BRAVUS
MINING & RESOURCES

## Change application to SDA approval APC2023/003

# Planning Report

-

**Revision 0 | 5 June 2025**

## Document Details

| | |
|---|---|
| Document Title | Planning Report |
| Document No | N/A |

## Version Control

| Revision | Issue Date | Change Details | Author | Checked | Approved |
|---|---|---|---|---|---|
| 0 | 5/06/2025 | Update | Environment | Squad | J. Moore |

## Disclaimer

You are not entitled to and agree not to rely on or use any information, comment, conclusion or opinion in this Report or rely on the accuracy or completeness of any information included in this Report for any purpose. To the maximum extent permitted by law, neither Adani Mining Pty Ltd (Adani) nor its associated entities or any of their respective directors, officers or employees will be liable to you for any loss (including indirect, consequential or economic loss), damages, costs or expenses suffered or incurred, directly or indirectly, under or in connection with the use or provision of this Report by or to you or any breach by you of your obligations, including losses, damages, costs or expenses arising as a result of breach of contract, statutory duty, negligence or any other act or omission. Any reliance on this Report is entirely at your own risk. This Report is confidential to you and you agree to keep it confidential. This Report may not be disclosed to any other person except with our prior written consent.

## Table of Contents

**1 Introduction ..... 6**
1.1 Background ..... 6
1.2 Change Application ..... 7
**2 Description of the Subject Land and Locality ..... 8**
**3 The Proposed Development ..... 9**
**4 Current and Historic Land Uses ..... 11**
**5 Other Approvals required for the Development ..... 12**
**6 Operational Works necessary for the MCU ..... 13**
**7 Adjacent Land Uses ..... 14**
**8 Galilee State Development Area Planning Scheme and Adverse Impacts ..... 15**
**9 Conclusion ..... 16**

## Appendices

Appendix A | Change application for SDA Approval MCU APC 2023/001 ..... 17
Appendix B | Change a Land Use for Non-Resident Workforce Accommodation in the Galilee Basin State Development Area – Planning report for Rail Camp 6 dated September 2014 ..... 18
Appendix C | Tenure Search ..... 19
Appendix D | Owners Consent to the application to Change a Land Use for Non-Resident Workforce Accommodation ..... 20
Appendix E | MCU APC 2023 ..... 21
Appendix F | Environmental Authority EA 0002209 ..... 22

## Tables

## No table of figures entries found.

## Figures

Figure 3-1: Location of the Carmichael Mine and Moray Downs ..... 10

## Abbreviations

| Term | Description |
|---|---|
| AMPL | Adani Mining Pty Ltd) (AMPL) (Bravus Mining & Resources) |
| CCMR Project | Carmichael Coal Mine and Rail Project |
| CRN | Carmichael Rail Network Pty Ltd |
| EA | Environmental Authority |
| GBSDA | Galilee Basin State Development Area |
| IRC | Isaac Regional Council |
| LGA | Local Government Area |
| MAR | Mine Access Road |
| MCU | Material Change of Use |
| SDA | State Development Area |

## Definitions

| Term | Description |
|---|---|
| Non-Resident Workforce Accommodation | premises used to provide accommodation for non-resident workers. The use may include provision of recreational and entertainment facilities for the exclusive use of residents and their visitors. |
| MAR | Mine Access Road which includes Moray Carmichael Boundary Road and Elgin Road as defined in Infrastructure Access Agreement executed with the Isaac Regional Council (IRC) in June 2019 |
| Proponent | A person or their representative who makes an application under the development scheme. |

# 1 Introduction

This Planning Report is prepared to support the application for Carmichael Rail Network Pty Ltd (CRN) (the Proponent) (ABN 87 601 738 685) request for a change application for the existing State Development Area (SDA) approval for non-resident workforce accommodation (Camp 6) in the Galilee Basin State Development Area (APC2023/001), refer to **Attachment A**.

The proposed change relates to a change in the 'approved term' stated in Condition 2.2 to "The use is approved until construction completion of the Elgin Road and Moray Carmichael Road (the approved term) to facilitate the construction of the Elgin Road and Moray Carmichael Road in accordance with the Infrastructure Access Agreement executed with Isaac Regional Council (IRC)".

The Planning Report prepared and issued in September 2014 (GHD, 2014) provides information which has previously been assessed. Where relevant, references are made within this Planning Report to the Planning Report for Rail Camp 6 (GHD, 2014) (**Attachment B**) are provided.

This Planning Report has been prepared to fulfil the requirements of a Planning Report with the meaning as stated in the Galilee Basin State Development Area – Development Scheme:

a) an accurate description of the land, the subject of the application;
b) a detailed description of all aspects of the proposed development, including a detailed site plan (to scale) and other plans necessary to describe the proposed development;
c) a description of the current and historic (if known) land uses;
d) a list of other approvals required for the development to proceed and the process for obtaining those approvals;
e) a description of any operational works necessary for the material change of use the subject of the SDA application to proceed;
f) a description of adjacent land uses and a statement of the likely impact on the surrounding land uses from the proposed development
g) a detailed assessment of how the proposed development satisfies the strategic vision, overall objectives, the preferred development intent of the precincts, and relevant assessment criteria including: (i) a detailed description and assessment of any adverse impacts of the proposed development (ii) detailed description of how any adverse impacts are to be managed (iii) an assessment of any impact the proposed development may have on existing and planned infrastructure (iv) identification of any need for upgrades to existing infrastructure or the need for any future infrastructure to support the proposed development and
h) relevant supporting information such as plans, drawings and management plans. All supplied plans, drawings and management plans must be prepared by a suitably qualified person in accordance with current best practice. The relevant plans, drawings and management plans must demonstrate that: (i) they have been prepared by a suitably qualified person (ii) they have been prepared in accordance with current best practice and (iii) the development satisfies the strategic vision, overall objectives, the preferred development intent of the precincts, and relevant assessment criteria. Relevant supporting information may be required to demonstrate how issues associated with the following may be addressed: (i) environmental, cultural heritage and community values (ii) engineering (iii) hydrological and hydraulic (iv) safety (v) emissions (vi) contaminated land (vii) acid sulfate soils and (viii) traffic etc

## 1.1 Background

Bravus Mining and Resources (Adani Mining Pty Ltd) (AMPL) (Bravus) is developing the Carmichael Mine and the Carmichael Rail Network Project. The Carmichael Mine is operated and managed by Bravus Mining and Resources (Adani Mining Ptd Ltd) (the Company). The non-resident workforce accommodation supports the overall project Carmichael Coal Mine and Rail Project (the CCMR Project).

The non-resident workforce accommodation has been used to facilitate construction and operation of the CCMR Project.

The non-resident workforce accommodation was constructed under APC 2023/001 for Non-Resident Workforce Accommodation to support the CCMR Project which includes the upgrade of the Mine Access Road (MAR) as required under the Infrastructure Access Agreement executed with the Isaac Regional Council (IRC) in June 2019. The Mine Access Road is the access to the Carmichael Mine from Gregory Development Road and includes Elgin Road and Moray Carmichael Boundary Road.

## 1.2 Change Application

There remains an ongoing delay associated with the construction of the MAR including: The construction of the Mine Access Road has been delayed due to the Isaac Regional Council instituting Supreme Court Proceedings against Adani Mining and Carmichael Rail Network in December 2023 in relation to the design of the road. Consequently, all construction works are on hold pending resolution of the Court proceedings. The use of the non-resident workforce accommodation will continue to be used to support the Project including the MAR maintenance, ongoing, until the proposed date approved term.

Change in the approved term (Condition 2.2) to “The use is approved until construction completion of the Elgin Road and Moray Carmichael Road (the approved term) to facilitate the construction of the Elgin Road and Moray Carmichael Road in accordance with the Infrastructure Access Agreement executed with Isaac Regional Council (IRC)”.

# 2 Description of the Subject Land and Locality

The non-resident workforce accommodation (Camp 6) is located in the Galilee Basin, approximately 160 km north-west of Clermont in Central Queensland.

The subject land, location and access to application area is as described in Section 2 of Attachment 2 – Change a Land Use for Non-Resident Workforce Accommodation in the Galilee Basin State Development Area – Planning Report for Rail Camp 6 dated September 2014 (**Attachment B**).

The Non-Resident Workforce Accommodation is located within the Isaac Regional Council (IRC) Local Government Area (LGA). The subject land on which the development is located, Lot 662 on Survey Plan 316209 is a Rolling Term Lease TL 0/239745 (Pastoral) held by AMPL.

A current state tenure Search is presented in **Attachment C**.

Owners Consent to the application to Change a Land Use for Non-Resident Workforce Accommodation in the Galilee Basin State Development Area (Ref: APC2023/001) is provided as **Attachment D**.

# 3 The Proposed Development

There are no proposed changes to the development. The proposed change is to the expiry date of the current approval and the application to the wider CCMR Project.

Following completion and commissioning of the rail construction, development of the land under APC 2023/001 for Non-Resident Workforce Accommodation was reduced in capacity in 2023 from 500 beds to a 300-bed development. The land once occupied by the accommodation facilities removed is adjacent to remaining accommodation units and workforce recreation areas. This land is now used and maintained as recreational common areas for the non-permanent workforce.

This proposed change retains a non-resident workforce accommodation capacity to support the ongoing construction of the 96.9km upgrade of the Elgin Road and Moray-Carmichael Boundary Roads (MAR) which includes several major waterway crossing upgrades. The Camp is also used for rail and mine purposes associated with the CCMR Project.

The non-resident workforce accommodation will continue to be used to support the Project including the MAR maintenance, ongoing, until the proposed date 'approved term', per Condition 2.2 MCU Approval APC2023/001. Figure 1 provides an aerial image of current subject land.




Figure 3-1: Location of the Carmichael Mine and Moray Downs

# 4 Current and Historic Land Uses

The current use of the Subject Land is Non-Resident Workforce Accommodation. The dominant land use prior to the use as Non-Resident Workforce Accommodation was low intensity cattle grazing.

# 5 Other Approvals required for the Development

No other approvals are required for the continued use of the Non-Resident Workforce Accommodation.

Development of the land has been undertaken in accordance with MCU Approval APC2023/001 (**Attachment E**) and as described in Change a Land Use for Non-Resident Workforce Accommodation in the Galilee Basin State Development Area – Planning report for Rail Camp 6 dated September 2014 (**Attachment B**).

Environmental Authority EA0002209 for Environmentally Relevant Activity (ERA) ERA 63 (Sewage Treatment) is held by Adani Mining Pty Ltd is in place for the development (refer **Attachment F**).

# 6 Operational Works necessary for the MCU

No operational works are proposed. There are no proposed changes to the development.

The Future Approvals stated in 5.3 of the Planning Report for Rail Camp 6 (GHD, 2014) see **Attachment B** have either been obtained or are not required.

# 7 Adjacent Land Uses

The land is owned by AMPL.

The surrounding land is used is associated with low intensity cattle grazing and rail transport associated with the CCMR Project. There are no additional impacts on surrounding land uses from the proposed change.

# 8 Galilee State Development Area Planning Scheme and Adverse Impacts

The development (including the proposed change to Condition 2.2) satisfies the strategic vision, overall objectives, the preferred development intent of the precincts, and relevant assessment described in Section 7 of the Planning Report for Rail Camp 6 (GHD, 2014) see **Attachment B**.

The development (including the proposed change to Condition 2.2) will not vary impacts associated with the existing development as described in Section 8 of the Planning Report for Rail Camp 6 (GHD, 2014) see **Attachment B.**

Development of the land under APC 2023/001 has not generated any complaints from adjacent landholders or the public in relation to compliance with air, dust, noise, waste, nuisance or water as they apply to conditions of the MCU 2023/001 (**Attachment E**) or Environmental Authority EA 0002209 (**Attachment F**).

# 9 Conclusion

The non-resident workforce accommodation on the subject land was constructed under and consistent with an approved MCU Approval APC 2023/001 in the Galilee State Development Area to support construction and operation of the Carmichael Coal Mine and Rail project.

There remains an ongoing delay associated with the construction of the MAR including: The construction of the Mine Access Road has been delayed due to the Isaac Regional Council instituting Supreme Court Proceedings against Adani Mining and Carmichael Rail Network in December 2023 in relation to the design of the road. Consequently, all construction works are on hold pending resolution of the Court proceedings. The use of the non-resident workforce accommodation will continue to be used to support the Project including the MAR maintenance, ongoing, until the proposed date approved term.

With the proposed change the 'approved term' stated in Condition 2.2 does not lead to any different or additional impacts and remains consistent with the Galilee Basin State Development Area (SDA) Development Scheme.

# Appendix A | Change application for SDA Approval MCU APC 2023/001

Queensland Government

# The Coordinator-General

**State development areas: Application and request form**

## Before you start

## Important information

There are a number of different types of applications or requests relating to development within a State development area (SDA).

The most common of these is an SDA application for a material change of use (MCU). An MCU is:

- the start of a new use of the premises
- the re-establishment on the premises of a use that has been abandoned
- a material change in the intensity or scale of the use of the premises.

A development scheme may also provide for some or all of the following applications and requests:

- request for pre-lodgement consideration
- SDA application for:
  - reconfiguring a lot
  - operational work
- request to change an SDA application
- change application for an SDA approval
- request to state a later currency period
- request to carry out prior affected development
- request for approval of a plan of subdivision.

It is important to note there are some variations in terminology used in the development schemes as a result of amendments to the *State Development and Public Works Organisation Act 1971*. For more information, read the Applications and requests advisory note.

Before making an application or request, refer to the relevant development scheme.

There are a number of different types of applications or requests relating to development within a State development area (SDA).

The most common of these is an SDA application for a material change of use (MCU). An MCU is:

- the start of a new use of the premises
- the re-establishment on the premises of a use that has been abandoned
- a material change in the intensity or scale of the use of the premises.

A development scheme may also provide for some or all of the following applications and requests:

- request for pre-lodgement consideration
- SDA application for:
  - reconfiguring a lot
  - operational work
- request to change an SDA application
- change application for an SDA approval
- request to state a later currency period
- request to carry out prior affected development
- request for approval of a plan of subdivision.

It is important to note there are some variations in terminology used in the development schemes as a result of amendments to the *State Development and Public Works Organisation Act 1971*. For more information, read the Applications and requests advisory note.

Before making an application or request, refer to the relevant development scheme.

## How to complete forms

All SDA application and request forms are to be submitted via the approved online forms.

The Coordinator-General can only accept SDA applications that are properly made. For an SDA application to be properly made, you must:

- complete all fields
- upload the necessary documentation
- pay the relevant fee.

For certain applications or requests, a planning report, environmental impact statement (EIS) or impact assessment report (IAR) (draft and/or final) and evaluation report on the EIS or IAR (if prepared) may also be required.

The information provided must be detailed enough to enable the Coordinator-General to adequately assess the application or request. Insufficient information may result in the Coordinator-General requesting additional information.

If for any reason you cannot submit the forms online you can contact the SDA Division on 1800 001 048 or via sdainfo@coordinatorgeneral.qld.gov.au to have a hard copy form sent out to you.

## Fee waiver request

Prior to making an application or request, a proponent may request that the Coordinator-General waive all or part of the relevant fee.

If you would like to request a fee waiver, a written request providing sufficient grounds for the waiver must be made as part of a pre-lodgement consideration.

For more information, read the Guideline to state development area fees.

☑ I have read and understood the requirements for requesting a fee waiver. *

## Privacy and security

The Coordinator-General collects personal information from you, including information about your name, email address, address, and telephone number. We collect this information to process, assess and make decisions about your application.

Your personal information will be used and may be disclosed publicly on the Department's website, and/or provided to third parties and other government agencies in the course of processing, assessing and making a decision about your application, and as authorised or required by law.

Your personal information will be handled and protected in accordance with the *Information Privacy Act 2009* and the Department's Privacy and Security Statement.

☑ By completing the form/s you agree to our Privacy and Security Statement. *

## Disclaimer

All information that is provided as part of this application or request, including any further information requests, may be publicly released on the Department's website, and/or provided to third parties and other government agencies to process, assess, and make a decision about your application.

All information will be stored on the Departmental files as required by the *Public Records Act 2002* and may be disclosed for purposes relating to the processing and assessment of the application or as authorised or required by law.

☑ By completing the form/s you have agreed to this disclaimer. *

## Application type

## State development area

Select state development area *

- ○ Abbot Point State Development Area
- ○ Bromelton State Development Area
- ○ Bundaberg State Development Area
- ○ Cairns South State Development Area
- ○ Callide Infrastructure Corridor State Development Area
- ◉ Galilee Basin State Development Area
- ○ Gladstone State Development Area
- ○ Mackay State Development Area
- ○ Stanwell-Gladstone Infrastructure Corridor State Development Area
- ○ Surat Basin Infrastructure Corridor State Development Area
- ○ Townsville State Development Area

## Application or request

Select application or request type *

- ○ Request for pre-lodgement consideration
- ○ SDA application for a material change of use
- ○ Request to change an SDA application
- ◉ Change application for an SDA approval
- ○ Request to state a later currency period
- ○ Change application for an SDA approval and request to state a later currency period
- ○ Request to carry out prior affected development

A request for authorisation of self-assessable operational work is available to be submitted in conjunction with this SDA application.

- ☐ Request for self-assessable operational work

## Proponent details

## ABN

Enter your Australian Business Number (ABN)

87 601 738 685

## Proponent name

The proponent is the person responsible for making the application and need not be the owner of the land. A decision notice will be issued to the proponent.

Title

Mr

First name *

Joshua

Last name *

Moore

Company name

Carmichael Rail Network Pty Ltd

## Applicant

Applicants details *

Same as above  Alternate contact

Title

Mr

First name

Joshua

Last name

Moore

Company name

Carmichael Rail Network Pty Ltd

## Postal address

Address line 1 *

GPO Box 2569

Address line 2

Suburb *

Brisbane

State *

QLD

Postcode *

4001

## Contact details

Phone number (Australia) *

0448876960

Mobile number *

0448876960

Email address *

joshua.moore@bravus.com.au

Confirm email address *

joshua.moore@bravus.com.au

## Property details

## Land owner's consent

See 'Application stage' of the relevant development scheme for owner's consent requirements.

Is owner's consent required for this SDA application or request? *

- ○ Yes
- ◉ No

## Application details

## SDA application

Identify the SDA application to which this change application applies.

Reference number *

APC2023/001

Lot on plan description (e.g. Lot 3 RP 12345)

Lot 662 on SP316209

Date approved

22 Jun 2023

Date approval lapses

## Proposed change/s

Provide a brief description of the proposed change being requested and identify the condition number/s to which the proposed change relates.

**Change 1** *

Change in the 'approved term' to “The use is approved until construction completion of the Elgin Road and Moray Carmichael Road (the approved term) to facilitate the construction of the Elgin Road and Moray Carmichael Road in accordance with the Infrastructure Access Agreement executed with Isaac Regional Council (IRC)”.

Condition number *

Condition 2.2

## Application process sought

What change application process is being sought? *

(●) a minor change ( ) not a minor change

For a definition of a minor change please read the relevant development scheme.

## Definition of minor change

Demonstrate that the proposed change/s meets the definition of a minor change.

**Change 1** *

The change does not substantially alter the original SDA approval as the non-resident workforce accommodation (Camp) is used for the Carmichael Coal Mine and Rail Project to support infrastructure including the upgrade of the Mine Access Road (MAR); a change to the duration is minor considering the ownership of the land (Lot 662 on SP316209 is owned by Adani Mining Pty Ltd) and the remote location of the Camp (no close sensitive receptors). Refer to the attached Mine Change Assessment.

## Supporting information

Please upload all supporting information here and ensure that file names clearly reflect the type of document uploaded e.g. survey plan, traffic report, site drawing.

The information provided must be detailed enough to enable the Coordinator-General to adequately assess your application or request. Insufficient information may result in the Coordinator-General requesting additional information.

The information provided must be detailed enough to enable the Coordinator-General to adequately assess your application or request. Insufficient information may result in the Coordinator-General requesting additional information.

| File Name | Size |
|---|---|
| Camp 6 and the Mine Access Road.pdf | 2.47 MB |
| Minor Change Assessment - CRN Updated 22042025.docx | 21.45 kB |
| Letter -APC2023001 Change application SDA approval.pdf | 561.07 kB |

# Declaration

## Applicant declaration

- [x] This document is a true representation of the submission I have prepared. By transmitting it electronically to the Coordinator-General, and the Coordinator-General agreeing to accept it electronically, it has the same status as if I had signed it. I understand that it is an offence to give the Coordinator-General a document that contains information known to be false or misleading. *

Applicants name *

Joshua Moore

Date

24 Apr 2025

## Payment details

## Fee waiver

Have you received a fee waiver? *

- ○ Yes
- ◉ No

## Relevant fee

To determine the relevant fee, read the Guideline to State development area fees together with the relevant development scheme or contact the Office of the Coordinator-General on 1800 001 048 or via sdainfo@coordinatorgeneral.qld.gov.au.

Relevant fee amount *

$ 15,443.25

## Payment type

Please confirm your preferred method of payment. *

- ○ Credit/Debit card
- ◉ Direct deposit

**Account name:** Department of State Development, Infrastructure, Local Government and Planning
**BSB:** 064-013
**Account no:** 10007096
**Reference:** SDA proponent's name e.g. SDASmithJonesPL

# Appendix B | Change a Land Use for Non-Resident Workforce Accommodation in the Galilee Basin State Development Area – Planning report for Rail Camp 6 dated September 2014








Adani Mining Pty Ltd

# CHANGE A USE OF LAND FOR NON-RESIDENT WORKFORCE ACCOMMODATION IN THE GALILEE BASIN STATE DEVELOPMENT AREA

## Planning Report for Rail Camp 6

SEPTEMBER 2014

# Table of contents


1. Introduction ..... 1
   - 1.1 Purpose of report ..... 1
   - 1.2 Development application components ..... 1
   - 1.3 Approval history ..... 2
   - 1.4 Summary of key application details ..... 4
2. Subject land and locality ..... 5
   - 2.1 Location ..... 5
   - 2.2 Access ..... 5
   - 2.3 Tenure ..... 8
   - 2.4 Physical characteristics and environmental conditions ..... 8
   - 2.5 Compatibility with existing and future land uses ..... 10
3. Development proposal ..... 11
   - 3.1 Overview of the proposed development ..... 11
   - 3.2 Built form and design specifics ..... 12
   - 3.3 Infrastructure requirements ..... 15
   - 3.4 Environmental Authority ..... 16
4. Construction and operation phase ..... 18
   - 4.1 Staging and timing ..... 18
   - 4.2 Construction detail ..... 18
   - 4.3 Operation details ..... 18
   - 4.4 Transport of materials, equipment and personnel ..... 18
   - 4.5 Decommissioning and rehabilitation ..... 18
5. Statutory considerations ..... 20
   - 5.1 Commonwealth approvals ..... 20
   - 5.2 Other planning and environmental approvals ..... 20
   - 5.3 Future approvals ..... 22
6. Assessment against State legislation ..... 23
   - 6.1 Overview ..... 23
   - 6.2 State planning policy ..... 23
   - 6.3 Regional plan ..... 33
   - 6.4 State development assessment provisions ..... 39
7. Assessment against development scheme ..... 40
   - 7.1 Overview ..... 40
   - 7.2 Proposed use as defined in development scheme ..... 40
   - 7.3 Intent or purpose of any relevant land-use precinct ..... 42
   - 7.4 Objectives of the development scheme ..... 42
   - 7.5 Assessment criteria of the development scheme ..... 44

7.6 Relevant referral agencies ..... 52
7.7 Public notification ..... 53
7.8 Consultation ..... 54
8. Impacts of proposal ..... 55
8.1 Introduction ..... 55
8.2 Land use ..... 55
8.3 Landscape character and amenity ..... 55
8.4 Surface hydrology ..... 56
8.5 Groundwater ..... 58
8.6 Geology and soils ..... 59
8.7 Terrestrial ecology ..... 62
8.8 Aquatic ecology ..... 69
8.9 Air environment ..... 70
8.10 Noise and vibration ..... 71
8.11 Transport ..... 72
8.12 Greenhouse gasses ..... 73
8.13 Social and economic environment ..... 74
8.14 Cultural heritage ..... 74
8.15 Health and safety ..... 75
8.16 Environmental management summary ..... 75
9. Compliance with Coordinator General's conditions ..... 78
9.1 Overview ..... 78
9.2 Coordinator General's relevant conditions ..... 78
9.3 Adani relevant project commitments ..... 81
10. Conclusion ..... 85
11. References ..... 86

# Table index

Table 1 Key application details ..... 4
Table 2 Overview of build form and design specifics ..... 12
Table 3 Desired regional outcomes ..... 35
Table 4 GBSDA land use ..... 40
Table 5 Development assessment against the objectives of the GBSDA ..... 42
Table 6 Development assessment against the assessment criteria of the GBSDA ..... 45
Table 7 Assessment against additional assessment criteria for development in the Mining Services Precinct in the GBSDA ..... 50
Table 8 Relevant Recommendations from CG's Report ..... 78
Table 9 Rail camp 6 project commitments ..... 81

# Figure index


Figure 1 Project location....6
Figure 2 Site location....7
Figure 3 Climate data for Bulliwallah/Clermont....9
Figure 4 Application for an environmental authority....22
Figure 5 SPP - MSES biodiversity mapping....26
Figure 6 SPP – Flood hazard....30
Figure 7 SPP – Bushfire hazard....31
Figure 8 Regional plan land use designation....34
Figure 9 GBSDA precincts....41
Figure 10 Watercourses and wetlands....57
Figure 11 Soils and geology....60
Figure 12 DNRM Regional ecosystem mapping/regrowth/essential habitat....64
Figure 13 Broad vegetation communities and fauna habitat types....65


# Appendices


Appendix A – Application forms

Appendix B – Land owners consent / title search

Appendix C – Project drawings

Appendix D – EMR / CLR search

Appendix E – Traffic Impact Assessment

Appendix F – Stormwater Management Plan

Appendix G – Electrical Report

Appendix H – Supporting Information for ERAs

Appendix I – Species List

Appendix J – Rehabilitation Plan

Appendix K – SDAP Code Assessment

# 1. Introduction

## 1.1 Purpose of report

This planning report has been prepared by GHD Pty Ltd (GHD) on behalf of Adani Mining Pty Ltd (Adani) as a supporting information document for proposed works located at Moray Bulliwallah Road (approximately 45km west of Gregory Developmental Road), more formally described as Lot 662 on Crown Plan PH1491.

This development application seeks a 'Change a Use of Land' (CUL) for non-resident workforce accommodation required for the construction of a 407 bed temporary rail construction accommodation camp (Rail Camp 6) in the Galilee Basin State Development Area (GBSDA) for the proposed Carmichael Coal Mine and Rail Project. The proposed Rail Camp 6 is intended to temporarily accommodate 407 construction personnel and is comprised of single storey temporary accommodation buildings that are support by communal mess, office and recreation facilities.

Also sought as part of this development application is an environmental authority for Environmentally Relevant Activity (ERA) 63 (Sewage Treatment).

## 1.2 Development application components

### 1.2.1 'Change a use of land' application

The development application comprises a CUL for non-resident workforce accommodation for the temporary rail construction accommodation camp within the GBSDA in accordance with the *State Development and Public Works Organisation Act 1971* (SDPWO Act). Pursuant to Section 8 (1) of the *Development Scheme for the Galilee Basin State Development Area 2014,* this application is to be submitted to and assessed by the Office of the Coordinator-General (CG). A copy of the GBSDA Development Application Form is provided in Appendix A.

The CUL application is to be assessed against the objectives of the Development Scheme for the GBSDA, and the land use intents of the applicable land use precinct within which the site is located. In accordance with Section 9.2 of the Development Scheme, the CG may waive the referral stage of the assessment process if the application has been subject to another referral process.

As outlined in Section 1.3 of this report, this application has been prepared in accordance with the EIS document for the Carmichael Coal Mine and Rail Project. The EIS has undergone extensive referral as part of the EIS process. In accordance with the Development Scheme, this application will be referred to Isaac Regional Council (IRC) as the applicable local government. It will also be referred to the Department of Transport and Main Roads (DTMR) as a concurrence agency, in accordance with Schedule 7, Table 3, Item 2 of the *Sustainable Planning Regulation 2009*.

Further information with regard to the development proposal is provided in Section 3 of this report.

An assessment of the proposal against the Development Scheme for the GBSDA is provided in Section 7 of this report.

### 1.2.2 Environmental authority application

This development application also seeks an environmental authority for ERA 63 (Sewage Treatment).

The environmental authority will be submitted to and assessed by the Department of Environment and Heritage Protection (DEHP).

For further information with regard to this component of the development application, refer to Section 3.4 of this report.

## 1.3 Approval history

### 1.3.1 Carmichael Coal Mine and Rail Project

#### *Overview*

Adani proposes to develop an open cut and underground thermal coal mine in the north Galilee Basin known as the Carmichael Coal Mine and Rail Project. The proposed mine will have a total per annum production of approximately 60 million tones and an operational lifespan of 60 years. The mine site is situated approximately 160km northwest of Clermont and is proposed to be serviced by a new 179km rail corridor along which all coal will be transported.

Also proposed by Adani is the North Galilee Basin Rail Project, which will comprise the development of an approximately 300km long standard gauge, greenfield rail line with an operational capacity of up to 100 million tonnes per annum. The alignment will run from the proposed Carmichael Coal Mine and Rail Project dual gauge line in the vicinity of Mistake Creek and head northward to connect with supporting infrastructure at the Port of Abbot Point, near Bowen, Queensland. The North Galilee Basin Rail Project is subject to a separate EIS approvals process.

The construction of the proposed Carmichael Coal Mine and Rail Project coal mine and rail corridor requires the employment of large volumes of workers that are separate from those that will be employed when the mine is in operation. These workers must be accommodated in locations that are within close proximity to the rail corridor and the mine site itself to reduce travel times to the required work locations. Given the remote nature of the locality and lack of accommodation infrastructure, temporary construction workers accommodation camps must be established.

The construction of the required rail corridor involves the establishment of a total of six temporary rail construction camps at regular intervals along the rail corridor each containing a total of approximately 400 beds. The construction of the mine facility requires the establishment of one camp located at the mine site itself accommodating a total of 510 beds. The Carmichael Coal Mine and Rail Project therefore involves the establishment of a total of seven temporary workers camps.

This development application for CUL is relevant to one of the proposed 407 bed rail construction camp only; termed Rail Camp 6. For further information, refer to Section 5.3 of this report.

#### *Environment Protection and Biodiversity Conservation Act 1999*

The Carmichael Coal Mine and Rail Project was declared a 'controlled action' requiring assessment and approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Commonwealth Minister for the Environment's approval of the 'controlled action' subject to conditions was granted on 24 July 2014.

Further information regarding the EPBC Act is provided in Section 5.1 of this report.

### *Environmental Impact Statement*

Adani began formal environmental assessment of the Carmichael Coal Mine and Rail Project in 2010, through preparation of an Environmental Impact Statement (EIS), to address State and Federal government approval requirements.

Adani worked closely with stakeholders and undertook a range of technical, environmental, social and cultural investigations to develop the EIS, which describes the:

- Current environment
- Environmental impacts
- Ways of avoiding, mitigating or offsetting these impacts.

The EIS was released by the CG for public and local, State and Federal government agency consultation from Saturday, 15 December 2012 to Monday, 11 February 2013. All submissions received during public consultation were assessed by the CG and Adani was instructed to prepare a Supplementary EIS (SEIS) in order to address and respond to submissions made during the public consultation of the EIS.

### *Supplementary Environmental Impact Statement*

The SEIS provides revised and additional environmental studies undertaken to reflect the amendments made to the Carmichael Coal Mine and Rail Project since the EIS publication and to address matters raised in submissions. It includes revised technical studies, impact assessment and management plans for a range of project issues. Adani has also undertaken engagement with stakeholders during the development of the SEIS. All submissions received during the SEIS public consultation period were assessed by the CG.

### *Additional Information to the Environmental Impact Statement*

The Additional Information to the EIS (AEIS) provides revised and additional environmental studies undertaken to reflect the amendments made to the Carmichael Coal Mine and Rail Project since the EIS publication and to address matters raised in submissions. It includes revised technical studies, impact assessment and management plans for a range of project issues.

Adani also prepared a number of draft application documents and other supporting information for future approvals in accordance with the relevant local planning scheme as part of the AEIS.

### *Coordinator-General's Report*

The CG's Evaluation Report on the Carmichael Coal Mine and Rail Project EIS was released on the 7 May 2014 and identifies that Adani will need to obtain a range of statutory approvals from the relevant State and Local Government agencies before the project can lawfully proceed. Further, this evaluation report has provided recommended or stated conditions in which this development application for CUL is required to comply with.

An assessment of the proposal's compliance in accordance with the provisions of the CG's report is provided in Section 9 of this report.

## 1.4 Summary of key application details

Key development application details are summarised in Table 1.

**Table 1 Key application details**

| Application details | |
|---|---|
| Applicant | Adani Mining Pty Ltd |
| Name of land owner/name of lessee | State Government / Lessee - Adani Mining Pty Ltd |
| Street address | Moray Bulliwallah Road – 45km west of the Gregory Developmental Road |
| Lot on plan | Lot 662 on PH1491 |
| Current land use | Mining Exploration / Cattle Grazing |
| GBSDA precinct | Mining Services Precinct |
| Development proposal | 407 bed temporary rail construction accommodation camp (Rail Camp 6) |
| Development assessment | 'Change a Use of Land' for Non-resident workforce accommodation within the GBSDA in accordance with the *State Development and Public Works Organisation Act 1971* |
| Assessment manager | CUL: CG<br>Environmental authority: DEHP |
| Referral agencies | IRC<br>DTMR<br>Refer to Section 7.6 of this report. |
| Contact details for application | Hamish Manzi – Adani Mining Pty Ltd<br>GPO Box 2569, Brisbane QLD 4001<br>reception.australia@adani.in |

# 2. Subject land and locality

## 2.1 Location

The site is located within Central West region of Queensland and is situated approximately 150km north-west of Moranbah and 45km west of the Gregory Developmental Road as generally illustrated in Figure 1. It is situated within a property known as 'Moray Downs', more formally described as Lot 662 PH1491 which has a total area of 117,000ha. The allotment is comparatively large and encompasses a vast tract of land that is intersected by various waterways and floodplains.

From a regional perspective the site is situated in an isolated location that is a substantial distance from the nearest urban centres of Clermont to the south and Moranbah to the east. The region is dominated by cattle grazing and extractive industry uses.

### 2.1.1 Site selection criteria

The location for the proposed temporary Rail Camp 6 as illustrated in Figure 2 has been determined based on a combination of environmental and logistical considerations. The generally low environmental value of the land which the proposed rail corridor traverses has generally allowed for the logistical goals for the camp location to be achieved.

The primary consideration for the location of the proposed rail camp is centred on logistical requirements and in particular the maximum distance that workers are required to travel from the camp to a work site. Due to the reduced speeds that the large vehicles which will be transporting the workers can achieve on the unsealed roads in the area, it has been determined that 40km is the maximum distance between a camp and the furthest point that workers will be required to travel to work on the rail corridor. Consequently, camps have been located approximately 80km apart.

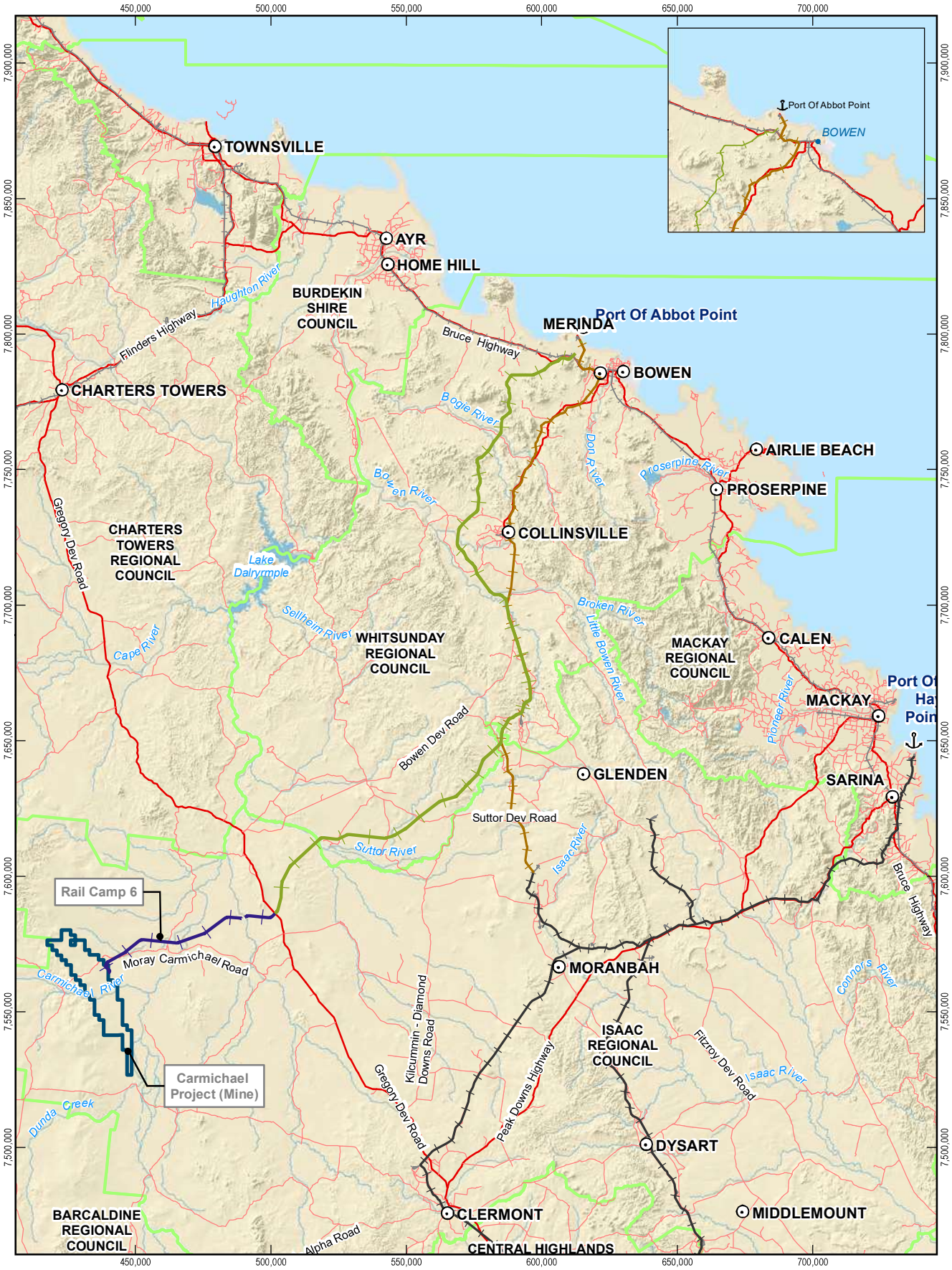
In certain instances camps have had to be relocated one to two kilometres from the optimum location due to environmental constraints. However, the logistical goals of the camp location selection process have been generally achieved and the 40km maximum travel distance will be applicable to the construction of the rail corridor.

In summary, the proposed location was decided as part of a detailed examination of the area and is considered to represent a sound combination of environmental and logistical considerations.

## 2.2 Access

As illustrated in Figure 2, access to the site will be from Moray Bulliwallah Road to the east via a 2.5km access road.

An aerial photo of the proposed development site is provided as Figure 2, identifying the site within the immediate area. It is evident from the photo below that the site is located within an area of sparse vegetation that is devoid of any permanent waterways or wetlands. The site is considered to be setback a sufficient distance from the nearby bend on North Creek.




LEGEND

- Town
- Major Port
- Other Rail Network
- Goonyella System
- Newlands System
- Major Road
- Local Road
- Watercourse
- Carmichael Project (Mine)
- Rail Package
- SP1 Rail Alignment
- NGBR Rail Alignment
- Local Government Boundaries

Based on or contains data provided by the State of QLD (DNRM) [2013]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

1:2,000,000 (at A4)

0 10 20 30 40 50

Kilometres

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

N

**Adani Mining Pty Ltd**
CUL GBSDA Rail Camp 6

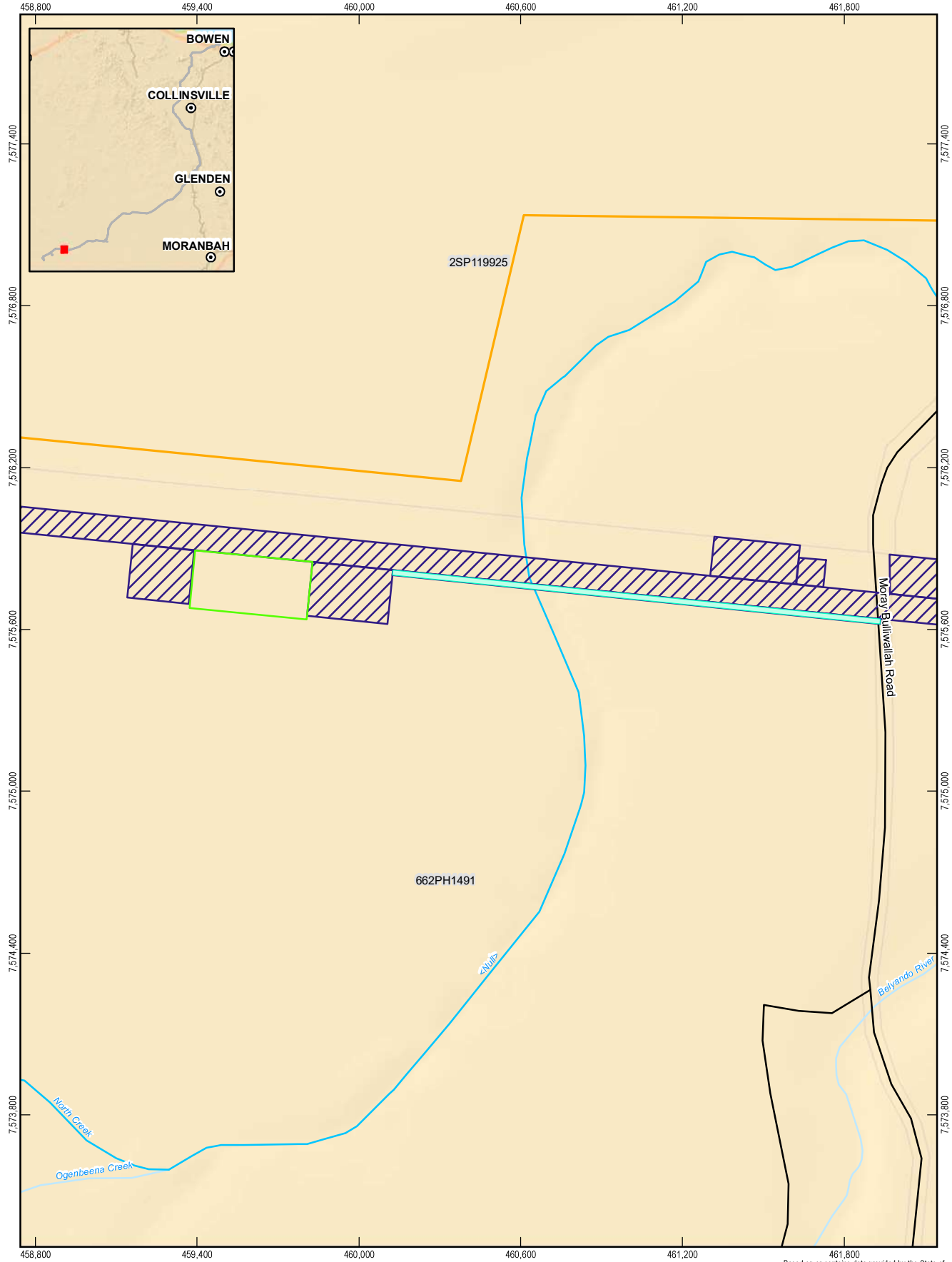
Project Location

Job Number 41-28122
Revision A
Date 23 Sep 2014

Figure 1

G:\41\28122\GIS\Maps\MXD\1600_MCU_7\41_28122_1616_rev_a.mxd
Level 9, 145 Ann St Brisbane QLD 4000 T +61 7 3316 3000 F +61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

© 2013. While GHD Pty Ltd has taken care to ensure the accuracy of this product, GHD Pty Ltd, DME, GA, ADANI and DNRM make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. GHD Pty Ltd, DME, GA, ADANI and DNRM cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.
Data Source: © Commonwealth of Australia (Geoscience Australia): Town, Railways, Watercourses (2007); DNRM: LGA, (2011), Hillshade (2009), SDA (2014); DMR: State Roads (2008); DME: EPC1690 (2010), EPC1080 (2011); Adani: Alignment Opt11 Rev3 (2014), NGBR: Alignment Opt12 Rev 1 (2014).




LEGEND

- Main Road
- Watercourse (Major)
- Watercourse (Minor)
- State Development Area Boundary
- Rail Camp 6
- Access Road
- SP1 Rail Alignment
- Cadastre

Based on or contains data provided by the State of QLD (DNRM) [2013]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

1:20,000 Paper Size A4

0 150 300 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

**Adani Mining Pty Ltd**
CUL GBSDA Rail Camp 6

| | |
|---|---|
| Job Number | 41-26457 |
| Revision | A |
| Date | 10 Sep 2014 |

# Site location

Figure 2

G:\41\28122\GIS\Maps\MXD\1600_MCU_7\41_28122_1602_rev_a.mxd

145 Ann Street Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

© 2014. Whilst every care has been taken to prepare this map, GHD, GA, DNRM, Adani make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: DNRM: Cadastre (2014), Roads (2010) SDA (2014), © Commonwealth of Australia (Geoscience Australia): Railways (2007); Adani: Project Rail Alignment, Camp Sites (2014). Created by: AJ

## 2.3 Tenure

### 2.3.1 Land ownership

The Certificate of Title states that Lot 662 on PH1491 is subject to a rolling term lease with Adani Mining Pty Ltd listed as the registered lessee. According to the Title the lease has a 30 year term commencing from 01/07/1976 which was extended to 31/12/2016.

A leaseholder's consent letter to support an application for owners consent to State Land Asset Management (SLAM) within the Department of Natural Resources and Mines (DNRM) is provided in Appendix B. Owners consent, to be provided by SLAM within DNRM will be provided to support this application in due course.

### 2.3.2 Encumbrances by easements and leases

The Certificate of Title indicates that the site is subject to the following encumbrances and interests:

1. Rights and interests reserved to the Crown by Lease No. 17665183.

## 2.4 Physical characteristics and environmental conditions

Details regarding the site's current physical characteristics and environmental conditions are provided in Sections 2.4.1 to 2.4.11 below.

### 2.4.1 Flora and fauna

The site appears to have been previously cleared as part of the former road base quarry use. As a result of the former use on the site there does not appear to be existing vegetation that is worthy of retention nor does it contain any vegetation that could not be easily re-established on the site.

The following information has been provided by Saunders Havill Group in regard to existing vegetation in addition to the species list contained within Appendix I.

*The proposed Rail Camp location at Moray Downs is to the west of tributaries associated with the Belyando River within a non-remnant area currently used for agricultural purposes. Vegetation assessment conducted within this area identified agricultural pastures dominated by non-native and weed species. Occasional native regrowth and grass species were recorded (Refer species List).*

*Due to the areas location within a disturbed agricultural setting, no habitat to support threatened species or species of conservation significance (Flora or Fauna) were observed.*

Further information is provided in Section 8.7 of this report.

### 2.4.2 Watercourses

No natural wetlands or waterways are located within the proposed camp location. It is noted that Moray Downs itself contains a number of waterway features. However, these will remain unaffected as a result of the proposed Rail Camp 6 construction.

### 2.4.3 Climate

Historical climatic data was obtained from the Bureau of Meteorology (BOM) for Bulliwallah (BOM station #036010 and Clermont (Clermont Airport Qld BOM Station #035124). Figure 3 shows that mean monthly rainfall and maximum temperature are greatest in January, November and December. For the Clermont and Bulliwallah weather observation sites, the mean annual maximum temperature is 28.95 °C and rainfall is 599.70 mm. These matters are being considered as part of the management and planning of construction activities.

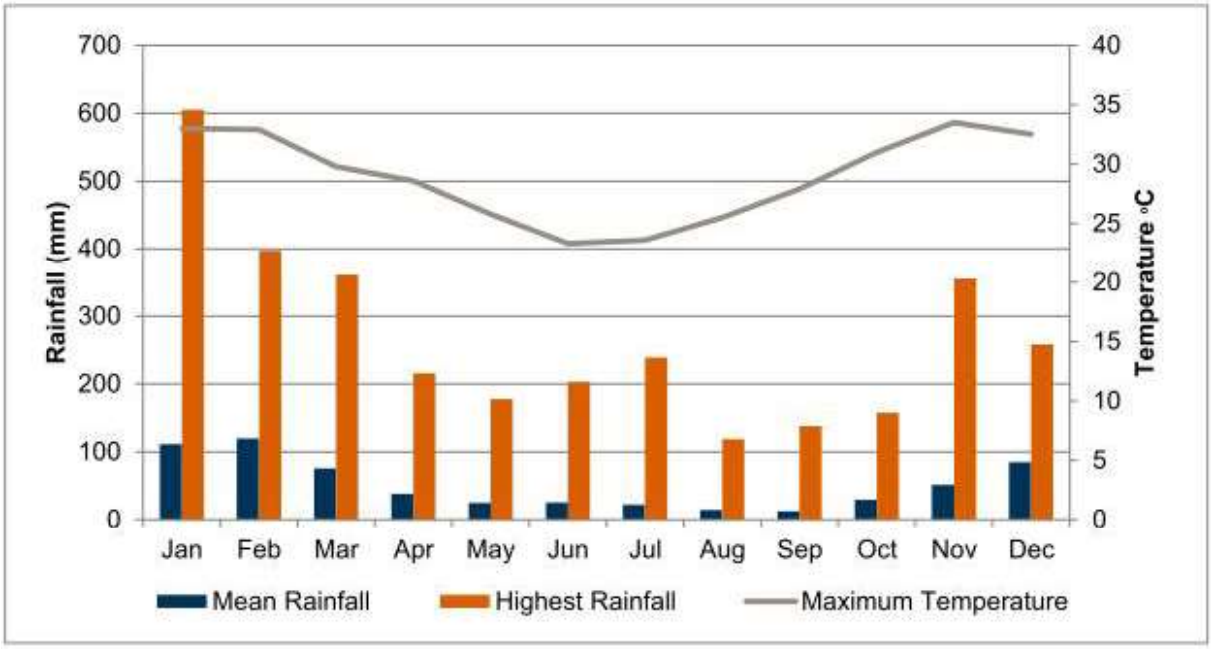



**Figure 3 Climate data for Bulliwallah/Clermont**

### 2.4.4 Soils and geology

The site is not identified as being at risk of the occurrence of acid sulfate soils as it is located inland and above 20m (Australian Height Datum) AHD. Acid sulfate soils are not considered to be a risk factor in non-coastal areas and on land above 20m AHD. Refer to Section 8.6 of this report for further information.

### 2.4.5 Topography

The site is generally flat with only a slight change in level. The site's highest point is at RL207AHD and its lowest point is RL205AHD. It is noted that the distance between these two levels is significant and the grade on the site is extremely low.

### 2.4.6 Ecological features/protected areas

The camp site is not identified as containing any regrowth vegetation, assessable vegetation or endangered ecosystems on any of the vegetation mapping under the *Nature Conservation Act 1992* (NC Act) and *Vegetation Management Act 1999* (VM Act). Refer to Section 8.7 of this report for further information.

### 2.4.7 General environmental conditions

The site land is currently used for rural grazing. The development site is generally flat without distinctive topographical features.

### 2.4.8 Cultural heritage values

A search of cultural heritage registers has not identified any areas of indigenous or non-indigenous cultural heritage value within the Rail Camp 6 footprint. Additionally, an assessment of cultural heritage of the Jangga People has confirmed that there are no cultural heritage values at the site.

### 2.4.9 Flooding and drainage

The site is not located within a designated flood or floodplain area and is therefore not subject to flooding.

### 2.4.10 Agricultural land

The site is not considered to have any significant agricultural value except for that associated with cattle grazing.

### 2.4.11 Existing utilities and infrastructure

The site does not currently possess any type of trunk infrastructure connections such as electricity, water supply, sewage treatment or telecommunications. Details of the required infrastructure to service the proposed development is provided in Section 3.3 of this report.

## 2.5 Compatibility with existing and future land uses

The Galilee Basin is approximately 247,000 square kilometres west of the Bowen Basin, extending north past Hughenden, south to Charleville and west beyond Winton and Middleton. The GBSDA was declared in June 2014 and provides for the establishment of mining and rail related development, including essential infrastructure. The GBSDA will enable a coordinated approach to developing multi-user common rail corridors whilst minimising impacts on landholders and the environment.

The proposed Rail Camp 6 is necessary infrastructure to support the construction of the rail corridor for the Carmichael Coal Mine and Rail Project. Adani has worked with the CG throughout the EIS process to ensure that the proposed rail alignment, coal mine, and the subsequent positioning of Rail Camp 6 does not prejudice the viability of the GBSDA in terms of future development.

An assessment of the proposal against the relevant requirements of the Development Scheme for the GBSDA that may be applicable to the development is provided in Section 7 of this report.

# 3. Development proposal

## 3.1 Overview of the proposed development

This report provides a town planning assessment in support of the proposed temporary construction accommodation camp located approximately 150km west of Moranbah on land described as Lot 662 on PH1491. The site is located within a cattle grazing property colloquially known as 'Moray Downs'.

The proposed facility represents the sixth of six camps associated with the construction of a new rail corridor that is proposed to service the proposed Carmichael Coal Mine and Rail Project to the west of the site and the North Galilee Basin Rail Project to the northeast of the Rail Camp 6 site. The rail line for the Carmichael Coal Mine and Rail Project is 179km and will link the mine site with the North Galilee Basin Rail Project. The North Galilee Basin Rail Project alignment will be approximately 300km long which will run from the proposed Carmichael Coal Mine and Rail Project and head northward to connect with supporting infrastructure at the Port of Abbot Point. Details of both projects are provided in Section 1.3 above.

The camp is intended to accommodate 407 beds and has been proposed in conjunction with five other rail camps along the proposed rail corridor which are located almost equal distances apart to ensure that workers are not required to travel in excess of 40km to access work site locations. Given the safe maximum speed for large vehicles on the roads that provide access to the length of the rail corridor, distances greater than 40km would result in unreasonable travel times to construction locations.

