan arrangements apply	☐ Yes ☐ No

- If **yes** to any of the above, this aspect of development is not assessable development and no development permit is required. End of part 11 of this checklist.
- If **no** to all of the above, continue to question 11.2

11.2 Is the proposed operational work to be carried out in a wild river area under the *Wild Rivers Act 2005*?

☐ No	- A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Removal, destruction or damage of marine plants state code</i> in the SDAP. - You must complete <i>IDAS form 26—Marine plants and declared fish habitat areas</i>
☐ Yes	Continue to question 11.3

11.3 Is the proposed operational work any of the following?

Specified works in the area	☐ Yes ☐ No
Operational work that is a necessary and unavoidable part of installing or maintaining works or infrastructure required to support other development for which a development permit or compliance permit is not required or, if a development application or a request for compliance assessment is required, the permit is held or has been applied for.	☐ Yes ☐ No

- If **no** to all of the above, this aspect of development is prohibited development and a development application cannot be made. End of part 11 of this checklist.
- If **yes** to any of the above, continue to question 11.4

11.4 Will the proposed operational work be carried out on land to which a property development plan applies?

☐ No	• A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Removal, destruction or damage of marine plants state code</i> in the SDAP. • You must complete <i>IDAS form 26—Marine plants and declared fish habitat areas</i> • End of part 11 of this checklist.
☐ Yes	• Continue to question 11.5

11.5 Is the proposed development consistent with the property development plan?

☐ No	• This aspect of development is prohibited development and a development application cannot be made • End of part 11 of this checklist
☐ Yes	• A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Removal, destruction or damage of marine plants state code</i> in the SDAP. • You must complete <i>IDAS form 26—Marine plants and declared fish habitat areas</i> • End of part 11 of this checklist.

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 4, item 8
- Sustainable Planning Regulation 2009, schedule 3, part 2
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 30
- *Sustainable Planning Act 2009*, schedule 1, items 2 and 7

Part 12—Great Barrier Reef Wetland Protection Areas

12.1 Is the proposed operational work for a domestic housing activity only?

☐ No	• Continue to question 12.2
☐ Yes	• A development permit is not required for this aspect of development and this is the end of the checklist

12.2 Is the proposed operational work the natural and ordinary consequence of a material change of use or reconfiguring a lot for which the state was a concurrence agency under schedule 7, table 3, item 21A or table 2, item 43A of the Sustainable Planning Regulation 2009?

☐ No	• Continue to question 12.3
☐ Yes	• A development permit is not required for this aspect of development and this is the end of the checklist

12.3 Is the proposed operational work associated with government supported transport infrastructure or electricity infrastructure?

☐ No	• A development permit is required and this application requires assessment by the chief executive of DSDIP as assessment manager or concurrence agency against the <i>Wetland protection area state code</i> in the SDAP. • You must complete <i>IDAS form 33—Great Barrier Reef Wetland protection area</i> • End of this checklist
☐ Yes	• A permit is not required for this aspect of development but the proposed work must comply with any applicable self assessable code • End of this checklist

Section reference:

- Sustainable Planning Regulation 2009, schedule 3, part 1, table 4, item 10
- Sustainable Planning Regulation 2009, schedule 7, table 2, item 43B

Privacy—please refer to your assessment manager for further details on the use of information recorded in this form

Disclaimer:

While the Department of State Development, Infrastructure and Planning (DSDIP) believes that the information contained on this checklist and provided as part of this process will be of assistance to you, it is provided on the basis that you will not rely on the information. It is your responsibility to make your own enquiries regarding the interpretation and application of the applicable legislation to your circumstances.

To the full extent permitted by law, DSDIP expressly disclaims all liability (including but not limited to liability for negligence) for errors or omissions of any kind or for any loss (including direct and indirect losses), damage or other consequence which may arise from your reliance on this process and the information contained on this checklist.

OFFICE USE ONLY

Date received

Reference numbers

The Sustainable Planning Act 2009 is administered by DSDIP. This checklist and all other required application materials should be sent to your assessment manager and any referral agency.

Appendix L: SARA Code

4.1 Concurrence environmentally relevant activities state code

Response column key:

☒ Achieved
P/S Performance solution
N/A Not applicable

Table 4.1.2: All environmentally relevant activities

Performance outcomes	Acceptable outcomes	Response	Comment
Site suitability			
PO1 The choice of the site at which the activity is to be carried out minimises serious environmental harm on areas of high conservation value and special significance, and sensitive land uses at adjacent places.	AO1.1 Areas of high conservation value and special significance likely to be affected by the activity are identified and evaluated, and any adverse effects on these areas are minimised, including edge effects. AND	☒	The activity which is subject to this application does not occur in the vicinity of any high conservation or special significance areas. A Site Based Management Plan has been prepared for this site which accounts for adverse effects which may negatively affect the surrounding environment.
	AO1.2 The activity does not have an adverse effect beyond the site. OR	☒	The Site Based Management Plan prepared for the subject site adequately accounts for potential adverse effects caused by the activity beyond the site.
	AO1.3 Critical design requirements will prevent emissions having an irreversible or widespread impact on adjacent areas.	☒	The Site Based Management Plan prepared for the subject site captures issues surrounding the prevention of emissions which may have an irreversible or widespread impact on adjacent areas.
Location of activity on the site			
PO2 The location for the activity on the site protects all environmental values relevant to adjacent sensitive land uses.	AO2.1 The location of the activity means there will be no adverse effect on any environmental values. OR	☒	The site has been located in an area which is located away from any environmentally sensitive areas. In conjunction with the preparation of a Site Based Management Plan to account for environmental risks associated with the operation, the site's location is considered to ensure that no adverse effects on environmental values will be incurred.
	AO2.2 Both of the following apply: (1) The activity and components of the activity are located on the site in a way that prevents or minimises adverse effects on the use of adjacent land and allows for effective management of the environmental impacts of the activity. (2) Areas used for storing environmentally hazardous materials in bulk are located to take into consideration the likelihood of flooding.	N/A	
Critical design requirements			
PO3 The design of the facility at which the activity is to be carried out permits the activity to be carried out in accordance with best practice	AO3.1 The activity does not involve the storage, production, treatment or release of hazardous contaminants, or involve a regulated structure. OR	N/A	

Performance outcomes	Acceptable outcomes	Response	Comment
environmental management.	AO3.2 Development ensures that– (1) All storage provided for hazardous contaminants includes secondary containment to prevent or minimise releases to the environment from spillage or leaks. (2) Regulated structures must comply with the <i>Manual for assessing hazard categories and hydraulic performance of dams</i> , Department of Environment and Heritage Protection, 2012. (3) Containers are provided for the storage of hazardous contaminants and are secured to prevent the removal of the containers from the site by a flood event. (4) The design of the facility– (a) prevents or minimises the production of hazardous contaminants and waste, or (b) contains and treats hazardous contaminants, rather than releasing them.	☒	Points relevant to the operation are addressed below. Those not addressed are to be assumed to be not applicable to the site operation. The Site Based Management Plan for this operation ensures that: • All storage provided for hazardous contaminants includes secondary containment to prevent or minimise releases to the environment from spillage or leaks. • Containers are provided for the storage of hazardous contaminants and are secured to prevent the removal of the containers from the site by a flood event. • The design of the facility– - prevents or minimises the production of hazardous contaminants and waste, or - contains and treats hazardous contaminants, rather than releasing them.
Standard criteria			
PO4 The design of the activity demonstrates consideration of the standard criteria. Editor's note: It is recommended that the development application should address how it has considered the standard criteria.	No acceptable outcome is prescribed.	☒	Prior to the preparation of the Site Based Management Plan for this activity, the standard criteria were considered and incorporated into the design of the activity. More information is available in the Site Based Management Plan.
PO5 The activity avoids adverse impacts on matters of national environmental significance and matters of state environmental significance or, where this is not reasonably possible, impacts are minimised and residual impacts are offset.	AO5.1 Matters of national environmental significance and matters of state environmental significance likely to be affected by the activity are identified and evaluated, and any adverse effects on the matters of national environmental significance of matters of state environmental significance are avoided or, where this cannot be reasonably achieved, impacts are minimised and any residual impacts are offset.	☒	No matters of national environmental significant or matters of state environmental significance were identified as occurring on or near the subject area proposed for the activity. As a result, impacts to these are not anticipated and therefore not required to be ameliorated or offset.