The isolated nature of the land that the proposed rail corridor traverses necessitates the accommodation of workers in a temporary location as the provision of accommodation within an existing urban centre is not a feasible or cost effective option to facilitate the construction process. The establishment of a temporary camp facility is therefore required in order to accommodate the large number of workers associated with the construction of the rail corridor.

The proposed camp facility has been appropriately designed from both a liveability and operational perspective and is expected to have minimal impacts upon the local environment. The camp will be essentially self-sufficient in terms of water treatment, stormwater management, wastewater treatment and wastewater disposal.

The proposal is not expected to result in any significant environmental impacts to the local area and it is proposed to rehabilitate the site and restore the land to its current pre development state upon completion of the rail corridor.

The proposal forms part of two larger infrastructure projects within the region that have been deemed to be of State Significance. When completed, the Carmichael Coal Mine and Rail Project and the North Galilee Basin Rail Project will represent a major increase in employment opportunities within the region and the establishment of the required worker accommodation is essential ensuring that the projects proceed accordingly.

As outlined throughout this report, the proposal is appropriate for the land in which it is situated and will not result in any significant adverse impacts upon the local environment.

A summary of the proposed development is outlined in Section 3.2 below.

### 3.1.1 Proposed alternatives

Other accommodation alternatives considered included housing at local towns however this was dismissed due to a variety of issues including:

- Capacity
- Drive in-drive out (DIDO) and safety concerns associated with fatigue management
- Impacts to road and pavement
- Buses and vehicles
- Lack of towns within close proximity.

## 3.2 Built form and design specifics

### 3.2.1 Overview

Development proposal details for Rail Camp 6 are provided in Table 2.

**Table 2 Overview of build form and design specifics**

| Item | Details |
|---|---|
| Total site area | 9.33ha (total lot area – 47,600ha) |
| Accommodation units | 407 beds (including two disabled units) |
| Maximum building height | Single storey |
| Open space areas | 5.68ha total including firebreak<br>Two large communal open space areas with one dedicated as a sports field<br>BBQ and shelter areas adjacent to each pod of accommodation buildings |
| Vehicular Access Points | Single access point and single exit point |
| Car Parking Allocation | 125 regular vehicle spaces<br>Two disabled spaces<br>Two bus spaces and bus drop off area |
| Effluent disposal area | 0.4ha |
| Detention basin area | 0.32ha |

### 3.2.2 Proposed development scale

The Rail Camp 6 layout plan is organised around a north-south spine and east-west path connection. The spine comprises communal buildings and facilities and recreation areas. The sequence of spaces along the spine begin with the vehicular entry to the camp, carpark and bus pickup zone, leading to the reception / office and dining facilities and then north to a large communal open space area that has outlooks to the wider landscape. The east-west central covered walkway dissects the site and provides a link between the accommodation precincts and the spine.

Nine accommodation precincts are proposed. Each precinct consists of small clusters of rooms with entries facing on to a shared covered walkway. A shared open space separates each accommodation precinct and includes seating, picnic shelters, laundry facility and a covered path to the central covered walkway.

A service area is located on the western and south western side of the camp. These areas are separated from the residential areas and pedestrian paths and cars. The service areas comprises of a loading dock for the kitchen, linen and waste facilities, a service road that provides access to the generator, water and sewage treatment plants and the laydown area.

A 30m wide firebreak is provided for the development and within this area is a detention basin collecting site water through an open swale network.

It is noted that the proposed development only involves the use of a small portion of the large allotment in which it is located. The proposed construction camp will have dimensions of approximately 435m by 215m.

### 3.2.3 Building height

The proposal involves the construction of single storey buildings only. The temporary nature of the development does not necessitate the establishment of buildings that are more than one storey in height.

### 3.2.4 Residential density

The proposed development intends to incorporate a total of 407 beds for the entire development. Given the nature of the accommodation and layout for the proposed accommodation buildings, this report will focus on the number of 'beds' as opposed to the number of accommodation 'units'. This is to allow for a certain degree of flexibility in terms of the internal layout of the proposed temporary accommodation buildings. This is considered to be essential as the temporary nature of the buildings may result in slight variation in sizing or internal layouts if buildings from different suppliers are involved.

Regardless of the internal layout of the proposed accommodation dwellings, the development proposes to establish 407 beds over a total site area of 9.33ha. Therefore, the proposal will involve a density of one person per 230m² of site area. This figure is comparable to a standard urban residential development and is not considered to be an excessive figure for population density, especially given that the residential development is ultimately temporary in nature.

### 3.2.5 Setbacks and separation distances

Given the isolated location of the site and the comparatively large size of the allotment in which it is situated, setback distances are not considered to be a significant issue for assessment as part of the proposal.

### 3.2.6 Communal Open Space

The proposed development includes a variety of communal open space areas. The open space is provided in the form of three types of areas which are described as follows:

- Outlying Communal Open Space

  The communal open space located at the south western corner of the site is intended to be used for more formal sporting type uses that require large amount of space. It is anticipated that football and cricket games will be played in this space.

- Central Communal Open Space

  The central communal open space is anticipated to be used for informal sports and as a general recreation area.

- BBQ Breakout Areas

  The smaller open spaces areas adjacent to individual accommodation units are intended to be a place for social interaction and as a retreat that is close to workers place of accommodation.

### 3.2.7 Vehicle movement and car parking

Vehicular access is proposed to be gained via a new haul road that travels directly west from the Moray Bulliwallah Road. Vehicles accessing the site will enter via a single dedicated access point and will exit via a designated single exit point.

It is proposed to create a total of 125 sealed car parking spaces and two dedicated bus parking spaces as part of the proposed camp designs. An unsealed overflow parking area is also proposed to be provided in the south-western corner of the site.

A Traffic Impact Assessment report has been prepared for the proposed development and is contained within Appendix E.

An extract of the key findings and outcomes contained within this report is as follows:

*This Transport Statement set out to assess the impact of the proposed rail construction accommodation camp upon the surrounding road network and has provided advice on the transport infrastructure within the development site and its connection with Moray Bulliwallah Road and Moray Carmichael Road/Moray Carmichael Boundary Road.*

*Construction workers will be accommodated within 407 demountable units in a temporary village. Buses will collect workers and transport them to and from the rail construction sites. These buses will use tracks running alongside the rail line as construction progresses.*

*External traffic movements are expected to be low but will consist largely of heavy vehicles, and when combined with the additional heavy vehicle movements expected on Moray Bulliwallah Road and Moray Carmichael Road/Moray Carmichael Boundary Road, it is recommended that an Auxiliary Left turn (AUL) be provided at both the Camp 3 site access intersection with Moray Bulliwallah Road and the Moray Bulliwallah Road/ Moray Carmichael Road/Moray Carmichael Boundary Road intersection.*

*Aside from this, the impacts of the proposed construction camp on the external road network are expected to be negligible; therefore this transport statement has focused on the internal aspects of the site.*

*Pedestrian access within the site has been designed to facilitate pedestrian movement along desire lines between accommodation units and communal buildings, the bus stops and open space.*

*The bus stop is designed to accommodate up to three buses or two articulated buses; a sheltered waiting area has been provided of sufficient size to manage the tidal nature of workers travelling to and from the construction sites.*

*Servicing the accommodation camp will take place from a dedicated loading area and turning circle adjacent the communal buildings, as well as from a service road linking to the sewage treatment plant. It is recommended that any heavy vehicle manoeuvring and waiting areas are provided in reinforced concrete.*

*In conclusion, the development of these lands for temporary construction worker accommodation has been considered in detail from a transport perspective. The result will be the delivery of a safe internal layout for camp residents and a safe connection to the external road network for site traffic movements.*

## 3.3 Infrastructure requirements

### 3.3.1 Civil works

Construction of the rail camp will generally comprise bulk earthworks and some volume of suitable construction material for use in load bearing areas. The project will be designed in order to maximise the balance between cut and fill. However, there might be some surplus spoil from earthworks and construction of stormwater infrastructure such as the detention pond, swales and drains – mostly material that might not be suitable for reuse as fill material, based on soil properties. Spoil estimate is currently not known and this can be confirmed during detailed design which will be based on detailed geotechnical and soils report.

Any unsuitable material will be disposed of, to form embankment in non-load bearing areas, such as perimeter bunds.

Results of the site walkover has indicated that for all rail camp sites, soil conditions appears to be heavy clay black and brown soils which would not be expected to be pervious. It has also been gathered during the site visit, that this entire area is not trafficable following even light rain and vehicles sinking to their axles could be expected after heavy rains.

The proposed Rail Camp 6 is located near a former road base quarry, which has largely been scraped down to the mudstone level. The site gently falls towards the south. The bulk earthworks design will be further optimised during detailed design to account for the probable quantities of unsuitable material obtained from detailed geotechnical investigations.

Civil engineering drawings depicting the earthworks proposed as part of the development have been prepared and are contained within Appendix C. The plans submitted as part of this application also include water reticulation layout plans and sewer reticulation layout plans.

### 3.3.2 Sewage

There is no existing sewage infrastructure to service the camp site. New sewage infrastructure including a sewage treatment plant is proposed to service the camp site. As outlined in Section 3.4 below, the application seeks approval for ERA 63 as part of the proposed sewage treatment facility.

Due to the nature of the site terrain being generally flat, gravity sewer will not be applicable in some areas; therefore sewage pump stations will be installed where suitable, to transport sewer discharge into the sewage treatment plant that is proposed. Alternative sewer infrastructure solutions such as a vacuum system will be considered during detailed design.

Treated water will be generally used on areas where high-quality treated water is not required, particularly landscaped areas.

### 3.3.3 Water supply

Investigations have confirmed the availability of multiple water supply sources which will be able to service the camp. The water supply strategy for the Carmichael Coal Mine and Rail Project is currently being finalised.

The proposed water supply infrastructure for Rail Camp 6 will consist of a water treatment plant, trunk distribution main and fire water infrastructure for firefighting purposes.

### 3.3.4 Stormwater management

It is proposed to collect and store all stormwater from roofed areas of the development to ensure that erosion issues to do not occur.

A Stormwater Management Plan has been prepared for the proposed development and is provided in Appendix F.

An extract of the key findings and outcomes contained within this report is as follows:

*In preparing this conceptual stormwater management strategy preliminary water quality and quantity assessments were undertaken for rail construction camp 3.*

*The objectives of this stormwater management strategy were to meet the performance criteria outlined in this report. The outcome of this preliminary investigation has recommended the inclusion of a number of stormwater quality and quantity management measures detailed herein and summarised as follows:*

- *Numerous vegetated swales for treatment and conveyance purposes as indicatively shown on Cardno 7508/90/08/-1.02; and*
- *One constructed sediment basin as described in Sections 5 and 6, and indicatively shown on Cardno 7508/90/08/-1.02.*

*The detailed design of the treatment and detention devices will need to comply with the information outlined within the stormwater management strategy, and with the relevant authority guidelines.*

### 3.3.5 General waste management

General waste will be stored in an appropriate location on the site adjacent to the general loading area.

Waste collection will be undertaken by contractors based on the segregation of recyclables from general waste. Waste will be transported to the nearest landfill or recycling facility to the site.

### 3.3.6 Electricity supply

The proposed camp will be supplied with all required electricity by diesel generators that are typically 600kVA in size with a 20,000 litre double bunded diesel tank. For further information in regard to electricity supply, refer to the Electrical Report prepared by Cardno contained in Appendix G.

## 3.4 Environmental Authority

### 3.4.1 Overview

This development application seeks an environmental authority for ERA 63 (Sewage Treatment) as defined by Schedule 2 of the *Environmental Protection Regulation 2008* (EP Reg). The environmental authority will be submitted to and assessed by DEHP.

A report addressing the relevant ERA application requirements has been prepared by Cardno and is contained within Appendix H. It is noted that the SBMP also references ERA 8 – Chemical Storage. Recent amendments to the *Environmental Protection Act 1994* (EP Act), amended the thresholds identified in Schedule 2 of the EP Reg and as such, ERA 8 is no longer triggered as the proposal does not involve storage of greater than 500m³ of class C1 of C2 combustible liquids.

A summary of the proposed activities and the relevant ERA type is outlined in Section 3.4.2 below.

### 3.4.2 Environmentally Relevant Activity 63 – Sewage Treatment

The proposed Rail Camp 6 involves the establishment of a sewage treatment plant that will treat sewage in greater volumes than the thresholds listed in Schedule 2 of the EP Reg. The EP Reg states the following in regard to ERA 63:

1. *Sewage treatment (the relevant activity) consists of—*
   a. *operating 1 or more sewage treatment works at a site that have a total daily peak design capacity of at least 21EP; or*
   b. *operating a sewage pumping station with a total design capacity of more than 40KL in an hour, if the operation of the pumping station is not an essential part of the operation of sewage treatment works to which paragraph (a) applies.*
2. *The relevant activity does not include—*
   a. *carrying out works, other than operating a sewage pumping station mentioned in subsection (1)(b), involving only infrastructure for the collection of sewage, including for example, pipes; or*
   b. *carrying out works involving either of the following—*
      i. *operating or maintaining composting toilets;*
      ii. *treating or recycling greywater.*
   c. *operating no-release works.*

The proposed ERA involves a total peak capacity of up to 80kL per day (ADWF assuming 200L/EP/day for 407 persons) and is falls within the ERA threshold of 100 to 1500 EP.

As outlined in the report contained within Appendix H, the proposed sewage treatment associated with the proposed development meets all required standard and guidelines.

For further information, refer to Section 5.2.1 of this report.

# 4. Construction and operation phase

## 4.1 Staging and timing

Rail Camp 6 is a temporary camp that will be in operation for the entire period that is required for construction of this particular section of the railway corridor. It is estimated that this will take approximately two years to complete. Once the section of the railway corridor that is associated with the camp that is the subject of this application is completed, the status of the camp will be reassessed with the future intention of dismantling and removing the camp. In accordance with the CG's recommendations, a Decommissioning and Rehabilitation Plan will be developed and progressive rehabilitation of temporary infrastructure sites and non-operational areas will occur.

The 407 bed Rail Camp 6 will house rail construction teams and should link to the completion of the rail corridor. The camp will have a six month construction period which is expected to occur from February to August 2015. Construction of the rail component that will utilise temporary Rail Camp 6 will last two years from February 2015.

The proposed development is scheduled to commence in February 2015, subject to receipt of required development approvals.

## 4.2 Construction detail

Construction of Rail Camp 6 is proposed to occur from February 2015 until August 2015. Staff required for the construction phase will be approximately 20 fulltime employees. These employees will be accommodated at a fly camp which will remain in place until Rail Camp 6 is constructed.

The construction phase will be undertaken by a contractor, who will be responsible for the development and implementation of appropriate management plans.

## 4.3 Operation details

It is anticipated that Rail Camp 6 will operate as a 24 hour operation with 20 to 30 fulltime operational staff operating on a rotation roster. The operation of the camp will be undertaken by a selected contractor who will be responsible for all onsite operations.

## 4.4 Transport of materials, equipment and personnel

A single source contractor will be engaged for transport of materials and equipment to the site. Construction materials will be transported to the site via Mackay and/or Townsville.

Water and sewage facilities including waste will all be taken off site to licenced waste disposal facilities.

Construction staff will be accommodated at a fly camp which will remain in place until Rail Camp 6 is constructed. During the operations phase, which is the construction of the rail segment, workers will be accommodated in Rail Camp 6.

## 4.5 Decommissioning and rehabilitation

As Rail Camp 6 is a temporary camp at some point in the future it will require decommissioning and rehabilitation. The Rail Camp will be subject to standard rehabilitation methods involving the following:

- Preclearance inspection
- Site preparation (following decommissioning of camp)

- Seeding
- Maintenance
- Monitoring.

A Rehabilitation Plan and report has been prepared for the proposed camp site and is contained in Appendix J.

# 5. Statutory considerations

## 5.1 Commonwealth approvals

### 5.1.1 EPBC Act

#### Overview

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Commonwealth's principal environmental protection legislation. Pursuant to Part 3 of the EPBC Act, a person must not take an action that has, or is likely to have, a significant impact on Matters of National Environmental Significance (MNES), or on Commonwealth land, unless that person can rely on an exemption, or obtain an approval from the Commonwealth Minister.

Amongst other things, the EPBC Act sets up a mechanism for the assessment and approval of projects undertaken by proponents that might have a significant impact on MNES. There are nine MNES protected under the EPBC Act as follows:

- Listed threatened species and communities
- Listed migratory species
- Ramsar wetlands of international importance
- Commonwealth marine environment
- World heritage properties
- National heritage places
- The Great Barrier Reef Marine Park
- Nuclear actions
- A water resource, in relation to coal seam gas development and large coal mining development.

A proposal requires referral to the Commonwealth Department of the Environment (DoE) if it is likely to have a significant impact on a MNES.

#### EIS Process

The Carmichael Coal Mine and Rail Project was declared a 'controlled action' requiring assessment and approval under the EPBC Act. The Commonwealth Minister for the Environment's approval of 'controlled action' subject to conditions was granted on 24 July 2014.

The proposed Rail Camp 6 does not propose any significant impacts on MNES and no further approvals under the EPBC Act are required in addition to those sought and approved under the EIS.

## 5.2 Other planning and environmental approvals

Rail Camp 6 is a component of the Carmichael Coal Mine and Rail Project which involves the construction of a coal mine and rail corridor. Approval for the required rail corridor will be part of a separate development application package.

### 5.2.1 Environmental Protection Act 1994

#### Overview

The EP Act aims to protect Queensland's environment, while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development) (Section 3 EP Act). The EP Act is administered by DEHP.

Sections 319 and 320 of the EP Act note that all persons have a duty of care to the environment. Therefore, it is not permissible to cause environmental harm whilst undertaking any activity, unless all reasonable and practical means are taken to minimise that harm. Under the EP Act anyone undertaking an activity that may cause environmental harm must comply with the EP Act's general duty of care and approval is required for the following:

- Activities that could cause actual or potential environmental harm via the generation of emissions or through carrying out the activity
- Environmentally Relevant Activities (ERAs)
- Activities likely to cause land contamination (notifiable activities recorded on the Environmental Management Register)
- All other notifiable activities listed in Schedule 3 of the EP Act.

As detailed in Section 3.4 of this report, this development application seeks an environmental authority for ERA 63 (Sewage Treatment) as defined by Schedule 2 of the EP Reg. The environmental authority will be submitted to and assessed by DEHP.

#### Greentape reduction

The Queensland Government has implemented changes to the EP Act and EP Reg in order to streamline and fast track certain environmental approvals. These changes commenced on 31 March 2013 and are set out in the *Environmental Protection (Greentape Reduction) and Other Legislation Amendment Act 2012.*

The amendments under the EP Act have introduced eligibility criteria and standard conditions which allow individual proponents to make one of the three new application types for an environmental authority. Individual proponents (referred to by DEHP as 'operators') who are able to meet the eligibility criteria can make a standard application for an environmental authority. If an individual proponent needs to vary one or more of the standard conditions they may do so by making a variation application. Individual proponents who cannot meet the eligibility criteria can still operate by making a site-specific application. Refer to Figure 4.

A copy of DEHP's environmental authority (site specific) application form is provided in Appendix A.

Schedule 2 of the EP Reg also prescribes particular ERAs as a 'Concurrence ERA'. This means that these ERAs also require a development permit for a Material Change of Use (MCU), to be obtained under the *Sustainable Planning Act 2009*. It is noted that ERA 63 is a concurrence ERA. In this instance, a development permit for CUL for non-resident workforce accommodation is being sought under the SDPWO Act. As sewage treatment is considered ancillary to this use, this satisfies this requirement under the EP Reg.

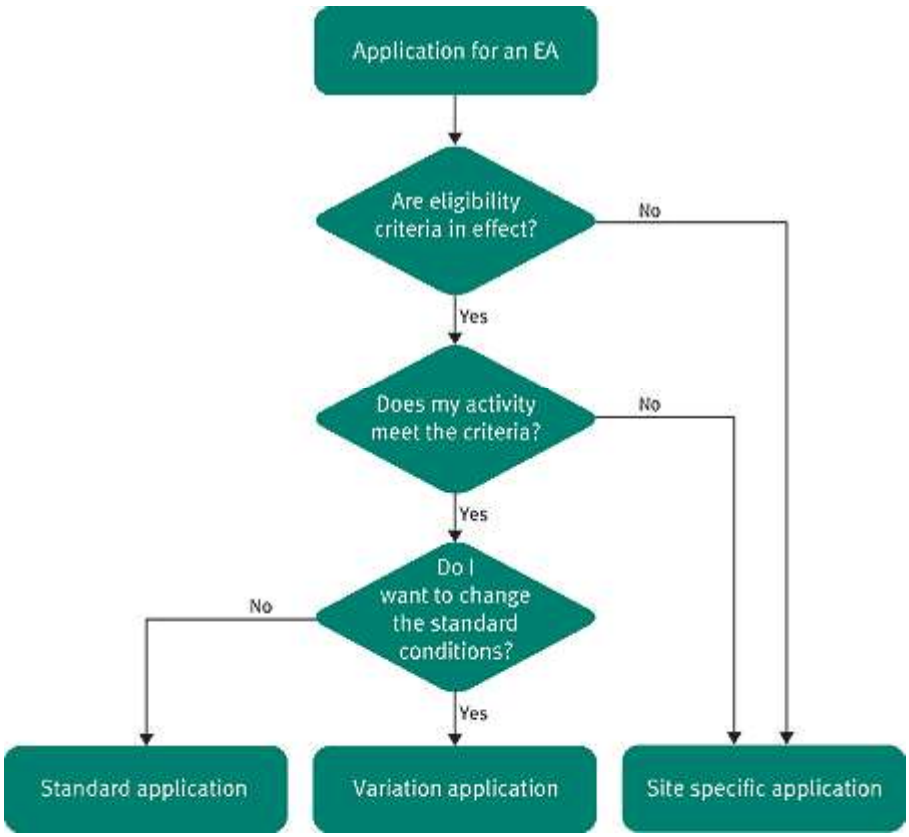



**Figure 4 Application for an environmental authority**

Source: Department of Environment and Heritage Protection

## 5.3 Future approvals

There are a number of future approvals which may be required to be obtained prior to the commencement of construction activities for the proposal and the ultimate commencement of the use. These approvals do not form a part of this CUL application and will be the subject of separate future approvals and applications. Future applications may include:

- Operational Works for:
  - Excavation and filling
  - Clearing native vegetation
  - Undertaking road works on a local government road
  - Taking or interfering with water
  - Taking or interfering with artesian or sub artesian water
- Building works
- Potential future applications for an environmental authority
- Local government applications- approval for alteration or improvement to local government controlled roads and approval for carrying out works on a road
- Compliance permit for plumbing and drainage works.

# 6. Assessment against State legislation

## 6.1 Overview

This section provides an assessment of the consistency of the proposal with the relevant state legislation, including:

1. State Planning Policy
2. Regional Plan
3. State development assessment provisions.

## 6.2 State planning policy

### 6.2.1 Overview

The State Planning Policy (SPP) was introduced in December 2013 to replace the multiple policies previously in existence. The SPP details matters of state interest in land use planning which enables development, protects our natural environment, and allows communities to grow and prosper. The assessment criteria within the GBSDA Development Scheme requires new development to demonstrate consistency with the SPP to the extent practicable where the State interests articulated by these instruments may be affected by the proposed new use. The State interests are assessed below.

### 6.2.2 Liveable communities and housing

#### Liveable communities

The following planning scheme measures recommended by the SPP are considered relevant to Rail Camp 6:

*(2a) maintaining or enhancing areas of high scenic amenity, and important views and vistas that contribute to natural and visual amenity.*

*(2b) maintaining or enhancing opportunities for public access and use of natural areas, rivers, dams and creeks.*

*(5b) locating development in areas currently serviced by state infrastructure, and where this cannot be achieved, facilitating development in a logical and orderly sequence to enable the cost-effective delivery of state infrastructure to service development.*

An assessment of the impact of Rail Camp 6 on scenic amenity is provided in Section 8.3 of this report. As concluded in these assessments, the existing landscape character is rural with the dominant land use activity being low intensity cattle grazing. Viewers travelling along Moray Carmichael Road will be able to see Rail Camp 6; however it is a temporary camp and is therefore not a long-term impact.

As discussed in Section 2.1.1 of this report, the proposed location for Rail Camp 6 was decided based on a combination of environmental and logistical factors. These included the sites' relatively low environmental value and maximum allowable travel distance for workers to the site.

The overall Carmichael Coal Mine and Rail Project is proposed in accordance with the Galilee Basin Coal Infrastructure Framework (State of Queensland 2013a), Galilee Basin Development Strategy (State of Queensland 2013b) and is within the GBSDA – the purpose of which is to facilitate development of the Galilee Basin. The Carmichael Coal Mine and Rail Project and the associated Rail Camp 6 are therefore compatible with the measure of 'facilitating development in a logical and orderly sequence to enable the cost-effective delivery of state infrastructure to service development'.

#### Housing supply and diversity

The following planning scheme measures recommended by the SPP would be considered relevant to the subject development application:

*(4) providing sufficient land to support the projected workforce population where housing is required for non-resident workforce accommodation associated with large-scale approved mining, agriculture, industry or infrastructure projects. The land should either be:*

*(a) within an existing township—where the accommodation can be appropriately integrated and potential adverse impacts on nearby sensitive uses mitigated, or*

*(b) outside an existing township—where the accommodation is completely separate from the township and self-sufficient.*

Rail Camp 6 will be completely separate from existing townships and will be self-sufficient. Accordingly, the development application would be considered compatible with this component of the SPP.

### 6.2.3 Economic growth

#### Agriculture

The site is not considered to have any significant agricultural value except for that associated with cattle grazing. Accordingly, the planning scheme measures recommended by the SPP are not considered relevant to this application.

#### Development and construction

The following planning scheme measures recommended by the SPP are considered relevant to this development application:

*(1) identifying suitable land for residential, retail, commercial, industrial and mixed use development, considering the physical constraints of the land, surrounding land uses and existing and anticipated demand, through:*

*(a) planning for the associated infrastructure required to support these land uses.*

*(4) considering state-led initiatives, including State Development Areas and Priority Development Areas and allowing for complementary surrounding land uses and services.*

The overall Carmichael Coal Mine and Rail Project is proposed in accordance with the Galilee Basin Coal Infrastructure Framework (State of Queensland 2013a), Galilee Basin Development Strategy (State of Queensland 2013b) and is within the GBSDA – the purpose of which is to facilitate development of the Galilee Basin. The Carmichael Coal Mine and Rail Project and the associated Rail Camp 6 are therefore considered to be located within suitable land for this type of development.

### Mining and extractive resources

The planning scheme measures recommended by the SPP are not considered relevant to this application. The proposed development is not within a Key Resource Area (KRA) and is not for extractive resources or coal, mineral, petroleum and gas resources.

### Tourism

The planning scheme measures recommended by the SPP are not considered relevant to this application. The proposed development is associated with the development of the resource industry in the Galilee Basin and is not expected to significantly contribute to tourism in the region.

## 6.2.4 Environment and heritage

### Biodiversity

The following planning scheme measures recommended by the SPP are considered relevant to this development application:

*For national environmental significance:*

*(1) considering matters of national environmental significance in the local government area, and the requirements of the Environment Protection and Biodiversity Conservation Act 1999.*

*For state environmental significance:*

*(2) identifying matters of state environmental significance.*

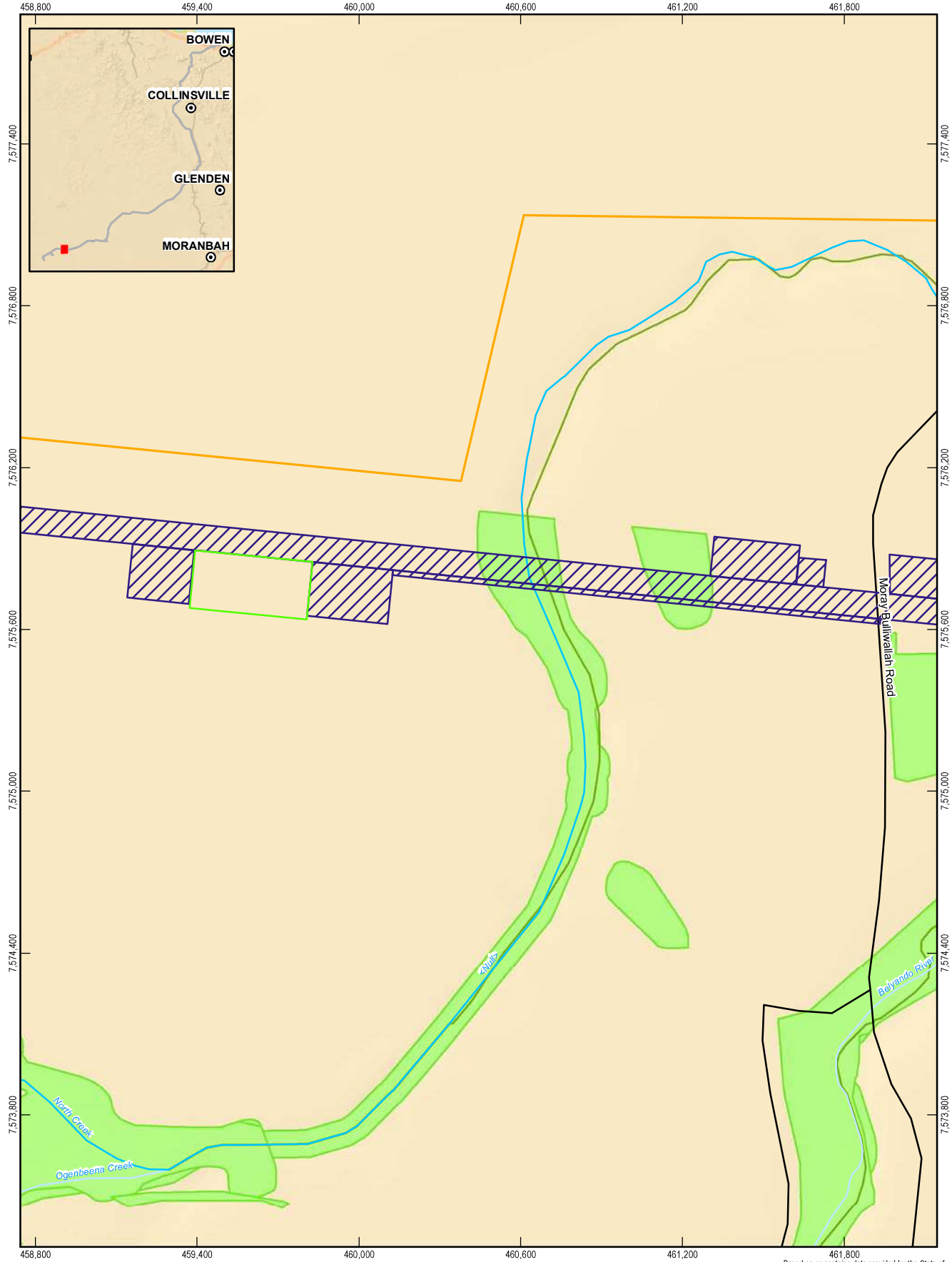
*(3) locating development in areas that avoids significant adverse impacts on matters of state environmental significance.*

*(4) facilitating the protection and enhancement of matters of state environmental significance.*

*(5) maintaining or enhancing ecological connectivity.*

Environmental values were considered in the selection of Rail Camp 6 footprint, avoiding areas of native vegetation wherever possible. As a result, the proposed location of the Rail Camp 6 footprint is within an area that appears to have been previously cleared. Remnant vegetation within the surrounding landscape consists of isolated remnants in the riparian corridor along Belyando River and in narrow fringes along the Moray Carmichael Boundary Road.

As illustrated in Figure 5, no regulated vegetation or Regional Ecosystems mapped by DNRM (Version 8, 2013) are present within the Rail Camp 6 footprint. A total of 9.33 ha of non-remnant vegetation will be cleared for the construction of Rail Camp 6. Refer to Section 8.7 of this report for further information.




Based on or contains data provided by the State of QLD (DNRM) [2013]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

1:20,000 Paper Size A4

0 150 300 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

**Adani Mining Pty Ltd**

CUL GBSDA Rail Camp 6

Matters of State Interest under the State Planning Policy
MSES Biodiversity Mapping

| | |
|---|---|
| Job Number | 41-26457 |
| Revision | A |
| Date | 10 Sep 2014 |

Figure 5

G:\41\28122\GIS\Maps\MXD\1600_MCU_7\41_28122_1606_rev_a.mxd

145 Ann Street Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

© 2014. Whilst every care has been taken to prepare this map, GHD, GA, DNRM, DEHP, Adani make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: DNRM: Roads (2010) SDA (2014), © Commonwealth of Australia (Geoscience Australia): Railways (2007); DEHP: MSES Biovdiversity (2014); Adani: Project Rail Alignment, Camp Sites (2014). Created by: AJ

### Coastal environment

The planning scheme measures recommended by the SPP are not considered relevant to this application. The proposed Rail Camp 6 is not located within a coastal management district.

### Cultural heritage

The planning scheme measures recommended by the SPP are not considered relevant to this development application. An assessment of cultural heritage of the Jangga People and a search of cultural heritage registers has not identified any areas of indigenous or non-indigenous cultural heritage value within the Rail Camp 6 site.

### Water quality

The following planning scheme measures recommended by the SPP are considered relevant to this development application:

> *(1) facilitating the protection of environmental values and the achievement of water quality objectives for Queensland waters.*
>
> *(7) including requirements that development in water resource catchments is undertaken in a manner which contributes to the maintenance and enhancement (where possible) of water quality to protect the drinking water and aquatic ecosystem environmental values in those catchments.*
>
> *(9) in an acid sulfate soil affected area, protecting the natural and built environment (including infrastructure) and human health from the potential adverse impacts of acid sulfate soils by:*
>
> > *(a) identifying areas with high probability of containing acid sulfate soils, and*
> >
> > *(b) providing preference to land uses that will avoid or minimise the disturbance of acid sulfate soils, and*
> >
> > *(c) including requirements for managing the disturbance of acid sulfate soils to avoid or minimise the mobilisation and release of contaminants*

Aquatic environmental values have been considered in the site selection and design of the rail corridor and associated infrastructure. As such, no aquatic and riparian habitats, including existing farm dams will be directly impacted by the construction of Rail Camp 6. However, construction phase activities may result in indirect and temporary impacts on aquatic systems. Disruption to aquatic habitats has the potential to impact through the localised reduction in availability and quality of drinking resources and foraging habitat, and potentially changes to riparian habitats in downstream watercourses due to changes in water quality and flow regimes. Mitigation measures are discussed in Section 8.8 of this report.

The site is not identified as being at risk of the occurrence of acid sulfate soils as it is located inland and above 20m (Australian Height Datum) AHD. Acid sulfate soils are not considered to be a risk factor in non-coastal areas and on land above 20m AHD.

### 6.2.5 Safety and resilience to hazards

#### Emissions and hazardous activities

The following planning scheme measures recommended by the SPP are considered relevant to this development application:

> *(1) locating industrial land uses and major sport, recreation and entertainment facilities in areas that avoid, mitigate and manage the adverse impacts of emissions on sensitive land uses.*
>
> *(2) locating and managing development for activities involving the use, storage and disposal of hazardous materials and hazardous chemicals, dangerous goods and flammable or combustible substances to avoid or mitigate potential adverse impacts on surrounding uses, and minimise the health and safety risks to communities and individuals.*
>
> *(3) protecting the following existing and approved land uses or areas from encroachment by development that would compromise the ability of the land use to function safely and effectively:*
>
> > *(f) industrial land in a state development area, or an enterprise opportunity area or employment opportunity area identified in a regional plan*
>
> *(6) planning for development involving the storage of hazardous chemicals that exceed a hazardous chemicals flood hazard threshold in a flood hazard area, to minimise the likelihood of inundation of flood waters from creeks, rivers, lakes or estuaries on storage areas.*

Air quality assessments undertaken for the EIS predict that the ground-level concentrations of all air pollutants released from Rail Camp 6 will not exceed the objectives of the *Environmental Protection (Air) Policy 2008* as outlined in Section 8.9 of this report. Sensitive receptors within or in close proximity to Rail Camp 6, as outlined in the *Environmental Protection (Noise) Policy 2008* include dwellings and protected areas identified under the NC Act. The offsite infrastructure is located in an isolated rural area with a small number of sensitive receptors as discussed in Section 8.10 of this report. Mitigation measures for noise and air quality impacts are discussed in Sections 8.9 and 8.10 of this report.

Use, storage and disposal of hazardous chemicals, dangerous goods and flammable or combustible substances will be undertaken in accordance with the relevant Australian Standards. A report addressing the relevant ERA application requirements has been prepared by Cardno and is contained within Appendix H. This report has been prepared in accordance with DEHP's Site Based Management Plan (SBMP) guideline licensing requirements and describes in full detail the activities to be carried out at the site and how they are to be managed. The SBMP also identifies the environmental management measures which will be adopted onsite to address potential environmental impacts associated with the proposed ERA.

The overall Carmichael Coal Mine and Rail Project is proposed in accordance with the Galilee Basin Coal Infrastructure Framework (State of Queensland 2013a), Galilee Basin Development Strategy (State of Queensland 2013b) and is within the GBSDA – the purpose of which is to facilitate development of the Galilee Basin. The Carmichael Coal Mine and Rail Project and the associated Rail Camp 6 are therefore considered to be compatible with the safe and effective operation of industrial land within a state development area.

### Natural hazards, risks and resilience

The following planning scheme measures recommended by the SPP are considered relevant to this development application:

*(3) including provisions that require development to:*

*(a) avoid natural hazard areas or mitigate the risks of the natural hazard to an acceptable or tolerable level, and*

*(b) support, and not unduly burden, disaster management response or recovery capacity and capabilities, and*

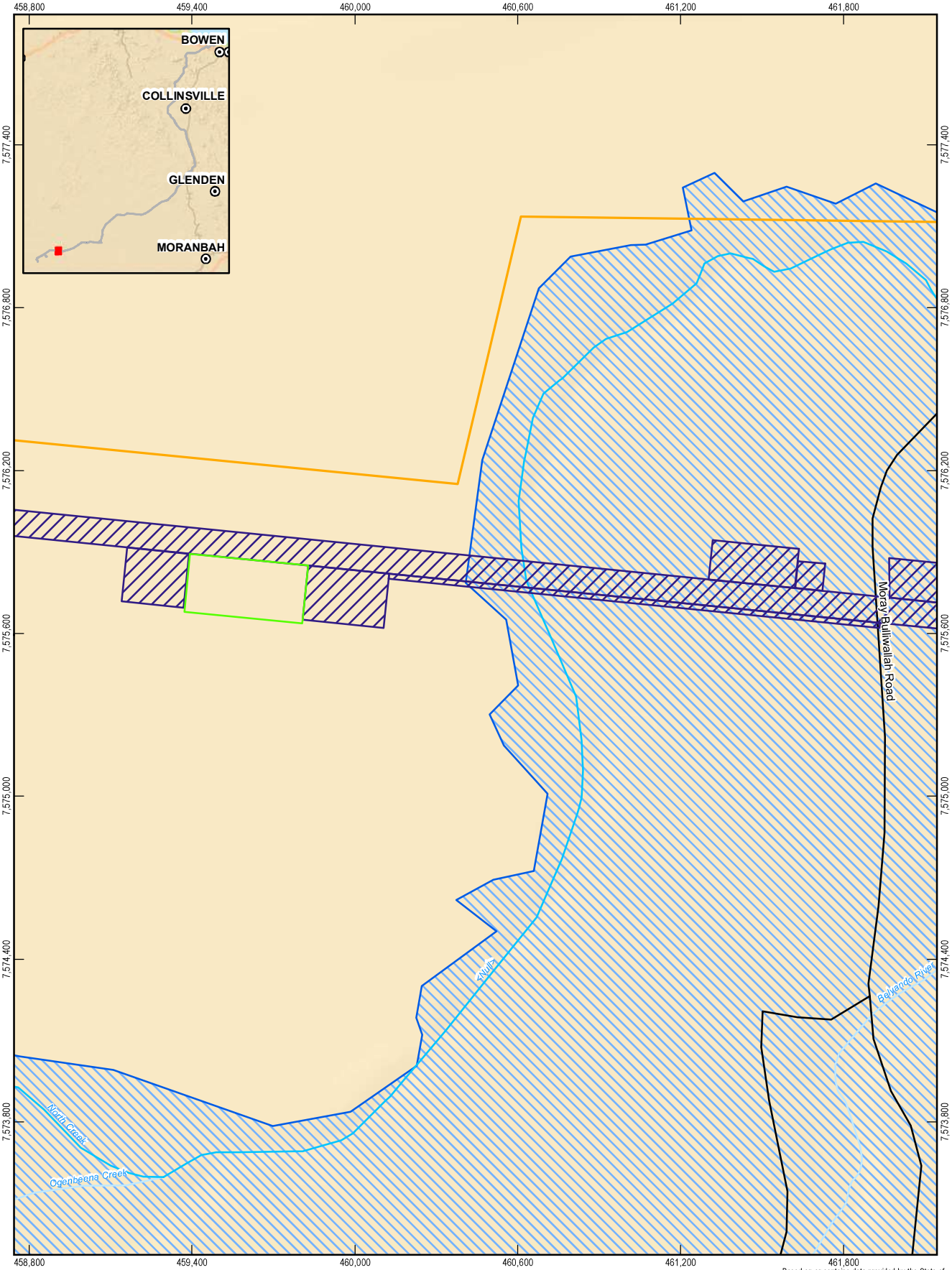
*(c) directly, indirectly and cumulatively avoid an increase in the severity of the natural hazard and the potential for damage on the site or to other properties, and*

*(d) maintain or enhance natural processes and the protective function of landforms and vegetation that can mitigate risks associated with the natural hazard.*

The site is not within a designated flood or floodplain area and is not considered to be subject to flooding as shown in Figure 6.

Figure 7 indicates that part of the site is within a medium bushfire hazard area as mapped by DNRM (2013). A Bushfire Management Plan will be implemented which includes prevention and mitigation measures, preparation objectives and the response and recovery strategies and processes.

The site is generally flat with only a slight change in level. The site's highest point is at RL207AHD and its lowest point is RL205AHD. It is noted that the distance between these two levels is significant and the grade on the site is extremely low. As a result, the site is not susceptible to landslide or erosion.




LEGEND

- Main Road
- Watercourse (Major)
- Watercourse (Minor)
- State Development Area Boundary
- Rail Camp 6
- SP1 Rail Alignment
- Flood Hazard Area

Based on or contains data provided by the State of QLD (DNRM) [2013]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

1:20,000 Paper Size A4

0 150 300 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

**Adani Mining Pty Ltd**

CUL GBSDA Rail Camp 6

Matters of State Interest under the State Planning Policy Flooding Hazard

| | |
|---|---|
| Job Number | 41-26457 |
| Revision | A |
| Date | 10 Sep 2014 |

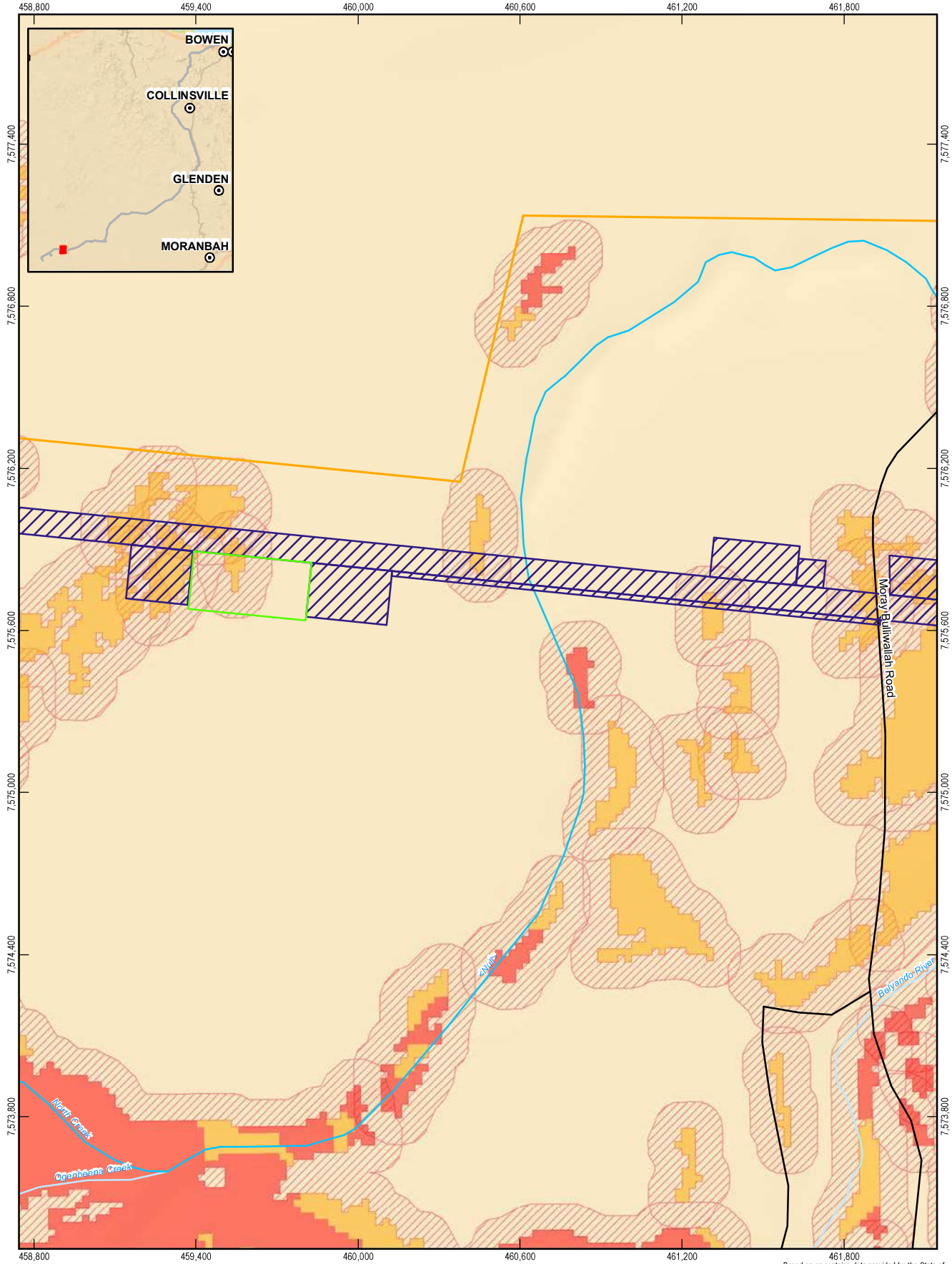
Figure 6

G:\41\28122\GIS\Maps\MXD\1600_MCU_7\41_28122_1607_rev_a.mxd

145 Ann Street Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

© 2014. Whilst every care has been taken to prepare this map, GHD, GA, DNRM, Adani make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: DNRM: Roads (2010) SDA (2014), Flooding Hazard Area (2013), © Commonwealth of Australia (Geoscience Australia): Railways (2007); Adani: Project Rail Alignment, Camp Sites (2014). Created by: AJ




LEGEND

- Main Road
- Watercourse (Major)
- Watercourse (Minor)
- State Development Area Boundary
- Rail Camp 6
- SP1 Rail Alignment
- Bushfire Hazard Area (Bushfire Prone Area)
- High (Potential Intensity)
- Medium (Potential Intensity)
- BPA Potential Impact Buffers

Based on or contains data provided by the State of QLD (DNRM) [2013]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

1:20,000 Paper Size A4

0 150 300 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

**Adani Mining Pty Ltd**

CUL GBSDA Rail Camp 6

Matters of State Interest under the State Planning Policy Bushfire Hazard

| | |
|---|---|
| Job Number | 41-26457 |
| Revision | A |
| Date | 10 Sep 2014 |

Figure 7

G:\41\28122\GIS\Maps\MXD\1600_MCU_7\41_28122_1608_rev_a.mxd

145 Ann Street Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

© 2014. Whilst every care has been taken to prepare this map, GHD, GA, DNRM, Adani make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: DNRM: Roads (2010) SDA (2014), Bushfire Hazard Area (2014), © Commonwealth of Australia (Geoscience Australia): Railways (2007); Adani: Project Rail Alignment, Camp Sites (2014). Created by: AJ

### 6.2.6 Infrastructure

#### Energy and water supply

The following planning scheme measures recommended by the SPP are considered relevant to the development application:

> *(2) protecting existing and approved future major electricity infrastructure locations and corridors (including easements), electricity substations, and bulk water supply infrastructure locations and corridors (including easements) from development that would compromise the corridor integrity, and the efficient delivery and functioning of the identified infrastructure.*

As discussed in Section 3.3.3, investigations have confirmed the availability of multiple water supply sources which will be able to service Rail Camp 6. The water supply strategy for the Carmichael Coal Mine and Rail Project is currently being finalised. . The proposed water supply infrastructure for the Rail Camp 6 site will consist of a water treatment plant, trunk distribution main and some fire water tanks for firefighting purposes.

As discussed in Section 3.3.6, the proposed camp will be supplied with electricity by diesel generators that are typically 600kVA in size with a 20,000 litre double bunded diesel tank. For further information in regard to electricity supply, please refer to the Electrical report prepared by Cardno contained in Appendix G.

As Rail Camp 6 is self-sufficient, the protection, relocation or modification of existing services is not required and the potential for disruption is avoided. Adani will also ensure compliance with the relevant health and safety legislation during the construction and operation phase of Rail Camp 6.

#### State transport infrastructure

The following planning scheme measures recommended by the SPP are considered relevant to the development application:

> *(4) protecting state transport infrastructure and existing and future state transport corridors and networks from development that may adversely affect the safety and efficiency of the infrastructure, corridors and networks.*

As discussed in Section 3.2.7, a TIA report has been prepared for the proposed Rail Camp 6 in order to assess the impact of the proposal upon the surrounding road network and has provided advice on the transport infrastructure within the development site and its connection with Moray Bulliwallah Road and Moray Carmichael Road/Moray Carmichael Boundary Road. A copy of the TIA report is contained within Appendix E.

External traffic movements are expected to be low but will consist largely of heavy vehicles, and when combined with the additional heavy vehicle movements expected on Moray Bulliwallah Road and Moray Carmichael Road/Moray Carmichael Boundary Road, it is recommended that an Auxiliary Left turn (AUL) be provided at both the Rail Camp 6 site access intersection with Moray Bulliwallah Road and the Moray Bulliwallah Road/Moray Carmichael Road/Moray Carmichael Boundary Road intersection. Aside from this, the impacts of the proposed Rail Camp 6 on the external road network are expected to be negligible; therefore the TIA has focused on the internal aspects of the site.

The potential impacts of Rail Camp 6 on State transport infrastructure are also addressed in the State Development Assessment Provisions (SDAP) codes provided in Appendix K.

### Strategic airports and aviation facilities

The planning scheme measures recommended by the SPP are not considered relevant to this application. The proposed development is not in proximity to a strategic airport identified in the SPP.

### Strategic ports

The planning scheme measures recommended by the SPP are not considered relevant to this application. The proposed development is not in proximity to a strategic port identified in the SPP.

## 6.3 Regional plan

Rail Camp 6 is located within the boundaries of the Mackay, Isaac and Whitsunday Regional Plan (MIWRP) and subsequently needs to consider the relevant provisions throughout project design. The MIWRP is a statutory plan that establishes a vision and direction for the region to 2031 and provides certainty about where the region is heading and provides a framework to respond to challenges and opportunities that may arise.

The MIWRP seeks to achieve its purpose through a series of desired regional outcomes (DROs). The DROs articulate the preferred direction for proposed development and land use outcomes in the region, and include specific policies and programs to manage the growth of the region to 2031.

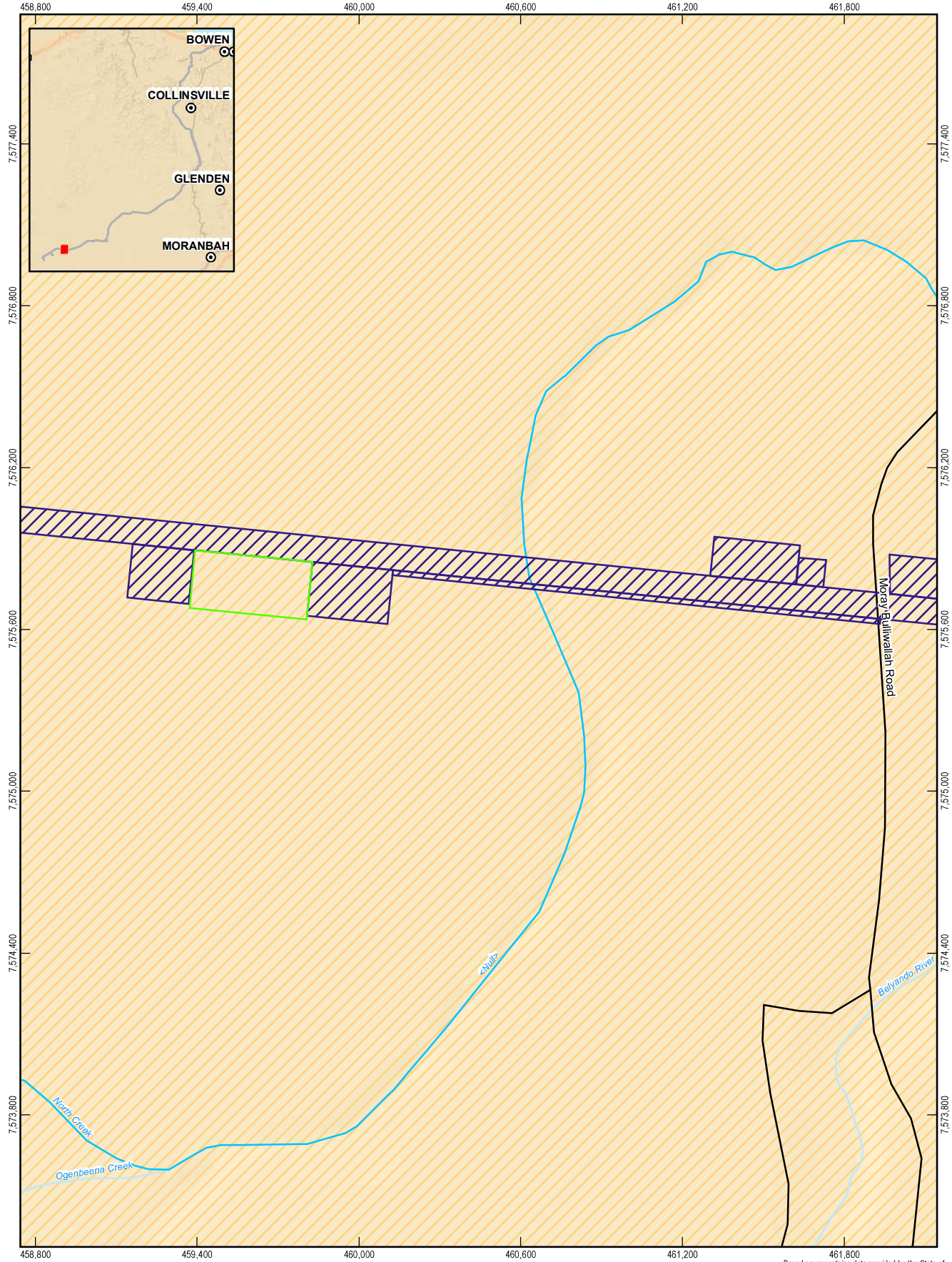
### 6.3.1 Intent of regional plan land use designation – regional landscape and rural production area

The site is contained within the Regional Landscape and Rural Production Area designation of the Mackay, Isaac and Whitsunday Regional Plan as illustrated in Figure 8.