8.2 Brigalow Belt and New England Tablelands bioregion state code

Response column key:

- ☒ Achieved
- P/S Performance solution
- N/A Not applicable

Table 8.2.3: General

Performance outcomes	Acceptable outcomes	Response	Comment
Clearing to avoid and minimise impacts			
PO1 To regulate the clearing of vegetation in a way that ensures the conservation of regional ecosystems, clearing only occurs where the applicant has demonstrated that the development has first avoided and minimised the impacts of development.	No acceptable outcome is prescribed.	☒	A careful site selection and design process was undertaken for the Project. The location of this offsite infrastructure was selected because it avoided field verified mapped regional ecosystems as much as possible considering its large size and out of a total of 978.1ha footprint, only 4.9 hectares of least concern remnant vegetation requires removal to facilitate its construction. The development footprint has been restricted to its smallest practical size to minimise the extent of clearing required to facilitate its creation.
Biodiversity and conservation outcomes			
PO2 Clearing may occur only where the material change of use or reconfiguring a lot can demonstrate that the level of conservation and biodiversity outcomes ensured by the development significantly exceeds the extent and value of the area proposed to be cleared. This can only be achieved by meeting the requirements of Appendix A: Vegetation offset policy.	No acceptable outcome is prescribed.	☒	The current ecological value of the area proposed to be cleared is relatively low. Whilst 4.9 hectares of least concern remnant vegetation is proposed to be removed, the offsetting of this vegetation is accounted for in the broader EIS and SEIS documents in accordance with the Vegetation Offset Policy.. As a result, the majority of the 978.1ha of clearing which needs to occur to facilitate construction of this facility occurs in non-remnant vegetation. Consequently, the offsetting of the removal of remnant vegetation in conjunction with weed management and removal associated with the clearing is considered to exceed and improve upon the current ecological state of the site as a result of the clearing works.

Table 8.2.7: Coordinated projects

Performance outcomes	Acceptable outcomes	Response	Comment
Limits to clearing			
PO1 To regulate the clearing of vegetation in a way that conserves remnant vegetation that are regional ecosystems, does not cause land degradation, prevents the loss of biodiversity and maintains ecological	No acceptable outcome is prescribed.	☒	A careful site selection and design process was undertaken for the Project. The selection process identified the preferred location and alignment of the infrastructure proposed for the Project. The selection process considered economic, social and environmental impacts while aiming to deliver the desired infrastructure outcomes. The proposed route

Performance outcomes	Acceptable outcomes	Response	Comment
processes, subject to the limitations required to meet PO2–PO10, clearing is limited to the extent that is necessary for the project, any associated ancillary works, and the operation of works that comprise a project declared to be a coordinated project under the <i>State Development and Public Works Organisation Act 1971</i> , section 26.			selected avoids as much remnant vegetation as possible (particularly of concern and endangered REs), although 4.9 hectares of least concern remnant vegetation requires removal. The true extent of this mapping is subject to a PMAV application. The development also avoids areas of high ecological value where possible and the width of linear corridors has been reduced to the absolute minimum width necessary for construction.
Wetlands			
PO2 To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and maintains ecological processes, maintain the current extent of assessable vegetation associated with any natural significant wetland or natural wetland to provide: (1) water quality by filtering sediments, nutrients and other pollutants (2) aquatic habitat (3) terrestrial habitat.	AO2.1 Clearing does not occur: (1) in any natural wetland (2) within 100 metres from any natural wetland (3) in any natural significant wetland (4) within 200 metres from any natural significant wetland.	☒	Clearing is not proposed to occur within, or in any vicinity closer to 200 metres to a natural significant wetland. Nonetheless, erosion and sediment control devices will be installed prior to clearing.
Watercourses			
PO3 To regulate the clearing of vegetation in a way that does not cause land degradation, prevents the loss of biodiversity and maintains ecological processes, maintain the current extent of assessable vegetation associated with any watercourse to provide: (1) bank stability by protecting against bank erosion (2) water quality by filtering sediments, nutrients and other pollutants (3) aquatic habitat (4) terrestrial habitat.	AO3.1 Clearing does not occur: (1) in any watercourse (2) within the relevant distance stipulated in Table 2 of each high bank of each watercourse.	☒	Clearing is not proposed to occur within, or in any vicinity to a watercourse.
Connectivity			
PO4 To regulate the clearing of vegetation in a way that prevents the loss of biodiversity and maintains ecological processes, areas of mapped remnant	AO4.1 Where clearing is less than: (1) 10 metres wide in the coastal subregions of the Brigalow Belt bioregion (2) 2 hectares in the coastal subregions of the Brigalow	☒	Total clearing of remnant vegetation is less than 5ha (4.9 hectares). It occurs in two (2) areas classified as least concern. The northern portion of remnant vegetation is currently isolated and does not provide any connectivity to

19.3 Transport infrastructure and network design state code

Response column key:

- ☒ Achieved
- P/S Performance solution
- N/A Not applicable

Table 19.3.1: All development

Performance outcomes	Acceptable outcomes	Response	Comment
All state transport infrastructure – except state-controlled roads			
PO1 Development does not compromise the safe and efficient management or operation of state transport infrastructure or transport networks.	AO1.1 Any impact from the development on the safe and efficient management and operation of the state transport corridor or transport network is identified and mitigated. Editor's note: A traffic impact assessment will assist in addressing this acceptable outcome. A traffic impact assessment should identify any upgrade works required to mitigate impacts on the safe and efficient management and operation of the state transport corridor.	☒	The proposed development is located a significant distance away from the state controlled transport infrastructure in the state transport corridor, and will therefore not prejudice any planned upgrades of same..
PO2 Development does not compromise planned upgrades to state transport infrastructure or the development of future state transport infrastructure in future state transport corridors.	AO2.1 Written advice has been provided by DTMR that there are no planned upgrades of state transport infrastructure or future state transport corridors which will be compromised by the development. OR both of the following acceptable outcomes apply	N/A	
	AO2.2 The layout and design of the proposed development accommodates planned upgrades to adjacent state transport infrastructure in the state transport corridor. AND	☒	The proposed development is located a significant distance away from the state controlled transport infrastructure in the state transport corridor, and will therefore not prejudice any planned upgrades of same.
	AO2.3 The layout and design of the development does not compromise the delivery of state transport infrastructure in future state transport corridors. Editor's note: A traffic impact assessment will assist in addressing this acceptable outcome.	☒	The proposed development is located a significant distance away from the state controlled transport infrastructure and any future state transport corridor, and will therefore not prejudice any planned upgrades of same.
State-controlled roads			
PO3 Development does not compromise the safe and efficient management or operation of state-controlled roads. Editor's note: A traffic impact assessment will assist in addressing this performance outcome.	A03.1 Any impact from the development on the safe and efficient management and operation of the state-controlled road is identified and mitigated. Editor's note: A traffic impact assessment will assist in addressing this acceptable outcome.	☒	The potential impacts from the proposed development have been assessed as both a stand-alone development, and also in the context of the broader Carmichael Coal Mine and Rail Project. None of the identified potential impacts are of a scale which would compromise planned state road upgrades or delivery.