The intent for the Rural Area of the MIWRP states the following:

> *The RLRPA identifies land with regional landscape, rural production or other non-urban values. It protects this land from inappropriate development, particularly urban or rural residential development. The RLRPA also includes lands which are considered unsuitable for development for the life of the plan, based on the regional plan principles to consolidate urban growth.*
>
> *These areas support the lifestyle and wellbeing of the regional population, whom are mostly located in the Urban Footprint.*

The proposed development, whilst technically representing residential development, is not considered to be inappropriate development as it is temporary in nature and will not adversely affect the production value of the regional landscape. The proposal is essential to the development of a major extractive industry development and will allow for the construction of an important piece of infrastructure, being a new rail corridor, to proceed.




LEGEND

- Main Road
- Watercourse (Major)
- Watercourse (Minor)
- Rail Camp 6
- SP1 Rail Alignment
- Mackay Issac Whitsundays Regional Plan

Based on or contains data provided by the State of QLD (DNRM) [2013]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

1:20,000 Paper Size A4

0 150 300 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

**Adani Mining Pty Ltd**

CUL GBSDA Rail Camp 6

# Regional Plan Land Use Designation

| | |
|---|---|
| Job Number | 41-26457 |
| Revision | A |
| Date | 10 Sep 2014 |

Figure 8

G:\41\28122\GIS\Maps\MXD\1600_MCU_7\41_28122_1609_rev_a.mxd

145 Ann Street Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

© 2014. Whilst every care has been taken to prepare this map, GHD, GA, DNRM, Adani make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: DNRM: Roads (2010) SDA (2014), © Commonwealth of Australia (Geoscience Australia): Railways (2007); Adani: Project Rail Alignment, Camp Sites (2014). Created by: AJ

### 6.3.2 Relevant desired regional outcomes of the regional plan

Based on the location and nature of the proposed development, the following regional policies in Table 3 below are relevant in the assessment of the proposed development:

**Table 3 Desired regional outcomes**

| Principle | Comments |
|---|---|
| Desired Regional Outcome 2 – Regional Landscape | |
| **2.2 Regional landscape areas**<br>**Optimise multiple community benefits through coordinated planning, management and investment in regional landscape areas.** | |
| *Policies*<br>2.2.2 Regional landscape areas are managed to optimise economic, social, recreational and ecosystem services to the region.<br>2.2.3 Inter-urban breaks are protected from development that diminishes their function. | The proposal will represent an economic benefit to the area as it is facilitating the construction of a major infrastructure facility. The proposed rail line is essential to the operation of a major mine facility that is intended to operate in the region for 90 years. The influx of employment and income present within the region during this timeframe is considered to be extensive and important to the future prosperity of the region.<br>Given the isolated nature and the fact that the camp is directly related to a mining development, the proposal will have no impact upon the provision of inter-urban breaks and will not undermine the role of the existing centres within the region. The significant distance from the site to the existing major centres ensures that the role of permanent accommodation within these localities will not be jeopardised. |
| Desired Regional Outcome 3 – Environment | |
| **3.1 Biodiversity**<br>**The region's natural assets, biodiversity values and ecological services are protected, managed and enhanced to improve their resilience to the anticipated effects of climate change and other threats.** | |
| *Policies*<br>3.1.2 Development in non-urban areas maintains the integrity of areas with significant biodiversity values.<br>3.1.3 In urban areas, impacts from development on areas with significant biodiversity values, where they cannot be avoided, are offset in accordance with established policies, codes and frameworks.<br>3.1.4 The values of regional biodiversity networks are protected for the long-term through improved ecological connectivity, enhanced habitat extent and condition, and rehabilitation of degraded areas. | The proposed camp site has been designed and located to ensure minimal impacts upon ecological processes. As demonstrated in the submitted ecological report, the site will be rehabilitated and returned to its existing state following the completion of the rail corridor construction process.<br>The proposed construction camp will have no impact upon the local ecological connectivity and immediate habitat represents a very small footprint area. The site is located with an existing cattle grazing area and is not considered to possess any significant environmental values that cannot be fully restored when the temporary use ceases.<br>The proposed camp site has been designed and located to ensure minimal impacts upon ecological processes. As demonstrated throughout the submitted development application documentation and the EIS data, the site will be rehabilitated and returned to its |

| Principle | Comments |
|---|---|
| | existing state following the completion of the rail corridor construction process.<br>The proposed construction camp will have no impact upon the local ecological connectivity and the immediate habitat given the relatively small footprint area. The site is located with an existing cattle grazing area and is not considered to possess any significant environmental values that cannot be fully restored when the temporary use ceases. |
| Desired Regional Outcome 4 – Natural Resource Management | |
| **4.1.1 The management and use of natural resources enhance community, economic and landscape values.** | |
| *Policies*<br>4.1.2 Adverse impacts on the region's natural resources are avoided or minimised through the location, design and management of development.<br>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. | The site has been located to ensure that there are no impacts upon the region's natural resources. The relatively small footprint and temporary nature of the use ensures that there will be no ongoing impacts upon the region's natural resources. |
| **4.3.1 Mineral, petroleum and extractive resources are managed for current and future use, and their extraction, processing, transport and downstream value-adding continue to contribute to the economy.** | |
| *Policies*<br>4.3.2 Identified valuable mineral and extractive resource areas within the region are protected from development that might adversely affect current or future extraction.<br>4.3.3 The operation of extraction and processing activities does not compromise human health, current and future resource use opportunities, regional landscape value or ecosystem function and services, and must minimise its impact on primary production.<br>4.3.4 Once extraction ceases, former mining resource areas are rehabilitated to facilitate multiple end-uses of sites, ensuring their continuing contribution to the economic, social and environmental values of the region.<br>4.3.5 Innovative practices are encouraged, including local processing and value-adding activities for mineral and extractive resources, to maximise eco-efficiencies. | The proposal is ancillary to a proposed resource extraction use but does not actually involve any extraction. The proposed camp will assist in facilitating the construction of a new rail line that will assist in transporting extracted mineral to a port of export. It is therefore contended that the proposal will have a positive impact upon future extraction within the region and the state as whole. |
| Desired Regional Outcome 6 – Economic leadership and coordination | |
| **6.1.1 Strong economic leadership attracts, coordinates and drives regional economic development, innovation and investment.** | |
| 6.1.2 Strengthen the region's economic voice and promote its competitive advantages and assets.<br>6.1.3 Develop and enhance strategies to encourage and facilitate public and private investment and reinvestment. | The proposed development is essential to a larger project that will significantly increase investment and employment opportunities within the region.<br>The proposal is part of a larger project that will facilitate economic growth from adjoining regions and a state and international level. The |

| Principle | Comments |
|---|---|
| 6.1.4 Identify and facilitate outcomes that remove growth constraints and impediments to business to encourage new business and investment attraction.<br>6.1.5 Identify and encourage opportunities to leverage economic growth from adjoining regions, and state, national and international levels.<br>6.1.6 Ensure collaboration between all sectors of government, business and the community to maximise the socio-economic and environmental benefits of major projects.<br>6.1.8 Create and strengthen links with domestic markets, including opportunities to service the resource sector in Bowen and Galilee basins.<br>6.1.10 Support initiatives that enable new diverse business and industry opportunities within the region. | Carmichael Coal Mine and Rail Project is a significant project that will bring major employment and revenue to the region and the state. |
| **6.2.1 Suitable land, infrastructure and facilities are available and managed to enable sustainable economic and employment growth in the region.** | |
| *Policies*<br>6.2.2 Employment needs and enterprise land requirements are identified to inform future planning decisions.<br>6.2.4 Identify, maintain and protect sites and corridors (including disused corridors) for infrastructure that supports economic development.<br>6.2.5 Strategically located land and facilities are protected from incompatible development for future economic uses.<br>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.<br>6.2.7 Establish and maintain links between town centres, business precincts and key transport, communication networks and other associated infrastructure.<br>6.2.8 Facilitate the expansion of existing business precincts and key industry sectors such as aviation, manufacturing, aquaculture, agriculture, tourism, mining, extractive industries, bulk exports and mineral processing and marine industry sectors.<br>6.2.9 Facilitate the provision of world-class infrastructure, including advanced telecommunications, to enhance economic competitiveness. | The proposal is part of a larger proposal to develop a new rail corridor that will significantly enhance economic development within the region. The rail corridor is intended to service the proposed Carmichael Coal Mine and Rail Project which will eventually employ large numbers of persons and will involve the creation of a new permanent settlement for mine workers. |
| **6.3.1 The economy grows through increasing levels of human-capital, knowledge-capital and natural-capital and is resilient to external factors through multiple strong industry sectors that provide diverse employment opportunities.** | |
| *Policies*<br>6.3.2 Attract and retain a diverse workforce to meet current and future needs of the economy. | The proposal will contribute to the levels of human capital within the region and contribute to both the short term and long term |

| Principle | Comments |
|---|---|
| 6.3.3 Identify and protect areas of economic importance (e.g. agriculture centres, industrial areas, port areas, mineral resources and tourism) and support new and continued production in these areas.<br>6.3.4 Encourage the diversification of industry sectors to facilitate an efficient, resilient and strong economy.<br>6.3.5 Facilitate the development of high value-added and knowledge-based economic activities in suitable locations.<br>6.3.6 Maximise opportunities for the development of supply chains to capitalise on economic development within and external to the region.<br>6.3.7 Identify and protect sites for the development of innovative business and knowledge precincts, and promote the development of world-class facilities.<br>6.3.8 Skills development is supported and workforce participation increased through improved access to a range of regional education and training opportunities.<br>6.3.9 Promote further development of specialised educational institutions in the region to meet the requirements of the region's major industries and provide skills development opportunities to support industries.<br>6.3.10 Raise business competitiveness by using the government's export, business improvement, sectoral development and education skills programs.<br>6.3.11 Promote partnership programs between research, training and education facilities, business and industry.<br>6.3.12 Facilitate investment in emerging opportunities, particularly primary industries, bio-industries, intermodal transport logistics hubs, and renewable and clean energy.<br>6.3.13 Opportunities for clustering complementary businesses and industries are supported, with appropriate locations for future expansion of those activities planned and secured ahead of time.<br>6.3.14 Develop industry clusters and partnerships, targeting industries relevant to the region's competitive advantages and market opportunities. | employment opportunities within the region. Short term employment will be generated as part of the construction process and long term employment will eventually be generated by the mine operation and its ancillary facilities. |
| **6.5.1 Manage mining and extractive resources to maximise economic opportunities and other community benefits, while minimising negative environmental and social impacts for present and future generations.** | |
| *Policies*<br>6.5.2 Identify and protect key strategic mineral, energy and extractive resources and haul routes from incompatible development.<br>6.5.3 Identify and support new sectors that | The proposed development is directly associated with the construction of a new rail corridor that is directly associated with a proposed extractive resource operation. The proposed development is essential to the |

| Principle | Comments |
|---|---|
| have the potential for future growth associated with the resource sector such as mine rehabilitation and carbon dioxide emissions capture.<br>6.5.4 Support and develop growth of specialised technology and research-based sectors (tertiary industries) which value-add to the resource sector.<br>6.5.5 Minimise adverse impacts of resource development on valuable environmental and other economic resources, and ensure appropriate rehabilitation of affected landscapes.<br>6.5.6 Ensure sufficient supply of minerals, gas and extractive resources are available for future use, and their extraction, processing, transport and downstream value-adding contribute to the local economy. | operation of the extractive industry and the efficient supply of minerals.<br>The proposal is part of a larger project that will add value to the local economy through an increase in income and residents. |

In view of the above assessment, the proposed development is consistent with the intent of the MIWRP. Therefore, the proposed development is viewed as being consistent with the main planning principles contained within this particular document.

## 6.4 State development assessment provisions

The SDAP set out the matters of interest to the State for development assessment, where the chief executive administering the *Sustainable Planning Act 2009* is responsible for assessing or deciding development applications. An assessment against the applicable codes of the SDAP has been provided.

The following SDAP are relevant to this application:

- Module 4: Environmentally relevant activities
- Module 17: Public passenger transport
- Module 18: State transport infrastructure protection
- Module 19: State transport network functionality.

The State codes for each of these modules are provided in Appendix K.

# 7. Assessment against development scheme

## 7.1 Overview

The following section provides an assessment of the proposed development against the relevant requirements of the Development Scheme for the GBSDA that may be applicable to the development.

## 7.2 Proposed use as defined in development scheme

According to the definitions within Section 2 of the Development Scheme, a change a use of land (CUL) application includes:

*a. The start of a new use of land;*

*b. The re-establishment of a use of land that has been abandoned; or*

*c. A material increase in the intensity or scale of the use of land.*

As the proposal is for the start of a new use of land it constitutes a CUL application.

According to Section 2 of the Development Scheme the use proposed as part of the CUL application is non-resident workforce accommodation which is defined as the following:

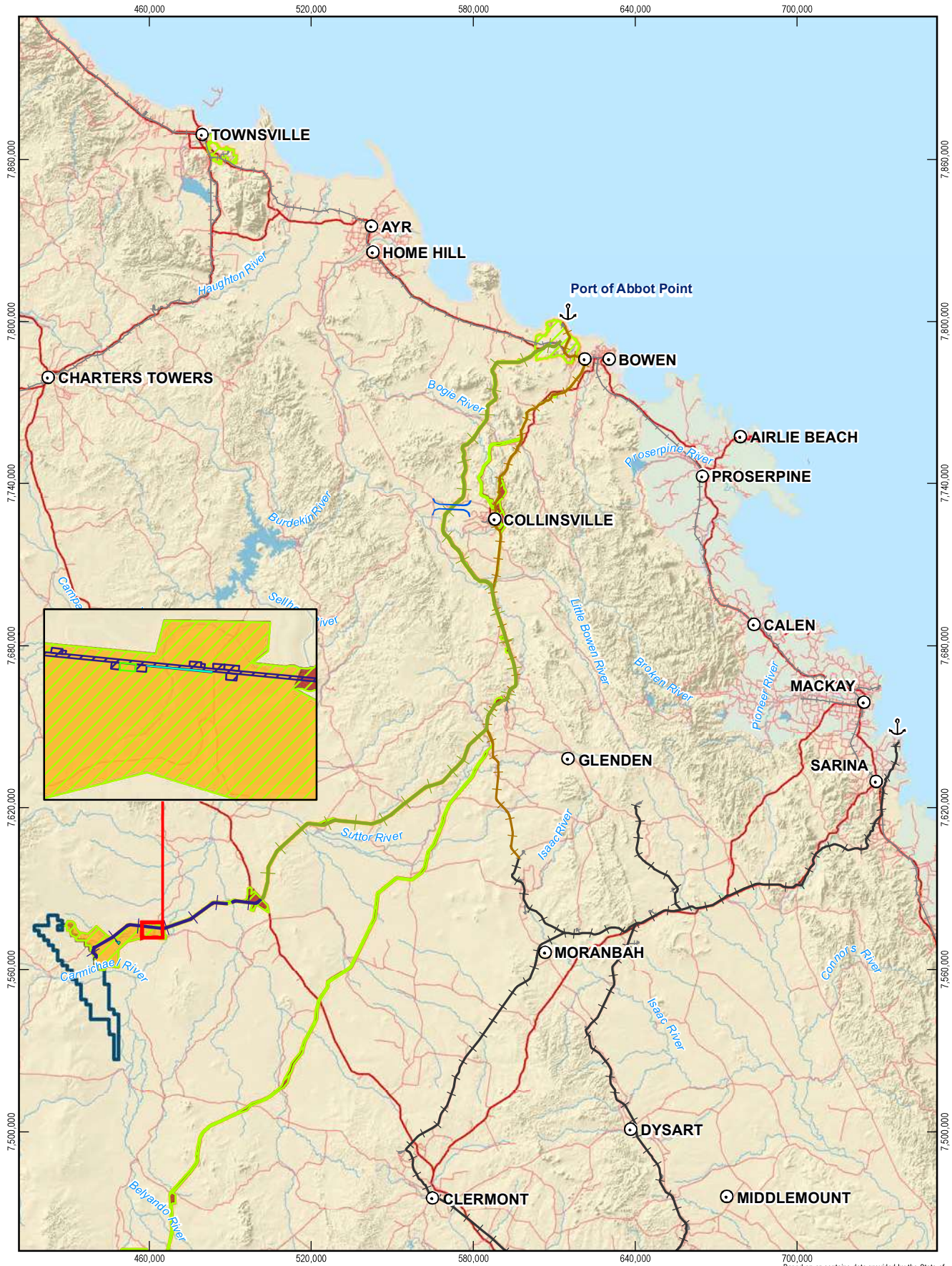
> *Non-resident workforce accommodation means premises used to provide accommodation for non-resident workers. The use may include provision of recreational and entertainment facilities for the exclusive use of residents and their visitors.*

All proposals for CUL developments within the GBSDA must comply with the objectives of the Development Scheme for the GBSDA and the land use intents of the relevant land use precincts. Figure 9 shows the location on Rail Camp 6 within the Mining Services Precinct under the Development Scheme for the GBSDA. According to Table 4 below, the proposed use is a consistent use within the precinct.

**Table 4 GBSDA land use**

| Proposed Use | Development Scheme Definition | Precinct | Consistent Uses |
|---|---|---|---|
| Rail Camp 6 – temporary rail construction camp | Non-resident workforce accommodation | Mining Services Precinct | Air services<br>Emergency services<br>Low impact industry<br>Medium impact industry<br>Non-resident workforce accommodation<br>Rail infrastructure<br>Service industry<br>Utility installation<br><br>Use is consistent with the preferred land use intent. |

The consistency of the proposal with the general intent and purpose of the Mining Service Precinct has been discussed in the sections below.




LEGEND

- Major Port
- Town
- Major Road
- Local Road
- Watercourse
- Other Rail Network
- Goonyella System
- Newlands System
- SP1 Rail Alignment
- NGBR Rail Alignment
- Rail Camp 6
- Access Road
- Carmichael Project (Mine)
- Galilee Basin State Development Area
- Galilee Basin SDA Mining Services Precinct
- Galilee Basin SDA Rail Corridor Precinct

Based on or contains data provided by the State of QLD (DNRM) [2013]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

1:2,000,000 Paper Size A4

0 10 20 40 60

Kilometres

Horizontal Datum: GDA 1994
Grid: GCS GDA 1994

N

**Adani Mining Pty Ltd**
CUL GBSDA Rail Camp 6

# Galilee Basin State Development Area Precincts

| | |
|---|---|
| Job Number | 41-26457 |
| Revision | A |
| Date | 10 Sep 2014 |

Figure 9

G:\41\28122\GIS\Maps\MXD\1600_MCU_7\41_28122_1614_rev_a.mxd

145 Ann Street Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

© 2014. Whilst every care has been taken to prepare this map, GHD, GA, DNRM, Adani make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data Source: © Commonwealth of Australia (Geoscience Australia): Town, Railways, Watercourses (2007); DNRM: Hillshade (2009), SDA, Precinct (2014); DMR: State Roads (2008); DME: EPC1690 (2010), EPC1080 (2011); Adani: Alignment Opt11 Rev3 (2014), NGBR: Alignment Opt12 Rev 1 (2014).

## 7.3 Intent or purpose of any relevant land-use precinct

The key intent of the Mining Services Precinct is to accommodate uses that support resource activities and other development in the Galilee Basin. An airport, industrial activities and non-resident workforce accommodation are given priority over alternate land uses.

The proposal is defined as non-resident workforce accommodation within the Development Scheme for the GBSDA and as such fulfils the land use intent of this precinct.

## 7.4 Objectives of the development scheme

The purpose of this section is to undertake an assessment of the proposed development against the objectives of the Development Scheme for the GBSDA, as identified in Section 5 of the Development Scheme. According to Table 5 below, the proposed development complies with the objectives of the GBSDA.

**Table 5 Development assessment against the objectives of the GBSDA**

| Objective | Proposal response |
|---|---|
| Development within the GBSDA will be consistent with the State's intentions for the development of the Galilee Basin. | *Complies*<br>The camp supports the development of the Galilee Basin and will facilitate the construction of a rail corridor to transport coal to the Port of Abbot Point.<br>On this basis it is considered that the proposed development supports the achievement of this objective. |
| Development within the GBSDA will be consistent with the strategic vision for the GBSDA, the land use precincts and each land use precinct's preferred land use intent. | *Complies*<br>The development is consistent with the strategic vision as it supports the development of the Galilee Basin and is for supporting infrastructure to facilitate the mining and export of coal from the Galilee Basin.<br>The development is deemed a consistent use in the Mining Services Precinct and reflects the precinct intent as it supports resource activities and development in the Galilee Basin.<br>On this basis, it is considered that the proposed development supports the achievement of this objective. |
| Development within the GBSDA will allow for the establishment of infrastructure corridors and supporting industry and infrastructure that facilitate the export of coal from the Galilee Basin. | *Complies*<br>Rail Camp 6 will facilitate the construction of the Carmichael Coal Mine and Rail Project. The rail will provide for the dedicated, efficient and safe transportation of coal from the Carmichael Mine to the Port of Abbot Point.<br>On this basis, it is considered that the proposed development supports the achievement of this objective. |
| Development within the GBSDA will ensure the integrity and functionality of the GBSDA is maintained and protected from land uses and activities that may be incompatible with, or adversely affect the ability to achieve the strategic | *Complies*<br>The construction of Rail Camp 6 will not restrict the integrity and functionality of the GBSDA as it is a use that is compatible with the strategic vision of the GBSDA. |

| Objective | Proposal response |
|---|---|
| vision of the GBSDA. | In accordance with Table 3 of the Development Scheme, the proposed 'non-resident workforce accommodation' use is consistent with the preferred land use intent of the Mining Services Precinct within which the site is located.<br>On this basis, it is considered that the proposed development supports the achievement of this objective. |
| Development within the GBSDA will where appropriate, facilitate the development of end to end infrastructure solutions in multi-user infrastructure corridors. | *Complies*<br>The Carmichael Coal Mine and Rail Project will provide a rail corridor to transport coal from the Carmichael Coal Mine to the Port of Abbot Point. Rail Camp 6 is a temporary camp for the construction of the rail corridor.<br>On this basis, it is considered that the proposed development supports the achievement of this objective. |
| Development within the GBSDA will ensure the physical characteristics of land are considered in determining the suitability and location of development. | *Complies*<br>Section 2.1.1 of this report outlines site selection criteria used to determine the most appropriate location for Rail Camp 6. Selection was based on a combination of environmental and logistical considerations.<br>On this basis, it is considered that the proposed development supports the achievement of this objective. |
| Development within the GBSDA will ensure development recognises and manages impacts on environmental, cultural heritage and community values. | *Complies*<br>The proposed Rail Camp 6 will not have a significant impact upon the existing environmental, cultural heritage and community values.<br>The environmental context of the site has been addressed through the Carmichael Coal Mine and Rail Project EIS/SEIS/AEIS. In cases where negative impacts have been identified, appropriate mitigation measures have been prescribed and will be put in place to avoid or minimise such impacts. Potential impacts and associated mitigation measures relevant to Rail Camp 6 are detailed in Section 8 of this report.<br>Consultation with the general community and key stakeholders was undertaken as part of the EIS process. All concerns have been raised through this process and have been addressed in the SEIS for the Project. Details are provided in Section 7.7 of this report.<br>Indigenous consultation was undertaken as part of the Carmichael Coal Mine and Rail EIS. Refer to Indigenous and Non-indigenous Cultural Heritage Chapter 5 of Volume 1 of the EIS.<br>On this basis, it is considered that the |

| Objective | Proposal response |
|---|---|
| | proposed development supports the achievement of this objective. |
| Development within the GBSDA will be adequately serviced by infrastructure. | *Complies*<br>Section 3.3 of this report details infrastructure requirements for Rail Camp 6 to ensure it is adequately serviced.<br>On this basis, it is considered that the proposed development supports the achievement of this objective. |
| Development within the GBSDA will achieve appropriate levels of flood immunity and appropriately manage flood levels on adjoining land. | *Complies*<br>The site is not located within a designated flood or floodplain area and is not considered to be subject to flooding. Refer to Section 2.4.9 of this report.<br>On this basis, it is considered that the proposed development supports the achievement of this objective. |
| Development within the GBSDA will use water and energy efficiently and minimise potential impacts on water quality. | *Complies*<br>The proposed camp will be supplied with electricity by diesel generators that are typically 600kVA in size with a 20,000 litre double bunded diesel tank. For further information in regard to electricity supply, please refer to the Electrical report contained in Appendix G.<br>The proposed water supply infrastructure for the camp site will consist of water treatment plant, trunk distribution main and some fire water tanks for firefighting purposes.<br>Aquatic environmental values have been considered in the site selection and design of the rail corridor and associated infrastructure. As such, no aquatic and riparian habitats, including existing farm dams will be directly impacted by the construction of Rail Camp 6.<br>Refer to water quality and greenhouse gas potential impact and mitigation measures in Sections 8.5 and 8.12 below.<br>On this basis, it is considered that the proposed development supports the achievement of this objective. |

## 7.5 Assessment criteria of the development scheme

The purpose of this section is to undertake an assessment of the proposed development against the assessment criteria of the Development Scheme for the GBSDA, as identified in Section 7 of the Development Scheme. According to Table 6 and Table 7 below, the proposed development complies with the assessment criteria of the GBSDA.

**Table 6 Development assessment against the assessment criteria of the GBSDA**

| Assessment criteria | Proposal response |
|---|---|
| Infrastructure | |
| 1. Development maximises infrastructure efficiency and minimises infrastructure costs for infrastructure associated with telecommunications, transport, water, wastewater, recycled water and energy. | *Complies*<br>As Rail Camp 6 is self-sufficient, the protection, relocation or modification of existing services and/or infrastructure is not required and the potential for disruption is avoided. Adani will also ensure compliance with the relevant health and safety legislation during the construction and operation phase of Rail Camp 6.<br>Details of infrastructure requirements for the proposed Rail Camp 6 are detailed in Section 3.3 of this report. |
| 2. Development plans for and manages impacts on existing and future known infrastructure. | *Complies*<br>As discussed in Section 3.2.7 of this report, the impacts of the proposed Rail Camp 6 on the external road network are expected to be negligible.<br>A TIA has been prepared for the proposed Rail Camp 6 in order to assess the impact of the proposal upon the surrounding road network and has provided advice on the transport infrastructure within the development site and its connection with Moray Bulliwallah Road and Moray Carmichael Road / Moray Carmichael Boundary Road. A copy of the TIA report is contained within Appendix E. |
| Emissions | |
| 3. Development:<br>• is designed to avoid or otherwise minimise adverse impacts from emissions that will affect the health and safety, wellbeing and amenity of communities and individuals;<br>• supports the achievement of the relevant acoustic and air quality objectives of the *Environmental Protection (Noise) Policy 2008* and the *Environmental Protection (Air) Policy 2008* (Appendix 5). | Complies<br>Air quality assessments undertaken for the EIS predict that the ground-level concentrations of all air pollutants released from Rail Camp 6 will not exceed the objectives of the *Environmental Protection (Air) Policy 2008* as outlined in Section 8.9 of this report.<br>Sensitive receptors within or in close proximity to Rail Camp 6, as outlined in the *Environmental Protection (Noise) Policy 2008* include dwellings and protected areas identified under the NC Act. The offsite infrastructure is located in an isolated rural area with a small number of sensitive receptors as discussed in Section 8.10 of this report. It is noted that neither of these are located within the proposed Rail Camp 6 footprint. |
| 4. Development is to minimise potential impacts of conflicts arising from (but not limited to) spray drift, odour, noise, dust, smoke or ash emissions with sensitive uses. This can be achieved by an | *Complies*<br>Mitigation measures for noise and air quality impacts are discussed in Sections 8.9 and 8.10 of this report. |

| Assessment criteria | Proposal response |
|---|---|
| effective separation or other demonstrated effective management tool. | Mitigation measures for the construction and operational phases of Rail Camp 6 are also detailed in the Rail EMP (Carmichael Coal Mine and Rail Project Supplementary EIS, Appendix W). |
| Flooding | |
| 5. Development is to demonstrate through appropriate flood modelling that appropriate levels of flood immunity can be achieved while avoiding alterations to existing flow rates, flood heights or other flooding impacts on upstream, downstream, or adjacent properties. This includes potential impacts from changes to stormwater flows and local flooding. | *Not Applicable*<br>The site is not located within a designated flood or floodplain area and is not considered to be subject to flooding. |
| Contaminated land | |
| 6. Development of land likely to be contaminated or recorded on the Environmental Management Register or Contaminated Land Register is to be investigated to ensure impacts to human health and the environment are not adversely affected. If required, develop a strategy to manage the existing contamination and potential for additional contamination such that human health and the environment are not adversely affected. | *Complies*<br>A search of the Environmental Management Register (EMR) and Contaminated Land Register (CLR) was undertaken for Lot 662 on PH1491. Results showed that the subject lot was not listed on the EMR or CLR. Refer to the EMR/ CLR Search provided in Appendix D. |
| Acid sulfate soils | |
| 7. Development is to demonstrate current best practice:<br>• avoids the disturbance of acid sulfate soils (ASS); or<br>• ensures that the disturbance of ASS avoids or minimises the mobilisation release of acid and metal contaminants. | *Not Applicable*<br>The site is not identified as being at risk of the occurrence of acid sulfate soils as it is located inland and above 20m (Australian Height Datum) AHD. Acid sulfate soils are not considered to be a risk factor in non-coastal areas and on land above 20m AHD. Refer to Section 8.6 of this report for further information. |
| Road works | |
| 8. Increased traffic arising from development is either able to be accommodated within existing road networks or works are undertaken to minimise adverse impacts on existing and future uses. | *Complies*<br>As discussed in Section 3.2.7 of this report, buses will collect workers and transport them to and from the rail construction sites. These buses will use tracks running alongside the rail line as construction progresses.<br>The impacts of the proposed camp on the external road network are expected to be negligible.<br>Refer to the TIA provided in Appendix E for further information. |
| 9. Local road networks within, and intersections connecting precincts, are to be designed to accommodate the proposed vehicle type and predicted traffic volumes associated with the development and the precinct/s. | *Complies*<br>The TIA provided in Appendix E has assessed the impact of the proposed Rail Camp 6 upon the surrounding road network. |

| Assessment criteria | Proposal response |
|---|---|
| | As discussed in Section 3.2.7 of this report, external traffic movements are expected to be low but will consist largely of heavy vehicles, and when combined with the additional heavy vehicle movements expected on Moray Bulliwallah Road and Moray Carmichael Road/Moray Carmichael Boundary Road, it is recommended that an AUL be provided at both the Rail Camp 6 site access intersection with Moray Bulliwallah Road and the Moray Carmichael Road/Moray Carmichael Boundary Road intersection.<br>Aside from this, the impacts of Rail Camp 6 on the external road network are expected to be negligible. |
| 10. Site layout facilitates safe and efficient vehicular ingress and egress and does not unduly impact on the safe and efficient operation of the use of external road, rail or transport infrastructure. | *Complies*<br>As discussed in Section 3.2.7 of this report, Rail Camp 6 has been considered in detail from a transport perspective. The result will be the delivery of a safe internal layout for camp residents and a safe connection to the external road network for site traffic movements.<br>Refer to the TIA provided in Appendix E for further information. |
| Non-resident workforce accommodation | |
| 11. Non-resident workforce accommodation delivers a high level of on-site amenity and adequately provides for occupants. | *Complies*<br>The proposed Rail Camp 6 has been appropriately designed from both a liveability and operational perspective.<br>Rail Camp 6 is organised around a north-south spine and east-west path connection. The spine comprises communal buildings and facilities and recreation areas. The sequence of spaces along the spine begin with the vehicular entry to the camp, carpark and bus pickup zone, leading to the reception / office and dining facilities and then north to a large communal open space area that has outlooks to the wider landscape. The east-west central covered walkway dissects the site and provides a link between the accommodation precincts and the spine.<br>The proposed development includes a variety of communal open space areas. The open space is provided in the form of three types of areas which are outlying communal open space, central communal open space, and BBQ breakout areas. The open space and recreation areas are sufficient for camp capacity and the layout has been designed considering amenity and liveability.<br>Refer to Section 3.2 for further information. |

| Assessment criteria | Proposal response |
|---|---|
| Water quality | |
| 12. Development:<br>• avoids or otherwise minimises adverse impacts on the environmental values of receiving waters, arising from:<br>(a) altered stormwater quality or flow; and<br>(b) wastewater (other than contaminated stormwater and sewage); and<br>(c) the creation or expansion of non-tidal artificial waterways; and<br>• complies with the SPP code : Water quality (Appendix 2). | *Complies*<br>As discussed in Section 3.3.4 of this report, it is proposed to collect and store all stormwater from roofed areas of the development to ensure that erosion issues to do not occur. A Stormwater Management Plan has been prepared for the proposed development and is provided in Appendix F.<br>In preparing the conceptual stormwater management strategy preliminary water quality and quantity assessments were undertaken for the rail construction camp. The outcome of this preliminary investigation has recommended the inclusion of a number of stormwater quality and quantity management measures detailed herein and summarised as follows:<br>• Numerous vegetated swales for treatment and conveyance purposes as indicatively shown on Cardno 7508/90/08/-1.02; and<br>• One constructed sediment basins as described in Sections 5 and 6, and indicatively shown on Cardno 7508/90/08/-1.02.<br>The detailed design of the treatment and detention devices will comply with the relevant authority guidelines. |
| 13. Development protects the ecological and hydraulic function of waterway corridors in and adjacent to the GBSDA. | *Complies*<br>As discussed in Section 2.4.2 of this report, no natural wetlands or waterways are located within the proposed camp footprint. It is noted that the lot itself contains a number of waterway features. However, these will remain unaffected as a result of the proposed camp construction. |
| Environment, cultural heritage and community | |
| 14. Environmental values, cultural heritage values and community values of the site and immediate surrounds are identified and protected, consistent with current best practice. Values are to be determined by detailed investigations prepared in accordance with a recognised methodology, and include the identification of local, regional, state and national values where relevant. | *Complies*<br>The proposed Rail Camp 6 will not have a significant impact upon the existing environmental, cultural heritage and community values.<br>These values and the environmental context of the site have been addressed through the Carmichael Coal Mine and Rail Project EIS/SEIS/AEIS. In cases where negative impacts have been identified, appropriate mitigation measures have been prescribed and will be put in place to avoid or minimise such impacts.<br>Potential impacts and associated mitigation measures relevant to Rail Camp 6 are detailed in Section 8 of this report. |

| Assessment criteria | Proposal response |
|---|---|
| 15. Any environmental offsets required as a result of development impacts must be offset in accordance with current best practice and relevant Queensland or Commonwealth Government policy. | *Not Applicable*<br>No environmental offsets are required as a result of the proposed Rail Camp 6. |
| 16. Buffer requirements for new uses are to be accommodated within the development site. | *Complies*<br>The accommodation precincts consist of small clusters of rooms with entries facing on to a shared covered walkway. A shared open space separates each accommodation precinct and includes seating, picnic shelters, laundry facility and a covered path to the central covered walkway.<br>Landscaping, walkways and open space buffers are used to separate accommodation precincts and communal areas. |
| Engineering standards | |
| 17. Development is to be designed and constructed in accordance with the Table of relevant engineering standards (and any subsequent revisions to the relevant standards) below. Alternative, innovative solutions are encouraged. | *Complies*<br>Civil Engineering Drawings depicting the earthworks proposed as part of the development have been prepared and are contained within Appendix C. The plans submitted as part of the application also include water reticulation layout plans and sewer reticulation layout plans. All plans have been prepared in accordance with the relevant engineering standards. |
| Table of Relevant Engineering Standards: | |
| Soil erosion | International Erosion Control Association (IECA) – Best Practice Erosion and Sediment Control. |
| Filling | AS3798 – Guidelines on Earthworks for Commercial and Residential Developments. |
| Other government matters | |
| 18. New development is to demonstrate consistency with relevant legislation, regional plans, State Planning Policy to the extent practicable where the State interests articulated by these instruments may be affected by the proposed new use. | *Complies*<br>Refer to Section 6 of this report for assessment against relevant State legislation including the State Planning Policy, Mackay Isaac and Whitsunday Regional Plan and State Development Assessment Provisions. The assessment indicates that the proposed development is generally consistent with the state interests, regional intent and outcomes, and matters of interest to the State concerning development applications. |
| 19. New uses are to avoid or minimise adverse impacts on existing or proposed State or local infrastructure. | *Complies*<br>The impacts of the proposed Rail Camp 6 on the external road network are expected to be negligible.<br>Refer to the TIA provided in Appendix E for further information. |

**Table 7 Assessment against additional assessment criteria for development in the Mining Services Precinct in the GBSDA**

| Assessment criteria | Proposal response |
|---|---|
| Energy and water efficiency | |
| 1. Building, site design and layout maximises energy efficiency having regard to:<br>• building orientation and passive solar design;<br>• maximising opportunities for cross ventilation;<br>• appropriate shade treatments;<br>• landscaping treatments to the western side of the building. | *Complies*<br>As discussed in Section 3.3.6, the proposed Rail Camp 6 will be supplied with electricity by diesel generators that are typically 600kVA in size with a 20,000 litre double bunded diesel tank. For further information in regard to electricity supply, please refer to the Electrical report prepared by Cardno contained in Appendix G. |
| 2. Water efficiency is optimised through the use of alternative water supply sources, including:<br>• rainwater harvesting systems;<br>• recycled water source. | *Complies*<br>As discussed in Section 3.3.3, investigations have confirmed the availability of multiple water supply sources which will be able to service the camp. The water supply strategy for the Carmichael Coal Mine and Rail Project is currently being finalised. The proposed water supply infrastructure for the camp site will consist of a water treatment plant, trunk distribution main and some fire water tanks for firefighting purposes. |
| Visual impacts | |
| 3. Visual impacts of buildings and any retaining structures are minimised through building design and landscaping when viewed from a publicly accessible view point such as major roads. | *Complies*<br>An assessment of the impact of Rail Camp 6 on scenic amenity is provided in Section 8.3 of this report. As concluded in these assessments, the existing landscape character is rural with the dominant land use activity being low intensity cattle grazing. Viewers travelling along Moray Carmichael Road will be able to see the Rail Camp 6; however it is a temporary camp and is therefore not a long-term visual impact. |
| 4. Incorporate high quality urban design and landscape treatments particularly for those areas that are highly visible from public roads. | *Complies*<br>Refer to comments for point 3 above. |
| Water quality | |
| 5. Development incorporates best practice Integrated Water Cycle Management strategies. | *Complies*<br>Refer to comments provided for water quality in Table 6, items 12 and 13 above. |
| 6. Water sensitive urban design principles are integrated into development. | *Complies*<br>Refer to comments provided for water quality in Table 6, items 12 and 13 above. |
| Engineering Standards | |
| 7. Development is to be designed and constructed in accordance with the Table of | *Complies*<br>Refer to comments provided for |

| Assessment criteria | | Proposal response |
|---|---|---|
| relevant engineering standards (and any subsequent revisions to the relevant standards) below. Alternative, innovative solutions are encouraged. | | engineering standards in Table 6, item 17 above. |
| Table of Relevant Engineering Standards | | |
| Stormwater quality | • Water sensitive urban design: Design objectives for urban stormwater management;<br>• Construction and Establishment Guidelines, Swales, Bioretention Systems and Wetlands;<br>• Concept Design Guidelines for Water Sensitive Urban Design;<br>• Standard Drawings for Water Sensitive Urban Design;<br>• Queensland Urban Drainage Manual (QUDM);<br>• Australian Rainfall and Runoff (ARR) - where referenced by QUDM. | |
| Roads (major) | • DTMR's Road Planning and Design Manual - A guide to Queensland Practice;<br>• DTMR Pavement Design Manual;<br>• DTMR Bridge Design Manual;<br>• Queensland Urban Drainage Manual (QUDM) - Chapter 7;<br>• DTMR Drainage Design Manual;<br>• Manual of Uniform Traffic Control Devices;<br>• DTMR Guide to Pavement Markings;<br>• Australian Standard AS1158 (Street Lighting);<br>• Complete Streets Manual 2010 (Section 17: Industrial Streets). | |
| Roads (minor) | • Relevant local government construction standards. | |
| Site access | • Relevant local government construction standards. | |
| Footpaths and cycle paths | • Local government standards for construction;<br>• Austroads – Guide to Road Design Part 6A: Pedestrian and Cyclist Paths. | |
| Built form | | |
| 8. The scale, character and built form of development contributes to a high standard of amenity. | | *Complies*<br>Refer to comments provided in Table 6, item 11 above. |
| 9. Development must incorporate crime prevention through environmental design (CPTED) principles. | | *Complies*<br>Refer to comments provided in Table 6, item 11 above. |
| Landscaping | | |
| 10. Development provides landscaping that:<br>• minimises the visual impacts of the development;<br>• incorporates at least 50% local species;<br>• is low maintenance. | | *Complies*<br>As discussed in Section 3 of this report, Rail Camp 6 is organised around a north-south spine and east-west path connection. The spine comprises communal buildings and facilities and recreation areas. The sequence of spaces along the spine begin with the vehicular entry to the camp, carpark and bus pickup zone, leading to the reception / office and dining facilities and then north to a large communal open space area that has outlooks to the wider landscape. The east-west central covered |

| Assessment criteria | Proposal response |
|---|---|
| | walkway dissects the site and provides a link between the accommodation precincts and the spine.<br>Nine accommodation precincts are proposed. Each precinct consists of small clusters of rooms with entries facing on to a shared covered walkway. A shared open space separates each accommodation precinct and includes seating, picnic shelters, laundry facility and a covered path to the central covered walkway.<br>Given the isolated nature of Rail Camp 6, this level of landscaping within the open spaces areas is considered sufficient for the proposed development. |
| 11. Maintains and enhances significant vegetation and provides appropriate landscaping. | *Complies*<br>As discussed in Section 2.4.1 of this report, Rail Camp 6 contains open areas of non-remnant vegetation and is considered to have relatively low value for native wildlife.<br>Refer to item 10 above with regard to proposed landscaping for Rail Camp 6. |
| Road works | |
| 12. Provide:<br>• local road networks and intersections within the precinct are designed to accommodate the proposed vehicle type and predicted traffic volumes associated with the development;<br>• site layout facilitates safe and efficient vehicular ingress and egress and does not unduly impact on the safe and efficient operation of the use of external road, rail or transport infrastructure;<br>• adequate car parking for number and nature of vehicles expected. | *Complies*<br>Refer to comments provided in Table 6, items 8, 9 and 10 above.<br>As discussed in Section 3.2.7 a total of 125 sealed car parking spaces with 2 disabled spaces are proposed as part of the Rail Camp 6 design.<br>A TIA report has been prepared for Rail Camp 6 and is contained within Appendix E. |

## 7.6 Relevant referral agencies

According to Section 2 of the Development Scheme a referral entity for an application means:

*a. Any relevant technical referral agencies;*

*b. The local government for the local government areas within which the GBSDA is located; and*

*c. Any other entity nominated by the Coordinator-General.*

In accordance with Section 9.2 of the Development Scheme, the CG may waive the referral stage of the assessment process if the application has been subject to another referral process.

As outlined in this report, this application has been prepared in accordance with the EIS document for the Carmichael Coal Mine and Rail Project. The EIS has undergone extensive referral as part of the EIS process. In accordance with the Development Scheme, this application will be referred to Isaac Regional Council as the applicable local government.

It will also be referred to DTMR as a concurrence agency, in accordance with Schedule 7, Table 3, Item 2 of the *Sustainable Planning Regulation 2009*.

## 7.7 Public notification

### 7.7.1 Previous consultation

The EIS process under the SDPWOA requires public notification to occur during preparation of an EIS. There are several statutory requirements for community consultation embedded in the EIS process under the SDPWOA.

The SDPWOA requires a Draft TOR for an EIS to be made available for public comment. The draft TOR for the Carmichael Coal Mine and Rail EIS was released for public and advisory agency comment from 12 February 2011 to 28 March 2011. A total of 20 submissions on the Draft TOR were received by the CG, including nine from advisory agencies, two from regional councils, four from private individuals and five from other organisations (including one from the project proponent).

Following public review of the EIS, the CG forwards all properly made submissions to the proponent. The proponent then addressed any substantive issues raised in written submissions in a Supplementary EIS (SEIS). The SEIS was released by the CG for public, local, State and Federal government agency consultation from 25 November 2013 to 20 December 2013.

The following public consultation activities were undertaken during the EIS process:

- Project briefings:
  - Queensland CG's office (with invited delegates from other departments as necessary)
  - Government Agencies (Commonwealth, State and Local)
  - Former Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC)
  - Council briefings- Isaac Regional Council, Whitsunday Regional Council, Charters Towers
- Community Information Sessions – Collinsville, Clermont, Moranbah
- Hard copies of the EIS displayed at Charters Towers Library, Clermont Library, Moranbah Library, the National Library of Australia and the State Library of Queensland
- Interviews, workshops, landholder case studies and SIA unit meetings to inform SIA and SIMP (management and monitoring)
- Landholder communications
- Consultation with Traditional Owners
- Distribution of Project information and updates at milestones
- Responding to stakeholder enquiries via Project contact channels (detailed below).

Communication materials utilised during Project consultation included:

- Stakeholder database
- Project newsletters
- 1800 free call telephone information line
- Reply paid post address
- Project email address

- Community feedback forms
- Project website
- Paid advertising / public notices

The results of these consultations are documented in the Consultation report included in Volume 4 Appendix I of the Mine and Rail Technical Reports and are summarised in Section 7 of Volume 1.

### 7.7.2 Proposed consultation

The CG may decide to waive the public notification stage under the GBSDA Development Scheme.

The EIS for the Carmichael Coal Mine and Rail Project has undergone extensive public notification. As the proposed development was included in the EIS it is therefore considered that further public notification for this CUL application will not be required.

## 7.8 Consultation

Adani has undertaken consultation with relevant local and state agencies in relation to this proposal and external to that undertaken during the EIS process. Consultation with the following sectors has occurred:

- Weekly discussions with the Office of the CG State Development Areas Division to discuss the preparation and lodgement of this application
- Department of Transport and Main Roads
- Isaac Regional Council
- Department of State Development, Infrastructure and Planning
- Department of Natural Resources and Mines
- Department of Environment and Heritage Protection.

# 8. Impacts of proposal

## 8.1 Introduction

Detailed descriptions of all the impacts of the application are discussed in the Carmichael Coal Mine and Rail Project EIS (in particular Volume 3 relevant Appendices in Volume 4 and the Supplementary EIS). The EIS addresses impacts on the environment, such as land, water, air, noise, nature conservation, cultural heritage, waste, health and safety.

The specific impacts that directly relate to the Rail Camp 6 footprint within the GBSDA are discussed below and have been summarised from the relevant sections of the EIS, where applicable. It is noted that a number of additional assessments have been undertaken in support of this CUL development application.

## 8.2 Land use

Rail Camp 6 occurs within a pastoral lease to the north-east of the Mine. This property has been intensively grazed for many decades. The landscape has been heavily fragmented by historic land-clearing. Only small patches of remnant vegetation persist, predominantly located along Belyando River and its tributaries.

The total site area (9.33 ha) of cattle grazing pasture (non-remnant vegetation) will be cleared for the construction of Rail Camp 6.

## 8.3 Landscape character and amenity

### 8.3.1 Potential impacts

The existing landscape character is described as rural (agricultural), primarily used for cattle grazing. The vegetation elements of the landscape around the proposed Rail Camp 6, comprises broad acre paddocks of native grasses, scattered acacias/eucalypt clumps and woodlands. Native stands of trees and isolated paddock trees are also evident within grazing paddocks. The landscape in the vicinity of the Rail Camp 6 footprint is flat to slightly undulating modified bushland. Further information on the landscape character and amenity can be found within Carmichael Coal Mine and Rail Project EIS Vol. 3, Section 4.

The construction camps will require night-lighting which will result in localised and temporary light pollution. However, given the rural character of the area, artificial night lighting levels are expected to be very low, if present at all. Furthermore, while viewers travelling along Moray Carmichael Road will be able to see Rail Camp 6, it is only a temporary structure. Potential impacts associated with the construction and operation of Rail Camp 6 include:

- Increased visual permeability associated with vegetation clearing
- Increase in presence of built infrastructure in the landscape
- Increase in light pollution around infrastructure at night (infrastructure lighting and vehicles).

### 8.3.2 Mitigation measures

#### Increased visual permeability and presence of built infrastructure in the landscape

Preliminary evaluation of the Carmichael Coal Mine and Rail Project rail alignment options and siting of depots and rail camps, including Rail Camp 6, has been guided by the need to avoid or

reduce potential adverse effects on landscape character and visual receptors (refer to Rail EIS, Volume 1, Section 3).

The Carmichael Coal Mine and Rail Project rail corridor would aim to achieve construction and operation without causing undue visual disruption to existing receptors. Mitigation in regard to the development of Rail Camp 6 relates to retention and maintenance of vegetation or revegetation along the Moray Carmichael Road and the nearby riparian corridor to mitigate the impact of this aspect. Co-location of temporary activities, for example, construction camps, batch plants and laydown areas will also be carried out to reduce the area of impact.

Any bare ground associated with temporary infrastructure (e.g. construction camps) after construction of the rail corridor will be re-vegetated in line with pre clearing conditions, such as suitable pasture or native vegetation.

#### Increase in light pollution

The following mitigation measures are recommended in regard to lighting for Rail Camp 6:

- Use luminaires which reduce light spill, sky glow and glare
- Utilise direction lighting wherever possible to reduce light spill
- Fauna-sensitive lighting will be considered during construction camp design.

## 8.4 Surface hydrology

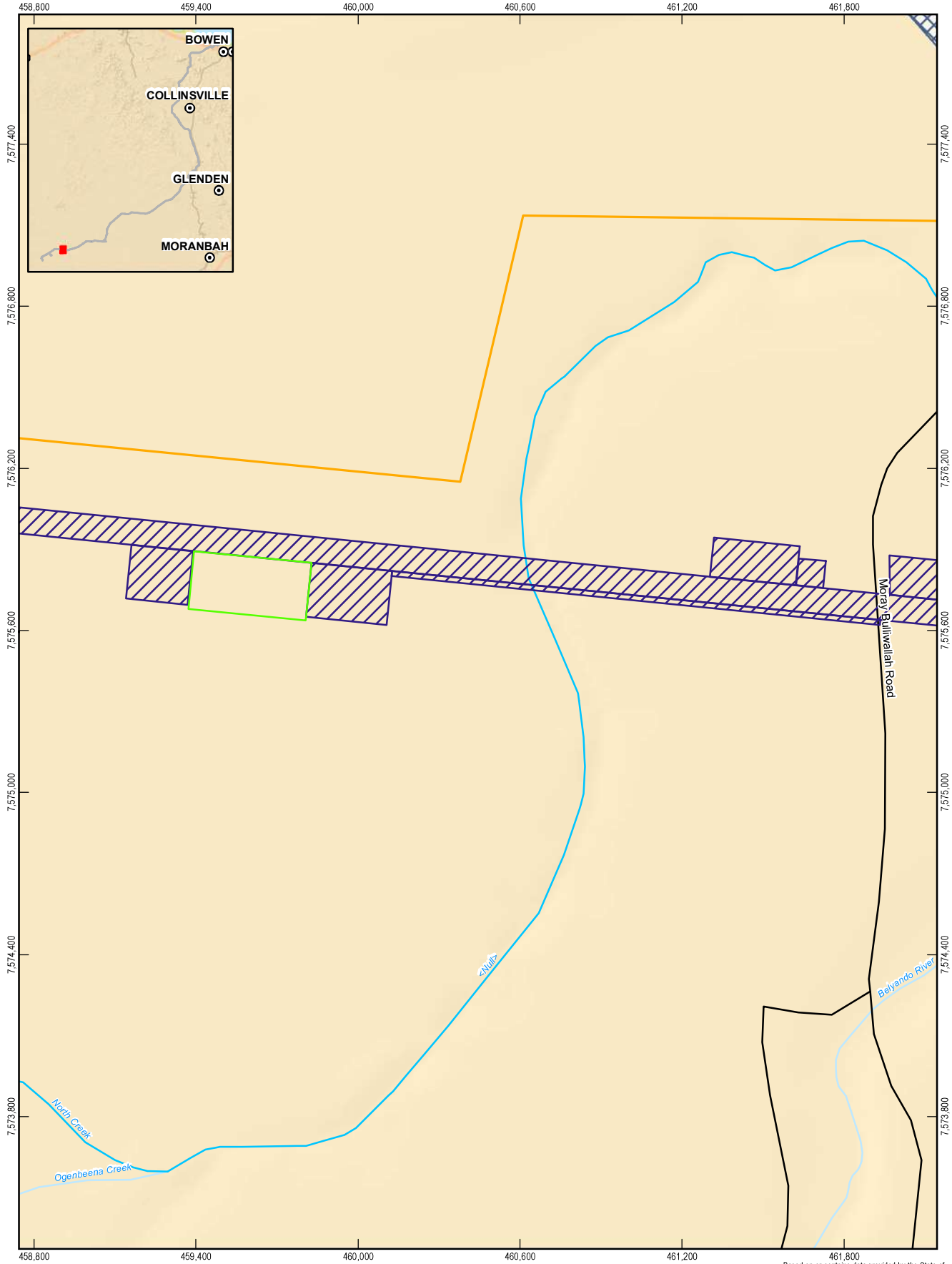
### 8.4.1 Potential impacts

The Rail Camp 6 area and surrounding landscape is characterised by relatively flat plains comprising rivers and creeks which have reasonably well defined channels lying within wider floodplains that can become inundated during flood events. Streams are largely ephemeral, reflecting the intermittent nature of rainfall in the area. Some base flow is retained from groundwater inflows in some streams.