Performance outcomes	Acceptable outcomes	Response	Comment
			Brown Consulting have completed the ' <i>Carmichael Coal Mine add Rail Project – Traffic Impact Assessment</i> ' which addresses the impact of the Project on State Controlled Roads. This report is included in the SEIS documentation
PO4 Development does not compromise planned upgrades of the state-controlled road network or delivery of future state-controlled roads.	AO4.1 Written advice has been provided by DTMR that there are no planned upgrades of state-controlled roads or future state-controlled roads which will be compromised by the development. OR	N/A	
	AO4.2 Any impact from the development does not compromise planned upgrades of the state-controlled road network or the delivery of future state-controlled roads. Editor's note: A traffic impact assessment will assist in addressing this acceptable outcome.	☒	The potential impacts from the proposed development have been assessed as both a stand-alone development, and also in the context of the broader Carmichael Coal Mine and Rail Project. None of the identified potential impacts are of a scale which would compromise planned state road upgrades or delivery. Brown Consulting have completed the ' <i>Carmichael Coal Mine add Rail Project – Traffic Impact Assessment</i> ' which addresses the impact of the Project on State Controlled Roads. This report is included in the SEIS documentation
PO5 Upgrade works on or associated with the state-controlled road network are undertaken in accordance with applicable standards.	AO5.1 Upgrade works for the development are consistent with the requirements of the <i>Road planning and design manual – interim guide to road planning and design practice</i> , Department of Transport and Main Roads, 2010. AND	☒	Brown Consulting have completed the ' <i>Carmichael Coal Mine add Rail Project – Traffic Impact Assessment</i> ' which addresses the impact of the Project on State Controlled Roads. This report is included in the SEIS documentation
	AO5.2 The design and staging of upgrade works on or associated with the state-controlled road network are consistent with planned upgrades.	☒	Brown Consulting have completed the ' <i>Carmichael Coal Mine add Rail Project – Traffic Impact Assessment</i> ' which addresses the impact of the Project on State Controlled Roads. This report is included in the SEIS documentation
PO6 Development does not impose traffic loadings on the state-controlled road network which could be accommodated on the local road network.	AO6.1 New roads proposed as part of the development are consistent with the road hierarchy adopted by the relevant local government, and new lower order roads do not connect directly to a state-controlled road. AND	N/A	No new public roads are proposed as part of this development application.

Performance outcomes	Acceptable outcomes	Response	Comment
	AO6.2 Where the opportunity is available, development provides for road access locations to lower order roads. AND	☒	Proposed new private access roads will intersect with Moray-Carmichael Road, a local government controlled road. Brown Consulting have completed the '<i>Carmichael Coal Mine add Rail Project – Traffic Impact Assessment</i>' which addresses the impact of the Project on State Controlled Roads. This report is included in the SEIS documentation
	AO6.3 Where possible, the layout and design of the development encourages traffic generated by the development to use lower order roads.	☒	Proposed new private access roads will intersect with Moray-Carmichael Road, a local government controlled road. Brown Consulting have completed the '<i>Carmichael Coal Mine add Rail Project – Traffic Impact Assessment</i>' which addresses the impact of the Project on State Controlled Roads. This report is included in the SEIS documentation