The Rail Camp 6 footprint is located within the Belyando River catchment, which takes up approximately 70 per cent of the Belyando Suttor sub catchment. The catchment suffers significant water losses due to natural breakouts and periods of no flow. Two creeks, North Creek and Ogenbeena Creek run in a west to east direction to the west and east of the Rail Camp 6 footprint (Figure 10). The two creeks are characterised as ephemeral drainage lines and eventually drain to the Belyando River.

Hydrological impacts of the proposed rail and associated infrastructure are described in more detail in the Carmichael Coal Mine and Rail Project EIS Volume 3, Section 6 and Volume 4, Appendix AB. Wherever possible, direct construction impacts on aquatic and riparian habitat have been avoided. While no watercourses or wetlands will be directly impacted by the construction of Rail Camp 6, activities may result in indirect, temporary impacts on aquatic systems receiving runoff flows from areas of land cleared. Potential impacts during construction of the rail camp may include:

- Clearing of vegetation and the exposure of soils to erosive forces, such as wind and rain
- Erosion and sedimentation from construction activities
- Changes in water quality resulting from overland flows and stormwater run-off.




LEGEND

- Main Road
- Watercourse (Major)
- Watercourse (Minor)
- State Development Area Boundary
- Rail Camp 6
- SP1 Rail Alignment
- Wetland Protection Area
- Wetland Protection Area Trigger

Based on or contains data provided by the State of QLD (DNRM) [2013]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

1:20,000 Paper Size A4

0 150 300 600

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

**Adani Mining Pty Ltd**
CUL GBSDA Rail Camp 6

| | |
|---|---|
| Job Number | 41-26457 |
| Revision | A |
| Date | 10 Sep 2014 |

# Watercourses and wetlands

Figure 10

G:\41\28122\GIS\Maps\MXD\1600_MCU_7\41_28122_1615_rev_a.mxd

145 Ann Street Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

© 2014. Whilst every care has been taken to prepare this map, GHD, GA, DNRM, Adani make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: DNRM: Roads (2010) SDA (2014), Fauna Habitat / Broad Vegetation Type (2009), © Commonwealth of Australia (Geoscience Australia): Railways (2007); Adani: Project Rail Alignment, Camp Sites (2014). Created by: AJ

### 8.4.2 Mitigation measures

Potential impacts on aquatic habitats as a result of land based activities such as vegetation clearing, can be largely avoided or mitigated through the implementation of construction-specific management measures.

Mitigation measures detailed in the draft rail Environmental Management Plan (EMP) include erosion and sediment control requirements to be implemented and monitored throughout the life of the facility. An EMP for the rail corridor is included in the Carmichael Coal Mine and Rail Project SEIS, Volume 4, Appendix W and a revised version is provided in the AEIS.

To limit the degradation of downstream aquatic habitat during construction activities, mitigation and management will focus on reducing the potential mobilisation of sediments or pollutants, diversion of stormwater flows from disturbed areas and limiting sediment transport from exposed areas.

Controlling site runoff from all areas disturbed during construction and will be important in limiting the degradation of habitats downstream of the construction footprints. The measures identified include (but are not limited to):

- Erosion and sediment controls relevant to construction activities will be implemented and managed in accordance with the Erosion and Sediment Control Management Plan (see draft rail EMP).
- The transport, storage and handling of hazardous substances will be managed in accordance with the Hazardous Substances Management Plan (see draft rail EMP).
- All water required for the construction phase (for earthworks, dust suppression, concrete batching plants, potable water, etc.) will be imported to all construction sites, and not be sourced from the rivers and creeks without application for , and receipt of appropriate permits and/or licences.
- All rail camp stormwater captured on site will be reused for irrigation, dust suppression or discharged via a sediment basin.
- Maximising retention of surface cover by clearly delineating clearing areas and restricting activities to these areas.
- Undertaking revegetation according to Rehabilitation Plan requirements, where applicable and following decommissioning of the site.

## 8.5 Groundwater

### 8.5.1 Potential impacts

In relation to Rail Camp 6, there is limited information about groundwater resources for the area. A number of supply options exist for the provision of potable and non-potable water. This may include, extraction from creeks and rivers, water and rainfall harvesting, use of farm dams, recycling, etc. There are no recorded groundwater dependent ecosystems in proximity to the proposed footprint.

There is potential for the development of water bores in the Carmichael Coal Mine and Rail Project rail corridor area. It is not likely, however, that water usage will rely solely on groundwater sources. Further it is not likely that establishment of groundwater bores and abstraction of groundwater for construction purposes will result in a decrease in the local resource for other users.

### 8.5.2 Mitigation measures

Mitigation measures are detailed in the draft rail EMP in the Carmichael Coal Mine and Rail Project EIS, Volume 3, Section 13. Mitigation measures during construction will comprise:

- Identifying the presence and quality of groundwater in any areas where excavation is to occur and determine the approach to managing groundwater from excavation such that degradation of surface water quality or land does not occur.
- Checking that work permit applications include appropriate measures for management of groundwater from excavations.
- Ensuring dewatering requirements (if any) will be identified during the detailed design. If major drawdown of the alluvial aquifer is identified, a groundwater monitoring program will be developed and implemented.

There are no operational controls required in relation to groundwater.

## 8.6 Geology and soils

### 8.6.1 Potential impacts

#### Geology and soils

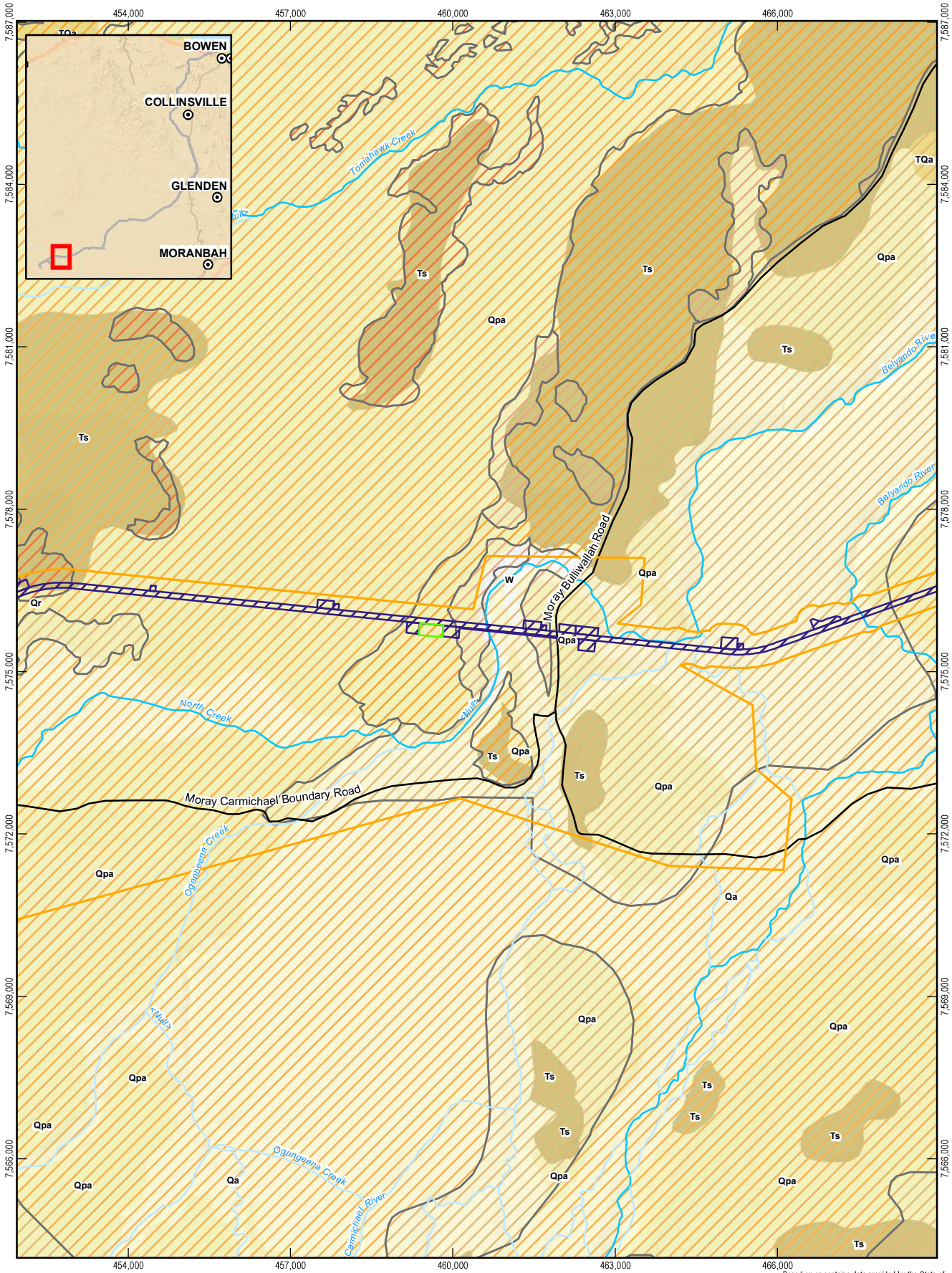
The western extent of the rail corridor traverses an area of fluvial and colluvial deposits, which were laid down over the area during the Tertiary period. These quaternary deposits are a mixture of silt, sand and gravel, with some alluvium in the fluvial deposition environments. There are some areas of soil, sand and gravel deposited from in-situ weathering and Aeolian processes. Refer to Figure 11. Additional information on the geology and soils in the Project area can be found in the Carmichael Coal Mine and Rail Project EIS, Volume 3, Section 4 and Volume 4, Appendix Y.

The construction and operation of Rail Camp 6 will result in a range of changes to the landscape that will potentially increase the risk of erosion, these include:

- Clearing of vegetative cover;
- Changes in topography, drainage patterns and localised concentration of storm water flows;
- Dust deposition; and
- Excavation and stockpiling of material.

Topographical features, soil types and construction methods will be the primary drivers for erosion risk during the construction of the rail and associated infrastructure, including Rail Camp 6. Sediments that are entrained in water runoff have the potential to collect in the surface waters.

Loss of topsoil and to a lesser extent subsoil from the construction area is important in terms of rehabilitation success. Topsoil is the most valuable resource in relation to rehabilitation and needs to be retained onsite and in a good re-usable condition.




LEGEND

- Main Road
- Watercourse (Major)
- Watercourse (Minor)
- State Development Area Boundary
- Rail Camp 6
- SP1 Rail Alignment

Soil Type
- Chromosols
- Dermosols
- Kandasols
- Sodosols
- Vertosols

100k Geology
WATER BODIES
- Water body (unspecified)

QUATERNARY
- Qa-QLD
- Qr-QLD

PLEISTOCENE
- Qpa-QLD

LATE TERTIARY - QUATERNARY
- TQa-QLD

TERTIARY
- Ts-QLD

Based on or contains data provided by the State of QLD (DNRM) [2013]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

1:100,000 Paper Size A4

0 750 1,500 3,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

**Adani Mining Pty Ltd**
CUL GBSDA Rail Camp 6

| | |
|---|---|
| Job Number | 41-26457 |
| Revision | A |
| Date | 10 Sep 2014 |

# Soils and geology

Figure 11

G:\41\28122\GIS\Maps\MXD\1600_MCU_7\41_28122_1611_rev_a.mxd

145 Ann Street Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

© 2014. Whilst every care has been taken to prepare this map, GHD, GA, DNRM, Adani make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: DNRM: Roads (2010) SDA (2014), Geology, Soils (2010), © Commonwealth of Australia (Geoscience Australia): Railways (2007); Adani: Project Rail Alignment, Camp Sites (2014). Created by: AJ

### Acid Sulfate Soils

Under the SPP, acid sulfate soils (ASS) must be considered where surface elevation is at or below five metres AHD or where the natural ground level is below 20 m AHD. However, ASS is known to also occur in some inland areas within river and lake beds, irrigation channels, and in saline seepage areas. As Rail Camp 6 is located at approximately 200 m AHD, ASS is not deemed to be a risk in the proposed area.

### Contamination

The potential impacts of land contamination may arise in two ways. First, construction and operation activities may increase human exposure to pre-existing contaminants, or mobilise contaminants to surface water or groundwater. Second, construction and operation activities may release contaminants into soils, causing soil contamination. Soil contamination then has a number of flow-on effects, including:

- Acute or chronic toxicity effects on humans and animals that come into contact with the soil, including where contaminated soil becomes windblown. Contaminated soil guidelines generally focus on whether or not levels of particular contaminants might be high enough to cause toxic effects.
- Inhibition of plant growth, and death of existing plants in contaminated areas
- Mobilisation of contaminants by overland flows to surface watercourses. This in turn may lead to acute or chronic toxicity effects to aquatic organisms and to contamination of water supplies.
- Mobilisation of contaminants to groundwater, which in turn may lead to contamination of groundwater supplies. In high permeability aquifers, contaminant plumes may be conveyed over considerable distances.

## 8.6.2 Mitigation measures

### Soil erosion

Prior to construction commencing, an Erosion and Sediment Control Plan (ESCP) will be developed in accordance with IECA, 2008, and will be used during the duration of the construction (refer to Carmichael Coal Mine and Rail Project EIS Volume 3, Section 13). The ESCP will focus on all aspects of construction and provide the required performance criteria for all controls to be implemented across the Project. The ESCP will be referred to when developing all onsite detailed ESCPs and will include (but not be limited to):

- Requirement to clearly identify areas for land clearing and earthworks on construction plans and on the ground to avoid unnecessary disturbance to areas outside the construction area
- Locating any soil or mulch stockpiles away from watercourses and key stormwater flow paths to limit potential for transport of these substances into the watercourses via runoff
- Rehabilitation and/or requirements to protect/stabilise exposed earth areas from water or wind erosion
- Monitoring requirements for the purposes of detecting changes in water quality downstream of the construction area
- Install perimeter catch drains around accommodation camps to prevent offsite upslope clean water from entering the site and bunding and basins downslope to confine dirty water within the site and out on the low flow channel. Design and management of the installation of such controls will be in accordance with IECA guidelines (IECA 2008)

- Rehabilitation of any disturbed ground due to temporary construction infrastructure will be conducted progressively as soon as construction activities are complete in any area
- Land clearing activities will, where possible, seek to avoid alteration to drainage paths such that the impacts to water quality and downstream flows are minimised to the greatest extent possible
- Temporarily disturbed areas will be stabilised as soon as practical by mulching and/or reinstating topsoil and subsoil and compacting replaced soils
- Any bare ground associated with temporary infrastructure (e.g. construction camps) will be re-vegetated in line with pre clearing conditions, such as suitable pasture or native vegetation immediately after the completion of the construction of the Carmichael Coal Mine and Rail Project rail corridor
- Stripped topsoil will be set aside for use in reinstatement where properties allow. Topsoil stockpiles will be managed to maintain soil fertility and other soil properties.

Progressive rehabilitation will be undertaken to stabilise temporarily disturbed areas as quickly as practical and to limit erosion. Erosion and sediment control measures will be employed, which are consistent with the practices described in the IECA, Best Practice Erosion and Sediment Control Guideline, 2008.

#### Release of acidity from ASS

Mapping indicates ASS is unlikely to be present within the Rail Camp 6 footprint.

#### Contamination remediation

Mitigation measures for the construction and operational phases of the temporary Rail Camp are detailed in the draft Rail EMP (Carmichael Coal Mine and Rail Project Supplementary EIS, Appendix Q2). These measures include:

- Management of oily waste and hydrocarbon contaminated waste, including waste from sumps and bunds, in accordance with requirements in the waste management sub plan
- Recirculation of water from vehicle wash areas
- Refuelling is only to take place at designated refuelling areas
- In the event of a spill, ensure all response, management and reporting procedures are implemented
- Conduct risk assessment for incidents of contamination and determine appropriate mitigation and management strategies
- Soil and groundwater testing as required to follow up a particular incident of contamination.

## 8.7 Terrestrial ecology

For information on the terrestrial ecology, existing environment, methodology, likelihood of occurrence assessment and MNES, refer to the Carmichael Coal Mine and Rail Project EIS Volume 3, Chapter 6 (Nature Conservation), 7 (MNES) and Appendix J5 (Offsite Infrastructure Environmental Assessment Report).

### 8.7.1 Potential impacts

Environmental values were considered in the selection of rail corridor and associated infrastructure, avoiding areas of native vegetation wherever possible. As a result, the proposed location of the Rail Camp 6 footprint is within an area that contains areas previously cleared for

agricultural development. Remnant vegetation within the surrounding landscape persists as isolated remnants in the riparian corridor along Belyando River and in narrow fringes along the Moray Carmichael Boundary Road.

### *Construction phase*

#### Vegetation clearing extents

No regulated vegetation or Regional Ecosystems mapped by DNRM (Version 8, 2013) are present within the Rail Camp 6 footprint (refer to Carmichael Coal Mine and Rail Project Supplementary EIS Vol. 4, Appendix J7) (Figure 12 and Figure 13). The total site area of 9.33 ha of non-remnant vegetation will be cleared for the construction of Rail Camp 6.

#### Terrestrial fauna a fauna habitat clearing extents

The Rail Camp 6 footprint contains open areas of non-remnant vegetation and is considered to have relatively low value for native wildlife, only providing habitat for generalist species that are tolerant of vegetation clearing. No potential habitat for threatened fauna under the NC Act or EPBC Act is identified within the Rail Camp 6 footprint.

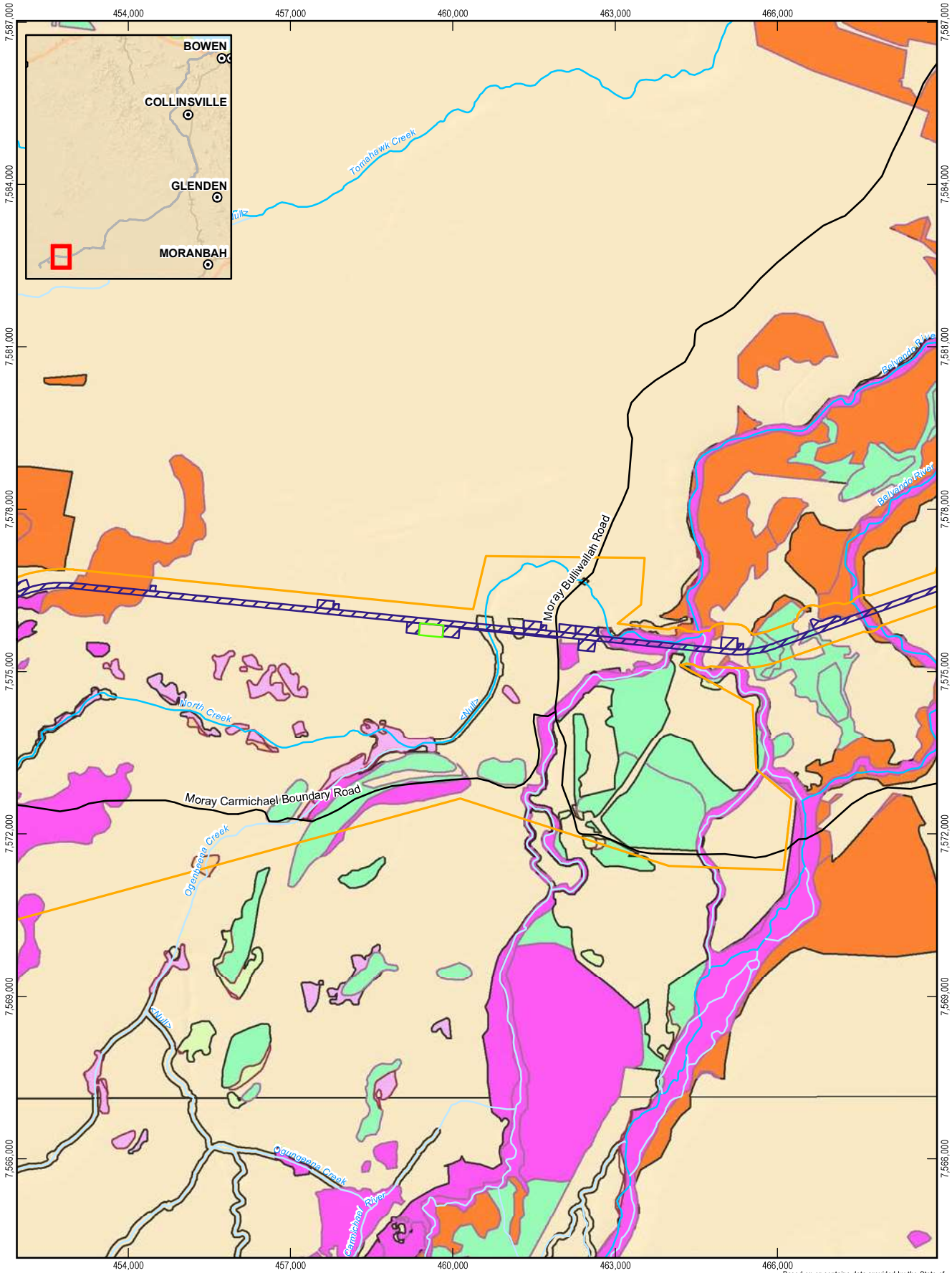
Potential impacts to terrestrial environmental values during construction of the rail camp include:

- Loss of native vegetation and low grade habitat for native animals
- Injury or mortality to native animals
- Degradation of adjacent habitat due to dust deposition, changes in overland flow regimes, exposure of edges to sunlight and increased predation
- Proliferation and introduction of weeds and pests, including class 2 declared weeds and pests under the *Land Protection (Pest and Stock Route Management) Act 2002* (LP Act)
- Wildlife disturbance from increased noise and light.

### *Operational phase*

Potential impacts to terrestrial environmental values during operation of the rail camp include:

- Injury or mortality to native animals from vehicles and heavy machinery
- Proliferation and introduction of weeds and pests, including class 2 declared weeds and pests under the LP Act
- Wildlife disturbance from increased noise and light.




LEGEND

- Main Road
- Watercourse (Major)
- Watercourse (Minor)
- State Development Area Boundary
- Rail Camp 6
- SP1 Rail Alignment

Regional ecosystems v8

- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regioal ecosystems
- Category A or B area that is a least concern regioal ecosystems
- Category C area containing endangered regional ecosystems
- Category C area containing of concern regional ecosystems
- Category C area that is a least concern regional ecosystems
- Non Remnant

Based on or contains data provided by the State of QLD (DNRM) [2013]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

1:100,000 Paper Size A4

0 1,500 3,000 6,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

GHD

adani

**Adani Mining Pty Ltd**

CUL GBSDA Rail Camp 6

DNRM Certified Regional Ecosystems, Regrowth Vegetation and Essential Habitat

| | |
|---|---|
| Job Number | 41-26457 |
| Revision | A |
| Date | 10 Sep 2014 |

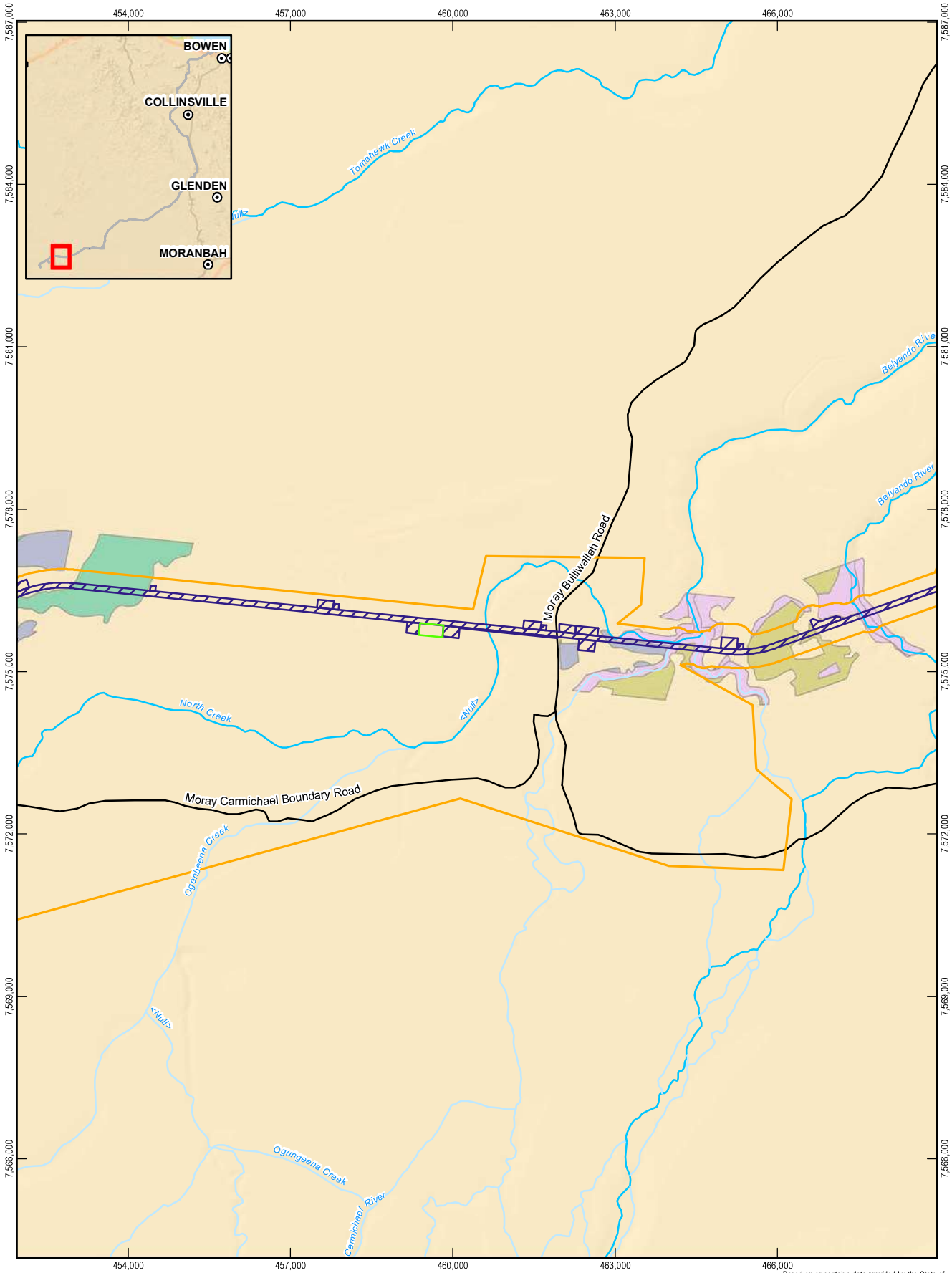
Figure 12

G:\41\28122\GIS\Maps\MXD\1600_MCU_7\41_28122_1612_rev_a.mxd

145 Ann Street Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

© 2014. Whilst every care has been taken to prepare this map, GHD, GA, DNRM, Adani make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: DNRM: Roads (2010) SDA (2014), Regional Ecosystems (2013), © Commonwealth of Australia (Geoscience Australia): Railways (2007); Adani: Project Rail Alignment, Camp Sites (2014). Created by: AJ




LEGEND

- Main Road
- Watercourse (Major)
- Watercourse (Minor)
- State Development Area Boundary
- Temporary Camp 6
- SP1 Rail Alignment

Fauna Habitat / Broad Vegetation Community

- Eucalypt open woodland
- Acacia woodland or forest
- Open woodland fringing watercourses and on flood plains
- Grassland

Based on or contains data provided by the State of QLD (DNRM) [2013]. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

1:100,000 Paper Size A4

0 750 1,500 3,000

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

**Adani Mining Pty Ltd**
CUL GBSDA Rail Camp 6

| | |
|---|---|
| Job Number | 41-26457 |
| Revision | A |
| Date | 10 Sep 2014 |

# Broad Vegetation Communities and Fauna Habitat Types

Figure 13

G:\41\28122\GIS\Maps\MXD\1600_MCU_7\41_28122_1613_rev_a.mxd

145 Ann Street Brisbane QLD 4000 Australia T 61 7 3316 3000 F 61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

© 2014. Whilst every care has been taken to prepare this map, GHD, GA, DNRM, Adani make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: DNRM: Roads (2010) SDA (2014), Fauna Habitat / Broad Vegetation Type (2009), © Commonwealth of Australia (Geoscience Australia): Railways (2007); Adani: Project Rail Alignment, Camp Sites (2014). Created by: AJ

### 8.7.2 Mitigation measures

The following mitigation measure will be undertaken to ensure adverse impact on the environment are minimised.

#### *Preconstruction*

The planning and concept design of the rail corridor and associated infrastructure has aimed to avoid, condense and minimise the footprint of disturbance impacting areas of existing environmental values, including riparian corridors and mapped regulated vegetation. The Rail Camp 6 footprint is located within previously cleared grazing pasture.

#### *Construction phase*

##### Loss of vegetation and habitat

Where land clearing is required during construction, the following management and mitigation measures are recommended:

- Laydown areas, access tracks and other facilities will be located within previously disturbed/degraded and/or cleared areas or within areas of non-remnant vegetation as far as possible
- Following clearing, rehabilitation will occur in areas no longer required
- Site inductions for all staff will include education sessions regarding the local fauna that may be present on the site and protocols to be undertaken if fauna are encountered
- Temporary fencing will be erected around high value habitats to be retained to exclude construction works
- Vegetation clearing in sensitive habitat areas will be undertaken in the presence of a qualified fauna spotter-catcher. Pre-demarcated habitat features will be thoroughly checked by fauna spotter-catcher prior to clearing. Provisions for the relocation of fauna should be made prior to the commencement of clearing
- Habitat features such as hollows and log piles will be salvaged, where possible, and placed in nearby (retained) habitat areas. Where this is not possible, the loss of habitat features will be supplemented in adjacent habitat areas with artificial habitat (for example, nest boxes)
- If any pits/trenches are to remain open after daily site works have been completed, they will be fenced, covered, or fauna ramps should be put in place to provide a potential means of escape for trapped fauna
- Watercourse areas will be restored and rehabilitated to improve connectivity and enhance provision of suitable habitat for native animals present in the area.

##### Injury or mortality to native animals

Management and mitigation measures to reduce the potential for fauna mortality as a result of land clearing activities include:

- Pre-clearance surveys will be undertaken in areas identified as potential habitat for threatened species, prior to commencement of clearing. In areas where these surveys indicate the presence of habitat features observed to (or with the potential to) provide habitat for these species, a fauna-spotter catcher will be engaged to accompany clearing crews. Pre-demarcated habitat features identified during the pre-clearance survey will be thoroughly checked by the fauna spotter-catcher prior to clearing. Provision for the relocation of fauna will be made prior to the commencement of clearing

- Vegetation clearing will be undertaken in a sequential manner to allow more mobile fauna species the opportunity to disperse away from clearing areas
- Procedures in the event that an animal is injured will be developed
- Vehicles will be required to stay on pre-determined routes
- All vehicles and plant will adhere to site rules relating to speed limits. Speed limits will be clearly signposted so as to minimise the potential for road kill
- Any road kill will be dragged to the edge of the road immediately and subsequently removed as quickly as practicable to reduce potential for scavengers to be struck
- Where practical, temporary fencing will be erected around excavations to exclude mobile animals from vegetation clearing areas
- Work areas will be checked for fauna that may have become trapped before work commences each day
- In instances where an animal has entered active construction areas, the site Environmental Manager will be immediately informed. An assessment of whether the animal is at risk of harm and/or poses a threat to construction personnel will be made by the Environmental Manager (or their delegate)
- If any pits/trenches are to remain open after daily site works have been completed, they will be securely covered by an impenetrable barrier, if possible, or fauna ramps (e.g. log ramps or wooden planks) will be put in place to provide a potential means of escape for trapped fauna
- Site inductions are to include education regarding the local fauna of the site and protocols to be implemented if fauna are encountered.

### Degradation of adjacent habitat

Management of erosion and sedimentation in and adjacent to cleared areas will be undertaken in accordance with erosion and sediment controls set out in the draft rail EMP (Carmichael Coal Mine and Rail Project EIS, Volume 3, Section 13). This plan will identify all practices to be implemented prior to, during, and post-construction. The management approach to erosion and sediment control actions will include:

- Diversion of clean stormwater around disturbed areas, with scour protection as required to address any associated modifications in drainage paths.
- Drainage, erosion and sediment controls, in particular in areas near earthworks and key stormwater flow paths, will be installed and maintained.
- All soil or mulch stockpiles will be located away from watercourses and key stormwater flow paths to limit potential for transport of these substances into the watercourses via runoff.
- Design of stockpiles will consider soil properties to ensure side-slope stability and minimise susceptibility to failure due to erosion risk.
- Dust suppression activities will be undertaken where appropriate and managed in accordance with the recommendations outlined in the Rail Air Quality Report (Carmichael Coal Mine and Rail Project EIS Volume 4, Appendix AD).
- Areas will be stabilised as soon as practicable after disturbance.
- Stormwater control works to be installed as soon as practicable in the construction of onsite and offsite infrastructure.

### Proliferation and introduction of weeds and pests

Pest and feral species spread, and the potential for introduction of new feral species, will require management during the construction phase of Rail Camp 6. An integrated suite of actions should be developed to manage pest species, including:

- A weed survey will be conducted prior to construction works commencing
- A weed management program will be developed for the construction and operational phases to ensure that weed infestation of disturbed areas is kept at a minimum
- Vegetation and topsoil containing declared weeds will not be reused on site
- Temporary and permanent washdowns will be installed prior to construction commencing
- Vehicle inspections and a weed hygiene declaration will be required for vehicles and all earthmoving equipment coming onto the site
- Disturbed topsoil and vegetative material will be returned as close as possible to the original sites in order to limit the potential spread of weeds and pathogens
- No animals will be allowed to be brought to the construction site
- Weeds will not be reused in revegetation and will be destroyed/disposed offsite at a licensed facility
- The management of vegetation waste (in a manner that minimises potential for spread of weeds) and disposal of food scraps (minimise to potential to attract pest animals) is in accordance with the Waste and Resource Management Plan.

### Wildlife disturbance from increased noise and light

Management and mitigation measures to reduce disruption to fauna behaviour during construction activities include:

- Pre-clearing surveys for active breeding sites
- Use of directional lighting where possible
- Restriction of movement of vehicles and humans to construction areas.

#### *Operational phase*

### Injury or mortality to native animals

Measures to mitigate the risk of wildlife mortality during the operational phase have been incorporated into the Rail EMP. Key measures to reduce wildlife mortality include:

- Establish and enforce local speed restrictions and other road rules
- Establish a protocol to record the incidence and location of all wildlife roadkill
- Provide lighting in potential high risk areas
- Enforce curfews to minimise night-time vehicle movements
- Restrict the use of barbed wire fencing or incorporate fencing with a non-barbed top wire.

### Proliferation and introduction of weeds and pests

An integrated suite of actions are incorporated into the draft rail EMP and Offsite Infrastructure EMP, and are to be implemented throughout the operational life of the mine to manage weeds and pest species.

These actions will include:

- Waste management measures incorporated into the draft rail EMP and Offsite Infrastructure EMP, and include containment of food scraps in securely sealed containers
- Vegetation and soil waste will not be moved to areas of lower weed infestation
- Pest animal occurrence will be monitored at onsite and offsite habitat management areas
- Weed levels will be monitored in areas adjacent to offsite habitat management areas. Monitoring will be undertaken annually, with results to be considered in terms of baseline information (collected prior to construction) and with reference to appropriate control (reference) sites. If significant infestations of any weeds occur, or if Weeds of National Significance or Class 1 or 2 weeds declared under the LP Act, weed control measures will be implemented
- All vehicles, equipment and materials brought on to the site will be certified as free of weeds and weed seeds and carry a weed hygiene declaration. Records are to be kept of compliance with this requirement
- Soil stripped and stockpiled from areas containing known weed infestations will be stored separately and are not to be moved to areas free of weeds
- Personnel will not bring domestic animals to the Project Area.

#### Wildlife disturbance from increased noise and light

The draft rail EMP and Offsite Infrastructure EMP has incorporated mitigation measures to reduce the impact of noise and light on local wildlife behaviour. Key measures include:

- Establishment and ongoing monitoring of noise emission monitoring stations located at key locations within the Carmichael Coal Mine and Rail Project area
- Regular maintenance of machinery within the industrial precinct and rail siding to minimise noise emissions
- Use of directional lighting to minimise light spill
- Use of long wavelength light with red or yellow tinting wherever this can be applied
- Undertaking revegetation according to Rehabilitation Plan requirements, where applicable and following decommissioning of the site.

## 8.8 Aquatic ecology

### 8.8.1 Potential impacts

Aquatic environmental values have been considered in the site selection and design of the rail corridor and associated infrastructure. As such, no aquatic and riparian habitats, including existing farm dams will be directly impacted by the construction of Rail Camp 6. However, construction phase activities may result in indirect and temporary impacts on aquatic systems. Disruption to aquatic habitats has the potential to impact through the localised reduction in availability and quality of drinking resources and foraging habitat, and potentially changes to riparian habitats in downstream watercourses due to changes in water quality and flow regimes. In particular, indirect impacts during the construction and operational phase may include:

- Changes to surface flows and geomorphology
- Degradation of water quality and aquatic habitat associated with overland flow.

### 8.8.2 Mitigation measures

Mitigation measures to ensure adverse impact on the environment are minimised during the construction and operational phase will include:

- Avoid clearing of vegetation and major earthworks during overland flow events
- Installing stormwater diversion and collection systems as early as possible in the construction period
- Developing and implementing erosion and sediment control plans. Further details on erosion and sediment control are provided in the draft rail EMP and Offsite Infrastructure EMP
- Maximising retention of surface cover by clearly delineating clearing areas and restricting activities to these areas
- Locating soil or mulch stockpiles away from watercourses and key stormwater flow paths to limit potential for transport of these substances into the watercourses via runoff
- Dust suppression activities to be undertaken where appropriate. Stabilisation of disturbed areas as soon as practicable after disturbance
- Wherever possible, staging the clearing of vegetation as construction progresses and minimising the disturbance footprint at all times
- Undertaking revegetation according to Rehabilitation Plan requirements
- Development of emergency response protocols and procedures for implementation in the event of a contaminant spill or leak and provision of spill response equipment
- Storage of fuels, chemicals, wastes and other potentially environmentally hazardous substances in bunded or otherwise contained areas away from watercourses
- Refuelling and in areas away from watercourses
- Regularly checking vehicles and equipment for oil leaks.

## 8.9 Air environment

### 8.9.1 Potential impacts

Information relating to air quality assessments and methodology can be found in the Carmichael Coal Mine and Rail Project EIS Volume 3, Chapter 7; Volume 4, Appendix AD and incorporated into the draft rail EMP (Carmichael Coal Mine and Rail Project EIS, Volume 3, Section 13).The assessments predict that the ground-level concentrations of all air pollutants released from Rail Camp 6 will not exceed the objectives of the *Environmental Protection (Air) Policy 2008* (Air EPP).

#### Construction

Potential air quality impact associated with construction of Rail Camp 6 include:

- Increased particulate levels associated with vegetation clearing, vehicle operations and earthworks.

#### Operational phase

Impacts on air quality are expected to be minimal during operation of Rail Camp 6.

### 8.9.2 Mitigation measures

While dust generated by construction activities is unlikely to impact air quality at sensitive places in the region, measures to mitigate the generation of dust emissions will be investigated and applied through the Carmichael Coal Mine and Rail Project (Rail) Environmental Management Framework (refer to draft rail EMP), which will include a dust management plan.

Mitigation measures to ensure adverse impact on the environment are minimised during construction and operation will include:

- Watering of construction site and access roads will be undertaken as required to control dust using water sprays
- Avoid movement or handling, or increase wetting, of soil material on days of very high winds in close proximity to downwind sensitive receptors
- Any long term (longer than 4 weeks) soil stockpiles will be covered, stabilised and/or moistened as required to prevent generation of dust particulates.

## 8.10 Noise and vibration

### 8.10.1 Potential impacts

Sensitive receptors within or in close proximity to the offsite infrastructure, as outlined in the EPP Noise, include dwellings and protected areas identified under the NC Act. The offsite infrastructure is located in an isolated rural area with a small number of sensitive receptors as follows:

Dwellings

- Labona homestead
- Bygana, Lignum and Doongmabulla homesteads).

The existing noise environment is consistent with the quiet rural setting. It is not anticipated that construction of the rail corridor and associated infrastructure will cause adverse noise impacts on identified receptors. Additional information and summary of background noise levels and assessments undertaken can be found within the Carmichael Coal Mine and Rail Project EIS Volume 3, Chapter 9.

Activities associated with Rail Camp 6 are not likely to cause any noise impacts on sensitive receptors in the area. Noise from operation-related traffic is predicted to be within guideline levels but incremental increases in traffic noise levels may be perceptible at locations close to Gregory Developmental Road and along the Moray Carmichael Road.

The location of mobile plant (e.g. compressors, generators), concrete batching plants and construction camps has been designed, as far as practicable, to be away from the nearest potential sensitive receptors.

Livestock and native animals are not expected to be affected by noise associated with civil works. Similarly, Vibration levels are not predicted to affect any sensitive receptors.

### 8.10.2 Mitigation measures

Mitigation measures would only be required upon receipt of a valid complaint. Adani will maintain a stakeholder engagement program throughout construction including:

- Provision of information to nearby residents regarding construction activities and how to contact Adani if noise issues arise

- A continuously monitored community liaison phone number and email address that allows noise complaints to be received and addressed in a timely manner.

If noise complaints are received, these will be entered into Adani's Consultation Manager database and responsibilities assigned for contacting the complainant and investigating the complaint in a timely manner.

## 8.11 Transport

### 8.11.1 Potential impacts

Information relating to impacts on transport infrastructure during construction and operation of the rail and associated infrastructure can be found in the Carmichael Coal Mine and Rail Project EIS, Volume 3, Section 11; Volume 4, Appendix AG and the Supplementary EIS, Appendix P.

It is estimated that there would be up to 407 people at Rail Camp 6. Construction workers will operate on a FIFO basis to airports in the vicinity of the Carmichael Coal Mine and Rail Project rail corridor, primarily Moranbah in the short-term. Personnel would then be transferred to the construction camps via buses.

Workers will be transported from rail camps to work sites by four wheel drive vehicles or buses. Travel time to the furthest work site is estimated at 35 minutes. The workforce is expected to leave the construction camp between the hours of 5:00 and 7:00 a.m. and return between 5:00 and 7:00 p.m.

It is expected that the construction of the Carmichael Coal Mine and Rail Project rail corridor would generate up to ten bus movements per week between the airport at Moranbah and each of the four rail camps. The proposed construction camps will be situated in vicinity of the rail corridor, and as a result trips between the camps and the rail corridor will have minimal impact on the external road.

Additional vehicle movements will also be generated by service vehicles supplying the construction camps. This would typically include services such as food transport, linen laundering, fuel supplies, waste management contractors and maintenance servicemen. For the purposes of this assessment, it has been assumed that there would be approximately 20 service vehicle (light vehicle) movements per week at each rail camp.

Movements attributed to the servicing of construction camps during operation of the camp are assumed to consist of 80 light vehicle movements each week (20 to each rail camp), which will be spread out throughout the day. For purposes of a worst-case scenario, it is assumed that 50 per cent of the light vehicle movements would occur during the peak hour. Based on this assumption it is likely that there will be ten vehicle movements per camp during the peak hour, or 40 in total.

### 8.11.2 Mitigation measures

The expected increase in traffic associated with the construction of the Carmichael Coal Mine and Rail Project rail corridor can be accommodated on most State-controlled roads that provide access to the site. However, a number of mitigating measures have been identified to ensure that transport and traffic impacts arising from the construction are minimised. These measures will be incorporated through the development of the Construction Traffic Management Plan (Refer to draft rail EMP).

An important measure relating to construction traffic impacts is the implementation of a community information awareness program. This program will be initiated prior to construction commencing and throughout the entire construction period to ensure that local residents are aware of the construction activities, with particular regard to construction traffic issues.

Other initiatives that will be undertaken as part of the construction and operation phases include:

- Consultation with DTMR, IRC and Queensland Police Services
- Reviewing speed restrictions along transport corridors
- Install specific warning signs at access roads to the construction corridor to warn road users of entering and exiting traffic
- Provide advance notice of road/lane closures and advice on alternative routes
- Provide appropriate traffic control and warning signs for areas identified where potential safety risk issues exist
- Managing the transportation of construction materials to maximise vehicle loads in order to minimise vehicle movements
- Manage the transportation of construction materials, using the Queensland Police Services and Pilots to maximise vehicle loads in order to minimise vehicle movements
- Buses will be used to move construction workers from the airport to the temporary construction camps wherever possible
- Safety induction to staff and contract workers will include awareness regarding traffic rules
- Drivers will be trained in safe driving of the vehicle and fatigue management strategies.

## 8.12 Greenhouse gasses

### 8.12.1 Potential impacts

The Greenhouse Gas (GHG) emissions generated during the construction of the Carmichael Coal Mine and Rail Project rail corridor will result from emissions generated during vegetation removal, wastewater treatment, transport, manufacturing and construction of building materials and energy usage. These GHG emissions will be relatively low, produced over a short time period and are therefore unlikely to contribute significantly to Queensland's overall GHG emissions.

### 8.12.2 Mitigation measures

A rail EMP has been developed and will be implemented during construction. These EMPs include commitments aimed to avoid and reduce GHG emissions, energy costs and energy consumption for the construction of the Carmichael Coal Mine and Rail Project rail corridor, including:

- Implementation of vehicle operating guidelines to encourage correct and efficient operation of vehicles
- The implementation of a traffic management plan that:
  - Reduces the number of vehicles and/or trips required for transport
  - Uses buses for transportation of large numbers of personnel to minimise number of vehicles operating
- Implementation of a wider fuel management strategy which encourages use of more efficient plants and vehicles, planning, logistics, driver education and maintenance
- Efficient management of procurement and product supply

- Reduction on the amount of waste disposed to landfill and reuse of waste on site as much as possible, which will subsequently reduce the amount of vehicle movements and therefore fuel usage
- GHG emissions and energy consumption will be measured in accordance with current legislative requirements.

Activities such as vegetation clearing will be restricted to the required footprint only through the implementation of the EMPs which will identify clearing limits.

## 8.13 Social and economic environment

Social and Economic impacts were assessed for the whole of the Carmichael Coal Mine and Rail Project and can be found in the Carmichael Coal Mine and Rail Project EIS Volume 1, Section 3.

Temporary construction camps will be developed to house construction workers for the Carmichael Coal Mine and Rail Project rail corridor. The temporary construction camps will be relatively evenly spaced along the rail alignment approximately 80km apart reducing the distance construction teams need to travel to a maximum of about 40km from each camp to the furthest work point. The temporary construction camps will be located as close to the proposed alignment as possible. A construction access road will be built along the proposed alignment and will provide access from the temporary construction camps to construction areas. Buses and four wheel drives will be used to transport workers from the temporary construction camps to the work areas for each shift.

The proposed workforce management and accommodation strategy for both construction and operation phases of the Carmichael Coal Mine and Rail Project will minimise presence of non-resident workers in existing communities. Distances from the mine and western end of the rail alignment, and the intention to fly workers directly to a purpose built airstrip near the proposed workers accommodation village will preclude workers being able to travel to Clermont or other local or regional centres to access community services and infrastructure.

The temporary construction camps for construction of the Carmichael Coal Mine and Rail Project rail corridor will be temporary, of smaller capacity and, as such, will not have the level of services proposed for the mine workers accommodation village. Further, construction workers may be utilising their own vehicles to travel to the temporary construction camps and construction sites, particularly where they have specialised tools and equipment. Hence, during the construction period, workers may access towns such as Moranbah and make use of services available in the towns. However, the number of workers present is relatively small and construction is short term in nature, and hence, exacerbation of existing issues in nearby towns is not expected.

Overall, the construction and operation activities associated with Rail Camp 6 are not expected to exacerbate existing issues in relation to social services and infrastructure.

Further information in regards to the management plan for social impacts for the Mine and Rail Project can be found in the Carmichael Coal Mine and Rail Project EIS Volume 1, Section 4.

## 8.14 Cultural heritage

### 8.14.1 Potential impacts

Adani are committed to ensuring all practical measures are taken to avoid impacts on Indigenous and non–indigenous cultural heritage.

A search of cultural heritage registers has not identified any areas of non-indigenous cultural heritage value within the Project Area. An assessment of cultural heritage of the Jangga People identified no cultural heritage values within the site footprint. Further, it is not expected that places meeting the criteria for cultural heritage significance. Additional information regarding cultural heritage can be found within the Carmichael Coal Mine and Rail Project EIS Volume 1, Section 5.

To date a number of items of Indigenous cultural heritage value have been identified on the Carmichael Coal Mine and Rail project mine site. Adani will continue to avoid, manage and mitigate cultural heritage values in line with the Cultural heritage management plans (CHMPs) developed with the relevant Aboriginal parties and approved by DERM (now EHP). The CHMPs will continue to be refined as further survey work is undertaken. Where practical, the concept design will be amended to respond to significant cultural finds.

Potential impacts to cultural heritage associated with the construction and operation of the rail camp include:

- Disturbance and potential destruction of artefacts associated with vegetation clearing
- Concealment of artefacts resulting from spoil placement.

### 8.14.2 Mitigation measures

Rail Camp 6 is not expected to impact matters of state heritage significance as such, no mitigation measures are proposed.

CHMPs will be finalised and approved prior to pre-construction for the Project. Any required pre-clearing surveys for construction areas will also be undertaken in accordance with the CHMP. Where items of archaeological importance are identified during construction or operation of the Project the procedures identified in the DEHP (2014) Guideline: Archaeological Investigations will be implemented. These procedures are also reflected in draft environmental management plan included in the Carmichael Coal Mine and Rail Project EIS Vol. 2, Section 13.

## 8.15 Health and safety

The Proponent is and environmentally responsible company committed to providing a safe and healthy working environment to its employees, contractors, and visitors. The Adani Environment and Sustainability Policy can be found in the Carmichael Coal Mine and Rail Project EIS, Volume 4, Appendix A.

## 8.16 Environmental management summary

### 8.16.1 Environmental management plan

An EMP for the rail corridor is included in the Carmichael Coal Mine and Rail Project Supplementary EIS, Appendix W.

The EMP has been prepared to support an environmental impact assessment process for the Carmichael Coal and Mine Project under the EPBC Act and SDPWO Act. As such, the EMP reflects the findings and recommendations of studies undertaken for the EIS, and provides a framework for management of identified impacts and implementation of recommendations made in the EIS. The EMP will be further developed as detailed design of the Project continues and to achieve compliance with conditions of approvals obtained.

The EMP covers:

- Design and pre-construction requirements
- Construction phase activities

- Operation activities
- Decommissioning.

Closure and Rehabilitation requirements have been identified and included in a separate Closure and Rehabilitation Management Strategy Plans for the Rail. Depending on the selected contracting strategy for the construction and operation phases, contractors and subcontractors may be required to prepare stand-alone environmental management plans for those aspects of the project under their control. Such plans will be required to be consistent with this EMP.

As required by the continual improvement approach to environmental management, this EMP is a dynamic document and will be updated as required to reflect:

- Changing significance of impacts and hazards associated with the offsite infrastructure construction
- Changes in legal and other obligations
- Learnings and corrective actions from monitoring activities.

As the Carmichael Coal Mine and Rail Project's rail corridor has a proposed operating life of 90 years, it is likely that significant changes in legislation, policy and available techniques in relation to environmental management will occur during the life of the project. Annual review of the EMP will ensure that changes are adopted.

### 8.16.2 Site based management plan

A Site Based Management Plan has been prepared in accordance with DEHP's SBMP guideline licensing requirements and describes in full detail the ERAs to be carried out at the site and how they are to be managed. The SBMP identifies the environmental management measures which will be adopted onsite to address potential environmental impacts associated with the proposed ERAs.

There are potential environmental and public health impacts associated with the onsite treatment, storage and disposal of effluent and fuel storage activities as presented. The potential impacts associated with the operation of the ERAs are identified as follows:

- Odour emissions and gaseous chemical release
- Noise from operation of equipment
- Release of contaminants to land, surface water or groundwater due to effluent or sludge spill, fuel tanker rupture, tank leakage or diesel spill.

The potential impacts associated with the contaminant releases are identified below:

- Contamination of land, surface water or groundwater due to poor effluent quality
- Contamination of land, surface water or groundwater due to incorrect effluent irrigation application rates
- Contamination of land, surface water or groundwater due to uncontrolled effluent and untreated stormwater discharge
- Contamination of land, surface water or groundwater due to tank leakage or rupture
- Contamination of land, surface water or groundwater due to diesel spills
- Sedimentation of receiving waters as a result of the erosion and sediment wash-off from the irrigation area, as a result of degradation of the vegetation cover
- Over nitrification or salination of soils through excessive nutrient loadings and salinity loadings

- Degradation of soil structure and increases in sodicity over time leading to reduction in agricultural/landscaping use value of the soils
- Odour emission from STP and irrigation areas
- Odour emission from fuel storage infrastructure and spilled fuels
- Public health risks due to uncontrolled access to plant and equipment, volatile organic compounds or solvents or exposure to irrigation spray aerosols
- Public health risks due to fire from ignition or explosion of flammable liquids.

Environmental and public health impacts associated with release of untreated effluent and diesel or changes in the ambient environment will be minimised through adherence to the mitigation and control measures proposed in the SBMP for the ERAs (Section 6 onwards). Refer to Appendix H.

# 9. Compliance with Coordinator General's conditions

## 9.1 Overview

The CG's report on the Carmichael Coal Mine and Rail EIS provides a number of conditions which require further consideration or assessment at the CUL stage. This section of the planning report specifically addresses those elements outlined within Section 2 of Appendix 2 to the CG's Report relating to conditions to be addressed by the proponent in relation to the CUL application within the GBSDA.

## 9.2 Coordinator General's relevant conditions

### 9.2.1 Coordinator-General's stated conditions

As outlined in the CG's report, Part B, Section 1, Appendix 2 contains stated conditions relating to environmental authority for ERA 63 Sewage Treatment which will be included by the assessment manager in the relevant approval. Refer to Appendix H for further information on the proposed sewage treatment which meets all required standards and guidelines.

### 9.2.2 Coordinator-General's recommendations relating to the contents of an MCU application

The following Table 8 addresses each of the conditions outlined in Recommendation 6 and Recommendation 7 of the CG's Report relating to the contents of an MCU application. Italicised text provides a reference to where the component of the recommendation has been addressed.