Performance outcomes	Acceptable outcomes	Response	Comment
vegetation are: (1) of sufficient size and configured in a way to maintain ecosystem functioning (2) of sufficient size and configured in a way to remain in the landscape in spite of any threatening processes (3) located on the lot(s) that are the subject of the application to maintain connectivity to mapped remnant vegetation on adjacent properties.	Belt bioregion (3) 25 metres wide in the non-coastal subregions of the Brigalow Belt and New England Tableland bioregion, or (4) 5 hectares in the non-coastal subregions of the Brigalow Belt and the New England Tableland bioregion clearing does not: (a) reduce the width of mapped remnant vegetation to less than 200 metres (b) occur where the width of mapped remnant vegetation is less than 200 metres. AND		adjacent areas of vegetation. The removal of the southern portion of remnant vegetation will not reduce the width of remnant vegetation in that portion of the site to less than 200m, and does not occur in an area where the width of mapped remnant vegetation is less than 200 metres.
	AO4.2 Clearing does not: (1) reduce areas of contiguous mapped remnant vegetation to less than 10 hectares in the coastal subregions of the Brigalow Belt bioregion (2) occur in areas of contiguous mapped remnant vegetation that are less than 10 hectares in the coastal subregions of the Brigalow Belt Bioregion (3) reduce areas of contiguous mapped remnant vegetation to less than 50 hectares in the non-coastal subregions of the Brigalow Belt and New England Tableland bioregion (4) occur in areas of contiguous mapped remnant vegetation that are less than 50 hectares in the non-coastal subregions of the Brigalow Belt and New England Tableland bioregion (5) reduce the width of mapped remnant vegetation to less than 200 metres (6) occur where the width of mapped remnant vegetation is less than 200 metres (7) reduce the total extent of mapped remnant vegetation to less than 30 per cent of the area of the lot(s) that are the subject of the application (8) occur where the total extent of mapped remnant vegetation is less than 30 per cent of the area of the lot(s) that are the subject of the application. AND	P/S	Clearing will not: • Clearing does not occur in areas of contiguous mapped remnant vegetation in the coastal subregions of the Brigalow Belt bioregion. • Clearing will not reduce areas of contiguous mapped remnant vegetation to less than 50 hectares in the non-coastal subregions of the Brigalow Belt and New England Tableland bioregion because these areas are already less than 50 hectares in area. • Clearing unavoidably occurs in areas of contiguous mapped remnant vegetation less than 50 hectares in the non-coastal subregions of the Brigalow Belt and New England Tableland bioregion, however the area selected for this project represents the minimum impact on the ecology of the surrounding area by removing the least amount of remnant vegetation possible. • The northern portion of remnant vegetation is currently isolated and does not provide any connectivity to adjacent areas of vegetation. The removal of the southern portion of remnant vegetation will not reduce the width of remnant vegetation in that portion of the site to less than 200m, and does not occur in an area where the width of mapped remnant vegetation is less than 200 metres. • The proposed clearing does not reduce the total

Performance outcomes	Acceptable outcomes	Response	Comment
			extent of mapped remnant vegetation to less than 30 per cent of the area of the lot(s) that are the subject of the application The proposed clearing occurs where the total extent of mapped remnant vegetation is less than 30 per cent of the area of the lot(s) that are the subject of the application however the area selected for this project represents the minimum impact on the ecology of the surrounding area by removing the least amount of remnant vegetation possible.
	AO4.3 Where clearing is for a significant community project, maintain the current extent of mapped remnant vegetation where the vegetation is: (1) of sufficient size and configured in a way to maintain ecosystem functioning (2) of sufficient size and configured in a way to remain in the landscape in spite of any threatening processes (3) located on the lot(s) that are the subject of the application to maintain connectivity to mapped remnant vegetation on adjacent properties.	P/S	The proposed clearing occurs in small areas of least concern remnant vegetation. However, these areas of vegetation are not considered to be of sufficient size and configuration to significantly contribute to ecosystem functioning. The area selected for this project represents the minimum impact on the ecology of the surrounding area by removing the least amount of remnant vegetation possible.
Soil erosion			
PO5 To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes, the effect of clearing does not result in: (1) mass movement, gully erosion, rill erosion, sheet erosion, tunnel erosion, stream bank erosion, wind erosion or scalding (2) any associated loss of chemical, physical or biological fertility, including, but not limited to water holding capacity, soil structure, organic matter, soil biology and nutrients within or outside the lot(s) that are the subject of the application.	AO5.1 Mechanical clearing only occurs on: (1) very stable soils on a slope less than 15 per cent (2) stable soils on a slope less than 12 per cent (3) unstable soils on a slope less than 8 per cent (4) very unstable soils on a slope less than 5 per cent.	☒	The entire site on which the development is proposed is very flat. All clearing will occur on slopes which are less than 5 per cent.
Salinity			

Performance outcomes	Acceptable outcomes	Response	Comment
PO6 To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes, clearing does not contribute to: (1) waterlogging, or (2) the salinisation of groundwater, surface water or soil.	AO6.1 Where clearing is less than: (1) 2 hectares, or (2) 10 metres wide clearing does not occur in any discharge area. AND	☒	The clearing is not proposed in any discharge area.
	AO6.2 Where clearing is less than: (1) 5 hectares, or (2) 50 metres wide clearing does not occur: (a) in any discharge area, or (b) within 200 metres of any discharge area. AND	☒	The clearing is not proposed in any discharge area or within 200 metres of a discharge area.
	AO6.3 Clearing does not occur in areas greater than 5 hectares	☒	Clearing will occur in areas of greater than 5 hectares but only 4.9 hectares of remnant vegetation will be affected by the proposed development.
Conserving remnant vegetation that are endangered regional ecosystems and of concern regional ecosystems			
PO7 To regulate the clearing of vegetation in a way that conserves remnant vegetation that are endangered regional ecosystems and of concern regional ecosystems, maintain the current extent of endangered regional ecosystems and of concern regional ecosystems.	AO7.1 Clearing: (1) does not occur in an endangered regional ecosystem or an of concern regional ecosystem that is listed in Table 4 (2) in an endangered regional ecosystem or an of concern regional ecosystem that is not listed in Table 4, only occurs where the clearing is less than 10 metres wide or 0.5 hectares.	☒	Clearing will not occur in an endangered or of concern regional ecosystem.
Essential habitat			
PO8 To regulate the clearing of vegetation in a way that prevents the loss of biodiversity, maintain the current extent of essential habitat.	AO8.1 Clearing does not occur in an area shown as essential habitat on the essential habitat map.	☒	Clearing will not occur in an area shown as essential habitat on the essential habitat map.
Conservation status thresholds			
PO9 To regulate the clearing of vegetation in a way that conserves remnant vegetation that are regional ecosystems and prevents the loss of biodiversity, maintain the current extent of regional ecosystems listed in Table 5.	AO9.1 Clearing in a regional ecosystem listed in Table 5 does not occur unless the clearing is less than: (1) 10 metres wide, or (2) 2 hectares.	☒	Clearing will not occur in a regional ecosystem listed in Table 5.

Performance outcomes	Acceptable outcomes	Response	Comment
Acid sulfate soils			
PO10 To regulate the clearing of vegetation in a way that does not cause land degradation and maintains ecological processes in the coastal subregions of the Brigalow Belt bioregion, and the Marlborough Plains subregion, clearing activities do not result in disturbance of acid sulfate soils or changes to the hydrology of the location that will either: (1) aerate horizons containing iron sulfides, or (2) mobilise acid or metals.	AO10.1 In the coastal subregions of the Brigalow Belt bioregion, and the Marlborough Plains subregion, clearing in land zone 1, land zone 2 or land zone 3 in areas below 5 metre Australian height datum follows management principles in accordance with the <i>Queensland acid sulfate soil technical manual: Soil management guidelines</i>, Department of Natural Resources and Mines, 2002.		The proposed clearance areas are not located in the coastal subregions of the Brigalow Belt bioregion or Marlborough Plains subregion. Therefore, it is considered that Acid Sulfate Soils will not represent a significant issue for this project.