**Table 8 Relevant Recommendations from CG's Report**

| Recommendation 6 – MCU Application within a State Development Area |
|---|
| a. Prior to, or as part of an application to change land use within the State Development Area, the proponent must provide to the Coordinator- General: |
| i) A detailed description of all components of the project within the State Development Area including maps and drawings at an appropriate scale, delineating which components relate to construction and which relate to operations. |
| *Refer to Section 3 for proposed development details and Section 4 for construction and operation phase details. Section 7 also provides a map indicating the developments location within the GBSDA.* |
| ii) Detailed information on how all components of the project will address and satisfy the requirements of the development scheme for the State Development Area. |
| *Refer to Section 7 of this report for assessment against the GBSDA Development Scheme.* |
| iii) Documented management measures and procedures prepared in accordance with Recommendation 7. |
| *Refer to Section 8 for potential impacts and mitigation measures for the project.* |
| iv) Documented evidence that any accommodation components of the project will |

achieve an acceptable level of amenity for residents.

*Refer to Section 8.3 for an assessment of the impact of Rail Camp 6 on scenic amenity.*

v) Copies of any infrastructure agreements with state agencies or the Isaac Regional Council.

*Copies of infrastructure agreement can be provided on request.*

The Coordinator- General has jurisdiction for this condition.

**Recommendation 7 – Management measures and procedure requirements to be included in MCU and development approval applications**

a. The proponent in any application for an MCU or Development Approval must prepare and document management measures and procedures that will:

i) ensure compliance with applicable environmental legislation and any stated conditions under the SDPWO Act

*Refer to Section 5 for EPBC Act and Environmental Protection Act requirements.*

ii) implement relevant commitments made by the proponent in the project's environmental impact statement documentation

*Refer to Section 9.3 below for project commitments made by Adani in the AEIS.*

iii) minimise adverse impacts to the greatest extent practicable to:

A) the functioning and biodiversity of ecosystems

B) soil structure and quality

*Refer to Section 8 for potential impacts and mitigation measures.*

iv) minimise the clearing of native vegetation to the greatest extent practicable

*Refer to Section 8.7 for the extent of vegetation clearing on-site.*

v) prevent environmental nuisance from dust, odour light smoke or noise at a nuisance sensitive place

*Refer to Sections 8.9, 8.10, and 8.12 for impacts and mitigation measures concerning air environment, noise and vibration, and greenhouses gases.*

vi) establish rehabilitation objectives, including a rehabilitation schedule

*Refer to Section 4.5 for decommissioning and rehabilitation details.*

b. The management measures and procedures must detail appropriate performance criteria and standards, monitoring and auditing and corrective actions so that all reasonable and practicable measures to prevent or minimise environmental harm are identified

*Refer to Section 8 for mitigation measures. Carmichael Coal Mine and Rail Project EIS/SEIS/AEIS provide further detail of management measures, in particular the Rail EMP contained in Appendix W of the SEIS.*

c. When approved, the approval holder must:

i) implement and make available the management measures and procedures in (b) to all employees, contractors and subcontractors

ii) make the management measures and procedures publicly available on the proponent's website prior to the commencement of any construction work

iii) regularly review and amend as necessary the management measures and procedures in response to monitoring and auditing reports and changes in legislation and standards. Any management measures and procedures must be updated on the proponent's website within 30 business days.

*Adani intend to comply with these requirements upon receipt of the development permit for CUL.*

The administering authority is to have jurisdiction for this condition.

**Note to the applicant:**

Matters to consider in developing management measures and procedures may include but are not necessarily limited to:

- soils (including geotechnical investigations, soil types, salinity, sodicity and acid sulfate potential)
- erosion and sediment control (suggested guideline: International Erosion Control Australasia 2008, Best Practice Erosion and Sediment Control)
- native flora and fauna
- fauna passage, connectivity between populations and prevention of entrapment during construction
- weeds and pests
- progressive rehabilitation of disturbed areas
- surface waters (suggested guideline: Department of Natural Resources and Mines guideline Activities in a watercourse, lake or spring associated with a resource activity or mining operations (WAM/2008/3435)
- surface flood waters
- dust and air quality (including coal dust management)
- noise and vibration from construction activities (suggested guideline Application requirements for activities with noise impacts, DEHP)
- rail operational noise (suggested guideline NSW Environment Protection Authority Rail Infrastructure Noise Guideline 2013)
- chemical and fuel storage
- waste management
- stock routes
- agricultural land integrity
- lighting and visual amenity
- existing transport and utility infrastructure
- non-indigenous cultural heritage
- decommissioning and rehabilitation
- hazard and risk (including managing any adverse impacts of flood, severe storms, bushfire and landslide).

*These matters will be taken into account during development of management measures for Rail Camp 6.*

**Note**: Should the development require clearing of native vegetation assessable under the *Vegetation Management Act 1999*, a Property Vegetation Management Plan consistent with section 11 of the Vegetation Management Regulation 2012 must be prepared as part of an application for MCU/development approval.

*No clearing of vegetation assessable under the VM Act forms part of this development application.*

**Note:** Any mapping errors or claims of inaccurate mapping data of the Regulated Vegetation Management map or Regional Ecosystem mapping can be addressed by lodging a Property Map of Assessable Vegetation application under the *Vegetation Management Act 1999* prior to lodgement of any application for development approval.

*No mapping adjustments are required as part of this development application.*

## 9.3 Adani relevant project commitments

The Carmichael Coal Mine and Rail AEIS Project Commitments Register add to those commitments provided in Volume 1 Section 10 of the EIS. They have been presented under each relevant Project area and aspect. Table 9 details the project commitments relevant to Rail Camp 6.

**Table 9 Rail camp 6 project commitments**

| Commitment Category | Commitment |
|---|---|
| Project Wide Commitments | |
| Social Impact Management Strategies | P1.5 Development of a Workforce Management Strategy that includes a comprehensive employee induction programme addressing, among other things, a Code of Conduct for Employees and contractors regarding behaviour, alcohol and drug use, cultural awareness and safety. |
| | P1.6 Development of a Housing and Accommodation Strategy that provides a workers accommodation village and temporary construction camps for the construction and operations workforce and responds to housing and accommodation issues in local and regional communities. |
| | P1.8 An Emergency Management Plan will be developed for all components of the Project in consultation with relevant emergency service providers (including the relevant regional health service) and this will include response to injuries and medical evacuations as well as fire response and response to road accidents. |
| | P1.9 Development of Workforce Health and Safety Plans within the Workforce Management Strategy that will include a wellbeing program, including safe work practices, fatigue management, management of medical conditions (including communicable diseases), fitness, emotional and mental health and programs for financial planning. |
| Economics | P3.5 Whilst there will predominantly be a FIFO workforce, Adani will identify |

| | |
|---|---|
| | opportunities for Drive in Drive Out and Bus in Bus Out employment options. |
| Matters of national environmental significance | P6.70 All Project Environmental Management Plans will be informed by monitoring works to be completed pre-construction and during delivery of the Project. They will be adaptable and include provision for revision and update based on monitoring feedback, changes in operational or construction work plans, changes in legislation and to maintain currency against political, social and environmental circumstances. |
| Project Rail Commitments | |
| Project description | R1.2 A Decommissioning and Rehabilitation Plan will be developed with the overall aim of minimising the amount of land disturbed at any one time during the life of the Project (Rail). |
| Climate, natural hazards and climate change | R2.11 Develop an Emergency Response Plan (ERP) for construction, operations and decommissioning phase, which will incorporate the requirements for workplace health and safety, community and environmental hazard management. The ERP will include responses for natural events such as cyclones, flooding and earthquake. |
| Land | R3.2 Light spillage from artificial night-lighting used during night works will be designed such that the site is not over-lit unnecessarily and light spillage into adjacent areas is minimised.<br>Minimise security lighting to reduce additional sky glow.<br>Specify appropriate luminaires to reduce light spill, sky glow and glare.<br>Minimise any potential increase in light pollution within the natural environment by sensitive placement and specification of lighting.<br>Directional lighting will be used and shields provided to minimise spill outside the working area. This includes the sensitive placement and specification of lighting to minimise any potential increase in light pollution.<br>Fauna-sensitive lighting will be considered during construction camp design. |
| | R3.3 Develop and implement a traffic management plan to control road usage routes and traffic speed to reduce the visual impact of vehicle movements and dust generation. |
| | R3.4 Progressive rehabilitation of temporary infrastructure sites and non-operational areas. This will assist in providing texture and contrast in the visual landscape. |
| | R3.9 Clearing will be confined to the Carmichael Coal Mine and Rail Project rail corridor and infrastructure areas and minimised wherever possible, particularly in areas where temporary infrastructure is to be established. Existing trees and shrubs, particularly in discharge and just above the discharge areas, will be retained as far as is practicable. Retention of vegetation assists in maintaining groundwater levels at sufficient depths below ground level. |
| | R3.10 Temporarily disturbed areas will be stabilised as soon as practical by |

| | |
|---|---|
| | reinstating topsoil and subsoil and compacting replaced soils. Any bare ground associated with temporary infrastructure (e.g. construction camps) after the completion of the Project will be re-vegetated in line with pre clearing conditions, such as suitable pasture or native vegetation. |
| | R3.17 Sewage will be treated on-site with a package sewage treatment plant. Disposal options will be assessed during the design phase of the Project. |
| | R3.22 Chemical storage areas will be suitably bunded and constructed to minimise the potential for leaks. Chemicals will be stored, handled and used in accordance with the Material Safety Data Sheets. Small quantities of chemicals, fuels and oils will be stored within a bunded area within workshops or in a bunded container. |
| Nature conservation | R4.1 Design and layout of the temporary and permanent structures and infrastructure within the construction footprint (including construction areas, such as site offices, construction stockpile locations, machinery/equipment laydown areas and storages, access tracks and accommodation camps) will as far as possible avoid areas of remnant vegetation (in particular endangered, of concern and threatened REs) and make use of previously cleared, non-remnant land. |
| | R4.15 Management of fauna pest species during construction in and adjacent to cleared areas in accordance with a Project Fauna Pest Species Plan. This plan should include details relating to the monitoring and management of pest animals (refer Volume 3 Section 13). Camps and laydown areas to be fenced to prevent encroachment of feral species. Waste material to be appropriately sealed and stored to discourage encroachment by feral species. |
| | R4.27 Reduce the number of construction vehicles mobilising to and from site daily – retain vehicles within the construction zone and transfer personnel by means of bus to and from the work front daily to reduce the exposure for animal strike in areas away from the construction footprint. |
| Water resources | R5.9 Laydown areas for vehicles and machinery and storage areas for chemicals, oils and fuels will be contained in appropriately designed facilities. Containment may include: sealed/lined surfaces and hard stand areas; bunded areas; containerised storage. In addition, chemicals, oils, fluids and other hazardous substances will be stored in accordance with the specifications of the material safety data sheet, as appropriate. |
| Noise and vibration | R8.1 Locate mobile plant (e.g. compressors, generators), concrete batching plants and construction camps as far as practicable away from the nearest potential sensitive receptors. |
| Waste | R9.5 Recycling bins will be provided around the construction camps. Recyclable materials such as glass, aluminium, plastic and paper will then be taken offsite for recycling. |
| | R9.6 Non-recyclables will be taken offsite for disposal by a licenced contractor for disposal to a licensed facility. |

| | |
|---|---|
| | R9.7 All chemicals, fuels and oils will be stored in bunded areas in accordance with Australian Standards to minimise potential for any spills. Oily water generated at interceptors or in the event of a spill involving oil or diesel will be treated to separate oil from water. The separated water will be directed for evaporation or reused on-site for dust suppression. Spilled oil will be removed by a licensed vacuum truck contractor and disposed of at a licensed facility. Oil drums will be drained of all remaining product and stored on-site within a bunded facility for collection by a licensed contractor and recycler. |
| | R9.8 Sewage and grey water will be treated on-site prior to disposal and site specific wastewater management plans will be developed and implemented to ensure compliance with effluent treatment and discharge requirements. |
| Transport | R10.1 Traffic management issues will be addressed through the preparation and implementation of a Construction Traffic Management Plan, which will be developed during the detailed design phase. The TMP will consider impacts on bus school routes and other relevant impacts and will propose management and mitigation procedures outlining emergency response times for emergency. |
| | R10.17 A bus fleet will be required to support both the construction and operational phases of the Project. The buses will primarily transport the workforce to/from the Airport(s) (FIFO) and each work site. |
| Hazard and risk | R11.5 All buildings, structures and fixed plants will be protected with a suitable water supply, water reticulation and hydrant system. For buildings and occupied facilities, a fire hose system or a fire hydrant system, and/or pump sets will be in compliance with the Building Code of Australia (BCA). |
| | R11.6 The fire safety systems installed in a building will be any one or combination of the methods in a building to warn people of emergency, provide for safe evacuation, restrict the spread of fire and extinguish fire. |
| | R11.37 Zero tolerance for drug and alcohol use will be enforced. |
| | R11.41 Kitchen facilities at the construction camps will be provided in accordance with statutory requirement, which will be operated in compliance with food legislation by qualified contractors. Appropriate publications regarding personal hygiene will be provided. Operations will be undertaken in accordance with the QLD Food Act 2006. |
| | R11.43 Adani will develop and implement all management plans/systems/strategies as per the management plans and systems hierarchy in the commitment register at the appropriate project stage. |

# 10. Conclusion

This report has been prepared on behalf of Adani Mining Pty Ltd, the proponents of the development proposed to be undertaken on the subject site. This report has provided a town planning assessment in accordance with the provisions of the Galilee Basin State Development Area (GBDSA) Development Scheme in respect to the proposed 'Change a Use of Land' for non-resident workforce accommodation in accordance with the *State Development and Public Works Organisation Act 1971.*

A full assessment of the proposal has been made against the objectives of the Development Scheme for the GBSDA and the land use intents of the relevant land use precinct, being the Mining Services Precinct. This conclusion of this assessment is that the proposed development generally achieves compliance with the relevant objectives and assessment criteria of the Development Scheme for the GBSDA.

The proposal has also addressed those elements outlined within Section 2 of Appendix 2 to the CG's Report on the Carmichael Coal Mine and Rail EIS relating to conditions to be addressed by the proponent in relation to the CUL application within the GBSDA. This report has specifically addressed Recommendation 6 and Recommendation 7.

The proposal is considered to be appropriate for the site based on the following justification:

- The proposal complies with the Section 2 of Appendix 2 to the CG's Report on the Carmichael Coal Mine and Rail EIS relating to conditions to be addressed by the proponent in relation to the CUL application within the GBSDA
- The proposal accords with the relevant provisions of the Mackay, Isaac and Whitsunday Regional Plan
- The proposal accords with the relevant objectives of the Development Scheme for the GBSDA and the land use intents of the relevant land use precinct, being the Mining Services Precinct
- The proposal is an essential component of a project deemed to be of State Significance
- Accommodation for the workers cannot be reasonably provided within another land use precinct of the GBSDA Development Scheme
- The proposed location is appropriate and Rail Camp 6 has been sited to ensure minimal disruption to the rural amenity of the area
- The proposed location has been situated to ensure minimal impacts upon the environment and local biodiversity
- The site will be fully rehabilitated upon completion of this section of the rail corridor
- The proposal will contribute to the economy of the region
- The camp itself has been designed to a high standard and will provide appropriate standard of living for its residents
- The camp will mitigate all potential environmental risks and will not result in any significant adverse impact upon the local environment.

# 11. References


Carmichael Coal Mine and Rail Project EIS (Adani Mining Pty Ltd 2012)

Carmichael Coal Mine and Rail Project Supplementary EIS (Adani Mining Pty Ltd 2013)

Carmichael Coal Mine and Rail Project Additional EIS (Adani Mining Pty Ltd 2014)

Galilee Basin Coal Infrastructure Framework (State of Queensland 2013a)

Galilee Basin Development Strategy (State of Queensland 2013b)

Guideline: Archaeological Investigations (DEHP 2014)

# Appendices

**(Please note that Rail Camp 6 is referred to as Rail Camp 3 in some appendices)**

# **Appendix A** – Application forms

# Development application form
## Change a use of land within the Townsville State Development Area and the Galilee Basin State Development Area

**Prior to lodging your application:**

- Read the *Development scheme for the Townsville State Development Area* or the *Development scheme for the Galilee Basin State Development Area* at www.dsdip.qld.gov.au/sda.
- Consider contacting the State Development Areas Division on 1800 001 048 or sdainfo@coordinatorgeneral.qld.gov.au to request a pre-lodgement consideration of the proposed application.

### Purpose of application form

This form is used to make an application to the Coordinator-General to change a use of land within the Townsville State Development Area or within the Galilee Basin State Development Area. Application forms for other state development areas are available at www.dsdip.qld.gov.au/sda.

### How to complete the form

This form is designed to be completed electronically. You can save the form to your computer, complete all relevant fields and email the completed form and any supporting documents to the State Development Areas Division.

If you are completing the form manually there may be insufficient space and you may need to attach additional information.

The Coordinator-General will only accept applications that are 'properly made'. For an application to be properly made, you must:

- complete all the mandatory fields
- attach the necessary documentation
- pay the application fee.

### Where to send the form

Send the completed and signed application form to one of the following:

- **email** sdainfo@coordinatorgeneral.qld.gov.au
- **post** State Development Areas Division, PO Box 15517, City East Qld 4002

| **1. Proponent details*** The proponent is the person responsible for making the application and need not be the owner of the land. Any development approval that may be issued will be issued to the proponent. | |
|---|---|
| Name/s (individual or company name in full) | Adani Mining Pty Ltd |
| Contact name (for companies) | Hamish Manzi |
| Postal address | GPO Box 2569, Brisbane QLD 4001 |
| Contact phone number | 07 3223 4800 |
| Email address (if available) | reception.australia@adani.in |

| **2. Property description of the land*** Identify all lots, including any part of a lot on which the development is proposed. If necessary, include a map. | |
|---|---|
| Lot on Plan description (e.g. Lot 3 RP 12345) | Lot 662 PH 1491 |
| Street address | 5509 Elgin Road |
| Suburb/locality | Clermont |
| ☒ Click here if you have attached a map or table. | |

| **3. Easements** Although this information is not mandatory, it will assist assessment officers in understanding site constraints. | |
|---|---|
| Are there any easements on the premises (e.g. for vehicular access, electricity, overland flow, water, etc.)? | ☐ Yes<br><br>Ensure the nature, location and dimensions of each easement are included in the plans submitted. |
| | ☒ No |

| **4. Description of current land use** Provide a brief description of what the land is currently being used for e.g. grazing, vacant, etc. |
|---|
| Mining Exploration / Cattle Grazing |

*mandatory information

| **5. Assessment framework*** Check one assessment process only. For a definition of each assessment process, read the relevant development scheme at www.dsdip.qld.gov.au/sda. | |
|---|---|
| ☐ Minor assessment process | ☒ Significant assessment process |

| **6. Description of proposed land use** Provide a brief description of the proposed use of the land. | | |
|---|---|---|
| Proposed land use* | 407 bed temporary rail construction accommodation camp (Rail Camp 6) | |
| Use definition* (as per development scheme) | Mining Services Precinct – Non-resident workforce accommodation | |
| Estimated capital investment value (AUD) | $25 million | |
| Estimated employee numbers | Construction: 20 FTE | Operational: 20-30 FTE |
| Estimated production (e.g. up to nine million tonnes of LNG per annum) | n/a | |

| **7. Land owner's consent*** For information on the land owner consent requirements, read the relevant development scheme at www.dsdip.qld.gov.au/sda. | |
|---|---|
| Is owner's consent required for this application? | ☒ Yes |
| If yes, complete table A or B, whichever is applicable. | ☐ No |
| **Table A** Complete if providing signature/s of land owner/s. | |
| Name of owner/s of land | |
| I/We the abovementioned owner/s of the land consent to the making of this application: | |
| Signature/s of owner/s of the land | |
| Date | |

*mandatory information

| **Table B**<br>Complete if land owner's consent has been provided by letter or if consent will be provided separately. The application is **not** 'properly made' until the owner's consent is provided. | |
|---|---|
| Name of owner/s of land | State Land Asset Management – Department of Natural Resources and Mines to provide owners consent |
| ☐ The owner's consent is attached.<br><br>☒ The owner's consent will be provided separately to the Coordinator-General. | |

| **8. Is this application subject to an environmental impact statement (EIS) process?*** | | |
|---|---|---|
| ☒ Yes<br><br>If yes, this application form must be accompanied by the EIS, any supplementary information to the EIS, and any evaluation report on the EIS. | ☐ No | ☐ Will be<br><br>If application will be subject to an EIS, provide details below. |
| Details of EIS process to be followed and expected dates of process milestones:<br>Rail Camp 6 was included as part of the Carmichael Coal Mine and Rail Project EIS. The Carmichael Coal Mine and Rail project has been subject to an EIS process under a bilateral process for the *State Development and Public Works Organisation Act 1971* which received the Coordinator General's approval on the 7 May 2014 and the *Environmental Protection and Biodiversity Conservation Act 1999* on the 24 July 2014. | | |

| **9. Other approvals required for the development to proceed*** | | |
|---|---|---|
| **Description of approval required**<br>e.g. operational works | **Agency**<br>e.g. relevant local government/s | **Stage**<br>not commenced, lodged or approved |
| Environmental authority for Environmentally Relevant Activity (ERA) 63 (Sewerage Treatment) | EHP | To be lodged concurrently |
| | | |
| | | |
| | | |

*mandatory information

| **10. Referral entities for this application*** See section 2 of the relevant development scheme at www.dsdip.qld.gov.au/sda for a definition of referral entities. |
|---|
| Isaac Regional Council |
| Department of Transport and Main Roads |
| |
| |
| |

| **11. Supporting information to accompany this application*** | |
|---|---|
| **Description of supporting information or title of attachment** Note: This application must be accompanied by a planning report | **Method of lodgement** e.g. via email, hard copy, USB or disk |
| Planning report (including Appendices A-K) | Via dropbox, pdf file |
| | |
| | |
| | |
| | |
| | |
| | |

| **12. Proponent's declaration*** |
|---|
| ☒ By making this application, I declare that all the information in this application is true and correct. Note: It is unlawful to provide false or misleading information. |

*mandatory information

| **13. Application fee*** <br> For more information, read the *Guideline for application fees* at www.dsdip.qld.gov.au/sda. | |
|---|---|
| Application fee amount: | Invoice number: <br> Contact State Development Areas Division for invoice number. |
| ☐ Cheque attached | ☐ Direct deposit <br> Contact State Development Areas Division for account details. <br><br> Date deposited: |

| | | |
|---|---|---|
| **Office use only** | Date received | |
| | Receiving officer | |
| | Fee invoice | ☐ Attached ☐ Requested |
| | Fee received | Date: <br><br> Receipt number: |
| | Owner's consent | ☐ Attached ☐ To be provided <br><br> ☐ Not required |
| | Properly made application | ☐ Yes ☐ No <br><br> Notes: |
| | MCU reference number | |
| | Source number | |

*mandatory information

# 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 – Sewage Treatment |
| ERA threshold | **1(b)(i)** - Operating a sewage treatment works with a total daily peak design capacity of 100 to 1,500 equivalent persons if treated effluent is discharged to an infiltration trench or through an irrigation scheme |
| Applicable fees | $570.00 plus 30% of the annual fee (annual fee - $6,385.50)<br>**= $2,485.65** |
| Proposed scale/capacity | 400 EP |
| Type of approval sought | ☒ Development permit and environmental authority (see notes)<br>☐ 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 | email |
| Details of any known acid sulphate soils within or adjoining the premises. | ☐ Confirmed<br>☒ 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 | email |
| Details about how the location for the activity on a site protects all environmental values relevant to adjacent sensitive uses. | ☒ Confirmed | email |
| 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 | email |
| **About the proposed ERA** | | |
| Attachment to IDAS form 8—application for an environmental authority (EM941) completed and required information provided. | ☒ Confirmed | email |
| A statement addressing the relevant part(s) of the State Development Assessment Provisions (SDAP). | ☒ Confirmed<br>☐ Not applicable | email |

**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.

---

**OFFICE USE ONLY**

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.

**Department of State Development, Infrastructure and Planning**
PO Box 15009 City East Qld 4002
**tel** 13 QGOV (13 74 68)
info@dsdip.qld.gov.au

**www.dsdip.qld.gov.au**

# Application form

## *Environmental Protection Act 1994*

### Site specific application for a new environmental authority for a prescribed ERA

*This is the approved form to make a site specific application for an environmental authority under sections 124 and 125 of the* Environmental Protection Act 1994 *(EP Act) for an environmentally relevant activity (ERA) which is prescribed under section 19 of the EP Act.*

It is recommended that you read the information on what to provide with an application, prior to making an application. This information is located on the Queensland Government's business and industry website at www.business.qld.gov.au (use the search words *"Environmental Licence")*. This website also has a diagnostic tool called a "Forms and fees finder" which will take you through a series of questions and provide a customised result which will identify any forms, fees and supporting information you need to make an application.

**Only use this application form if you are applying for a new environmental authority (EA) where:**

- ☑ All of the ERA/s being applied for are prescribed under section 19 of the EP Act.
- ☑ The ERA/s being applied for do not form part of an ERA project under existing environmental authority.
- ☑ The ERA/s being applied for are not being carried out as part of a significant project.
- ☑ If more than one ERA is being applied for:
    - All ERAs are operationally interrelated, that is, the operation cannot function without all of the ERAs. Separate applications will need to be made for the ERAs that cannot be carried out as a single integrated operation.
    - The places where the ERAs will be carried out are close enough to make the integrated day to day management of the activities feasible.
    - The ERAs will be carried out under the day to day management of a single responsible person (e.g. a site manager or operations manager).
- ☑ Where a material change of use is triggered under the *Sustainable Panning Act 2009*, a development application has been made.
- ☑ If any of the ERAs being applied for are to be carried out on a parcel of land within a state development area and a particular use for the parcel of land is not stated in the approved development scheme, you have applied for, or hold a current approval for the use under section 84(4)(b) of the *State Development and Public Works Organisation Act 1971.*
- ☑ The application is not to dredge or extract more than 10,000 tonnes of material a year in the North Stradbroke Island region.

**If you would like to have a pre-lodgement meeting:**

- For prescribed ERAs 2, 3 and 4—contact the Department of Agriculture, Fisheries and Forestry by email at **livestockregulator@daff.qld.gov.au**
- For any other ERA—please fill out and lodge the form Application for a Pre-Design/Pre-Lodgement Meeting (EM1125[1]), prior to lodging this application for an environmental authority.

[1] This is the publication number. The publication number can be used as a search term to find the latest version of a publication at www.qld.gov.au.



Great state. Great opportunity.

Queensland Government

## 1. Applicant details

| | |
|---|---|
| Is there more than one applicant? | ☒ No, please provide applicant's details here.<br>☐ Yes, please provide the principal applicant's details here and other applicants' details at attachment 1—*"Joint applicants and appointment of principal applicant"* |

| | |
|---|---|
| Name - individual or contact person if applicant is a business<br>Hamish Manzi | Suitable Operator Number<br>649121 |
| Business name (include trading name if relevant)<br>Adani Mining Pty Ltd | ABN/ACN (if relevant)<br>27 145 455 205 |
| Residential or registered business address (not a post office box)<br>Level 25, 10 Eagle Street, Brisbane, QLD 4000 | Phone<br>07 3223 4800 |
| Postal address (if different from above)<br>GPO Box 2569, Brisbane, QLD, 4001 | Facsimile<br>N/A |
| Email<br>reception.australia@adani.in | ☐ Indicate if you do not want to receive correspondence via email |

**Nomination of an agent for this application**

I/we nominate the below agent to act on my/our behalf and to receive correspondence relating to this application.

| | |
|---|---|
| Name of agent - individual or contact person if agent is a business | |
| Business name (include trading name if relevant) | ABN/ACN (if relevant) |
| Postal address | Phone |
| Email | ☐ Indicate if you do not want to receive correspondence via email |

## 2. Registered suitable operator status

A suitable operator is a person or a corporation assessed under section 318I of the EP Act as being suitable to carry out an ERA and is listed on the suitable operator register on the EHP website at www.ehp.qld.gov.au (use the search words "suitable operator register".

| Are all applicants registered as a suitable operator? | |
|---|---|
| ☒ Yes | Please include your suitable operator registration number in section one above. If there is more than one applicant, include all applicants' suitable operator registration number on Attachment 1.<br>NOTE: The suitable operator number provided must belong to the exact same name as the applicants. |
| ☐ No | You must apply on the attached *"Application to be a registered suitable operator"*, or if there is more than one applicant, complete a separate *"Application to be a registered suitable operator"* (Form EM745) and attach it to this application. |

## 3. Description of land where the ERA/s will be carried out

| Will the ERA/s be carried out at a fixed location? | | | | |
|---|---|---|---|---|
| ☒ Yes<br>NOTE: If there is more than one location please complete Attachment 2 | Number<br>5509 | Street Name<br>Elgin Road | Suburb/Town<br>Clermont | Postcode<br>N/A |
| | Real Property Description<br>Lot 662 Plan PH1491 | | Specific area within the location ie GPS or other descriptor<br>N/A | |
| | Port (if relevant)<br>N/A | | Project Name (if relevant)<br>Rail Camp 6 | |
| ☐ No | The location will be recorded as "Various locations throughout the State of Queensland" | | | |

## 4. Details of contaminated land

| Is there a site management plan in effect for contaminated land that relates to the above land? | | | |
|---|---|---|---|
| ☒ No | | | |
| ☐ Yes | Description of land eg Lot No. | Plan Number | LGA |
| | | | |

## 5. Details of the ERAs being applied for

Complete the table below by advising which ERA/s you are applying for.

| ERA Number | Threshold | Name of ERA | Does the ERA have standard conditions[2] that you can comply with? |
|---|---|---|---|
| 63 | 1(b)(i) | Sewage Treatment | ☒ No ☐ Yes , attach details |
| | | | ☐ No ☐ Yes, attach details |
| | | | ☐ No ☐ Yes, attach details |
| | | | ☐ No ☐ Yes, attach details |

## 6. Other related approvals

To avoid the possibility of your environmental authority application being invalid, you need to ensure any other required applications have been made prior to lodging this application. If you are not sure what approvals are required you should contact the planning area of your local government authority or if the area is within a state development area visit the Department of State Development, Infrastructure and Planning website at: http://www.dsdip.qld.gov.au/state-development-areas/development-applications.html.

Are you required to obtain any of the following approvals to conduct the ERA/s?

- A development approval from your Local Government Authority (for ERA/s which may trigger within the local planning scheme the need for an approval under the *Sustainable Planning Act 2009*), or
- An approval for the use of land under the *State Development and Public Works Organisation Act 1971*?

| | | | | | |
|---|---|---|---|---|---|
| ☐ No | | | | | |
| ☒ Yes | Approval name | Legislation | Application number | Date lodged | Approval status |
| | Change Use of Land | SDPWO Act 1971 | TBC | TBC | TBC |

[2] ERAs with eligibility criteria and standard conditions are listed at: www.business.qld.gov.au (use the search term "eligibility criteria").

## 7. Regulated waste transport ERAs

Is your application for an ERA 57 Regulated waste transport?

☒ No

☐ Yes

Provide details or attach a separate list of the vehicles used for the waste transport.

| Type e.g. tanker, truck | Make and model | Year of manufacture | Registration number |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## 8. Matters of national environmental significance

There are currently nine matters of national environmental significance (MNES) which have been defined in the *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)*. These are:

- world heritage properties
- national heritage places
- wetlands of international importance (listed under the Ramsar Convention)
- listed threatened species and ecological communities
- migratory species protected under international agreements
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mines)
- a water resource, in relation to coal seam gas development and large coal mining development

To determine whether the proposed ERA/s will have a significant impact on MNES and for referral requirements, please refer to the guidance provided by the Federal Governments Department of Environment on **www.australia.gov.au** and **www.environment.gov.au**.

Would the carrying out of the proposed ERA/ERA project be likely to have a significant impact on a matter of national environmental significance?

☒ No

☐ Yes, has the proposal been referred to the Federal Government Environment Minister or delegate for formal assessment and approval?

☐ Yes

☐ No

## 9. Assessment of the environmental impact

Where an Environmental Impact Statement (EIS) process under Chapter 3 of the EP Act, has not been completed, or if the environmental risk has changed since the EIS was completed, you must attach to this application an assessment of the likely impact of each ERA on environmental values including:

- a description of the environmental values likely to be affected by each relevant activity
- details of any emissions or releases likely to be generated by each relevant activity
- a description of the risk and likely magnitude of impacts on the environmental values
- details of the management practices proposed to be implemented to prevent or minimise adverse impacts
- details of how the land the subject of the application will be rehabilitated after each relevant activity ceases
- the proposed measures for minimising and managing waste generated by the activities.

☒ I have attached an assessment of the environmental impact and specific supporting information.

## 10. Details of waste management

| Describe the proposed measures for minimising and managing waste generated by the activity/ies below or on an attachment. |
|---|
| Refer to Site Based Management Plan included as Appendix H of the Town Planning Report. |

☒ I have attached the proposed measures.

## 11. Take effect date

You may nominate a date or event for when the environmental authority will take effect. An event can include a phase of your project, for example commissioning of equipment. The date the environmental authority takes effect will be the date from which you can commence the activities as well as the date your annual fees will commence to be charged (your anniversary date).

| Do you want to nominate a date or event for the environmental authority to take effect on? | |
|---|---|
| ☒ No | The take effect date will be the date of the decision or as nominated by the Administering Authority. However this cannot be before a related development approval has been granted. |
| ☐ Yes | Nominate the date or event below. You must not commence any activities until after the take effect date or, if you nominated an event, before you have given written notice of the date that the event occurred. However this cannot be before a related development approval has been granted.<br>Take effect date or event: |

## 12. Payment of fees

You are required to pay an application fee at the time of application. If your application is approved you will be required to pay a fee annually. Each ERA has a regulated fee and the annual fee will be the highest annual fee of any ERA associated with the project. The first annual fee will be invoiced when the permit becomes effective. Information on fees is available at www.business.gov.au.

Please select your payment method for the application fee below:

☐ Cheque or money order payable to the Department of Environment and Heritage Protection (attached).

☐ Cheque or money order payable to the Department of Agriculture, Fisheries and Forestry (attached).

☐ Credit card. Please provide contact details and we will contact you for payment to be made over the telephone.

Telephone number: _____

## Applicant Certification

I declare that the information I have provided is true and correct. I understand that it is an offence to give information that I know is false, misleading or incomplete.

I will comply with all conditions on my environmental authority as well as any relevant provisions in the *Environmental Protection Act 1994.*

I understand that I am responsible for managing the environmental impacts of these activities, and that approval of this application is not an endorsement by the administering authority of the effectiveness of the management practices proposed or implemented.

| Signature | Date |
|---|---|
| | |

## Submit your completed application (in word searchable electronic PDF format):

## for ERA 2, ERA 3 or ERA 4 via email to livestockregulator@daff.qld.gov.au or:

**Post:**
Senior Environmental Scientist
Department of Agriculture, Fisheries and Forestry
GPO Box 102
TOOWOOMBA QLD 4350

**Further Information:**
www.business.qld.gov.au
Email:
livestockregulator@daff.qld.gov.au
Phone: 13 QGOV (13 74 68)

## For all other ERAs via email to palm@ehp.qld.gov.au or:

**Post:**
Permit and Licence Management
Department of Environment and Heritage Protection
GPO Box 2454
BRISBANE QLD 4001

**Courier or hand delivery:**
Permit and Licence Management
Department of Environment and Heritage Protection
Level 3, 400 George Street
BRISBANE QLD 4000
Hours: 8.30am–4.30pm business days

**Further Information:**
www.business.qld.gov.au
Email: palm@ehp.qld.gov.au
Phone: 13 QGOV (13 74 68)

### Privacy statement

The Departments of Environment and Heritage Protection (EHP) and Agriculture, Fisheries and Forestry (DAFF) are collecting the information on this form to process your application for an environmental authority. This collection is authorised under sections 124 and 125 of the *Environmental Protection Act 1994*. Your personal information will only be accessed by authorised employees within these departments and will not be disclosed to any other parties unless authorised or required by law. For queries about privacy matters please email **privacy@ehp.qld.gov.au** or telephone: (07) 3330 5436.

**Attachment 1**

## Joint applicants and appointment of principal applicant

We are joint applicants for this environmental authority and hereby appoint: _____
as the principal applicant to receive statutory documents relating to this application.

| Name - individual or contact person if applicant is a business | Suitable Operator Number [3] |
|---|---|
| Business name (include trading name if relevant) | ABN/ACN (if relevant) |
| Residential or registered business address (not a post office box) | Phone |
| Postal address (if different from above) | Facsimile |
| Email | ☐ Indicate if you do not want to receive correspondence via email |
| Signature | Date |

| Name - individual or contact person if applicant is a business | Suitable Operator Number |
|---|---|
| Business name (include trading name if relevant) | ABN/ACN (if relevant) |
| Residential or registered business address (not a post office box) | Phone |
| Postal address (if different from above) | Facsimile |
| Email | ☐ Indicate if you do not want to receive correspondence via email |
| Signature | Date |

| Name - individual or contact person if applicant is a business | Suitable Operator Number |
|---|---|
| Business name (include trading name if relevant) | ABN/ACN (if relevant) |
| Residential or registered business address (not a post office box) | Phone |
| Postal address (if different from above) | Facsimile |
| Email | ☐ Indicate if you do not want to receive correspondence via email |

3 To obtain an Environmental Authority all applicants must be on the register of suitable operators. If you are already registered provide your number on this attachment. If you are not registered complete and attach an "Application to be a registered suitable operator" (Form EM745) to this application.

*Attachment 2*

## List of locations where the ERA/s will be carried out.

Where there is more than one location list all locations and which ERA/s will be conducted at each location.

| Number | Street Name | Suburb/Town | Postcode | ERA/s |
|---|---|---|---|---|
| | | | | |
| Real Property Description<br>Lot Plan | | Specific area within the location ie GPS | | |

| Number | Street Name | Suburb/Town | Postcode | ERA/s |
|---|---|---|---|---|
| | | | | |
| Real Property Description<br>Lot Plan | | Specific area within the location ie GPS | | |

| Number | Street Name | Suburb/Town | Postcode | ERA/s |
|---|---|---|---|---|
| | | | | |
| Real Property Description<br>Lot Plan | | Specific area within the location ie GPS | | |

| Number | Street Name | Suburb/Town | Postcode | ERA/s |
|---|---|---|---|---|
| | | | | |
| Real Property Description<br>Lot Plan | | Specific area within the location ie GPS | | |

| Number | Street Name | Suburb/Town | Postcode | ERA/s |
|---|---|---|---|---|
| | | | | |
| Real Property Description<br>Lot Plan | | Specific area within the location ie GPS | | |

| Number | Street Name | Suburb/Town | Postcode | ERA/s |
|---|---|---|---|---|
| | | | | |
| Real Property Description<br>Lot Plan | | Specific area within the location ie GPS | | |

| Number | Street Name | Suburb/Town | Postcode | ERA/s |
|---|---|---|---|---|
| | | | | |
| Real Property Description<br>Lot Plan | | Specific area within the location ie GPS | | |

| Number | Street Name | Suburb/Town | Postcode | ERA/s |
|---|---|---|---|---|
| | | | | |
| Real Property Description<br>Lot Plan | | Specific area within the location ie GPS | | |

# Application form

## *Environmental Protection Act 1994*

### Application to be a registered suitable operator

*This approved form is to be used to apply to become a suitable operator under section 318F of the* Environmental Protection Act 1994 *(EP Act) for the carrying out of an environmentally relevant activity (ERA).*

## 1. Applicant details

| | |
|---|---|
| Name - Individual or contact person if applicant is a business | Position if a business |
| Company / Business Name (include trading name if relevant) | ABN/ACN (if relevant) |
| Residential or registered business address (not a post office box) | Phone |
| Postal address (if different from above) | Facsimile |
| Email | ☐ Indicate if you do not want to receive correspondence via email |

## 2. Applicant suitability

| Questions | No | Yes[4] |
|---|---|---|
| Have you[5] or a business partner or a related corporation ever: | | |
| • been **convicted or guilty of an environmental offence** under the *Environmental Protection Act 1994* or another law (whether in Queensland or elsewhere)? | ☐ | ☐ attach details |
| • had an environmental authority, instrument, licence or permit, however called, **refused, cancelled or suspended** by the administering authority (whether in Queensland or elsewhere)? | ☐ | ☐ attach details |

[4] If yes is ticked, you must indicate if the event occurred to you individually or to a company or business in which you currently hold, or have held a position of management or control. You must also provide complete details (including the state/territory/country in which the event occurred, the relevant legislation, location of offence or incident, date of offence or incident, amount of fine, facts and circumstances surrounding the offence or incident, details of relevant persons involved including name and positions, name of court, court reference number etc) in an attachment. You may also attach any submission you want the chief executive to consider in assessing this information, which will be used in deciding whether you are a suitable operator. - A 'relevant person' is either the applicant or any person with whom the applicant is a partner or, if a corporation, any of the corporation's executive officers.

[5] If a corporation is applying you must answer for the corporation, any of the corporation's executive officers and any other corporations of which the executive officers are, or have been, an executive officer. If an individual is applying you must answer for any person who is your business partner.



Great state. Great opportunity.

Queensland Government

| Questions | No | Yes[4] |
|---|---|---|
| • had a suitable operator registration or similar registration, however called, **refused, cancelled or suspended** under the *Environmental Protection Act 1994* or a corresponding law (whether in Queensland or elsewhere)? | ☐ | ☐ attach details |
| • received any of the following under the *Environmental Protection Act 1994:* | | |
| a penalty infringement notice | ☐ | ☐ attach details |
| an environmental protection order | ☐ | ☐ attach details |
| a notice requiring a transitional environmental program | ☐ | ☐ attach details |
| a notice to conduct or commission an environmental audit | ☐ | ☐ attach details |
| a notice to conduct or commission an environmental investigation | ☐ | ☐ attach details |
| a direction notice | ☐ | ☐ attach details |
| a clean up notice | ☐ | ☐ attach details |
| a cost recovery notice | ☐ | ☐ attach details |
| a restraint or inforcement order | ☐ | ☐ attach details |
| another compliance or enforcement action which is not stated above | ☐ | ☐ attach details |

## Applicant Certification

It is an offence to provide information that you know is false, misleading or incomplete.

I declare that the information provided is true and correct. I have attached details for any question where I have answered "yes".

| SIGNATURE | DATE |
|---|---|
| | |

## Submit your completed application via email to: palm@ehp.qld.gov.au or:

**Post:**
Permit and Licence Management
Department of Environment and Heritage Protection
GPO Box 2454
BRISBANE QLD 4001

**Courier or hand delivery:**
Permit and Licence Management
Department of Environment and Heritage Protection
Level 3, 400 George Street
BRISBANE QLD 4000
Hours: 8.30am–4.30pm business days

**Further Information:**
www.business.qld.gov.au
Email: palm@ehp.qld.gov.au
Phone: 13 QGOV (13 7468)

**Privacy statement**

The Department of Environment and Heritage Protection (the department) is committed to protecting the privacy, accuracy and security of your personal information in accordance with the *Information Privacy Act 2009*. The department is collecting your personal information to determine your suitability as a registered operator under section 318F of the *Environmental Protection Act 1994*. Some of this information may be given to the Department of Natural Resources and Mines for the purpose of the joint regulation of mining activities. If you answered yes to any question, the chief executive may give your information to an administering authority of another state under a corresponding law or the commissioner of the police service for the purpose of obtaining a suitability report.

If your application is approved your name, address and ABN/ACN will be disclosed on the Register of Suitable Operators which will be publicly available on the department's website. This disclosure is authorised by section 318I(1)(b) of the *Environmental Protection Act 1994*. All other information will not be given to any other person or agency unless you have given us permission or we are authorised or required by law. All information supplied on this form may be disclosed publicly in accordance with the *Right to Information Act 2009* and *Evidence Act 1977*. For queries about privacy matters email: privacy@ehp.qld.gov.au or telephone: (07) 3330 5436.

# **Appendix B** – Land owners consent / title search

2 September 2014

State Land Asset Management
Department of Natural Resources and Mines
PO Box 5318
Townsville QLD 4810

**Leaseholder's consent for Lot 662 PH1491 – To support an application for owners consent to the Department of Natural Resources and Mines**

To Whom It May Concern,

I, William Haseler, General Counsel for Adani Mining Pty Ltd, hereby consent to the lodgement of applications to the relevant administering authority by Adani Mining Pty Ltd or its agents required for applications for the following infrastructure required to deliver the Carmichael Coal Mine and Rail Project:

- Mine workers accommodation village including temporary construction camps
- Quarries
- Airport and associated infrastructure
- Water infrastructure
- Power infrastructure
- Industrial precinct and associated infrastructure
- Road and rail infrastructure

Such applications will include but are not limited to:

- Change a use of land development applications
- Environmentally relevant activities applications
- Vegetation clearing applications
- Water applications

Yours sincerely,

William Haseler

**General Counsel**

**Adani Mining Pty Ltd**

**GPO Box 2569**

**Brisbane QLD 4001**

**Adani Mining Pty Ltd**
Level 25
10 Eagle Street, Brisbane QLD 4000
GPO Box 2569, Brisbane QLD 4001
Australia

**Tel** +61 7 3223 4800
**Fax** +61 7 3223 4850
reception.australia@adani.in
www.adanimining.com

**Registered Office:** Level 30, 10 Eagle Street, Brisbane QLD 4000, Australia
**ABN:** 27 145 455 205

# CURRENT STATE TENURE SEARCH

**DEPT OF NATURAL RESOURCES AND MINES, QUEENSLAND**

Request No: 19288144
Search Date: 02/09/2014 09:34 **Title Reference: 17665183**
Date Created: 21/10/1995

**DESCRIPTION OF LAND**

Tenure Reference: PH 12/662

Lease Type: ROLLING TERM LEASE

LOT 662 CROWN PLAN PH1491
County of ALBANY Parish of DOOYNE
County of ALBANY Parish of ELSIE
County of DRURY Parish of LABONA
County of ALBANY Parish of MORAY
Local Government: ISAAC

Area: 117000.000000 Ha. (ABOUT)

No Land Description

No Forestry Entitlement Area

No Future Conservation Area

Purpose for which granted:
NO PURPOSE DEFINED

**TERM OF LEASE**

Term and day of beginning of lease

Term: 30 years commencing on 01/07/1976

Expiring on 30/06/2006

Extended to 31/12/2016

**REGISTERED LESSEE**

Dealing No: 714311274 13/02/2012

ADANI MINING PTY LTD A.C.N. 145 455 205

**CONDITIONS**

M76 The lessee shall, within five (5) years from the date of commencement of the lease and to the satisfaction of the Minister, provide ten (10) additional permanent water improvements on the holding.

**CONDITIONS**

M76 The lessee shall, within three (3) years from the date of commencement of the lease and to the satisfaction of the Minister erect not less than 80 kilometres of internal subdivisional fencing on the holding.

M76 The lessee shall, within three (3) years from the date of commencement of the lease and to the satisfaction of the Minister, erect two (2) additional sets of stockyards and dips on the holding.

M76 The lessee shall maintain all improvements existing on the holding as at 1st July, 1987, together with improvements effected in pursuance of the amended lease conditions, in a good and substantial state of repair to the satisfaction of the Minister throughout the term of the lease.

M76 The lessee shall during, the whole term of the lease maintain all improvements on the holding existing at the commencement thereof, together with the improvements effected in compliance with conditions 1 to 4 hereof in a good and substantial state of repair.

M80 The lessee shall, within ten (10) years from 1st July, 1987, and to the satisfaction of the Minister:-

(a) treat not less than twelve thousand (12 000) hectares of timber regrowth by offset discing or blake ploughing on the holding;
(b) erect a new stockproof boundary fence between Beenboona and Moray Downs Holdings;
(c) Re-construct five (5) old dams on the holding; and
(d) construct a further three (3) dams on the holding.

M80 The lessee shall within five (5) years from the date of commencement of the lease, and to the satisfaction of the Minister, develop an area of not less than 20,234 hectares of brigalow, gidyea and associated scrubs on the holding by:-

(a) Destroying by ringbarking or otherwise in accordance with a Permit granted by the Land Commissioner, such scrub in equal proportions during each year of such period, and thereafter maintaining such area free from all regrowth, suckers and undergrowth; and
(b) Burning all scrub destroyed in performance of this condition as soon as it shall be practicable and prudent so to do; and
(c) Sowing such cleared areas to improved pasture with such grass or grasses as may be approved by the Minister.

The lessee shall, within one month from the commencement of the term of the lease, apply to the Land Commissioner for a Permit to Destroy Trees on the Holding so that performance of this condition can be undertaken.

# CURRENT STATE TENURE SEARCH

**DEPT OF NATURAL RESOURCES AND MINES, QUEENSLAND**

Request No: 19288144
Search Date: 02/09/2014 09:34 **Title Reference: 17665183**
Date Created: 21/10/1995

**ENCUMBRANCES AND INTERESTS**

1. Rights and interests reserved to the Crown by Lease No. 17665183

**ADMINISTRATIVE ADVICES**

| Dealing | Type | Lodgement Date | Status |
|---|---|---|---|
| 708869202 | RESTORATION VEGETATION MANAGEMENT ACT 1999 | 02/08/2005 13:32 | CURRENT |
| 711882256 | VEG NOTICE VEGETATION MANAGEMENT ACT 1999 | 26/08/2008 15:46 | CURRENT |
| 714212362 | VEG NOTICE VEGETATION MANAGEMENT ACT 1999 | 12/12/2011 15:19 | CURRENT |
| 714787708 | VEG NOTICE VEGETATION MANAGEMENT ACT 1999 | 16/11/2012 14:29 | CURRENT |
| 715259597 | VEG NOTICE VEGETATION MANAGEMENT ACT 1999 | 15/08/2013 14:38 | CURRENT |

**UNREGISTERED DEALINGS - NIL**

** End of Current State Tenure Search **

Information provided under section 34 Land Title Act(1994) or section 281 Land Act(1994)

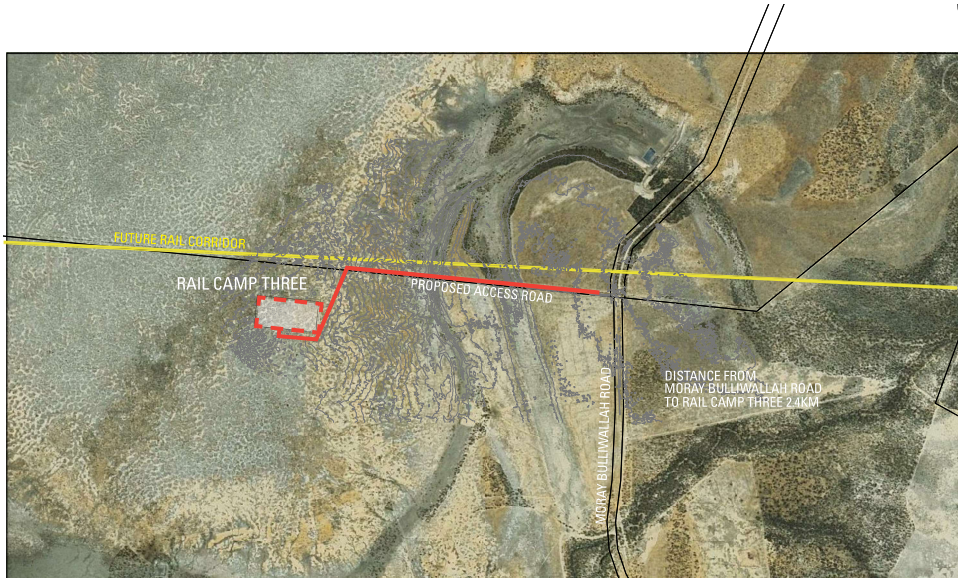
COPYRIGHT THE STATE OF QUEENSLAND (DEPT OF NATURAL RESOURCES AND MINES) [2014]
Requested By: D APPLICATIONS CITEC CONFIRM

# **Appendix C** – Project drawings

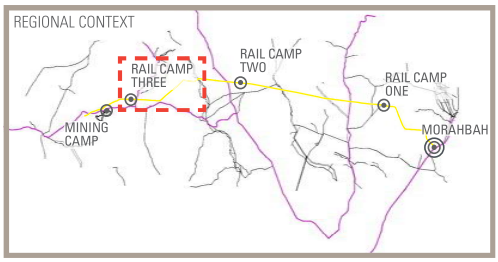
# CAMP LAYOUT PACKAGE PREPARED BY CARDNO

Cardno
Shaping the Future

# RAIL CAMP THREE
## CONTEXT




LOCATION PLAN
SCALE 1:15,000 @ A3




TYPICAL SITE PHOTOS

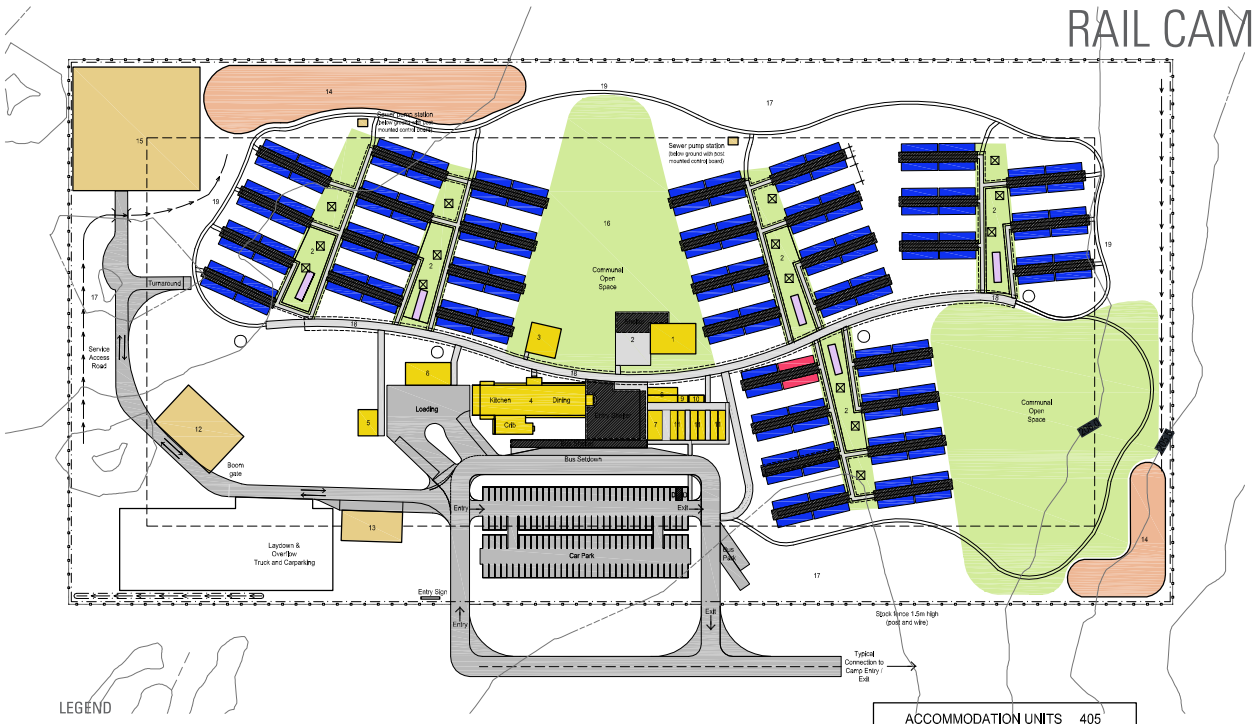








# RAIL CAMP THREE
## PLAN




LEGEND

- COMMUNAL BUILDING
- ACCOMMODATION UNIT
- DISABLED UNIT
- LAUNDRY
- PATH
- INFRASTRUCTURE
- COMMUNAL OPEN SPACE
- DETENTION BASIN

1 - Recreation Centre/ Wet Mess IT & Telephone
2 - BBQ & Shelter Areas
3 - Gym
4 - Kitchen/Dining
5 - Waste
6 - Maintenance / Linen Store
7 - Office
8 - Ablution M&F
9 - Ablution (Disabled)
10 - First Aid
11 - Lockers
12 - Water Treatment Plant
13 - Generator
14 - Detention Basin
15 - Sewerage Treatment Plant
16 - Communal Open Space
17 - Fire Break (30M wide)
18 - Central Path (3M wide) with Freestanding Awning
19 - Walking Track / Maintenance (1.2M - 2.5M wide)

- Fire Tank Water
- Catch Drain
- Perimeter Bund
- Perimeter Fence

| | |
|---|---|
| ACCOMMODATION UNITS | 405 |
| DISABLED UNITS | 2 |
| CAR PARKING | 125 |
| DISABLED CARPARKING | 2 |
| BUS PARKING | 2 |
| EFFULENT DISPOSAL (based on 100m² per person) | 4 ha |
| DETENTION BASIN | .34ha |
| TOTAL OPEN SPACE (including firebreak) | 5.66 ha |
| TOTAL SITE AREA | 9.38 ha |

0 10 20 30 40 50 100
Scale 1:1500 @ A3 - Dimensions in metres

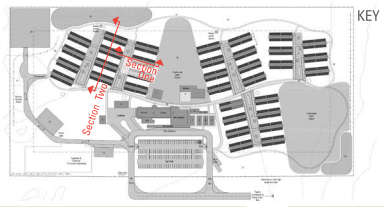
Cardno Shaping the Future

landscape architecture
urban design
environmental management

ADANI MINING Pty Ltd **RAIL CAMP 3**

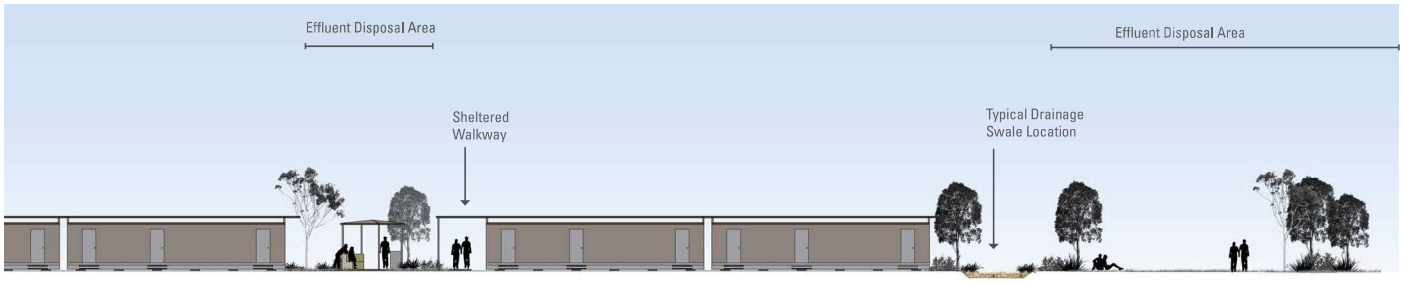
| DATE | DRAWING NO | ISSUE |
|---|---|---|
| 22.10.12 | SP126801 -RC03-02 | B |

# RAIL CAMP THREE
## SECTIONS




SECTION ONE

ACCOMMODATION UNITS | BBQ & SHELTER AREA | ACCOMMODATION UNITS | COMMUNAL OPEN SPACE




SECTION TWO

CENTRAL PATH | ACCOMMODATION UNITS | SERVICES | ACCOMMODATION UNITS | SERVICES | ACCOMMODATION UNITS | SERVICES | ACCOMMODATION UNITS | SERVICES | WALKING PATH




Cardno
Shaping the Future

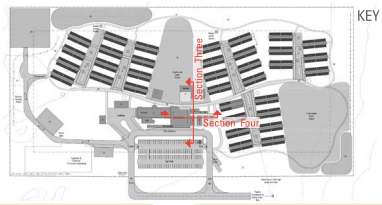
landscape architecture
urban design
environmental management

0 1 2 3 5 10m
SCALE 1:250 @ A3

ADANI MINING Pty Ltd **RAIL CAMP 3**

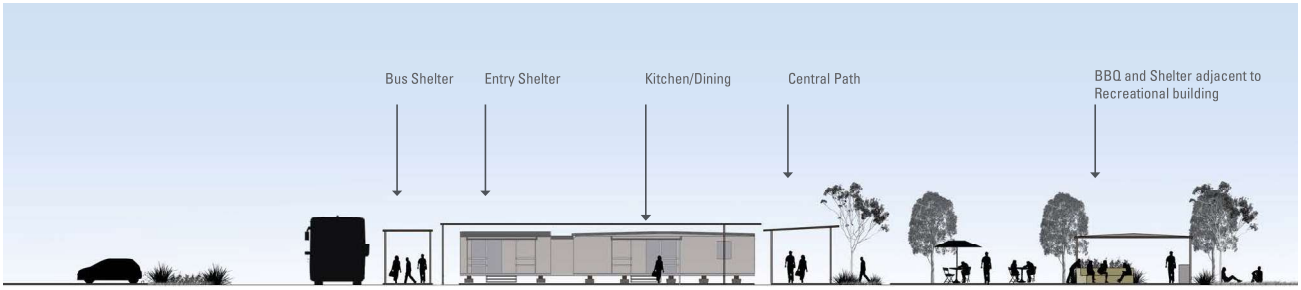
| DATE | DRAWING NO | ISSUE |
|---|---|---|
| 22.10.12 | SP126801 -RC03-03 | B |

# RAIL CAMP THREE
## SECTIONS



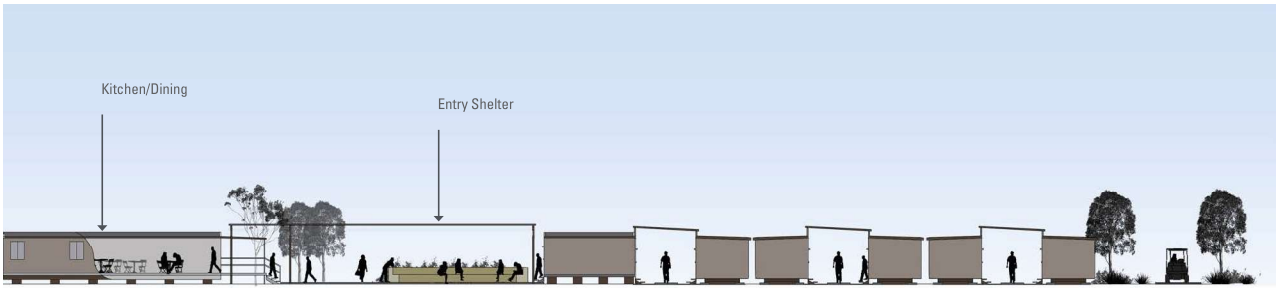

CARPARK | BUS PICKUP ZONE | ENTRY | COMMUNAL OPEN SPACE

SECTION THREE




KITCHEN / DINING | ENTRY | OFFICE | LOCKERS | ACCESS ROAD

SECTION FOUR




Cardno
Shaping the Future

landscape architecture
urban design
environmental management

0 1 2 3 5 10m
SCALE 1:250 @ A3

ADANI MINING Pty Ltd **RAIL CAMP 3**

| DATE | DRAWING NO | ISSUE |
|---|---|---|
| 22.10.12 | SP126801 -RC03-04 | B |

# RAIL CAMP THREE
## APPENDICES

ADANI RAIL CAMP

ATCO - 14.4 x 3.25M Three person double
ATCO - 14.4 x 3.25M VIP Two person Disabled
ATCO - 45.0 x 19.5 M Kitchen Diner (400 person)
ATCO - 12,0 x 6,0 M Office
ATCO - 12.0 x 3.0 M Ablution Block
ATCO - 12.0 x 3.0 M Linen Store
ATCO - 12.0 x 12.0 M Gym
ATCO - 18.0 x 12.0 M Recreation Centre
ATCO - 12.0 x 3.0 M Laundry

# RAILCAMP THREE
## APPENDICES

ADANI RAIL CAMP

ATCO - 14.4 x 3.25M Three person double
ATCO - 14.4 x 3.25M VIP Two person Disabled
ATCO - 45.0 x 19.5 M Kitchen Diner (400 person)
ATCO - 12.0 x 6.0 M Office
ATCO - 12.0 x 3.0 M Abulition Block
ATCO - 12.0 x 3.0 M Linen Store
ATCO - 12.0 x 12.0 M Gym
ATCO - 18.0 x 12.0 M Recreation Centre
ATCO - 12.0 x 3.0 M Laundry





Views indicative only

| - Drawing List | | |
|---|---|---|
| Sheet Number | Sheet Name | Current Revision |
| 00 | Title Page | |
| 01 | Floor Plan | |
| 02 | Elevations | |
| 06 | Sales Schedules | |

120842A2

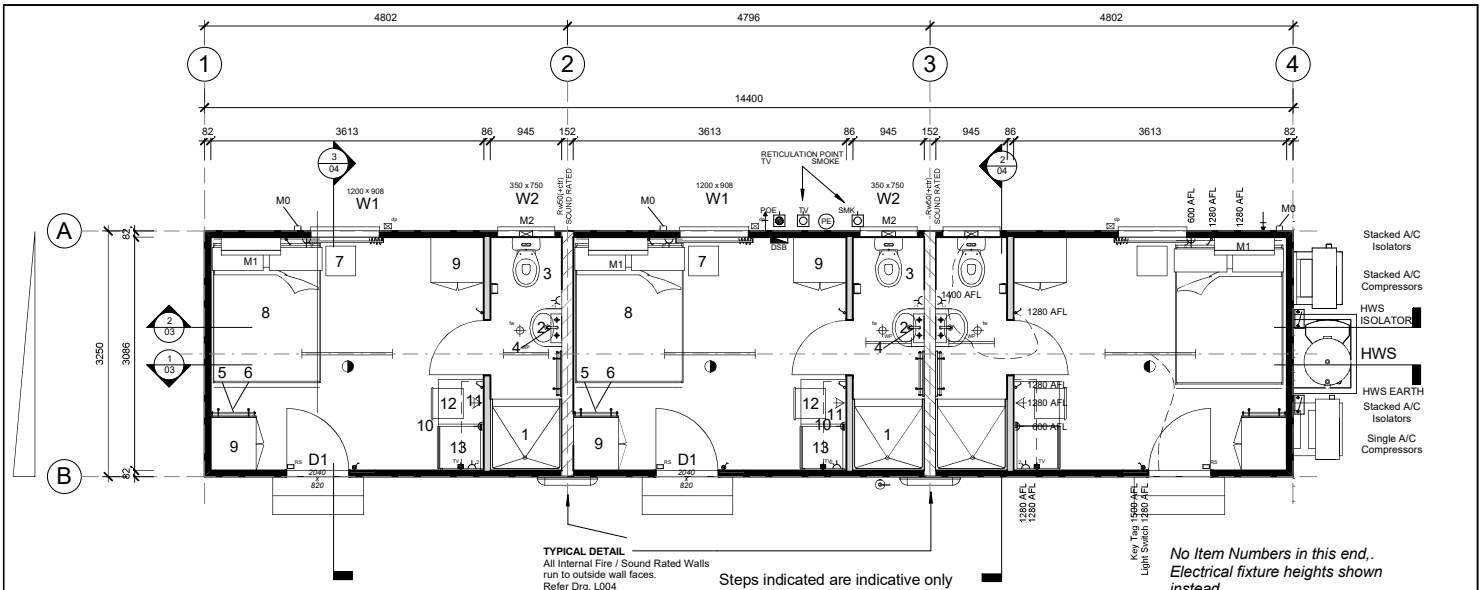
Adani Mining Pty. Ltd.
Carmichael Project
QLD.

14.4 x 3.25m VIP Three Person Double

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au

PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309




## Item Lists

Plumbing - Waste Manifold Outlet
Plumbing - Water Inlet c/w Line Strainer

1 945 x 945 Fibreglass shower cubicle / Curtain. 3 Star WELS
2 Hand Basin VC c/w Mirror Over - NOVATEC CARA inc. overflow & PVC Waste
3 WC Suite 4.5 Star WELS, c/w toilet roll holder
4 Shaving Cabinet c/w 2 mirrored doors
5 Towel Rail - 600w
6 Two Coat Hooks on Timber Rail x 600w
7 395w x 390d x 590h Bedside Three Drawer Unit
8 Double bed c/w innerspring mattress
9 1800h x 800w x 600d Robe c/w Shelves & Hanging Space
10 Step Desk
11 Shelving Over Desk - 1200mm Long Open
12 Steel framed stacker chair
13 Bar Fridge - WESTINGHOUSE - WRM1300WC - 130 litre
14 9.0Kg Fire Extinguisher - AB(E)
dp Dropper only, for 100 x 75mm Downpipe
fw Floor Waste
HWS Rheem Heat Pump 325 Litre/6kW -MPi - mounted externally

## Item Lists

D1 2040 x 820 External Door - Standard : Hollow Core MC
D2 2040 x 720 Internal Door - Standard : Hollow Core

W1 1200 x 908 Sliding Glass Window Grey Glass
W2 350 x 750 Sliding Glass Window Obscure Glass

M0 A/C Vertical Two Piece Cover
M1 2.5kW R/C Split System Air Conditioner - Hybrid
M2 Wall Mounted Exhaust Fan

## Notes

- Building designed in accordance with Queensland Development Code (QDC) MP3.3 - Temporary accommodation buildings and structures.
- Smoke Alarms and TV Outlets are reticulated to common point.
- Exhaust fan and light in ensuite to be operated from same switch
- Sound rated walls to run into roof cavity - refer to drawing details.

## Energy Efficiency Notes

- The design above is compliant for climate zones 1 & 3 for all orientations. Any changes to windows and/or external door sizes, quantity or locations will require re-submission for energy efficiency compliance.
- Under floor insulation not required under section P2 of QDC MP3.3 - Temporary Accommodation Building and Structures
- For climate zones other than 1 & 3, energy efficiency calculation is subject to geographic location & site orientation.

## Symbol Legend

Distribution Switchboard
POE - Point Of Entry
Light switch
Two-way light switch
Light switch - IPX5 rated
Isolation Switch
10amp Single GPO
10amp Double GPO
15amp Single GPO.
10amp GPO - IPX5 rated
20amp Single GPO
- Indicates floor mounting
- Indicates ceiling mounting
Comms. - Draw wire only
'F' Type television outlet
240V Smoke detector
36w Single fluorescent light
36w Double fluorescent light
36w Emergency back-up fluorescent light
36w Single fluorescent light - IP65 rated
Emergency exit light
Oyster Light - 11W Round Fluro
External light
18W Single Vandalite
Oyster light
Photo electric light switch
Spot light
PLUMBING - Water Inlet Point
PLUMBING - Waste Manifold Outlet Point

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.
14.4 x 3.25m VIP Three Person Double
Adani Mining Pty. Ltd.
Carmichael Project
QLD.

| | |
|---|---|
| DATE | 09.10.12 |
| SCALE | 1 : 50 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE (07) 3412 8600
FAX (07) 3803 0175
ABN: 71 083 902 309

TITLE
Floor Plan

DRAWING NUMBER
120842A2 -01

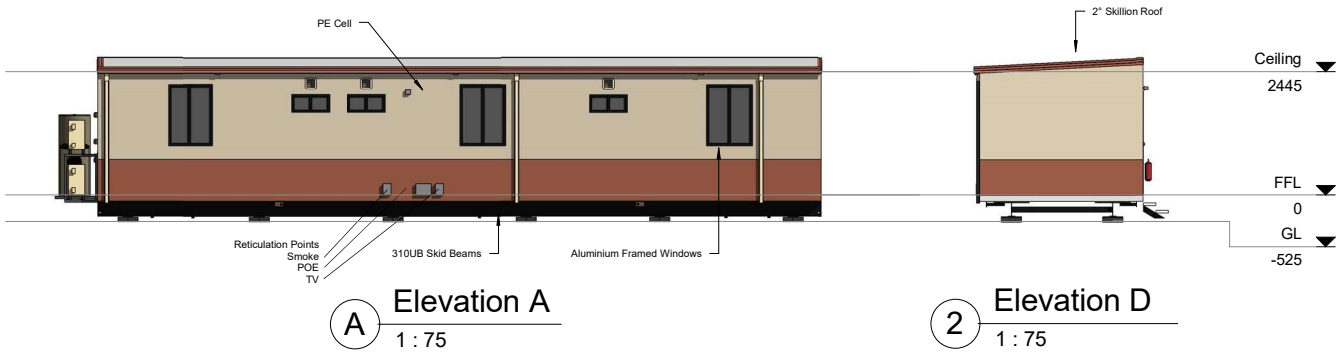
DESIGN WIND LOAD
Reg. C Cat. 2

NCC BUILDING CLASS
3

REVISION

SHEET SIZE
A3

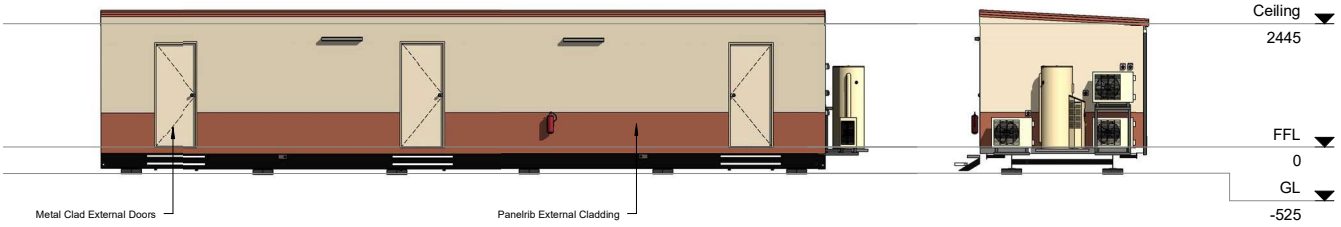
9/10/2012 10:34:26 AM




A Elevation A
1 : 75




2 Elevation D
1 : 75




B Elevation B
1 : 75

1 Elevation C
1 : 75

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

14.4 x 3.25m VIP Three Person Double
Adani Mining Pty. Ltd.
Carmichael Project
QLD.

| | |
|---|---|
| DATE | 09.10.12 |
| SCALE | 1 : 75 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE
Elevations

DRAWING NUMBER
120842A2 -02

DESIGN WIND LOAD
Reg. C Cat. 2

NCC BUILDING CLASS
3

REVISION

SHEET SIZE
A3

9/10/2012 10:34:34 AM

| Manufacturing Structural Members | | |
|---|---|---|
| Description | Member Size | Back to Back |
| Single Skid beams c/w Retractable lifters | 310UB | 2000 |

| - Floor Structure Schedule | |
|---|---|
| Floor Structure | Comments |
| Floor | |
| 480mm Floor Joist Centres | |
| Covering - 1.5mm Polyflor XL Vinyl | 100mm Cove - Bathroom |
| Flooring - 17mm F11 T&G Plywood | |
| Joists - LC10015 Galvaspan | |

| - Wall Schedule | |
|---|---|
| Wall Structure | Comments |
| External Wall | |
| 407mm Stud Centres | |
| Cladding External - Colorbond Maxirib - "Headland" | Lower |
| Cladding External - Colorbond Maxirib - "Paperbark" | Upper |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Insulation - R2.9 Batts - 75mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Thermal Break between Framing and Cladding | |
| Internal Wall - Fire / Sound Rated - Rw50 (+Ctr) | |
| 611mm Stud Centres | |
| Framing - 92 x 0.5 'RHONDO' Quiet Stud | |
| Insulation - R1.8 75mm Fibreglass Batt (14kg/m³) | |
| Lining - 2 x Layers 13mm Fyrecheck to both sides | |
| Lining - Internal - 3.6mm Polyester Coated Plywood (Finish layer to each side) | |
| Ply Internal Wall | |
| 611mm Stud Centres | |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |

| Sales Roof Structure Schedule | |
|---|---|
| Roof Structure | Comments |
| 2° Skillion Roof | |
| C2 - SDEK/PLY LC7512 - 611 - (3.0 & 3.5) | |
| 611mm Ceiling Joist Centres | |
| Ceiling Joist - LC7512 Galvaspan | |
| Insulation - R2.3 Foil Backed Blanket - 95mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Purlins - C7510 / LC7512 Galvaspan | |
| Roof - 0.42mm BMT Superdek Roofing | |

| Sales Door Schedule | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Panel | Height | Width | Handle Type | Hardware Set | Closer | Panic Bar | C/B Jamb | Timber Jamb | Security | Quantity | Comments |
| D1 | Standard : Hollow Core MC | 2040 | 820 | Standard | Entrance | No | No | Yes | No | | 3 | Weather and E/E Seals |
| D2 | Standard : Hollow Core | 2040 | 720 | Standard | Privacy | No | No | Yes | No | | 3 | |

** Under floor insulation not required under section P2 of ** QDC MP3.3 - Temporary Accommodation Building and Structures

| Wall Height |
|---|
| 2445 |

| Sales Window Schedule | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. | Type | Glazing | Height | Width | Sill Height | Quantity | Comments |
| W1 | Sliding XO | Grey Glass | 1200 | 908 | 1000 | 3 | c/w Curtains |
| W2 | Sliding XO.. | Obscure Glass | 350 | 750 | 1650 | 3 | |

| * Plumbing Fixtures | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| | Plumbing - Waste Manifold Outlet | 1 | |
| | Plumbing - Water Inlet c/w Line Strainer | 1 | |
| 1 | 945 x 945 Fibreglass shower cubicle / Curtain. 3 Star WELS | 3 | Hot & Cold |
| 2 | Hand Basin VC c/w Mirror Over - NOVATEC CARA inc. overflow & PVC Waste | 3 | Hot & Cold |
| 3 | WC Suite 4.5 Star WELS, c/w toilet roll holder | 3 | |
| 4 | Shaving Cabinet c/w 2 mirrored doors | 3 | |
| dp | Dropper only, for 100 x 75mm Downpipe | 3 | |
| fw | Floor Waste | 3 | |
| HWS | Rheem Heat Pump 325 Litre/6kW -MPi - mounted externally | 1 | |

| - Cupboards | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| 11 | Shelving Over Desk - 1200mm Long Open | 3 | |

| - Furniture | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| 5 | Towel Rail - 600w | 6 | 2 coat hooks above / rail |
| 6 | Two Coat Hooks on Timber Rail x 600w | 6 | |
| 7 | 395w x 390d x 590h Bedside Three Drawer Unit | 3 | |
| 8 | Double bed c/w innerspring mattress | 3 | |
| 9 | 1800h x 800w x 600d Robe c/w Shelves & Hanging Space | 6 | |
| 10 | Step Desk | 3 | c/w space for Bar Fridge |
| 12 | Steel framed stacker chair | 3 | |

| - Electrical Equipment Schedule | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| 13 | Bar Fridge - WESTINGHOUSE - WRM1300WC - 130 litre | 3 | |

| Sales Mechanical Equipment | | | |
|---|---|---|---|
| No. | Supplier | Description | Quantity |
| M0 | A/C Installer | A/C Vertical Two Piece Cover | 3 |
| M1 | DAIKIN | 2.5kW R/C Split System Air Conditioner - Hybrid | 3 |
| M2 | AIRFLOW | Wall Mounted Exhaust Fan | 3 |

## Refridgeration Pipes to run under floor

| - Electrical Fixtures | |
|---|---|
| Description | Quantity |
| 1x10amp GPO | 3 |
| 2x10amp GPO | 9 |
| 240v Smoke Alarm | 3 |
| External Smoke Junction Box | 1 |
| External TV Junction Box | 1 |
| Isolation Switch - AC | 3 |
| Isolation Switch - HWS | 1 |
| Photo Electric Cell | 1 |
| Reed Switch | 3 |
| Switchboard | 1 |
| TV Antenna Socket | 3 |

**SWITCHBOARD:** To have timer installed, via. Door Reed Switch, for all A/C units.
Units to be shut down if door left open for more than 1 minute.

| Lighting Fixtures | |
|---|---|
| 1x18w Fluro - IP65 | 3 |
| 1x36W Fluro - Bare | 3 |
| Reading Light - Oyster Shape | 6 |
| Single Vandalite - Wall Mounted | 2 |
| Switch - Key tag | 3 |
| Switch - Std | 12 |

| - Fire Services Schedule | | |
|---|---|---|
| No. | Description | Quantity |
| 14 | 9.0Kg Fire Extinguisher - AB(E) 2 | 1 |

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.
14.4 x 3.25m VIP Three Person Double
Adani Mining Pty. Ltd.
Carmichael Project
QLD.

| | |
|---|---|
| DATE | 09.10.12 |
| SCALE | |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE (07) 3412 8600
FAX (07) 3803 0175
ABN: 71 083 902 309

TITLE
Sales Schedules

DRAWING NUMBER
120842A2 -06

| | |
|---|---|
| DESIGN WIND LOAD | Reg. C Cat. 2 |
| NCC BUILDING CLASS | 3 |
| REVISION | |
| SHEET SIZE | A3 |

9/10/2012 10:34:36 AM





Views indicative only

| - Drawing List | | |
|---|---|---|
| Sheet Number | Sheet Name | Current Revision |
| 00 | Title Page | |
| 01 | Floor Plan | |
| 02 | Elevations | |
| 07 | Sales Schedules | |

120842A1

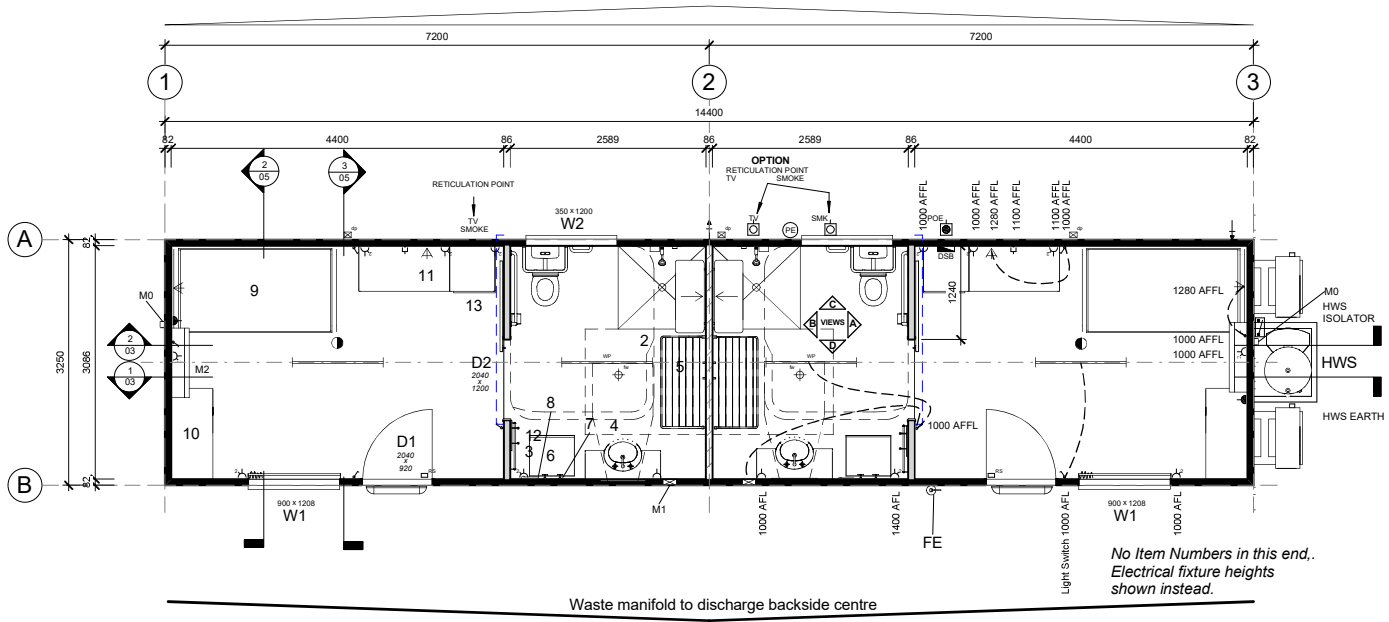
Adani Mining Pty. Ltd.
Carmichael Project
QLD.

14.4 x 3.25m VIP Two Person - Disabled

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au

PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309




## Item Lists

| | |
|---|---|
| | Plumbing - Waste Manifold Outlet |
| | Plumbing - Water Inlet c/w Line Strainer |
| 1 | Disabled WC Suite - 2011, Grab Rails & Backrest |
| 2 | Disabled Shower Type II - 2011 - c/w Fold-Up Seat & Grab Rails |
| 3 | Chrome plated towel rail |
| 4 | Disabled Vanity Unit c/w Laminated Bench Top & 1000 x 600 mirror over |
| 5 | Mini Folding Frame Clothesline |
| 6 | Washing Machine/Dryer Combo - Ariston ARMF125 on 300h plinth |
| 7 | Washing Machine Taps |
| 8 | Washing Machine Discharge Pipe |
| 9 | King single bed c/w innerspring mattress |
| 10 | Disabled Wardrobe - 2 Drawers |
| 11 | Disabled Stepped Desk 1800 x 600 |
| 12 | Two Coat Hooks on Timber Rail x 600w |
| 13 | Bar Fridge - WESTINGHOUSE - WRM1300WC - 130 litre |
| dp | Dropper only, for 100 x 75mm Downpipe |
| FE | 9.0Kg Fire Extinguisher - AB(E) |
| fw | Floor Waste |
| HWS | Rheem Heat Pump 325 Litre/6kW -MPi - mounted externally |

## Item Lists

| | |
|---|---|
| D1 | 2040 x 920 External Door - Standard : Hollow Core MC |
| D2 | 2040 x 1200 Internal Door Standard : Sliding Hollow Core - |
| W1 | 900 x 1208 Sliding Glass Window - Grey Glass |
| W2 | 350 x 1200 Sliding Glass Window Obscure Glass |
| M0 | A/C Vertical Two Piece Cover |
| M1 | Wall Mounted Exhaust Fan |
| M2 | 3.62kW R/C Split System Air Conditioner |

## Notes

- Building designed in accordance with Queensland Development Code (QDC) MP3.3 - Temporary accommodation buildings and structures.
- Smoke Alarms and TV Outlets are reticulated to common point.
- Exhaust fan and light in ensuite to be operated from same switch
- Sound rated walls to run into roof cavity - refer to drawing details.

## Energy Efficiency Notes

- The design above is compliant for climate zones 1 & 3 for all orientations. Any changes to windows and/or external door sizes, quantity or locations will require re-submission for energy efficiency compliance.
- Under floor insulation not required under section P2 of QDC MP3.3 - Temporary Accommodation Building and Structures
- For climate zones other than 1 & 3, energy efficiency calculation is subject to geographic location & site orientation.

## Symbol Legend

- Distribution Switchboard
- POE - Point Of Entry
- Light switch
- Two-way light switch
- Light switch - IPX5 rated
- Isolation Switch
- 10amp Single GPO
- 10amp Double GPO
- 15amp Single GPO.
- 10amp GPO - IPX5 rated
- 20amp Single GPO
- Indicates floor mounting
- Indicates ceiling mounting
- Comms. - Draw wire only
- 'F' Type television outlet
- 240V Smoke detector
- 36w Single fluorescent light
- 36w Double fluorescent light
- 36w Emergency back-up fluorescent light
- 36w Single fluorescent light - IP65 rated
- Emergency exit light
- Oyster Light - 11W Round Fluro
- External light
- 18W Single Vandalite
- Oyster light
- Photo electric light switch
- Spot light
- PLUMBING - Water Inlet Point
- PLUMBING - Waste Manifold Outlet Point

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

14.4 x 3.25m VIP Two Person - Disabled
Adani Mining Pty. Ltd.
Carmichael Project
QLD.

| | |
|---|---|
| DATE | 20.08.12 |
| SCALE | 1 : 50 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE (07) 3412 8600
FAX (07) 3803 0175
ABN: 71 083 902 309

TITLE: Floor Plan

DRAWING NUMBER: 120842A1 -01

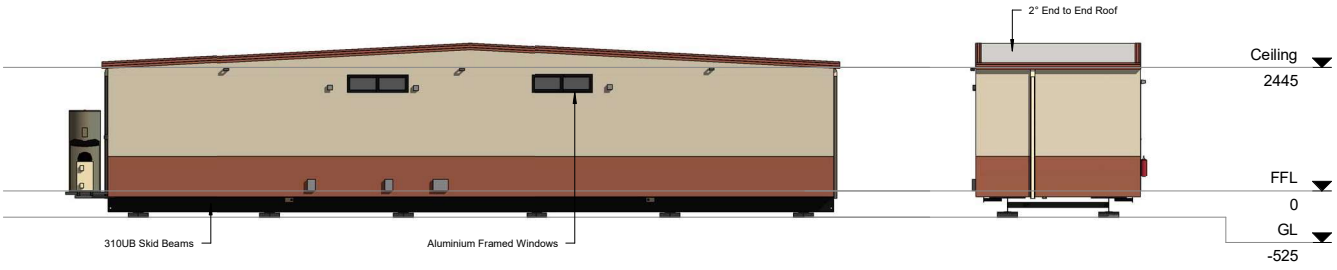
DESIGN WIND LOAD: Reg. C Cat. 2

NCC BUILDING CLASS: 3

REVISION

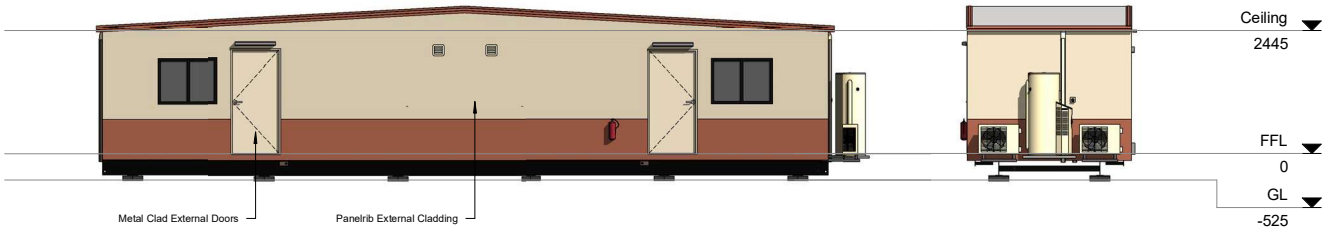
SHEET SIZE: A3

22/08/2012 3:01:29 PM




A Elevation A
1 : 75

2 Elevation D
1 : 75




B Elevation B
1 : 75

1 Elevation C
1 : 75

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

14.4 x 3.25m VIP Two Person - Disabled
Adani Mining Pty. Ltd.
Carmichael Project
QLD.

| | |
|---|---|
| DATE | 20.08.12 |
| SCALE | 1 : 75 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE
Elevations

DRAWING NUMBER
120842A1 -02

DESIGN WIND LOAD
Reg. C Cat. 2

NCC BUILDING CLASS
3

REVISION

SHEET SIZE
A3

22/08/2012 3:01:37 PM

## Manufacturing Structural Members

| Description | Member Size | Centre to Centre |
|---|---|---|
| Single Skid beams c/w Retractable lifters | 310UB | 2000 |

## - Floor Structure Schedule

| Floor Structure | Comments |
|---|---|
| Floor | |
| 600mm Floor Joist Centres | |
| Covering - 2.0mm Polyflor Non-Slip Vinyl | Bathrooms - 100mm Cove |
| Covering - 2.0mm Polyflor XL Vinyl | Bedrooms |
| Flooring - 17mm F11 T&G Plywood | |
| Insulation - Under Floor - 15mm Foilboard | |
| Joists - LC10015 Galvaspan | |

## - Wall Schedule

| Wall Structure | Comments |
|---|---|
| External Wall | |
| 611mm Stud Centres | |
| Cladding External - Colorbond Maxirib - "Headland" | Lower |
| Cladding External - Colorbond Maxirib - "Paperbark" | Upper |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Insulation - R2.9 Batts - 75mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Thermal Break between Framing and Cladding | |
| Ply Internal Wall | |
| 611mm Stud Centres | |
| 75mm Glasswool batt to wall hatched | |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |

**Wall Height**
**2445**

## Sales Roof Structure Schedule

| Roof Structure | Comments |
|---|---|
| 2° End to End Roof | |
| C2 - SDEK/PLY LC7512 - 611 - (3.0 & 3.5) | |
| 611mm Ceiling Joist Centres | |
| Ceiling Joist - LC7512 Galvaspan | |
| Insulation - R2.3 Foil Backed Blanket - 95mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Purlins - C7510 / LC7512 Galvaspan | |
| Roof - 0.42mm BMT Superdek Roofing | |

## Sales Door Schedule

| No. | Panel | Height | Width | Handle Type | Hardware Set | Closer | Panic Bar | C/B Jamb | Timber Jamb | Security | Quantity | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D1 | Standard : Hollow Core MC | 2040 | 920 | Lever | Entrance | No | No | Yes | No | | 2 | E/E & Weather Seals |
| D2 | Standard : Sliding Hollow Core | 2040 | 1200 | | Privacy | | | No | Yes | | 2 | Flush Pull Handle |

## Sales Window Schedule

| No. | Type | Glazing | Height | Width | Sill Height | Quantity | Comments |
|---|---|---|---|---|---|---|---|
| W1 | Sliding XO | Grey Glass | 900 | 1208 | 1000 | 2 | c/w Curtain — OPTION |
| W2 | Sliding XO.. | Obscure Glass | 350 | 1200 | 1960 | 2 | |

## * Plumbing Fixtures

| No. | Description | Quantity | Comments |
|---|---|---|---|
| | Plumbing - Waste Manifold Outlet | 1 | |
| | Plumbing - Water Inlet c/w Line Strainer | 1 | |
| 1 | Disabled WC Suite - 2011, Grab Rails & Backrest | 2 | |
| 2 | Disabled Shower Type II - 2011 - c/w Fold-Up Seat & Grab Rails | 2 | |
| 3 | Chrome plated towel rail | 2 | |
| 4 | Disabled Vanity Unit c/w Laminated Bench Top & 1000 x 600 mirror over | 2 | c/w Mirror. Disabled Compliant |
| 5 | Mini Folding Frame Clothesline | 2 | Set 1200 AFFL **OPTION** |
| 7 | Washing Machine Taps | 2 | |
| 8 | Washing Machine Discharge Pipe | 2 | |
| dp | Dropper only, for 100 x 75mm Downpipe | 3 | |
| fw | Floor Waste | 2 | |
| HWS | Rheem Heat Pump 325 Litre/6kW -MPi - mounted externally | 1 | |

## - Furniture

| No. | Description | Quantity | Comments |
|---|---|---|---|
| 9 | King single bed c/w innerspring mattress | 2 | **OPTION** |
| 10 | Disabled Wardrobe - 2 Drawers | 2 | Disabled Compliant 1 Lh & 1 RH |
| 11 | Disabled Stepped Desk 1800 x 600 | 2 | **OPTION** **OPTION** |
| 12 | Two Coat Hooks on Timber Rail x 600w | 2 | |

## - Electrical Equipment Schedule

| No. | Description | Quantity | Comments |
|---|---|---|---|
| 6 | Washing Machine/Dryer Combo - Ariston ARMF125 on 300h plinth | 2 | **OPTION** |
| 13 | Bar Fridge - WESTINGHOUSE - WRM1300WC - 130 litre | 2 | **OPTION** |

## Sales Mechanical Equipment

| No. | Supplier | Description | Quantity |
|---|---|---|---|
| M0 | A/C Installer | A/C Vertical Two Piece Cover | 2 |
| M1 | AIRFLOW | Wall Mounted Exhaust Fan | 2 |
| M2 | TECO | 3.62kW R/C Split System Air Conditioner | 2 |

Refridgeration Pipes to run under floor

## - Electrical Fixtures

| Description | Quantity |
|---|---|
| 1x10amp GPO AC | 2 |
| 1x15amp GPO AC | 2 |
| 2x10amp GPO | 12 |
| 240v Smoke Alarm | 2 |
| Draw Wire | 2 |
| External Smoke Junction Box | 1 |
| External TV Junction Box | 1 |
| Isolation Switch - HWS | 1 |
| Photo Electric Cell | 1 |
| Reed Switch **OPTION** | 2 |
| Switchboard | 1 |

**SWITCHBOARD:** To have timer installed, via. Door Reed Switch, **OPTION** for all A/C units.
Units to be shut down if door left open for more than 1 minute.

## Lighting Fixtures

| Lighting Fixtures | Quantity |
|---|---|
| 1x36W Fluro - Bare | 2 |
| 1x36W Fluro - IP65 | 2 |
| Reading Light - Oyster Shape | 4 |
| Single Vandalite - Wall Mounted | 2 |
| Switch - Std | 8 |

## - Fire Services Schedule

| No. | Description | Quantity |
|---|---|---|
| FE | 9.0Kg Fire Extinguisher - AB(E) 2 | 1 |

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.
14.4 x 3.25m VIP Two Person - Disabled
Adani Mining Pty. Ltd.
Carmichael Project
QLD.

| | |
|---|---|
| DATE | 20.08.12 |
| SCALE | |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE (07) 3412 8600
FAX (07) 3803 0175
ABN: 71 083 902 309

TITLE: Sales Schedules

DRAWING NUMBER: 120842A1 -07

DESIGN WIND LOAD: Reg. C Cat. 2
NCC BUILDING CLASS: 3
REVISION:
SHEET SIZE: A3

22/08/2012 3:01:39 PM





View indicative only

| - Drawing List | | |
|---|---|---|
| Sheet Number | Sheet Name | Current Revision |
| 00 | Title Page | A |
| 01 | Floor Plan | A |
| 02 | Elevations | A |
| 05 | Kitchen Sections | A |
| 07 | Sales Schedules | A |

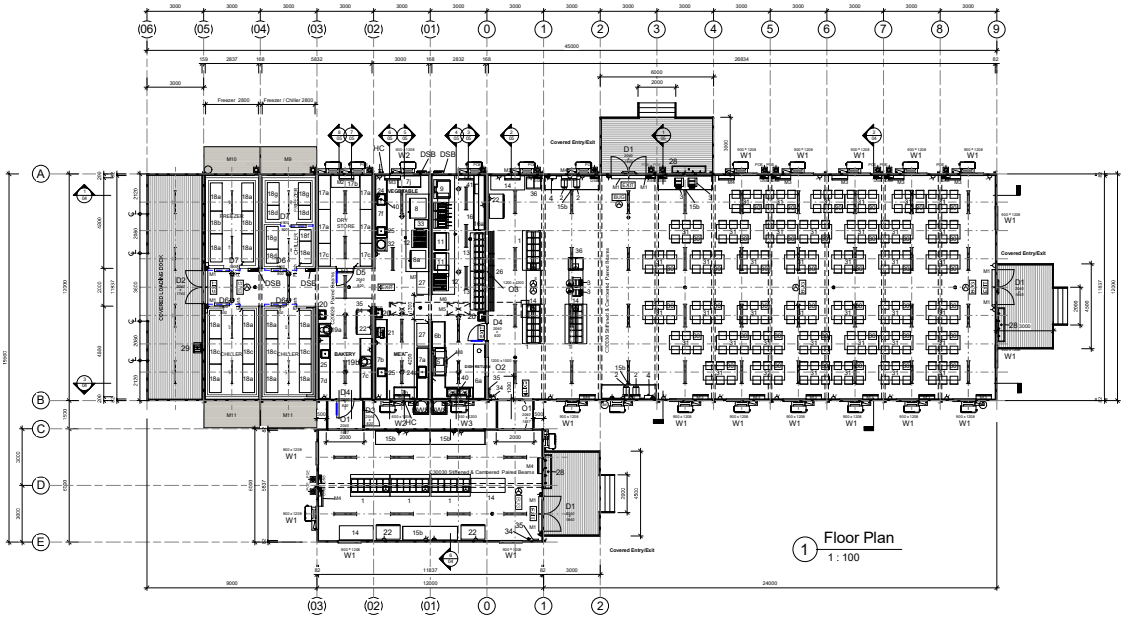
KD-400-H-C2

ATCO Structures & Logistics Pty Ltd

COOKING CAPACITY = 400 Person
SEATING CAPACITY = 240 Person

Kitchen Diner - 45.0 x 19.5m

ATCO Structures & Logistics



1 Floor Plan
1 : 100

## Item List

| | | | | | |
|---|---|---|---|---|---|
| | Plumbing - Water Inlet c/w Line Strainer | 16a | Shelving 4 Tier Post Style with ABS Shelves - 1800h x 1500w x 600d | D1 | 2040 x 1840 External Double Door - |
| 1 | Salad Bar - 6 Mod - Storage Under / Glass Canopy | 16b | Shelving 4 Tier Post Style with ABS Shelves - 1800h x 1200w x 600d | D2 | 2040 x 1740 External Double Door - |
| 2 | Drinks Dispenser - 2 x 12 litre | 16c | Shelving 4 Tier Post Style with ABS Shelves - 1800h x 1350w x 600d | D3 | 2040 x 820 External Door - |
| 3 | Conveyor Toaster | 16d | Shelving 4 Tier Post Style with ABS Shelves - 1800h x 750w x 600d | D4 | 2040 x 920 Internal Door - |
| 4 | BIRKO 10ltr Autocutter | 16e | Shelving 3 Tier MANTOVA Post Style with ABS Shelves - 1200h x 1200w x 600d | D5 | 2040 x 920 Internal Door - |
| 5 | Rack - Conveyor Dishwasher | 16f | Shelving 3 Tier Post Style with ABS Shelves - 1200h x 600w x 600d | D6 | 1900 x 800 Internal Door - |
| 6a | Dish Return c/w Scraps Hole / Chute (1400 x 2825 x 2900) (300 high Splashback with 600 high wall cover) | 16g | Shelving 3 Tier Post Style with ABS Shelves - 1800h x 1200w x 600d | D7 | 1900 x 800 Internal Door - |
| 6b | Dishwash Ecoll 1500 x 700 (300 high Splashback with 600 high wall cover) | 19a | Planetary Mixer - 40 litre | O1 | 2040 x 1000 |
| 7a | Prep Bench - Meat 01 x 2700w (300 high Splashback) | 19b | Planetary Mixer - 20 litre | | |
| 7b | Prep Bench - Meat 02 x 4200w (300 high Splashback) | 20 | Hand Basin, Stainless Steel - Knee Operated (Hot & Cold) | O2 | 1200 x 1000 Window opening |
| 7c | Prep Bench - Bakery 01 x 3300w (300 high Splashback) | 21 | Semi Automatic Slicer | O3 | 1200 x 4200 Servery |
| 7d | Prep Bench - Bakery 02 x 4000w (300 high Splashback to Inc. 600 Stepdown x 700w | 22 | Two Glass Door Chiller - 1120 Litres | W1 | 900 x 1206 Sliding Glass Window - Grey Glass |
| 7f | Prep Bench - Vege 01 x 4000w inc. Stepdown | 24 | 600 x 450 x 380 deep Sink c/w Pot Wash Item 40 | W2 | 600 x 1206 Sliding Glass Window - Obscure Glass |
| 7h | Mobile Bench - Meat x 1200w x 750d x 900h (No Splashback) | 24a | 600 x 450 x 380 deep Sink c/w Flickmixer | W3 | 350 x 1200 Sliding Glass Window - Obscure Glass |
| 7j | Mobile Bench - Vege x 1200w x 750d x 900h (No Splashback) | 25 | 450 x 450 x 300 deep Sink c/w Flickmixer | | |
| 8 | Combi Oven - Electric | 26 | Tubular Tray Race x 430w | M1 | 900mm Air Curtains |
| 8a | Combi Oven - Electric | 27 | Pot Rack 4 Tier Post Style with Wire Grid Shelves 1800h x 1200w x 600d | M2 | 3.5kW R/C Split System Air Conditioner - Inverter |
| 9 | Tilting Brat Pan - Electric - 150 Litre | 28 | 4 Tap Stainless Steel Wash Trough 1800mm long | M3 | 5.0kW R/C Split System Air Conditioner - Inverter |
| 10 | Deep Fryer - Electric - 3 Pan x 32 Litre | 29 | Cleaners sink with hinged grate (Hot & Cold Tap Only) | M4 | 7.1kW R/C Split System Air Conditioner - Inverter |
| 11 | Griddle - Electric | 30 | Steel Framed Stacker Chair | M5 | Fresh Air Dust Kitchen Induction System |
| 12 | Range - Electric - 6 Element | 31 | 1800 x 750 Melamine lunch table | M6 | Exhaust Canopy - Main x 4300w |
| 13 | Hot Bain Marie - 6 Mod - Heated Storage Under / Sneeze Guard | 32 | Bench Mounted Potato Peeler | M7 | Exhaust Canopy - Secondary |
| 14 | Mobile Bench - Diner x 1800w x 750d x 900h (No Splashback) | 33 | Infill Bench - 450w 750d (300 high Splashback) | M8 | Vent Hood for ES100 Rack - Conveyor Dishwasher |
| 15b | Beverage Bench x 2900w (600 high Splashback) | 34 | 9.0Kg Fire Extinguisher - ABE | M9 | External Compressors - Freezer / Chiller |
| 16 | Prep Bench - Cooking x 2600w (300 high Splashback) | 35 | Fire Blanket | M10 | External Compressor - Freezer |
| 16a | Prep Bench - Cooking - Shelf x 2600w | 36 | Ice Cream Freezer - 183 Litre | M11 | External Compressor - Chiller |
| 17a | Shelving 4 Tier Post Style with Wire Grid Shelves 1800h x 1800w x 600d | 40 | Pot Wash - Hob Mounted Pre Rinse & Add On Pot Filler | | |
| 17b | Shelving 4 Tier Post Style with Wire Grid Shelves 1800h x 1500w x 600d | 41 | Microwave | | |
| 17c | Shelving 4 Tier Post Style with Wire Grid Shelves 1800h x 1200w x 600d | BUG | Electronic Bug Killer - 2 x 20W | | |
| | | dp | Dropper only, for 150 x 75mm Downpipe | | |
| | | DSB | Switchboard | | |
| | | fw | Commercial Floor Waste | | |
| | | HC | Hose Cock | | |
| | | HWS | 315Ltr Triple element hot water system - mounted externally | | |

## Notes

- Fire fighting equipment supplied & installed by others.
- Freezer & Chillers to comply with NCC G.12

**C2 STRUCTURAL NOTES - Minimum Design Criteria**

Dead and Live Windloads in accordance with the latest version of AS1170.2
Wind Region: C - Terrain Category: 2
Ultimate Wind Speed: Vu = 41.2m/s (61)
Serviceability Wind Speed: Vs = 36.5m/s (36)
Shielding Multiplier: 1.0 Topographic Multiplier: 1.0
Earthquake Loads in accordance with the latest version of AS1170.4

**WINDOW SPECIFICATION**
DESIGN PRESSURE - ± 4822Pa
SLS (SERVICEABILITY) - 1.33kPA
WATER PENETRATION - 450PA

COOKING CAPACITY = 400 Person
SEATING CAPACITY = 240 Person

## Symbol Legend

- Distribution Switchboard
- POE - Point Of Entry
- Light switch
- Two-way light switch
- Light switch - IP65 rated
- Isolation Switch
- 10amp Single GPO
- 10amp Double GPO
- 15amp Single GPO
- 10amp GPO - IPX5 rated
- 20amp Single GPO
- - Indicates floor mounting
- - Indicates ceiling mounting
- Comms. - Draw wire only
- 'F' Type television outlet
- 240V Smoke detector
- 36w Single fluorescent light
- 36w Double fluorescent light
- 36w Emergency back-up fluorescent light
- 36w Single fluorescent light - IP65 rated
- Emergency exit light
- Oyster Light - 11W Round Fluro
- External light
- 18W Single Vandalite
- Oyster light
- Photo electric light switch
- Spot light
- PLUMBING - Water Inlet Point
- PLUMBING - Waste Manhole/ Outlet Point


ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
HASTI WICKES AVENUE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS DC, QLD 4118
E-mail: standard@atcoau.com.au

PHONE (07) 3412 8600
FAX (07) 3800 0175

ABN 71 000 402 339



THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES & LOGISTICS LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLLY OR IN PART WITHOUT WRITTEN AUTHORITY.

© COPYRIGHT

QUALITY CERTIFIED TO AS/NZS ISO 9001:2000
BY
SCHUCH INTERNATIONAL REGN No. 131

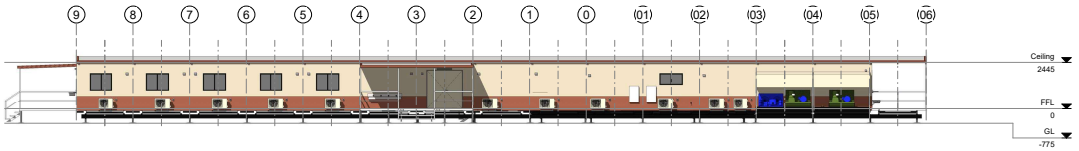

| Rev | Description | Date | By |
|---|---|---|---|
| A | Issued for Review | 05.05.12 | RA |

Kitchen Diner - 45.0 x 19.5m

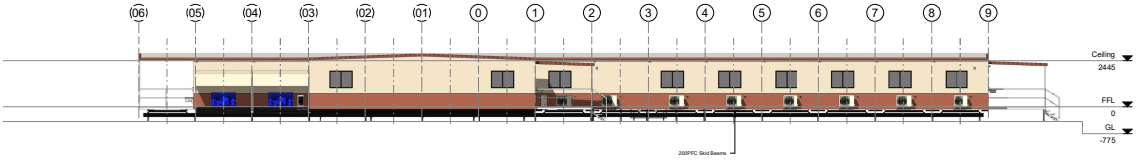
ATCO Structures & Logistics Pty Ltd

| | |
|---|---|
| DATE | 31.05.12 |
| SCALE | 1 : 100 |
| DRAWN | RA |
| CHECKED | TK |
| PROJECT No. | |
| DESIGN AND LOAD | ACCESS & LIVING CLASS |
| Reg. C Cat. 2 | 6 |
| TITLE | Floor Plan |
| DRAWING NUMBER | REVISION / SHEET SIZE |
| KD-400-H-C2 -01 | A / A1 |

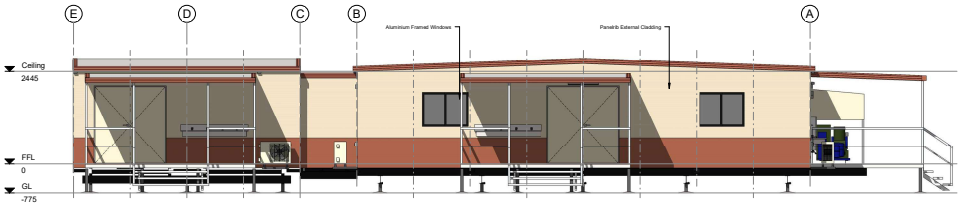

12/2/2007 2:37:21 AM



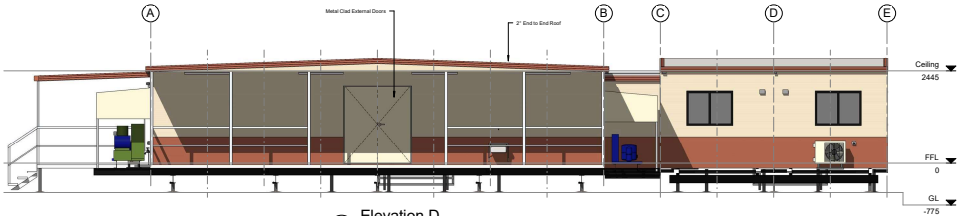

A Elevation A
1 : 100




B Elevation B
1 : 100




1 Elevation C
1 : 50




2 Elevation D
1 : 50

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
NH151 MACKAS LAKEVIEW, CRESTMEAD,
QLD 4132
P.O. BOX 1171, BROWNS PLAINS DC, QLD
4118
E-mail: kbooks@atcostruct.com.au

PHONE (07) 3412 8800
FAX (07) 3800 0171
ABN 71 000 993 309

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY.

© COPYRIGHT

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008
BY
SCI-QUAL INTERNATIONAL REGISTRAR

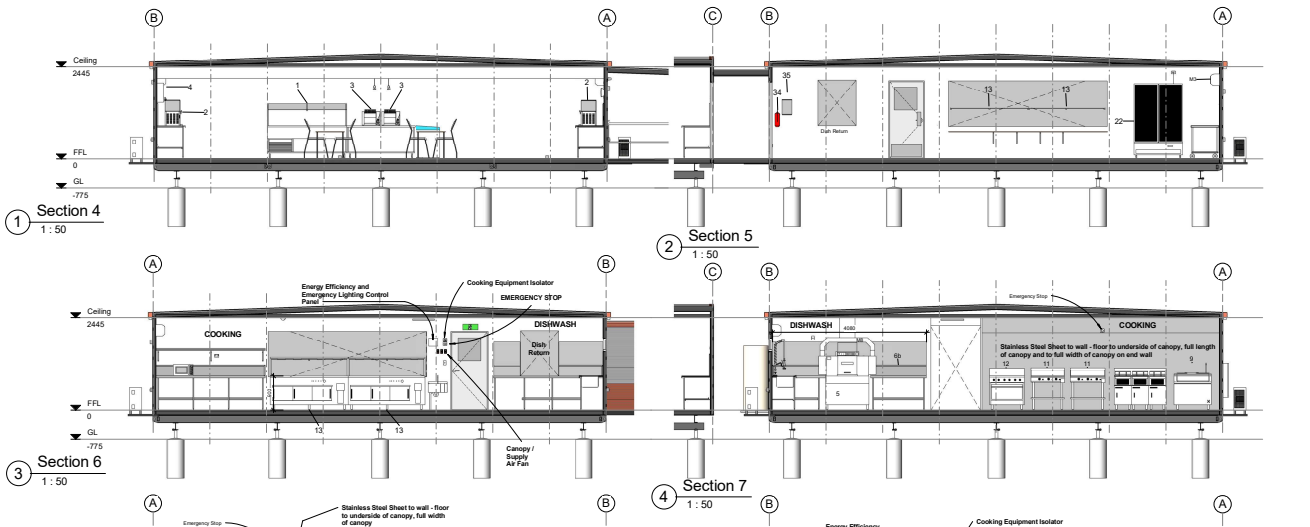
| Rev | Description | Date | By |
|---|---|---|---|
| A | Issued for Review | 03.09.12 | RA |

Kitchen Diner - 45.0 x 19.5m

ATCO Structures & Logistics Pty Ltd

| | |
|---|---|
| DATE | 31.05.12 |
| SCALE | As indicated |
| DRAWN | RA |
| CHECKED | TK |
| PROJECT No. | |
| DESIGN WIND LOAD | Reg. C Cat. 2 |
| REGION CLIMATIC CLASS | 6 |
| TITLE | Elevations |
| DRAWING NUMBER | KD-400-H-C2 -02 |
| REVISION | A |
| SHEET SIZE | A1 |

12/09/2012 9:22:29 AM




1 Section 4 — 1 : 50

2 Section 5 — 1 : 50

3 Section 6 — 1 : 50

4 Section 7 — 1 : 50

5 Section 8 — 1 : 50

6 Section 9 — 1 : 50

7 Section 10 — 1 : 50

8 Section 11 — 1 : 50

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
HIGHLAND MARKET AVENUE, CRESTMEAD, QLD 4132
PO BOX 1171, BROWNS PLAINS BC, QLD 4118
PHONE (07) 3412 8800
FAX (07) 3802 0170
ABN 71 000 002 309

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY.
© COPYRIGHT
QUALITY CERTIFIED TO AS/NZS ISO 9001:2008
BY
SCI-QUAL INTERNATIONAL REGISTRAR

| Rev | Description | Date | By |
|---|---|---|---|
| A | Issued for Review | 03.09.12 | RA |

Kitchen Diner - 45.0 x 19.5m

ATCO Structures & Logistics Pty Ltd

| | |
|---|---|
| DATE | 31.05.12 |
| SCALE | 1 : 50 |
| DRAWN | RA |
| CHECKED | TK |
| PROJECT No. | |
| DESIGN WIND LOAD | REGION CLIMATIC CLASS |
| Reg. C Cat. 2 | 6 |
| TITLE | Kitchen Sections |
| DRAWING NUMBER | REVISION / SHEET SIZE |
| KD-400-H-C2-05 | A / A1 |

12/09/2012 9:07:28 AM

## Manufacturing Structural Members

| Description | Member Size | Back to Back |
|---|---|---|
| Skid Beams - Perimeter Chassis | 200PFC | 2850 |
| Skid beams c/w retractable lifters | 200PFC | 2000 |
| Rail System | 200UB22.3 | |
| Paired Beams | C20020 | |
| Paired Beams | C30030 Stiffened & Cambered | |

## - Floor Structure Schedule

| Floor Structure | Comments |
|---|---|
| DECK | |
| 400mm Floor Joist Centres | |
| Flooring - 19 x 80 Shotedge | |
| Framing - LC7512 Galvaspan | |
| DINER FLOOR | |
| 480mm Floor Joist Centres | |
| Covering - 2.0mm Polyflor XL Vinyl | |
| Flooring - 17mm F11 T&G Plywood | |
| Joists - LC10015 Galvaspan | |
| KITCHEN FLOOR | |
| 400mm Floor Joist Centres | |
| Covering - 2.0mm Polyflor Non-Slip Vinyl | 100mm Cove |
| Flooring - 15mm Compressed Fibre Cement (CFC) | |
| Joists - LC10015 Galvaspan | |

**FREEZER FLOOR - 100mm panel type c/w 15mm CFC, epoxy coated to give a water resistant surface and 3mm Ali. Checker plate.**

**COLDROOM FLOOR - 100mm panel type c/w 15mm CFC, epoxy coated to give a water resistant surface and 3mm Ali. Checker plate.**

**NOTE: Floors flush to Hallway FFL**

## - Wall Schedule

| Wall Structure | Comments |
|---|---|
| Coldroom / Freezer Walls Panel | |
| 0.8mm Colorbond Skin | |
| 100mm EPS Panel | Coldroom |
| 150mm EPS Panel | Freezer |
| External Wall Stud Centres - Diner 611mm - Kitchen 400mm | |
| Cladding External - Colorbond Maxirib - "Headland" | Lower first sheet |
| Cladding External - Colorbond Maxirib - "Paperbark" | Upper Sheets |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Insulation - R2.9 Batts - 75mm | |
| Insulation - Sisalation | Kitchen External Walls |
| Lining - 6mm Villaboard | Kitchen Area |
| Lining - Internal - 3.6mm Polyester Coated Plywood | Diner |
| Thermal Break between Framing and Cladding | |
| External Wall / Double 600mm Stud Centres | |
| Cladding External - Colorbond Maxirib - "Headland" | Lower first sheet |
| Cladding External - Colorbond Maxirib - "Paperbark" | Upper Sheets |
| Framing - 2 Walls - 75 x 1.0mm Hi-Ten Truecore | |
| Insulation - R2.9 Batts - 75mm | |
| Lining - 6mm Villaboard | Kitchen Area |
| Thermal Break between Framing and Cladding | |
| Villaboard Double Internal Wall 400mm Stud Centres | |
| Framing - 2 Walls - 75 x 1.0mm Hi-Ten Truecore | |
| Lining - 6mm Villaboard | Kitchen Area |
| Villaboard Internal Wall 400mm Stud Centres | |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Lining - 6mm Villaboard | Kitchen Area |

**Wall Height**
**2445**

## Sales Roof Structure Schedule

| Roof Structure | Comments |
|---|---|
| 2° End to End Roof C2 - SDEKP8BD LC10015 - 400 - (3.0 & 3.5) | |
| Ceiling Joist Centres - Kitchen 400mm - Diner 611mm | |
| Framing - LC10015 Galvaspan | |
| Insulation - R2.3 Foil Back Blanket - 95mm | |
| Lining - Internal - 3.6mm Mirage Pearl Plywood | |
| Lining - Internal - 6mm Villaboard | Kitchen Area. Loading Dock Ceiling. |
| Purlins - C7510 / LC7512 Galvaspan | |
| Roof - 0.42mm BMT Superdek Roofing | DINER ONLY |
| Roof - 0.48mm BMT Superdek Roofing | KITCHEN ONLY |

## Sales Door Schedule

| No. | Panel | Height | Width | Handle Type | Hardware Set | Closer | Panic Bar | C/B Jamb | Timber Jamb | Security | Quantity | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D1 | Standard : Hollow Core MC | 2040 | 1840 | Lever | Entrance | Yes | No | Yes | No | | 3 | E/E Seals |
| D2 | Standard : Hollow Core MC | 2040 | 1740 | Lever | Entrance | Yes | No | Yes | No | | 1 | E/E Seals |
| D3 | Standard : Hollow Core | 2040 | 820 | Standard | Entrance | No | No | Yes | No | | 1 | E/E Seals |
| D4 | Half Glass : Solid Core | 2040 | 920 | Lever | Passage | Yes | No | Yes | No | | 2 | Push/Kick Plates both sides |
| D5 | Half Glass : Hollow Core | 2040 | 920 | Lever | Entrance | No | No | Yes | No | | 1 | |
| D6 | Standard : Coldroom Panel Door | 1900 | 800 | | Coolroom Furniture | | | Yes | No | | 3 | Chillers - Supplied and installed by third party. |
| D7 | Standard : Freezer Panel Door | 1900 | 800 | | Coolroom Furniture | | | Yes | No | | 2 | Freezer - Supplied and installed by third party. |
| O1 | Opening Only | 2040 | 1837 | | | | | Yes | No | | 3 | |

## Sales Window Schedule

| No. | Type | Glazing | Height | Width | Sill Height | Quantity | Comments |
|---|---|---|---|---|---|---|---|
| O2 | Window Opening only | Dish Return | 1200 | 1000 | 900 | 1 | |
| O3 | Window Opening only | Servery Window | 1200 | 4200 | 880 | 1 | |
| W1 | Sliding XO | Grey Glass | 900 | 1208 | 1000 | 18 | |
| W2 | Sliding XO1 | Obscure Glass | 600 | 1208 | 1300 | 2 | Sloping Sill |
| W3 | Sliding XO.. | Obscure Glass | 350 | 1200 | 1550 | 1 | Sloping Sill |

## * Plumbing Fixtures

| No. | Description | Quantity | Comments |
|---|---|---|---|
| 1 | Plumbing - Water Inlet c/w Line Strainer | 1 | |
| 4 | BIRKO 15ltr Autoboiler | 2 | |
| 20 | Hand Basin, Stainless Steel - Knee Operated (Hot & Cold) | 3 | |
| 24 | 600 x 450 x 380 deep Sink c/w Pot Wash Item 40 | 3 | Hot & Cold |
| 24a | 600 x 450 x 380 deep Sink c/w Flickmixer | 1 | Hot & Cold |
| 25 | 450 x 450 x 300 deep Sink c/w Flickmixer | 3 | Hot & Cold |
| 28 | 4 Tap Stainless Steel Wash Trough 1800mm long | 3 | |
| 29 | Cleaners sink with hinged grate (Hot & Cold Tap Only) | 1 | |
| 40 | Pot Wash - Hob-Mounted Pre Rinse & Add On Pot Filter | 2 | Hot & Cold |
| dp | Dropper only, for 100 x 75mm Downpipe | 33 | |
| fw | Commercial Floor Waste | 14 | |
| HC | Hose Cock | 2 | |
| HWS | 315Lt Triple element hot water system - mounted externally | 2 | |

## - Furniture

| No. | Description | Manufacturer | Quantity |
|---|---|---|---|
| 17a | Shelving 4 Tier Post Style with Wire Grid Shelves 1800h x 1800w x 600d | MANTOVA | 4 |
| 17b | Shelving 4 Tier Post Style with Wire Grid Shelves 1800h x 1500w x 600d | MANTOVA | 1 |
| 17c | Shelving 4 Tier Post Style with Wire Grid Shelves 1800h x 1200w x 600d | MANTOVA | 2 |
| 18a | Shelving 4 Tier Post Style with ABS Shelves - 1800h x 1500w x 600d | MANTOVA | 12 |
| 18b | Shelving 4 Tier Post Style with ABS Shelves - 1800h x 1200w x 600d | MANTOVA | 2 |
| 18c | Shelving 4 Tier Post Style with ABS Shelves - 1800h x 1350w x 600d | MANTOVA | 4 |
| 18d | Shelving 4 Tier Post Style with ABS Shelves - 1800h x 750w x 600d | MANTOVA | 3 |
| 18e | Shelving 3 Tier MANTOVA Post Style with ABS Shelves - 1200h x 1200w x 600d | | 1 |
| 18f | Shelving 3 Tier Post Style with ABS Shelves - 1200h x 600w x 600d | MANTOVA | 1 |
| 18g | Shelving 4 Tier Post Style with ABS Shelves - 1800h x 1200w x 600d | MANTOVA | 3 |
| 26 | Tubular Tray Race x 4200w | | 1 |
| 27 | Pot Rack 4 Tier Post Style with Wire Grid Shelves 1800h x 1200w x 600d | MANTOVA | 2 |
| 30 | Steel Framed Stacker Chair | | 240 |
| 31 | 1800 x 750 Melamine lunch table | | 40 |

## Stainless Steel Benches

| No. | Description | Quantity |
|---|---|---|
| 6a | Dish Return c/w Scraps Hole / Chute (1400 x 2825 x 2900) (300 high Splashback with 600 high wall cover) | 1 |
| 6b | Dishwash Exit 1500 x 700 (300 high Splashback with 600 high wall cover) | 1 |
| 7a | Prep Bench - Meat 01 x 2700w (300 high Splashback) | 1 |
| 7b | Prep Bench - Meat 02 x 4200w (300 high Splashback) | 1 |
| 7c | Prep Bench - Bakery 01 x 3200w (300 high Splashback) | 1 |
| 7h | Mobile Bench - Meat x 1200w x 750d x 900h (No Splashback) | 1 |
| 7j | Mobile Bench - Vege x 1200w x 750d x 900h (No Splashback) | 1 |
| 14 | Mobile Bench - Diner x 1800w x 750d x 900h (No Splashback) | 5 |
| 15b | Beverage Bench x 2900w (600 high Splashback) | 6 |
| 16 | Prep Bench - Cooking x 2900w (300 high Splashback) | 1 |
| 16a | Prep Bench - Cooking - Shelf x 2900w | 1 |
| 33 | Infill Bench - 450w 750d (300 high Splashback) | 1 |

## Sales Mechanical Equipment

| No. | Supplier | Description | Quantity |
|---|---|---|---|
| M1 | TECO | 900mm Air Curtains | 8 |
| M2 | DAIKIN | 3.5kW R/C Split System Air Conditioner - Inverter | 1 |
| M3 | DAIKIN | 5.0kW R/C Split System Air Conditioner - Inverter | 18 |
| M4 | DAIKIN | 7.1kW R/C Split System Air Conditioner - Inverter | 5 |
| M5 | Aircon Eng. | Fresh Air Dual Kitchen Induction System | 1 |
| M6 | T&H Sheetmetal | Exhaust Canopy - Main x 6300w | 1 |
| M7 | T&H Sheetmetal | Exhaust Canopy - Secondary | 1 |
| M8 | T&H Sheetmetal | Vent Hood for ES100 Rack - Conveyor Dishwasher | 1 |
| M9 | | External Compressors - Freezer / Chiller | 1 |
| M10 | | External Compressor - Freezer | 1 |
| M11 | | External Compressor - Chiller | 2 |

## Lighting Fixtures

| | Quantity |
|---|---|
| 1x36W Fluro - IP65 | 12 |
| 2x36W Fluro & Diffuser | 62 |
| Exit - Ceiling Mount | 4 |
| Exit - Ceiling Mount Directional | 2 |
| Exit - Wall Mount | 1 |
| Single Yardalite - Wall Mounted | 2 |
| Spitfire 10W - Emegency Light - Battery Backup | 10 |
| Switch - IP65 | 2 |
| Switch - Std | 12 |

## - Fire Services Schedule

| No. | Description | Quantity |
|---|---|---|
| 34 | 9.0Kg Fire Extinguisher - ABE(f) | 3 |
| 35 | Fire Blanket | 3 |

## - Electrical Fixtures

| Description | Quantity |
|---|---|
| 1x10amp GPO | 6 |
| 1x10amp GPO - Ceiling Mounted | 5 |
| 1x10amp GPO - Floor Mounted | 7 |
| 1x10amp GPO - Suspended | 2 |
| 1x15amp GPO | 9 |
| 1x15amp GPO - Suspended | 2 |
| 1x15amp GPO AC | 6 |
| 1x20amp 3P Point | 1 |
| 2x10amp GPO | 27 |
| Emergency Stop | 2 |
| Emergency Stop on Canopy | 2 |
| Energy Efficiency and Emergency Lighting Control Panel (HAGER) | 2 |
| Isolation Switch - AC | 23 |
| Isolation Switch - HWS | 2 |
| Mains Switchboard | 4 |
| On-Off Switch | 4 |
| Photo Electric Cell | 3 |
| RCE | 4 |
| Switchboard | 11 |

## Rainwater Goods

| Description | Quantity |
|---|---|
| Dropper only, for 100 x 75mm Downpipe | 33 |

## Handrail Schedule

| |
|---|
| Twin Rail Horizontal Handrails - as shown on floor plan |

## - Electrical Equipment Schedule

| No. | Description | Manufacturer | Model | Quantity |
|---|---|---|---|---|
| 1 | Salad Bar - 6 Mod - Storage Under / Glass Canopy | BRAMS | 6 Mod | 6 |
| 2 | Drinks Dispenser - 2 x 12 litre | PROMAC | VL 223 | 4 |
| 3 | Conveyor Toaster | ROBAND | TCR15 | 4 |
| 5 | Rack - Conveyor Dishwasher | ESWOOD | ES100 | 1 |
| 8 | Combi Oven - Electric | BLUESEAL | 20 tray - E20CSDW | 1 |
| 8a | Combi Oven - Electric | BLUESEAL | 14 tray - E14CSDW | 1 |
| 9 | Tilting Bratt Pan - Electric - 150 Litre | GOLDSTEIN | TPE-150 | 1 |
| 10 | Deep Fryer - Electric - 3 Pan x 32 Litre | GOLDSTEIN | FRE-18L - 3 Pan | 1 |
| 11 | Griddle - Electric | GOLDSTEIN | GPEDB-36 & SB36 | 2 |
| 12 | Range - Electric - 6 Element | GOLDSTEIN | PE-6R-2B | 2 |
| 13 | Hot Bain Marie - 6 Mod - Heated Storage Under / Sneeze Guard | BRAMS | 6 Mod | 2 |
| 19a | Planetary Mixer - 40 litre | PARAMOUNT | BM40AT3P | 1 |
| 19b | Planetary Mixer - 20 litre | PARAMOUNT | BM 20AT | 1 |
| 21 | Semi Automatic Slicer | BRICE | GL Matic | 1 |
| 22 | Two Glass Door Chiller - 1120 Litres | SKOPE | B1200-2 | 4 |
| 32 | Bench Mounted Potato Peeler | SAMMIC | M10 | 1 |
| 36 | Ice Cream Freezer - 183 Litre | BAKER | IGLOBO | 2 |
| 41 | Microwave | BONN | MV 1000 | 1 |
| BUG | Electronic Bug Killer - 2 x 20W | INSECT-O-CUTOR | 14614 | 5 |


ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
140-151 MACKES BOULEVARD, CRESTMEAD,
QLD 4132
P.O. BOX 1171, BROWNS PLAINS DC, QLD
4118
E-mail: standards@atcosl.com.au

PHONE: (07) 3412 8800
FAX: (07) 3800 0170

ABN: 71 000 002 309



THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY.

© COPYRIGHT

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008
BY
SCI-QUAL INTERNATIONAL REGISTRAR, CO.


| Rev | Description | Date | By |
|---|---|---|---|
| A | Issued for Review | 03.09.12 | RA |

Kitchen Diner - 45.0 x 19.5m

ATCO Structures & Logistics Pty Ltd

| | |
|---|---|
| DATE | 31.05.12 |
| SCALE | |
| DRAWN | RA |
| CHECKED | TK |
| PROJECT No. | |
| DESIGN WIND SPEED | REGION / WIND CLASS |
| Reg. C Cat. 2 | 6 |

TITLE
Sales Schedules

| DRAWING NUMBER | REVISION | SHEET SIZE |
|---|---|---|
| KD-400-H-C2 -07 | A | A1 |


10/09/2012 8:20:03 AM



| - Drawing List | | |
|---|---|---|
| **Sheet Number** | **Sheet Name** | **Current Revision** |
| 00 | Title Page | |
| 01 | Floor Plan | |
| 02 | Elevations | |
| 06 | Sales Schedules | |

120842G

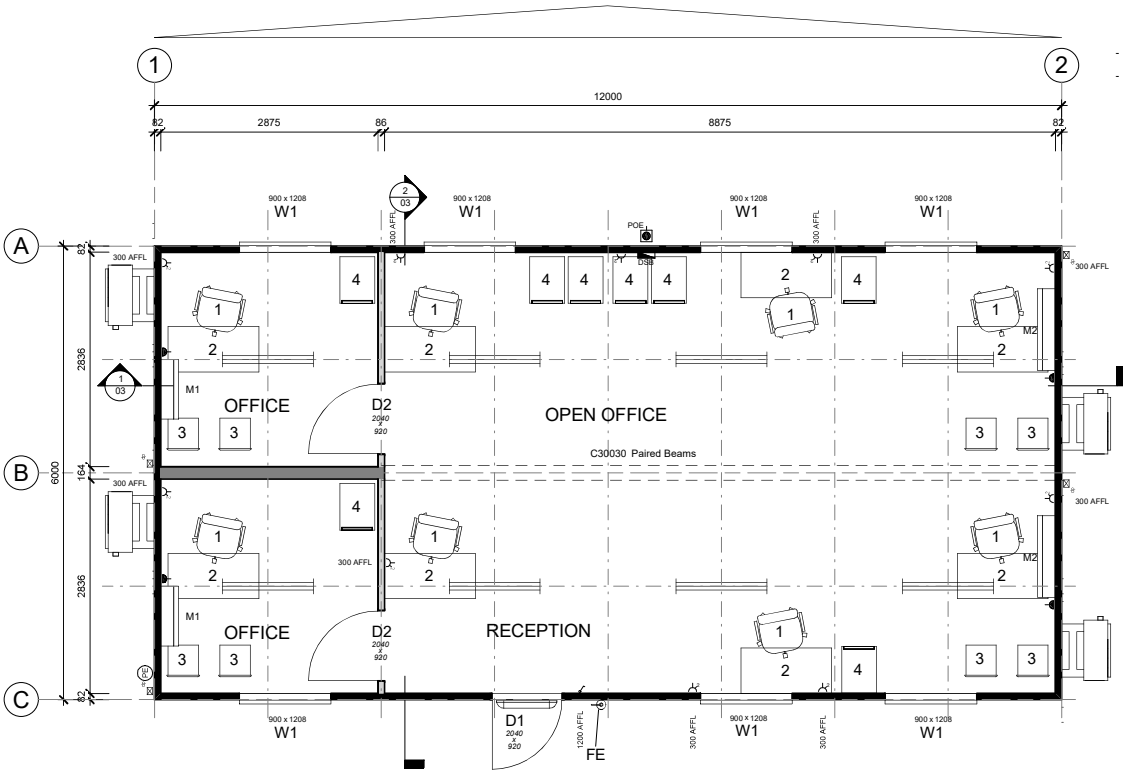
# Adani Mining Pty. Ltd.
# Carmichael
# QLD

## 12.0 x 6.0m Office

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au

PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309




1 Floor Plan

1 : 50

## Notes

- Fire fighting equipment supplied & installed by others.
- Plans are current at time of issue, are indicative only, and are subject to change at any time without notice.

## Item List

| | |
|---|---|
| D1 | 2040 x 920 External Door - Standard : Hollow Core MC |
| D2 | 2040 x 920 Internal Door - Standard : Hollow Core |
| W1 | 900 x 1208 Sliding Glass Window - Grey Glass |
| M1 | 2.66kW R/C Split System Air Conditioner |
| M2 | 5.05kW R/C Split System Air Conditioner |

ALL FURNITURE OPTIONED

| | |
|---|---|
| 1 | Swivel Chair |
| 2 | 1200 x 600 Desk c/w Drawer |
| 3 | PVC Stacker chair |
| 4 | 4 Drawer Filing Cabinet - By Others |
| dp | Dropper only, for 100 x 75mm Downpipe |
| FE | Fire Extinguisher 9.0kg - AB(E) |

## Symbol Legend

- DSB — Distribution Switchboard
- POE - Point Of Entry
- Light switch
- Two-way light switch
- Light switch - IPX5 rated
- Isolation Switch
- 10amp Single GPO
- 10amp Double GPO
- 15amp Single GPO.
- 10amp GPO - IPX5 rated
- 20amp Single GPO
  - Indicates floor mounting
  - Indicates ceiling mounting
- Comms. - Draw wire only
- 'F' Type television outlet
- 240V Smoke detector
- 36w Single fluorescent light
- 36w Double fluorescent light
- 36w Emergency back-up fluorescent light
- 36w Single fluorescent light - IP65 rated
- EXIT — Emergency exit light
- Oyster Light - 11W Round Fluro
- External light
- 18W Single Vandalite
- Oyster light
- PE — Photo electric light switch
- Spot light
- PLUMBING - Water Inlet Point
- PLUMBING - Waste Manifold Outlet Point

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 6.0m Office
Adani Mining Pty. Ltd.
Carmichael
QLD

| | |
|---|---|
| DATE | 21.08.12 |
| SCALE | 1 : 50 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE: Floor Plan

DRAWING NUMBER: 120842G -01

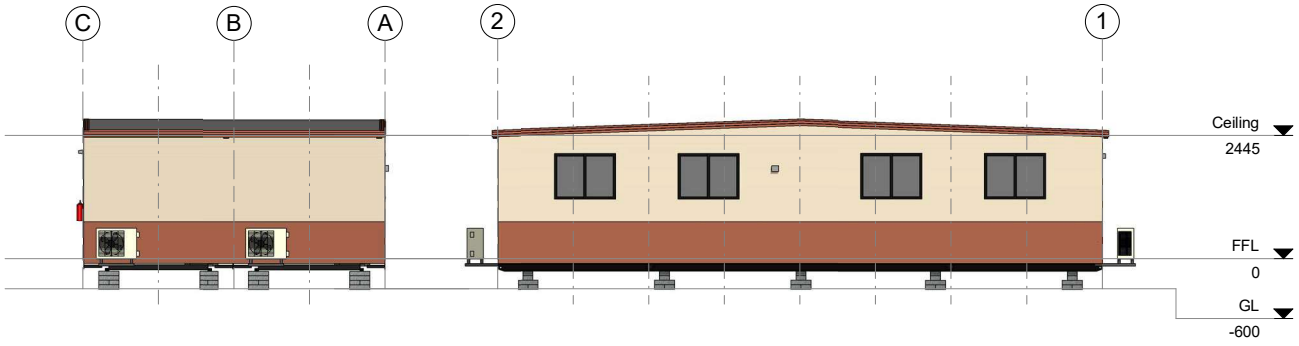
DESIGN WIND LOAD: C2

NCC BUILDING CLASS: 5

REVISION:

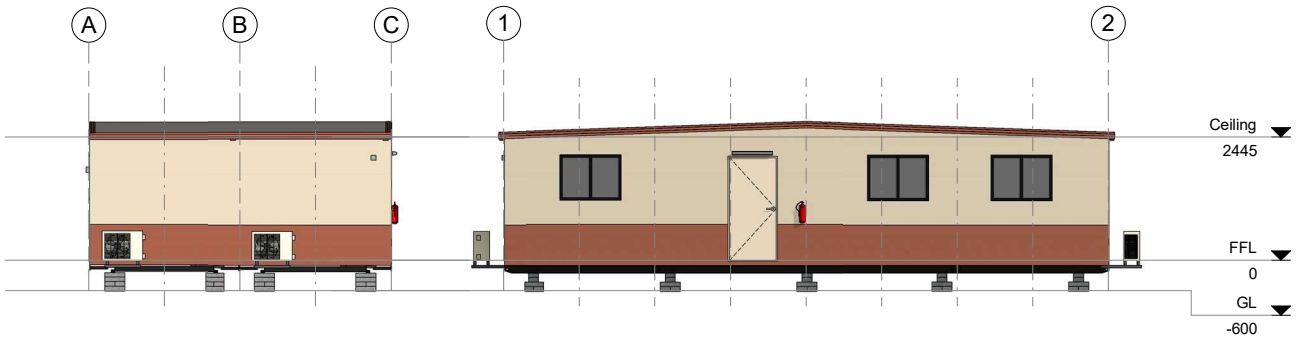
SHEET SIZE: A3

22/08/2012 2:05:21 PM




2 Elevation C
1 : 75

A Elevation A
1 : 75




1 Elevation D
1 : 75

B Elevation B
1 : 75

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 6.0m Office
Adani Mining Pty. Ltd.
Carmichael
QLD

| | |
|---|---|
| DATE | 21.08.12 |
| SCALE | 1 : 75 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE
Elevations

DRAWING NUMBER
120842G -02

| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 5 |
| REVISION | |
| SHEET SIZE | A3 |

22/08/2012 2:05:30 PM

| Manufacturing Structural Members | | |
|---|---|---|
| Description | Member Size | Back to Back |
| Skid Beams c/w Retractable Lifters | 150PFC | 2000 |
| Paired Beams | C30030 | |

| Sales Door Schedule | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Panel | Height | Width | Handle Type | Hardware Set | Closer | Panic Bar | C/B Jamb | Timber Jamb | Security | Quantity | Comments |
| D1 | Standard : Hollow Core MC | 2040 | 920 | Lever | Entrance | Yes | No | Yes | No | | 1 | E/E Seals |
| D2 | Standard : Hollow Core | 2040 | 920 | Lever | Entrance | No | No | Yes | No | | 2 | |

| - Floor Structure Schedule | |
|---|---|
| Floor Structure | Comments |
| Floor | |
| 600mm Floor Joist Centres | |
| Covering - 1.5mm Polyflor XL Vinyl | |
| Flooring - 17mm F11 T&G Plywood | |
| Insulation - Under Floor - 15mm Foilboard | |
| Joists - LC7512 Galvaspan | |

| Sales Window Schedule | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. | Type | Glazing | Height | Width | Sill Height | Quantity | Comments |
| W1 | Sliding XO | Grey Glass | 900 | 1208 | 1200 | 7 | c/w Curtains |

OPTION

| - Wall Schedule | |
|---|---|
| Wall Structure | Comments |
| External Wall | |
| 611mm Stud Centres | |
| Cladding External - Colorbond Maxirib - "Headland" | Lower first sheet |
| Cladding External - Colorbond Maxirib - "Paperbark" | Upper Sheets |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Framing - 75x1.0mm Hi-Ten Steel | |
| Insulation - R2.9 Batts - 75mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Thermal Break between Framing and Cladding | |
| Ply Internal Wall | |
| 611mm Stud Centres | |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |

| * Plumbing Fixtures | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| dp | Dropper only, for 100 x 75mm Downpipe | 4 | |

| Sales Mechanical Equipment | | | |
|---|---|---|---|
| No. | Supplier | Description | Quantity |
| M1 | TECO | 2.66kW R/C Split System Air Conditioner | 2 |
| M2 | TECO | 5.05kW R/C Split System Air Conditioner | 2 |

| Wall Height |
|---|
| 2445 |

| - Electrical Fixtures | |
|---|---|
| Description | Quantity |
| 1x15amp GPO AC | 4 |
| 2x10amp GPO | 10 |
| Photo Electric Cell | 1 |
| Switchboard | 1 |

ALL FURNITURE OPTIONED

| - Furniture | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| 1 | Swivel Chair | 8 | |
| 2 | 1200 x 600 Desk c/w Drawer | 8 | |
| 3 | PVC Stacker chair | 8 | |
| 4 | 4 Drawer Filing Cabinet - By Others | 8 | |

| Lighting Fixtures | Quantity |
|---|---|
| 2x36W Fluro - Bare | 8 |
| Single Vandalite - Wall Mounted | 1 |
| Switch - Std | 1 |

| Sales Roof Structure Schedule | |
|---|---|
| Roof Structure | Comments |
| 2° End to End Roof | |
| C2 - SDEK/PLY LC7512 - 611 - (3.0 & 3.5) | |
| 611mm Ceiling Joist Centres | |
| Ceiling Joist - LC7512 Galvaspan | |
| Insulation - R2.3 Foil Backed Blanket - 95mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Purlins - C7510 / LC7512 Galvaspan | |
| Roof - 0.42mm BMT Superdek Roofing | |

| - Fire Services Schedule | | |
|---|---|---|
| No. | Description | Quantity |
| FE | 9.0Kg Fire Extinguisher - AB(E) | 1 |

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 6.0m Office
Adani Mining Pty. Ltd.
Carmichael
QLD

| | |
|---|---|
| DATE | 21.08.12 |
| SCALE | |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE (07) 3412 8600
FAX (07) 3803 0175
ABN: 71 083 902 309

TITLE: Sales Schedules

DRAWING NUMBER: 120842G -06

DESIGN WIND LOAD: C2
NCC BUILDING CLASS: 5
REVISION:
SHEET SIZE: A3

22/08/2012 2:05:31 PM



View indicative only

| - Drawing List | | |
|---|---|---|
| Sheet Number | Sheet Name | Current Revision |
| 00 | Title Page | |
| 01 | Floor Plan | |
| 02 | Elevations | |
| 05 | Sales Schedules | |

120842H

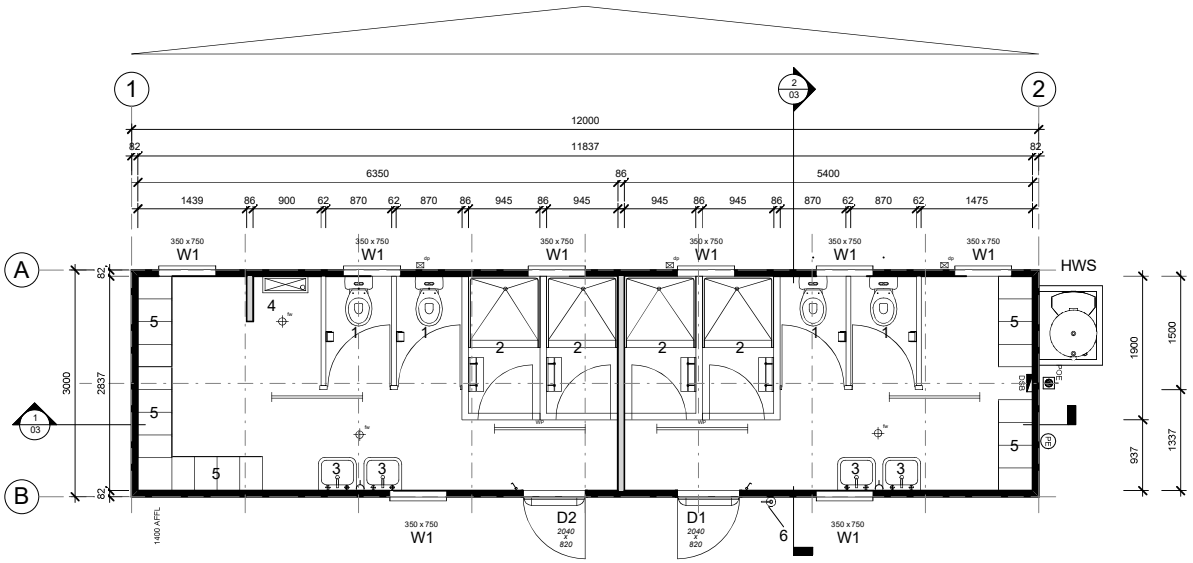
# Adani Mining Pty. Ltd.
# Carmichael Project
# QLD

## 12.0 x 3.0m Ablution Block

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au

PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309




## Notes

- Fire fighting equipment supplied & installed by others.
- Plans are current at time of issue, are indicative only, and are subject to change at any time without notice.

## Item List

| | | |
|---|---|---|
| D1 | 2040 x 820 External Door - | Standard : Hollow Core MC |
| D2 | 2040 x 820 External Door - | Standard : Hollow Core MC |
| W1 | 350 x 750 | Sliding Glass Window - Obscure Glass |

| | |
|---|---|
| 1 | WC Cubicle c/w toilet roll holder |
| 2 | Shower enclosure c/w bench seat & coat hooks |
| 3 | S/S Handbasin c/w mirror over |
| 4 | 600mm Wall mounted S/S urinal |
| 5 | Locker - 4 Bank 300 Wide - 1 Tier ← OPTIONAL |
| 6 | 9.0Kg Fire Extinguisher - AB(E) |
| dp | Dropper only, for 100 x 75mm Downpipe |
| fw | Floor Waste |
| HWS | Rheem Heat Pump 325 Litre/6kW -MPi - mounted externally |

## Symbol Legend

- Distribution Switchboard
- POE - Point Of Entry
- Light switch
- Two-way light switch
- Light switch - IPX5 rated
- Isolation Switch
- 10amp Single GPO
- 10amp Double GPO
- 15amp Single GPO.
- 10amp GPO - IPX5 rated
- 20amp Single GPO
- - Indicates floor mounting
- - Indicates ceiling mounting
- Comms. - Draw wire only
- 'F' Type television outlet
- 240V Smoke detector
- 36w Single fluorescent light
- 36w Double fluorescent light
- 36w Emergency back-up fluorescent light
- 36w Single fluorescent light - IP65 rated
- Emergency exit light
- Oyster Light - 11W Round Fluro
- External light
- 18W Single Vandalite
- Oyster light
- Photo electric light switch
- Spot light
- PLUMBING - Water Inlet Point
- PLUMBING - Waste Manifold Outlet Point

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 3.0m Ablution Block
Adani Mining Pty. Ltd.
Carmichael Project
QLD

| | |
|---|---|
| DATE | 21.08.12 |
| SCALE | 1 : 50 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics

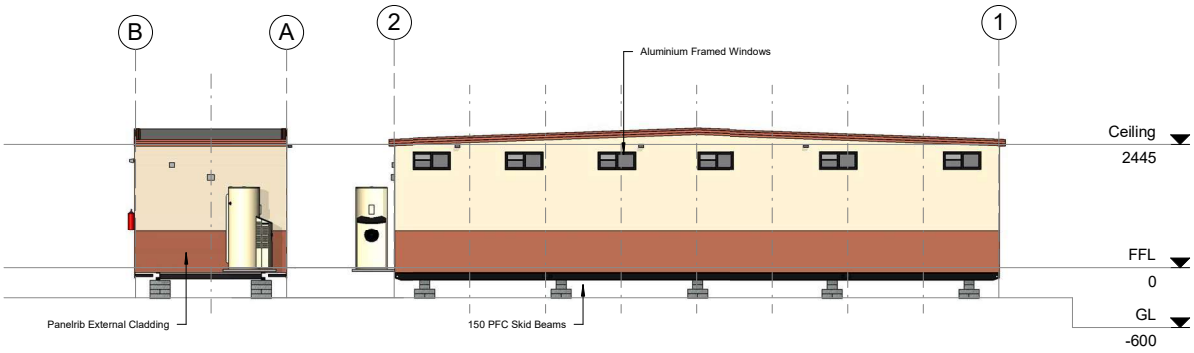
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE: Floor Plan

DRAWING NUMBER: 120842H -01

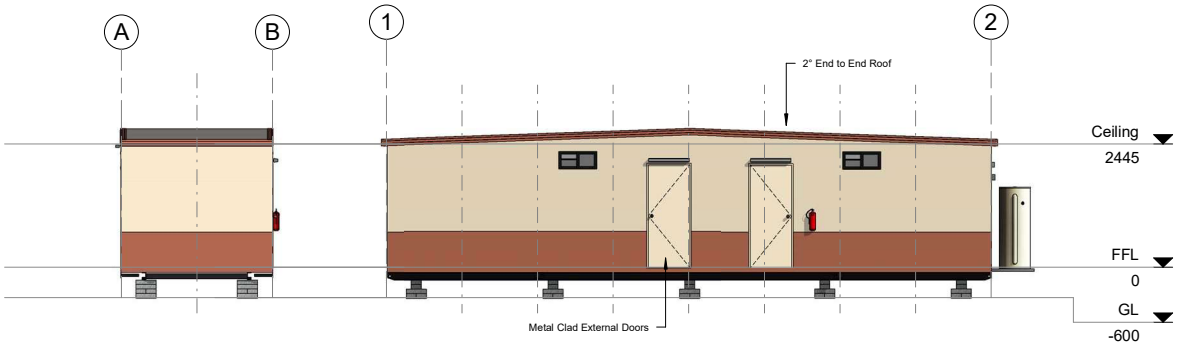
| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 10a |
| REVISION | |
| SHEET SIZE | A3 |

22/08/2012 1:28:41 PM




2 Elevation C
1 : 75

A Elevation A
1 : 75




1 Elevation D
1 : 75

B Elevation B
1 : 75

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 3.0m Ablution Block
Adani Mining Pty. Ltd.
Carmichael Project
QLD

| | |
|---|---|
| DATE | 21.08.12 |
| SCALE | 1 : 75 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE
Elevations

DRAWING NUMBER
120842H -02

| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 10a |
| REVISION | |
| SHEET SIZE | A3 |

22/08/2012 1:28:49 PM

| Manufacturing Structural Members | | |
|---|---|---|
| Description | Member Size | Back to Back |
| Skid Beams c/w Retractable Lifters | 150PFC | 2000 |

| Sales Door Schedule | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Panel | Height | Width | Handle Type | Hardware Set | Closer | Panic Bar | C/B Jamb | Timber Jamb | Security | Quantity | Comments |
| D1 | Standard : Hollow Core MC | 2040 | 820 | Standard | Entrance | No | No | Yes | No | | 1 | |
| D2 | Standard : Hollow Core MC | 2040 | 820 | Standard | Entrance | No | No | Yes | No | | 1 | |

| - Floor Structure Schedule | |
|---|---|
| Floor Structure | Comments |
| Floor | |
| 600mm Floor Joist Centres | |
| Covering - 1.5mm Polyflor XL Vinyl | 100mm Cove thoughout |
| Flooring - 17mm F11 T&G Plywood | |
| Joists - LC7512 Galvaspan | |

| Sales Window Schedule | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. | Type | Glazing | Height | Width | Sill Height | Quantity | Comments |
| W1 | PVO | Obscure Glass | 350 | 750 | 1960 | 8 | |

| - Wall Schedule | |
|---|---|
| Wall Structure | Comments |
| External Wall | |
| 611mm Stud Centres | |
| Cladding External - Colorbond Maxirib - "Headland" | Lower first sheet |
| Cladding External - Colorbond Maxirib - "Paperbark" | Upper Sheets |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Ply Internal Wall | |
| 611mm Stud Centres | |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |

| * Plumbing Fixtures | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| 1 | WC Cubicle c/w toilet roll holder | 4 | |
| 2 | Shower enclosure c/w bench seat & coat hooks | 4 | |
| 3 | S/S Handbasin c/w mirror over | 4 | |
| 4 | 600mm Wall mounted S/S urinal | 1 | |
| dp | Dropper only, for 100 x 75mm Downpipe | 3 | |
| fw | Floor Waste | 3 | |
| HWS | Rheem Heat Pump 325 Litre/6kW -MPi - mounted externally | 1 | |

| - Electrical Fixtures | |
|---|---|
| Description | Quantity |
| 1x10amp GPO | 2 |
| Photo Electric Cell | 1 |
| Switchboard | 1 |

| - Furniture | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| 5 | Locker - 4 Bank 300 Wide - 1 Tier | 5 | |

OPTIONAL

| Lighting Fixtures | Quantity |
|---|---|
| 1x36W Fluro - Bare | 2 |
| 1x36W Fluro - IP65 | 2 |
| Single Vandalite - Wall Mounted | 2 |
| Switch - Std | 2 |

| Sales Roof Structure Schedule | |
|---|---|
| Roof Structure | Comments |
| 2° End to End Roof | |
| C2 - SDEK/PLY LC7512 - 611 - (3.0 & 3.5) | |
| 611mm Ceiling Joist Centres | |
| Ceiling Joist - LC7512 Galvaspan | |
| Insulation - R2.3 Foil Backed Blanket - 95mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Purlins - C7510 / LC7512 Galvaspan | |
| Roof - 0.42mm BMT Superdek Roofing | |

| Wall Height |
|---|
| 2445 |

| - Fire Services Schedule | | |
|---|---|---|
| No. | Description | Quantity |
| 6 | 9.0Kg Fire Extinguisher - AB(E) | 1 |

| Rainwater Goods | |
|---|---|
| Description | Quantity |
| Dropper only, for 100 x 75mm Downpipe | 3 |

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 3.0m Ablution Block
Adani Mining Pty. Ltd.
Carmichael Project
QLD

| | |
|---|---|
| DATE | 21.08.12 |
| SCALE | |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE: Sales Schedules

DRAWING NUMBER: 120842H -05

| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 10a |
| REVISION | |
| SHEET SIZE | A3 |

22/08/2012 1:28:53 PM



View indicative only

| - Drawing List | | |
|---|---|---|
| Sheet Number | Sheet Name | Current Revision |
| 00 | Title Page | |
| 01 | Floor Plan | |
| 02 | Elevations | |
| 06 | Sales Schedules | |

120842J

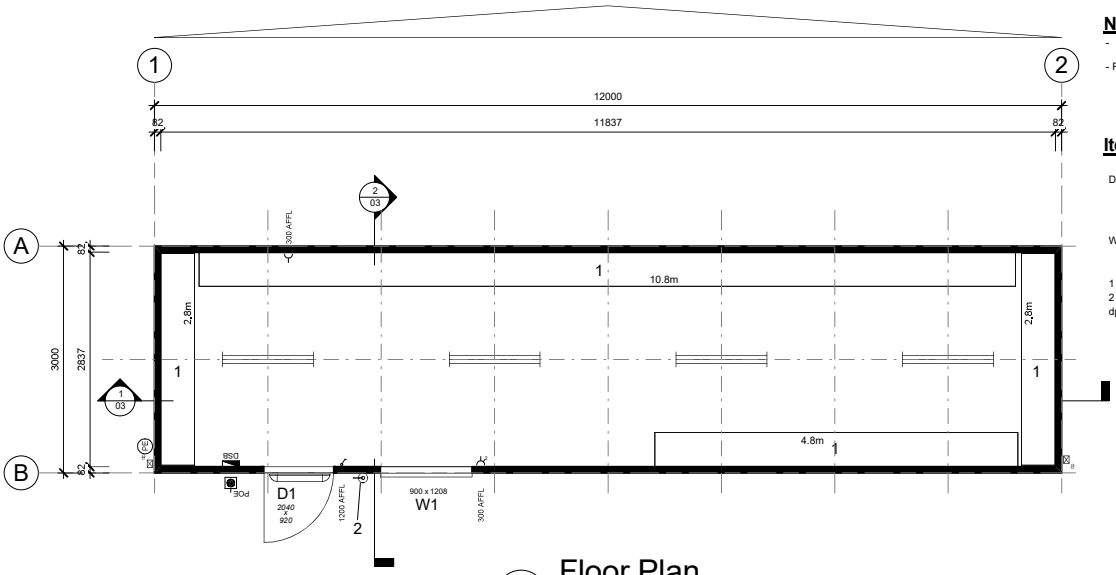
# Adani Mining Pty. Ltd.
# Carmichael Project
# QLD

## 12.0 x 3.0m Linen Store

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au

PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309




# 1 Floor Plan

1 : 50

## Notes

- Fire fighting equipment supplied & installed by others.
- Plans are current at time of issue, are indicative only, and are subject to change at any time without notice.

## Item List

| | |
|---|---|
| D1 | 2040 x 920 External Door - Standard : Hollow Core MC |
| W1 | 900 x 1208 Sliding Glass Window - Grey Glass |
| 1 | 3 Tier shelving ← OPTION |
| 2 | 9.0Kg Fire Extinguisher - AB(E) |
| dp | Dropper only, for 100 x 75mm Downpipe |

## Symbol Legend

- Distribution Switchboard
- POE - Point Of Entry
- Light switch
- Two-way light switch
- Light switch - IPX5 rated
- Isolation Switch
- 10amp Single GPO
- 10amp Double GPO
- 15amp Single GPO.
- 10amp GPO - IPX5 rated
- 20amp Single GPO
- - Indicates floor mounting
- - Indicates ceiling mounting
- Comms. - Draw wire only
- 'F' Type television outlet
- 240V Smoke detector
- 36w Single fluorescent light
- 36w Double fluorescent light
- 36w Emergency back-up fluorescent light
- 36w Single fluorescent light - IP65 rated
- Emergency exit light
- Oyster Light - 11W Round Fluro
- External light
- 18W Single Vandalite
- Oyster light
- Photo electric light switch
- Spot light
- PLUMBING - Water Inlet Point
- PLUMBING - Waste Manifold Outlet Point

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 3.0m Linen Store
Adani Mining Pty. Ltd.
Carmichael Project
QLD

| | |
|---|---|
| DATE | 20.08.12 |
| SCALE | 1 : 50 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE (07) 3412 8600
FAX (07) 3803 0175
ABN: 71 083 902 309

TITLE: Floor Plan

DRAWING NUMBER: 120842J -01

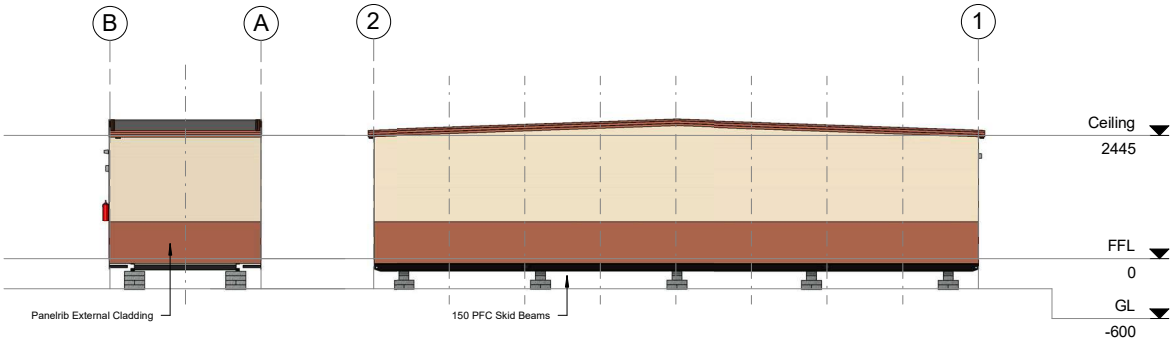
DESIGN WIND LOAD: C2

NCC BUILDING CLASS: 10a

REVISION:

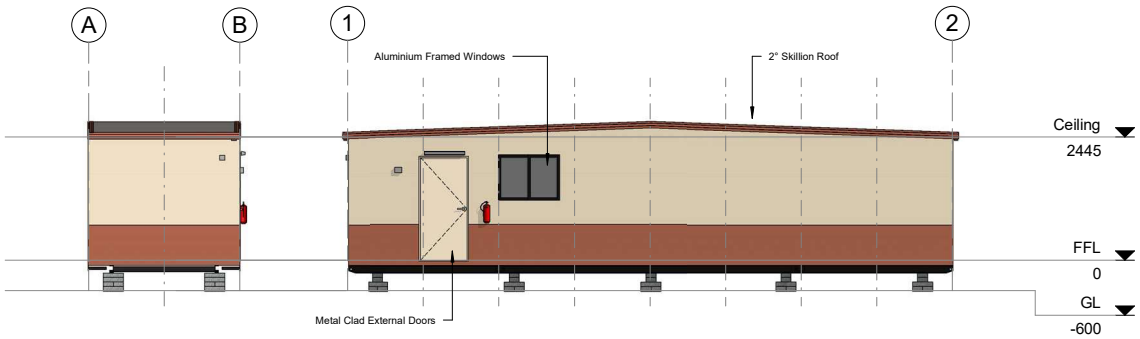
SHEET SIZE: A3

22/08/2012 1:13:00 PM




2 Elevation C
1 : 75

A Elevation A
1 : 75




1 Elevation D
1 : 75

B Elevation B
1 : 75

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 3.0m Linen Store
Adani Mining Pty. Ltd.
Carmichael Project
QLD

| | |
|---|---|
| DATE | 20.08.12 |
| SCALE | 1 : 75 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE
Elevations

DRAWING NUMBER
120842J -02

| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 10a |
| REVISION | |
| SHEET SIZE | A3 |

22/08/2012 1:13:05 PM

| Manufacturing Structural Members | | |
|---|---|---|
| Description | Member Size | Back to Back |
| Skid Beams c/w Retractable Lifters | 150PFC | 2000 |

| Sales Door Schedule | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Panel | Height | Width | Handle Type | Hardware Set | Closer | Panic Bar | C/B Jamb | Timber Jamb | Security | Quantity | Comments |
| D1 | Standard : Hollow Core MC | 2040 | 920 | Lever | Entrance | No | No | Yes | No | | 1 | E/E Seals |

| - Floor Structure Schedule | |
|---|---|
| Floor Structure | Comments |
| Floor | |
| 600mm Floor Joist Centres | |
| Covering - 1.5mm Polyflor XL Vinyl | 100mm Cove thoughout |
| Flooring - 17mm F11 T&G Plywood | |
| Joists - LC7512 Galvaspan | |

| Sales Window Schedule | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. | Type | Glazing | Height | Width | Sill Height | Quantity | Comments |
| W1 | Sliding XO | Grey Glass | 900 | 1208 | 1200 | 1 | c/w Curtains |

OPTION

| - Wall Schedule | |
|---|---|
| Wall Structure | Comments |
| External Wall | |
| 611mm Stud Centres | |
| Cladding External - Colorbond Maxirib - "Headland" | Lower first sheet |
| Cladding External - Colorbond Maxirib - "Paperbark" | Upper Sheets |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |

| * Plumbing Fixtures | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| dp | Dropper only, for 100 x 75mm Downpipe | 2 | |

| - Electrical Fixtures | |
|---|---|
| Description | Quantity |
| 1x10amp GPO | 1 |
| 2x10amp GPO | 1 |
| Photo Electric Cell | 1 |
| Switchboard | 1 |

| - Furniture | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| 1 | 3 Tier shelving | 4 | |

OPTION

| Lighting Fixtures | Quantity |
|---|---|
| 2x36W Fluro - Bare | 4 |
| Single Vandalite - Wall Mounted | 1 |
| Switch - Std | 1 |

| Sales Roof Structure Schedule | |
|---|---|
| Roof Structure | Comments |
| 2° End to End Roof | |
| C2 - SDEK/PLY LC7512 - 611 - (3.0 & 3.5) | |
| 611mm Ceiling Joist Centres | |
| Ceiling Joist - LC7512 Galvaspan | |
| Insulation - R2.3 Foil Backed Blanket - 95mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Purlins - C7510 / LC7512 Galvaspan | |
| Roof - 0.42mm BMT Superdek Roofing | |

| Wall Height |
|---|
| 2445 |

| - Fire Services Schedule | | |
|---|---|---|
| No. | Description | Quantity |
| 2 | 9.0Kg Fire Extinguisher - AB(E) | 1 |

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 3.0m Linen Store
Adani Mining Pty. Ltd.
Carmichael Project
QLD

| | |
|---|---|
| DATE | 20.08.12 |
| SCALE | |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE: Sales Schedules

DRAWING NUMBER: 120842J -06

| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 10a |
| REVISION | |
| SHEET SIZE | A3 |

22/08/2012 1:13:07 PM



| - Drawing List | | |
|---|---|---|
| **Sheet Number** | **Sheet Name** | **Current Revision** |
| 00 | Title Page | |
| 01 | Floor Plan | |
| 02 | Elevations | |
| 06 | Sales Schedules | |

WGM-1212-H-C2

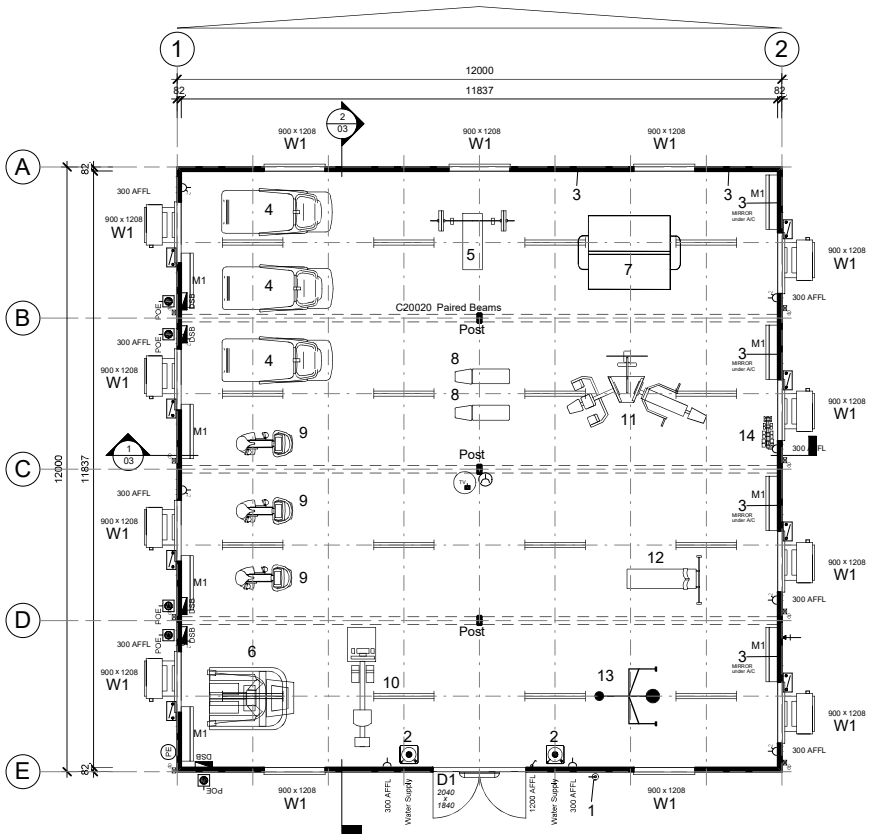
# ATCO Structures & Logistics Pty. Ltd.
# QLD

## 12.0 x 12.0m Gymnasium

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
148-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au

PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309




## Notes

- Fire fighting equipment supplied & installed by others.
- Plans are current at time of issue, are indicative only and are subject to change at any time without notice.

## Item List

| | |
|---|---|
| D1 | 2040 x 1840 External Double Door - Standard : Hollow Core MC |
| W1 | 900 x 1208 Sliding Glass Window - Grey Glass |
| M1 | 5.0kW R/C Split System Air Conditioner - Inverter |
| | Plumbing - Water Inlet c/w Line Strainer |
| 1 | 9.0Kg Fire Extinguisher - AB(E) |
| 2 | Water Cooler - Zip Freestanding EMBCF 60 - Mains Connected |
| 3 | 1800 x 900 Mirror |
| dp | Dropper only, for 100 x 75mm Downpipe |

## Equipment

| | | |
|---|---|---|
| 4 | Vision 9700 HRC Tread Mill | 3 |
| 5 | Olympic Bench Press Prone | 1 |
| 6 | Vision 6850 XT Cross Trainer | 1 |
| 7 | Smith Machine Linear | 1 |
| 8 | Adjustable Incline Bench 0-90° | 2 |
| 9 | Vision 3800 U/R Exercise Bike | 3 |
| 10 | Concept 2 Model D Rowing machine | 1 |
| 11 | Elite Sschwinn 780 Multistation | 1 |
| 12 | Abdominal Ladder | 1 |
| 13 | Heavy Bag & Speed Ball & Stand | 1 |
| 14 | 1 to 25kg Dumbell Set & Rack | 1 |

Items not shown, but included:
Olympic EZ Curl Bar & Weights
Olympic 7' Straight Bars & Collars
Leather Weight Lifting Belt
200kg of Olympic Weights & Weight Tree

## Symbol Legend

- DSB — Distribution Switchboard
- POE - Point Of Entry
- Light switch
- Two-way light switch
- Light switch - IPX5 rated
- Isolation Switch
- 10amp Single GPO
- 10amp Double GPO
- 15amp Single GPO.
- 10amp GPO - IPX5 rated
- 20amp Single GPO
  - Indicates floor mounting
  - Indicates ceiling mounting
- Comms. - Draw wire only
- 'F' Type television outlet
- 240V Smoke detector
- 36w Single fluorescent light
- 36w Double fluorescent light
- 36w Emergency back-up fluorescent light
- WF — 36w Single fluorescent light - IP65 rated
- EXIT — Emergency exit light
- Oyster Light - 11W Round Fluro
- External light
- 18W Single Vandalite
- Oyster light
- PE — Photo electric light switch
- Spot light
- PLUMBING - Water Inlet Point
- PLUMBING - Waste Manifold Outlet Point

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 12.0m Gymnasium
ATCO Structures & Logistics Pty. Ltd.
QLD

| | |
|---|---|
| DATE | 14.04.12 |
| SCALE | 1 : 75 |
| DRAWN | RA |
| CHECKED | TK |

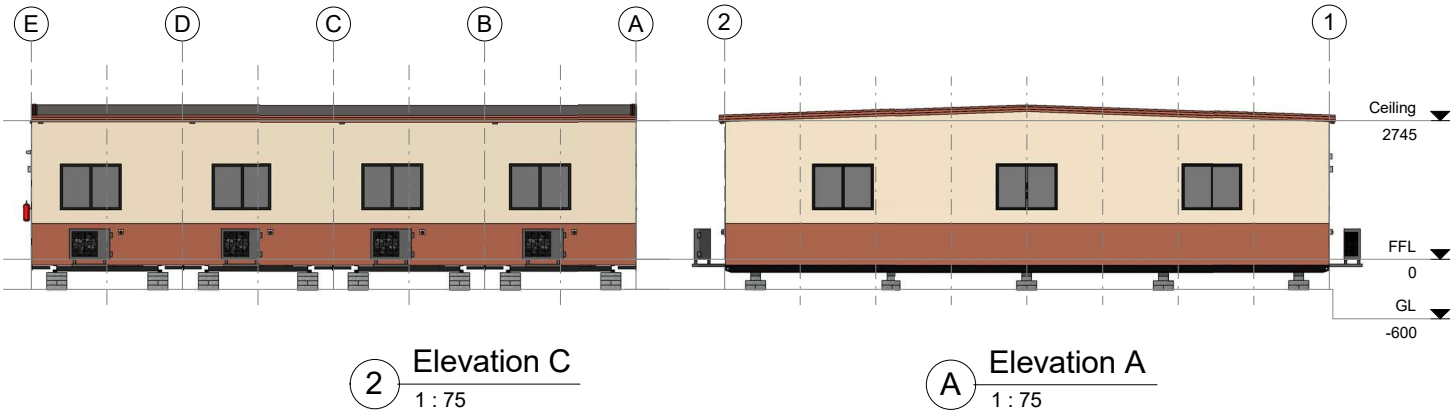
ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE: Floor Plan

DRAWING NUMBER: WGM-1212-H-C2 -01

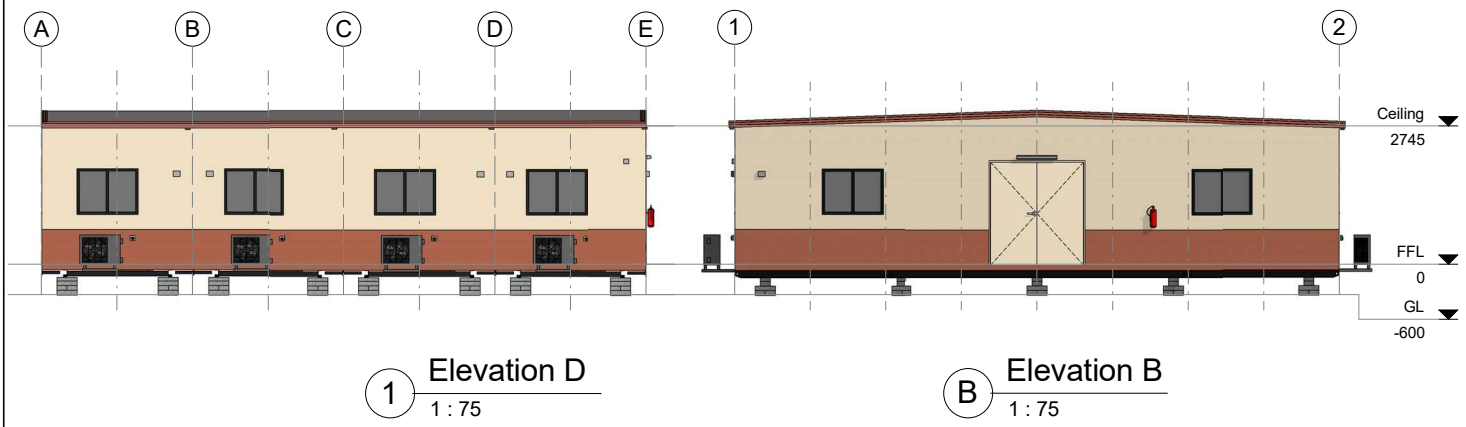
DESIGN WIND LOAD: C2
NCC BUILDING CLASS: 9b
REVISION:
SHEET SIZE: A3

2/08/2012 2:08:26 PM




2 Elevation C
1 : 75

A Elevation A
1 : 75




1 Elevation D
1 : 75

B Elevation B
1 : 75

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 12.0m Gymnasium
ATCO Structures & Logistics Pty. Ltd.
QLD

| | |
|---|---|
| DATE | 14.04.12 |
| SCALE | 1 : 75 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE
Elevations

DRAWING NUMBER
WGM-1212-H-C2 -02

| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 9b |
| REVISION | |
| SHEET SIZE | A3 |

2/08/2012 2:08:36 PM

| Manufacturing Structural Members | | |
|---|---|---|
| Description | Member Size | Back to Back |
| Skid Beams c/w Retractable Lifters | 150PFC | 2000 |
| Paired Beams | C20020 | |

| Sales Door Schedule | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Panel | Height | Width | Handle Type | Hardware Set | Closer | Panic Bar | C/B Jamb | Timber Jamb | Security | Quantity | Comments |
| D1 | Standard : Hollow Core MC | 2040 | 1840 | Lever | Entrance | Yes | No | Yes | No | | 1 | E/E Seals and Closer to each leaf. |

| - Floor Structure Schedule | |
|---|---|
| Floor Structure | Comments |
| Floor | |
| 300mm Floor Joist Centres | |
| Covering - Planet Supreme Direct Stick Carpet | |
| Flooring - 17mm F11 T&G Plywood | Two Layers |
| Joists - LC7512 Galvaspan | |

| Sales Window Schedule | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. | Type | Glazing | Height | Width | Sill Height | Quantity | Comments |
| W1 | Sliding XO | Grey Glass | 900 | 1208 | 1000 | 13 | c/w Curtains |

| - Wall Schedule | |
|---|---|
| Wall Structure | Comments |
| External Wall | |
| 611mm Stud Centres | |
| Cladding External - Colorbond Maxirib - "Headland" | Lower first sheet |
| Cladding External - Colorbond Maxirib - "Paperbark" | Upper Sheets |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Framing - 75x1.0mm Hi-Ten Steel | |
| Insulation - R2.9 Batts - 75mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Thermal Break between Framing and Cladding | |

| * Plumbing Fixtures | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| | Plumbing - Water Inlet c/w Line Strainer | 1 | |
| 2 | Water Cooler - Zip Freestanding EMBCF 60 - Mains Connected | 2 | |
| dp | Dropper only, for 100 x 75mm Downpipe | 8 | |

| - Furniture | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| 3 | 1800 x 900 Mirror | 6 | |

| Sales Mechanical Equipment | | | |
|---|---|---|---|
| No. | Supplier | Description | Quantity |
| M1 | DAIKIN | 5.0kW R/C Split System Air Conditioner - Inverter | 8 |

| - Electrical Fixtures | |
|---|---|
| Description | Quantity |
| 1x10amp GPO - Ceiling Mounted | 1 |
| 1x10amp GPO AC | 2 |
| 2x10amp GPO | 8 |
| Isolation Switch - AC | 8 |
| Photo Electric Cell | 1 |
| Switchboard | 5 |
| TV - Ceiling Mtd | 1 |

| Wall Height |
|---|
| 2745 |

| Lighting Fixtures | |
|---|---|
| 2x36W Fluro - Bare | 17 |
| Single Vandalite - Wall Mounted | 1 |
| Switch - Std | 1 |

| Sales Roof Structure Schedule | |
|---|---|
| Roof Structure | Comments |
| 2° End to End Roof | |
| C2 - SDEK/PLY LC7512 - 611 - (3.0 & 3.5) | |
| 611mm Ceiling Joist Centres | |
| Ceiling Joist - LC7512 Galvaspan | |
| Insulation - R2.3 Foil Backed Blanket - 95mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Purlins - C7510 / LC7512 Galvaspan | |
| Roof - 0.42mm BMT Superdek Roofing | |

| - Fire Services Schedule | | |
|---|---|---|
| No. | Description | Quantity |
| 1 | 9.0Kg Fire Extinguisher - AB(E) | 1 |

## Equipment

| | | |
|---|---|---|
| 4 | Vision 9700 HRC Tread Mill | 3 |
| 5 | Olympic Bench Press Prone | 1 |
| 6 | Vision 6850 XT Cross Trainer | 1 |
| 7 | Smith Machine Linear | 1 |
| 8 | Adjustable Incline Bench 0-90° | 2 |
| 9 | Vision 3800 U/R Exercise Bike | 3 |
| 10 | Concept 2 Model D Rowing machine | 1 |
| 11 | Elite Sschwinn 780 Multistation | 1 |
| 12 | Abdominal Ladder | 1 |
| 13 | Heavy Bag & Speed Ball & Stand | 1 |
| 14 | 1 to 25kg Dumbell Set & Rack | 1 |

Items not shown, but included:
Olympic EZ Curl Bar & Weights
Olympic 7' Straight Bars & Collars
Leather Weight Lifting Belt
200kg of Olympic Weights &
Weight Tree

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.
12.0 x 12.0m Gymnasium
ATCO Structures & Logistics Pty. Ltd.
QLD

| | |
|---|---|
| DATE | 14.04.12 |
| SCALE | |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE
Sales Schedules

DRAWING NUMBER
WGM-1212-H-C2 -06

| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 9b |
| REVISION | |
| SHEET SIZE | A3 |

2/08/2012 2:08:37 PM



| - Drawing List | | |
|---|---|---|
| **Sheet Number** | **Sheet Name** | **Current Revision** |
| 00 | Title Page | |
| 01 | Floor Plan | |
| 02 | Elevations | |
| 06 | Sales Schedules | |

WRC-1812-H-C2

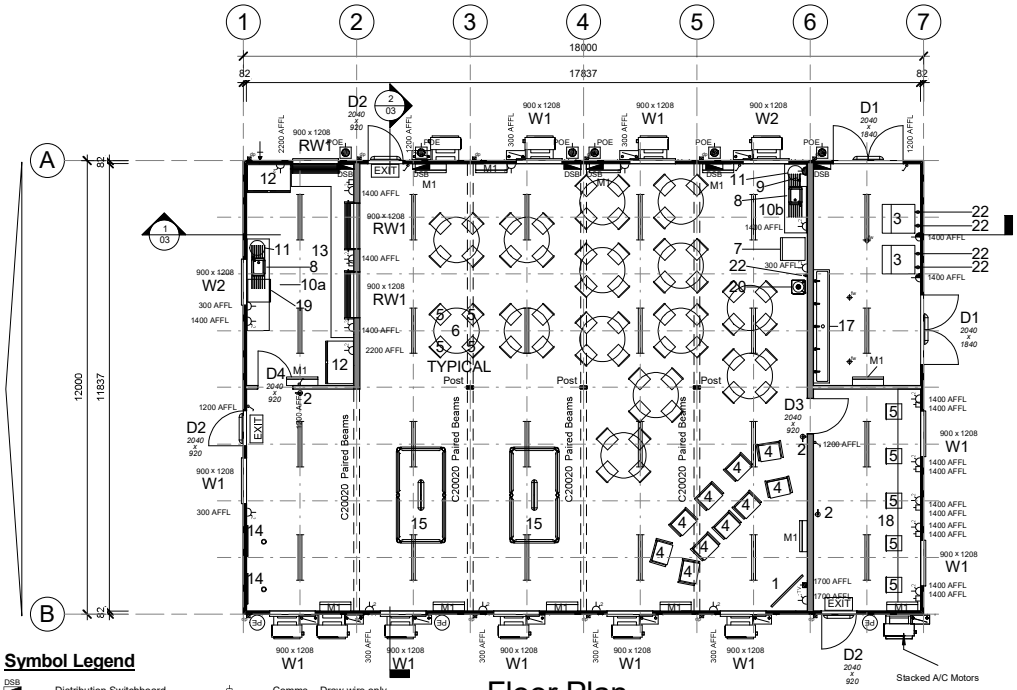
# ATCO Structures & Logistics Pty. Ltd.
# QLD

## 18.0 x 12.0m Recreation Centre

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
148-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au

PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309




## Floor Plan

1 : 100

## Notes

- Fire fighting equipment supplied & installed by others.
- Plans are current at time of issue, are indicative only and are subject to change at any time without notice.
- Any 3D views are to be regarded as indicative only.
- Additional Draw Wires may be required subject to Client requirement

## Item List

| | | |
|---|---|---|
| D1 | 2040 x 1840 External Double Door - | Standard : Hollow Core MC |
| D2 | 2040 x 920 External Door - | Standard : Hollow Core MC |
| D3 | 2040 x 920 Internal Door - | Standard : Hollow Core |
| D4 | 2040 x 920 Internal Door - | Standard : Hollow Core |
| RW1 | 900 x 1208 Roller Window | Colorbond |
| W1 | 900 x 1208 Sliding Glass Window - | Grey Glass |
| W2 | 900 x 1208 Sliding Glass Window - | Grey Glass |
| M1 | 5.0kW R/C Split System Air Conditioner - Inverter | |

| | |
|---|---|
| | Plumbing - Water Inlet c/w Line Strainer |
| 1 | Television - LCD - 50" - 127cm |
| 2 | 9.0Kg Fire Extinguisher - AB(E) |
| 3 | MANITOWOC - Ice Machine - S-450 on B400 Storage Bin (173kg/24hr, 130kg holding capacity) |
| 4 | Lounge Chair |
| 5 | PVC Stacker chair |
| 6 | 1200 Dia. Melamine table |
| 7 | Fridge - Single Door - 370 Litre - WRM3700WB |
| 8 | 1200x450 S/S insert sink |
| 9 | 7.5ltr Autoboiler |
| 10a | 600mm Wide Laminated benchtop c/w cupboards x 2400. c/w 600 high SS Splashback |
| 10b | 600mm Wide Laminated benchtop c/w cupboards x 1800. c/w 600 high SS Splashback |
| 11 | 50Ltr Hot Water System - Internal c/w Safe Tray |
| 12 | SKOPE Two Glass Door Chiller - B900-2 |
| 13 | 600mm Wide Laminated benchtop c/w cupboards & 2 sets of drawers. |
| 14 | Dart Board |
| 15 | Pool table c/w Cue Rack & pool Cues |
| 17 | 5 Tap Stainless Steel Fill Up Station - 3000mm long |
| 18 | 600mm (W) Melamine benchtop c/w steel legs |
| 19 | Dishwasher |
| 20 | Water Cooler - Zip Freestanding EMBCF 60 - Mains Connected. SS Splashback. |
| 22 | Wall mounted water connection |
| dp | Dropper only, for 100 x 75mm Downpipe |
| fw | Floor Waste |

## Symbol Legend

- DSB — Distribution Switchboard
- POE - Point Of Entry
- Light switch
- Two-way light switch
- Light switch - IPX5 rated
- Isolation Switch
- 10amp Single GPO
- 10amp Double GPO
- 15amp Single GPO.
- 10amp GPO - IPX5 rated
- 20amp Single GPO
- - Indicates floor mounting
- - Indicates ceiling mounting
- Comms. - Draw wire only
- 'F' Type television outlet
- 240V Smoke detector
- 36w Single fluorescent light
- 36w Double fluorescent light
- 36w Emergency back-up fluorescent light
- 36w Single fluorescent light - IP65 rated
- EXIT — Emergency exit light
- Oyster Light - 11W Round Fluro
- External light
- 18W Single Vandalite
- Oyster light
- PE — Photo electric light switch
- Spot light
- PLUMBING - Water Inlet Point
- PLUMBING - Waste Manifold Outlet Point

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

18.0 x 12.0m Recreation Centre
ATCO Structures & Logistics Pty. Ltd.
QLD

| | |
|---|---|
| DATE | 14.04.12 |
| SCALE | 1 : 100 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE (07) 3412 8600
FAX (07) 3803 0175
ABN: 71 083 902 309

TITLE: Floor Plan

DRAWING NUMBER: WRC-1812-H-C2 -01

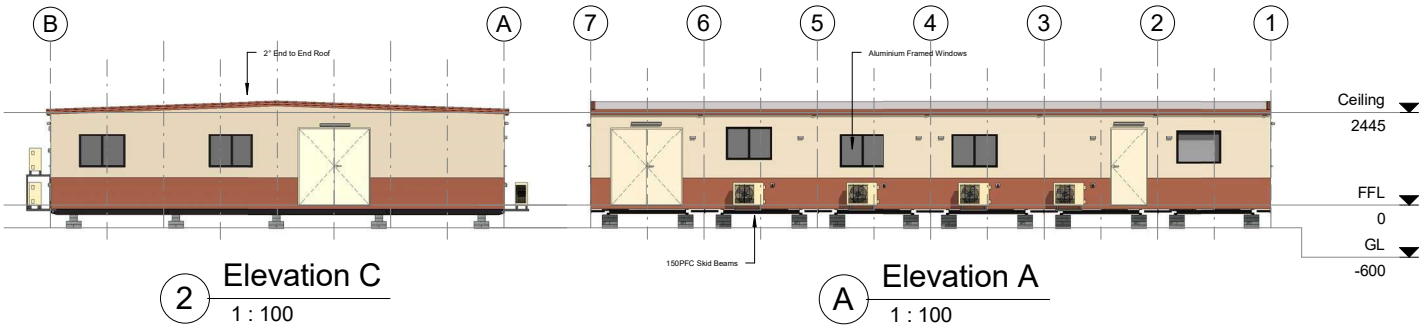
DESIGN WIND LOAD: C2

NCC BUILDING CLASS: 9b

REVISION

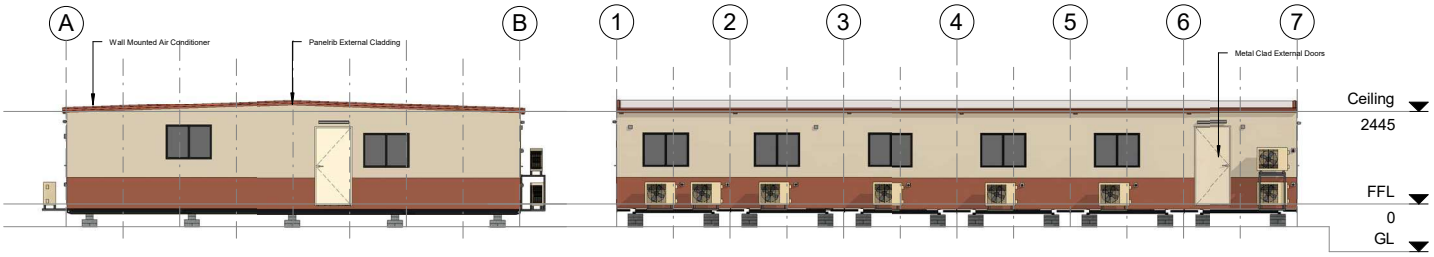
SHEET SIZE: A3

2/08/2012 1:53:23 PM




2 Elevation C
1 : 100

A Elevation A
1 : 100




1 Elevation D
1 : 100

B Elevation B
1 : 100

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

18.0 x 12.0m Recreation Centre
ATCO Structures & Logistics Pty. Ltd.
QLD

| | |
|---|---|
| DATE | 14.04.12 |
| SCALE | 1 : 100 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE
Elevations

DRAWING NUMBER
WRC-1812-H-C2 -02

| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 9b |
| REVISION | |
| SHEET SIZE | A3 |

2/08/2012 1:53:45 PM

## Manufacturing Structural Members

| Description | Member Size | Back to Back |
|---|---|---|
| Skid Beams c/w Retractable Lifters | 150PFC | 2000 |
| Paired Beams | C20020 | |

## - Floor Structure Schedule

| Floor Structure | Comments |
|---|---|
| Floor<br>480mm Floor Joist Centres | |
| Covering - 1.5mm Polyflor XL Vinyl | |
| Covering - 2.0mm Polyflor Non-Slip Vinyl | Inside Bar Area & Ice Room only. 100mm Cove |
| Flooring - 17mm F11 T&G Plywood | |
| Joists - LC7512 Galvaspan | |

## - Wall Schedule

| Wall Structure | Comments |
|---|---|
| External Wall<br>611mm Stud Centres | |
| Cladding External - Colorbond Maxirib - "Headland" | Lower first sheet |
| Cladding External - Colorbond Maxirib - "Paperbark" | Upper Sheets |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Framing - 75x1.0mm Hi-Ten Steel | |
| Insulation - R2.9 Batts - 75mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Thermal Break between Framing and Cladding | |
| Ply Internal Wall<br>611mm Stud Centres | |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |

## Sales Roof Structure Schedule

| Roof Structure | Comments |
|---|---|
| 2° End to End Roof<br>C2 - SDEK/PLY LC7512 - 611 - (3.0 & 3.5)<br>611mm Ceiling Joist Centres | |
| Ceiling Joist - LC7512 Galvaspan | |
| Insulation - R2.3 Foil Backed Blanket - 95mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Purlins - C7510 / LC7512 Galvaspan | |
| Roof - 0.42mm BMT Superdek Roofing | |

## Sales Door Schedule

| No. | Panel | Height | Width | Handle Type | Hardware Set | Closer | Panic Bar | C/B Jamb | Timber Jamb | Security | Quantity | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D1 | Standard : Hollow Core MC | 2040 | 1840 | Lever | Entrance | Yes | No | Yes | No | | 2 | E/E Seals |
| D2 | Standard : Hollow Core MC | 2040 | 920 | Lever | Entrance | Yes | No | Yes | No | | 3 | E/E Seals |
| D3 | Standard : Hollow Core | 2040 | 920 | Lever | Entrance | Yes | No | Yes | No | | 1 | |
| D4 | Standard : Hollow Core | 2040 | 920 | Lever | Entrance | Yes | No | Yes | No | | 1 | |

| Wall Height |
|---|
| 2445 |

## Sales Window Schedule

| No. | Type | Glazing | Height | Width | Sill Height | Quantity | Comments |
|---|---|---|---|---|---|---|---|
| RW1 | Roller Window | Colorbond | 900 | 1208 | 1100 | 3 | |
| W1 | Sliding XO | Grey Glass | 900 | 1208 | 1000 | 10 | c/w Curtains |
| W2 | Sliding XO | Grey Glass | 900 | 1208 | 1200 | 2 | c/w Curtains |

## * Plumbing Fixtures

| No. | Description | Quantity | Comments |
|---|---|---|---|
| | Plumbing - Water Inlet c/w Line Strainer | 1 | |
| 8 | 1200x450 S/S insert sink | 2 | |
| 9 | 7.5ltr Autoboiler | 1 | |
| 11 | 50Ltr Hot Water System - Internal c/w Safe Tray | 2 | |
| 17 | 5 Tap Stainless Steel Fill Up Station - 3000mm long | 1 | |
| 20 | Water Cooler - Zip Freestanding EMBCF 60 - Mains Connected. SS Splashback. | 1 | |
| 22 | Wall mounted water connection | 5 | |
| dp | Dropper only, for 100 x 75mm Downpipe | 12 | |
| fw | Floor Waste | 3 | |

## - Furniture

| No. | Description | Quantity | Comments |
|---|---|---|---|
| 4 | Lounge Chair | 10 | |
| 5 | PVC Stacker chair | 60 | |
| 6 | 1200 Dia. Melamine table | 14 | |
| 14 | Dart Board | 2 | |
| 15 | Pool table c/w Cue Rack & pool Cues | 2 | |
| 18 | 600mm (W) Melamine benchtop c/w steel legs | 1 | 5875 long |

## - Cupboards

| No. | Description | Quantity | Comments |
|---|---|---|---|
| 10a | 600mm Wide Laminated benchtop c/w cupboards x 2400. c/w 600 high SS Splashback | 1 | |
| 10b | 600mm Wide Laminated benchtop c/w cupboards x 1800. c/w 600 high SS Splashback | 1 | |
| 13 | 600mm Wide Laminated benchtop c/w cupboards & 2 sets of drawers. | 1 | Leg 1650 & Leg 4600 |

## Sales Mechanical Equipment

| No. | Supplier | Description | Quantity |
|---|---|---|---|
| M1 | DAIKIN | 5.0kW R/C Split System Air Conditioner - Inverter | 12 |

## - Electrical Fixtures

| Description | Quantity |
|---|---|
| 1x10amp GPO | 1 |
| 1x20amp GPO | 2 |
| 2x10amp GPO | 21 |
| Draw Wire | 7 |
| Isolation Switch - AC | 12 |
| Photo Electric Cell | 3 |
| Switchboard | 6 |
| TV Antenna Socket | 1 |

## Lighting Fixtures

| Lighting Fixtures | Quantity |
|---|---|
| 2x36W Fluro - Bare | 24 |
| Dart Board Light | 2 |
| Exit - Ceiling Mount | 3 |
| Pool Table Light - Ceiling Mounted | 2 |
| Single Vandalite - Wall Mounted2 | 5 |
| Switch - Std | 6 |

## - Fire Services Schedule

| No. | Description | Quantity |
|---|---|---|
| 2 | 9.0Kg Fire Extinguisher - AB(E) | 3 |

## - Electrical Equipment Schedule

| No. | Description | Quantity | Comments |
|---|---|---|---|
| 1 | Television - LCD - 50" - 127cm | 1 | |
| 3 | MANITOWOC - Ice Machine - S-450 on B400 Storage Bin (173kg/24hr, 130kg holding capacity) | 2 | |
| 7 | Fridge - Single Door - 370 Litre - WRM3700WB | 1 | |
| 12 | SKOPE Two Glass Door Chiller - B900-2 | 2 | |
| 19 | Dishwasher | 1 | |

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCHOUAL INTERNATIONAL REGN No. 531

PROJECT No.

18.0 x 12.0m Recreation Centre
ATCO Structures & Logistics Pty. Ltd.
QLD

| | |
|---|---|
| DATE | 14.04.12 |
| SCALE | |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics

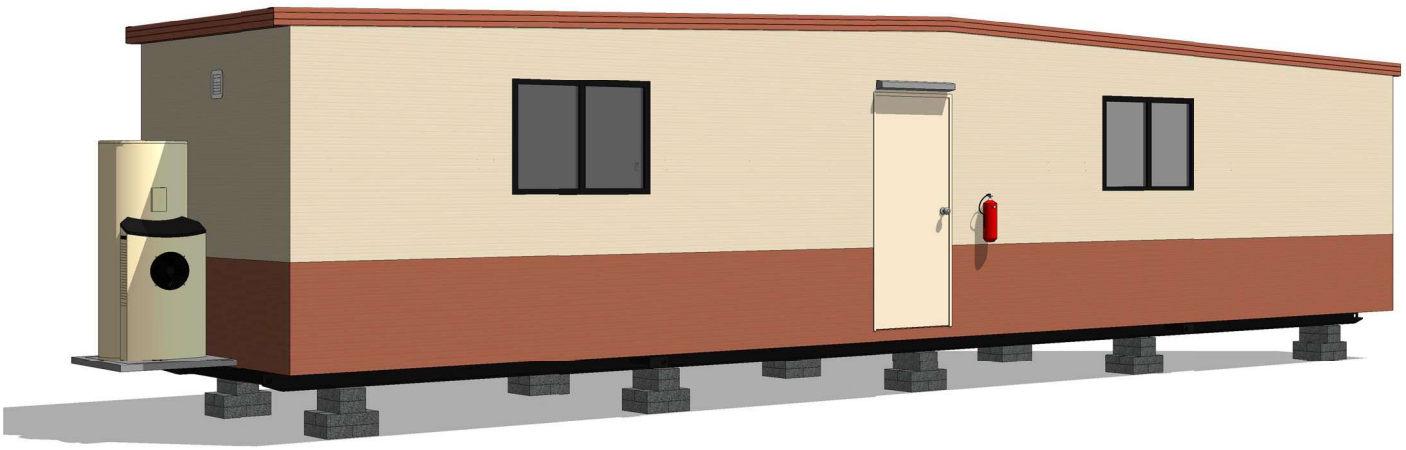
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE (07) 3412 8600
FAX (07) 3803 0175
ABN: 71 083 902 309

TITLE: Sales Schedules

DRAWING NUMBER: WRC-1812-H-C2 -06

| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 9b |
| REVISION | |
| SHEET SIZE | A3 |

2/08/2012 1:53:46 PM



View indicative only

| - Drawing List | | |
|---|---|---|
| **Sheet Number** | **Sheet Name** | **Current Revision** |
| 00 | Title Page | |
| 01 | Floor Plan | |
| 02 | Elevations | |
| 05 | Sales Schedules | |

120842D

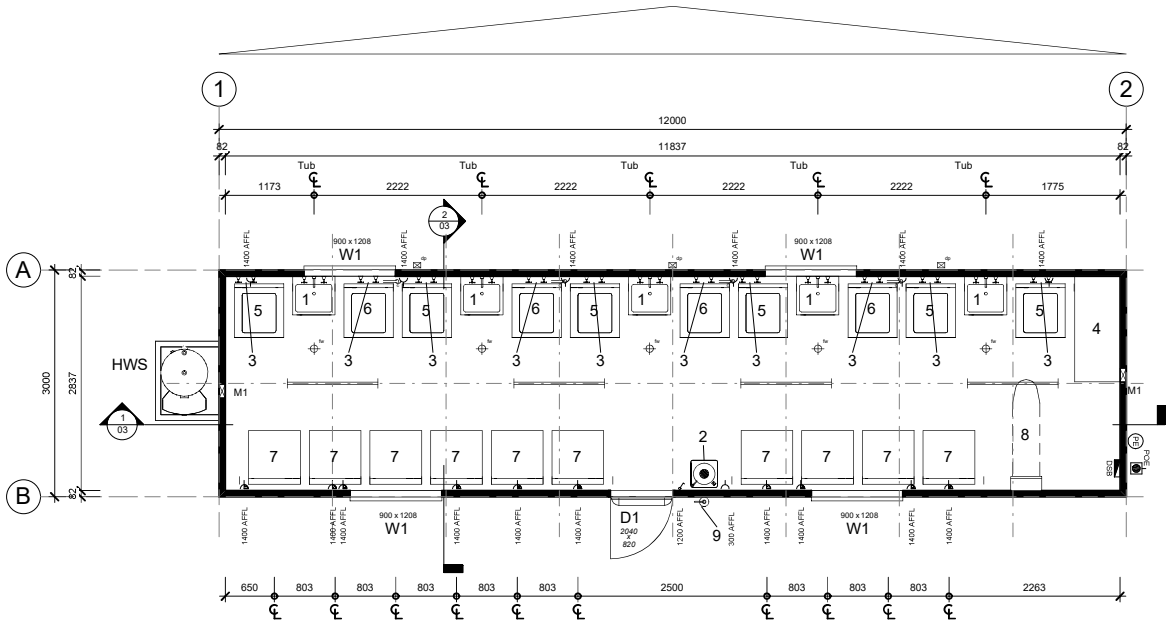
# Adani Mining Pty. Ltd.
# Carmichael Project
# QLD

## 12.0 x 3.0m Laundry

ATCO Structures & Logistics

ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au

PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309




## Notes

- Fire fighting equipment supplied & installed by others.
- HWS (Capacity: 6 washing machine loads per hour @ 20 litres per load.
- Floor Drains: One fixture per Floor Waste, all other fixtures discharge direct to waste lines.
- Plans are current at time of issue, are indicative only, and are subject to change at any time without notice.

## Item List

| | |
|---|---|
| D1 | 2040 x 820 External Door - Standard : Hollow Core MC |
| W1 | 900 x 1208 Sliding Glass Window - Grey Glass |
| M1 | Wall Mounted Exhaust Fan |

| | | |
|---|---|---|
| | 1 | Standard Laundry Unit - 45 Litre, Splashback & Wall Taps |
| **OPTION** | 2 | Water Cooler - Zip Freestanding EMBCF 60 - Mains Connected |
| | 3 | Washing Machine Taps |
| **OPTION** | 4 | 1400 x 600 Melamine Table c/w Legs |
| **OPTION** | 5 | SPEED QUEEN 6.5kg Washing Machine |
| **OPTION** | 6 | SPEED QUEEN 6.5kg Washing Machine c/w Discharge Stand Pipe |
| **OPTION** | 7 | SPEED QUEEN 9kg Dryer |
| **OPTION** | 8 | ROBIN HOOD Ironing Centre & Hard Wired Steam Iron |
| | 9 | 9.0Kg Fire Extinguisher - AB(E) |
| | dp | Dropper only, for 100 x 75mm Downpipe |
| | fw | Floor Waste |
| | HWS | Rheem Heat Pump 325 Litre/3.6kW -MPI - mounted externally |

## Symbol Legend

| | |
|---|---|
| DSB | Distribution Switchboard |
| | POE - Point Of Entry |
| | Light switch |
| | Two-way light switch |
| IPX5 | Light switch - IPX5 rated |
| | Isolation Switch |
| | 10amp Single GPO |
| 2 | 10amp Double GPO |
| | 15amp Single GPO. |
| IPX5 | 10amp GPO - IPX5 rated |
| | 20amp Single GPO |
| | - Indicates floor mounting |
| | - Indicates ceiling mounting |
| | Comms. - Draw wire only |
| | 'F' Type television outlet |
| | 240V Smoke detector |
| | 36w Single fluorescent light |
| | 36w Double fluorescent light |
| | 36w Emergency back-up fluorescent light |
| IP65 | 36w Single fluorescent light - IP65 rated |
| EXIT | Emergency exit light |
| | Oyster Light - 11W Round Fluro |
| | External light |
| | 18W Single Vandalite |
| | Oyster light |
| PE | Photo electric light switch |
| | Spot light |
| | PLUMBING - Water Inlet Point |
| | PLUMBING - Waste Manifold Outlet Point |

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 3.0m Laundry
Adani Mining Pty. Ltd.
Carmichael Project
QLD

| | |
|---|---|
| DATE | 21.08.12 |
| SCALE | 1 : 50 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics

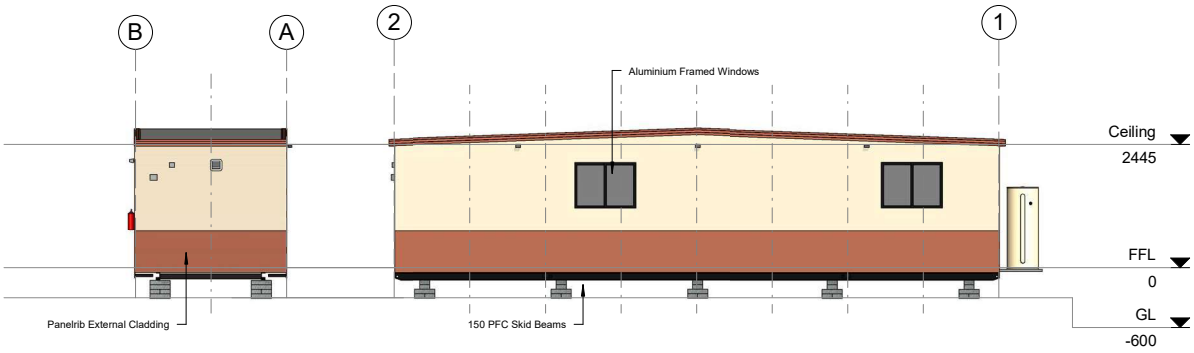
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE: Floor Plan

DRAWING NUMBER: 120842D -01

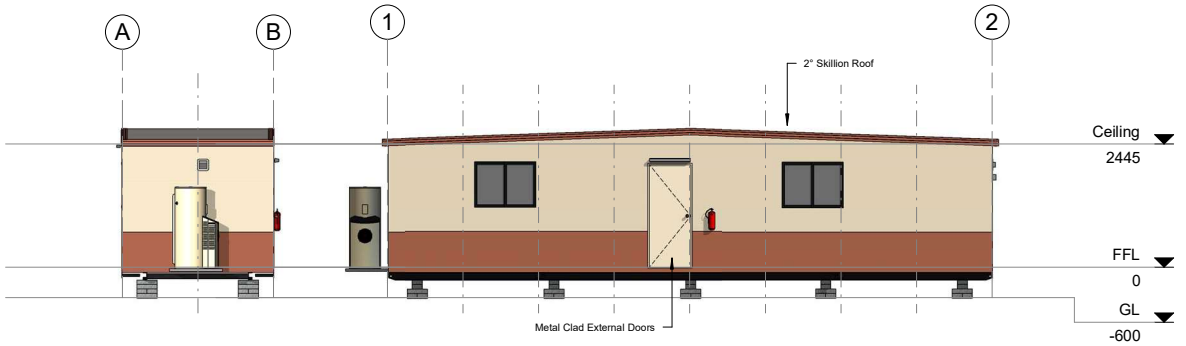
| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 10a |
| REVISION | |
| SHEET SIZE | A3 |

24/08/2012 11:42:45 AM




2 Elevation C
1 : 75

A Elevation A
1 : 75




1 Elevation D
1 : 75

B Elevation B
1 : 75

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 3.0m Laundry
Adani Mining Pty. Ltd.
Carmichael Project
QLD

| | |
|---|---|
| DATE | 21.08.12 |
| SCALE | 1 : 75 |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

TITLE
Elevations

DRAWING NUMBER
120842D -02

DESIGN WIND LOAD
C2

NCC BUILDING CLASS
10a

REVISION

SHEET SIZE
A3

24/08/2012 11:42:54 AM

| Manufacturing Structural Members | | |
|---|---|---|
| Description | Member Size | Back to Back |
| Skid Beams c/w Retractable Lifters | 150PFC | 2000 |

| Sales Door Schedule | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Panel | Height | Width | Handle Type | Hardware Set | Closer | Panic Bar | C/B Jamb | Timber Jamb | Security | Quantity | Comments |
| D1 | Standard : Hollow Core MC | 2040 | 820 | Standard | Entrance | No | No | Yes | No | | 1 | |

| - Floor Structure Schedule | |
|---|---|
| Floor Structure | Comments |
| Floor | |
| 600mm Floor Joist Centres | |
| Covering - 1.5mm Polyflor XL Vinyl | 100mm Cove thoughout |
| Flooring - 17mm F11 T&G Plywood | |
| Joists - LC7512 Galvaspan | |

| Sales Window Schedule | | | | | | | |
|---|---|---|---|---|---|---|---|
| No. | Type | Glazing | Height | Width | Sill Height | Quantity | Comments |
| W1 | Sliding XO | Grey Glass | 900 | 1208 | 1200 | 4 | C/w Curtains |

| - Wall Schedule | |
|---|---|
| Wall Structure | Comments |
| External Wall | |
| 611mm Stud Centres | |
| Cladding External - Colorbond Maxirib - "Headland" | Lower first sheet |
| Cladding External - Colorbond Maxirib - "Paperbark" | Upper Sheets |
| Framing - 75 x 1.0mm Hi-Ten Truecore | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |

| Wall Height |
|---|
| 2445 |

| * Plumbing Fixtures | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| 1 | Standard Laundry Unit - 45 Litre, Splashback & Wall Taps | 5 | |
| 2 | Water Cooler - Zip Freestanding EMBCF 60 - Mains Connected | 1 | SS Splashback **OPTION** |
| 3 | Washing Machine Taps | 10 | |
| dp | Dropper only, for 100 x 75mm Downpipe | 3 | |
| fw | Floor Waste | 5 | |
| HWS | Rheem Heat Pump 325 Litre/3.6kW -MPi - mounted externally | 1 | |

| Sales Mechanical Equipment | | | |
|---|---|---|---|
| No. | Supplier | Description | Quantity |
| M1 | AIRFLOW | Wall Mounted Exhaust Fan | 2 |

| - Electrical Fixtures | |
|---|---|
| Description | Quantity |
| 1x10amp GPO | 3 |
| 1x20amp GPO | 10 |
| 2x10amp GPO | 4 |
| Photo Electric Cell | 1 |
| Switchboard | 1 |

| - Furniture | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| 4 | 1400 x 600 Melamine Table c/w Legs | 1 | **OPTION** |

| - Electrical Equipment Schedule | | | |
|---|---|---|---|
| No. | Description | Quantity | Comments |
| 5 | SPEED QUEEN 6.5kg Washing Machine | 6 | **OPTION** |
| 6 | SPEED QUEEN 6.5kg Washing Machine c/w Discharge Stand Pipe | 4 | **OPTION** |
| 7 | SPEED QUEEN 9kg Dryer | 10 | **OPTION** |
| 8 | ROBIN HOOD Ironing Centre & Hard Wired Steam Iron | 1 | **OPTION** |

| Lighting Fixtures | Quantity |
|---|---|
| 1x36W Fluro - Bare | 4 |
| Single Vandalite - Wall Mounted | 1 |
| Switch - Std | 1 |

| - Fire Services Schedule | | |
|---|---|---|
| No. | Description | Quantity |
| 9 | 9.0Kg Fire Extinguisher - AB(E) | 1 |

| Sales Roof Structure Schedule | |
|---|---|
| Roof Structure | Comments |
| 2° End to End Roof | |
| C2 - SDEK/PLY LC7512 - 611 - (3.0 & 3.5) | |
| 611mm Ceiling Joist Centres | |
| Ceiling Joist - LC7512 Galvaspan | |
| Insulation - R2.3 Foil Backed Blanket - 95mm | |
| Lining - Internal - 3.6mm Polyester Coated Plywood | |
| Purlins - C7510 / LC7512 Galvaspan | |
| Roof - 0.42mm BMT Superdek Roofing | |

| Rev | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

THIS DRAWING REMAINS THE PROPERTY OF ATCO STRUCTURES PTY. LTD. IT MAY NOT BE REPRODUCED OR COPIED WHOLE OR IN PART WITHOUT WRITTEN AUTHORITY

QUALITY CERTIFIED TO AS/NZS ISO 9001:2008 BY SCI-QUAL INTERNATIONAL REGN No. 531

PROJECT No.

12.0 x 3.0m Laundry
Adani Mining Pty. Ltd.
Carmichael Project
QLD

| | |
|---|---|
| DATE | 21.08.12 |
| SCALE | |
| DRAWN | RA |
| CHECKED | TK |

ATCO Structures & Logistics
ATCO STRUCTURES & LOGISTICS PTY. LTD.
149-151 MAGNESIUM DRIVE, CRESTMEAD, QLD 4132
P.O. BOX 1171, BROWNS PLAINS BC, QLD 4118
E-mail: atcosales@atcosl.com.au
PHONE: (07) 3412 8600
FAX: (07) 3803 0175
ABN: 71 083 902 309

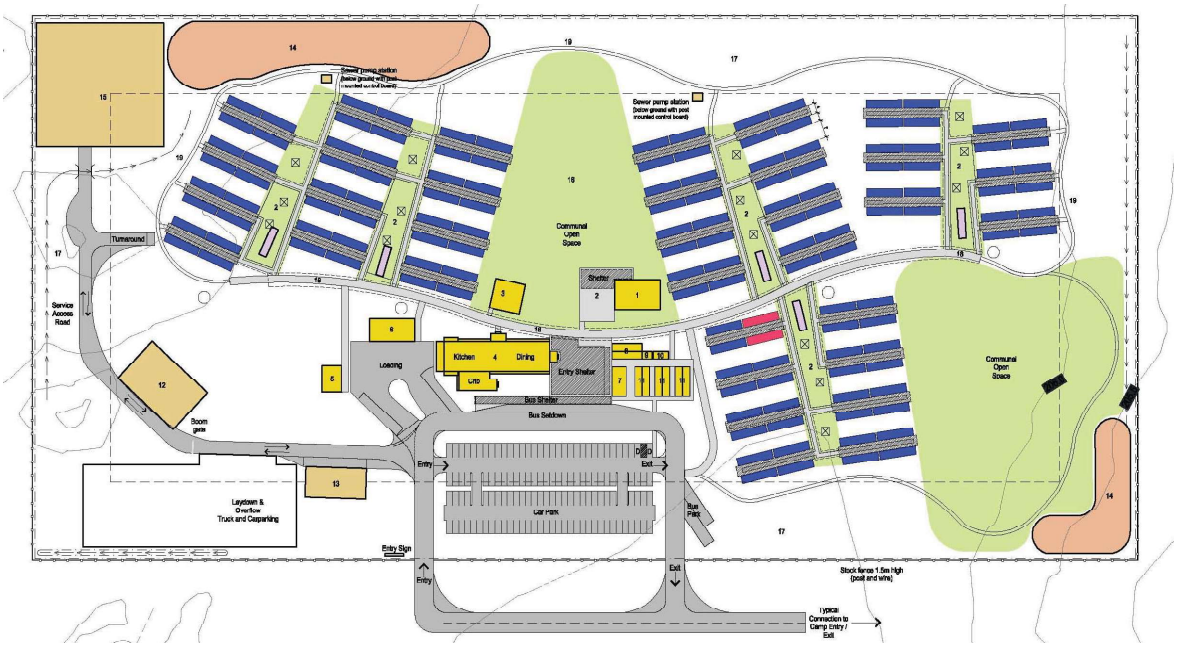
TITLE: Sales Schedules

DRAWING NUMBER: 120842D -05

| | |
|---|---|
| DESIGN WIND LOAD | C2 |
| NCC BUILDING CLASS | 10a |
| REVISION | |
| SHEET SIZE | A3 |

24/08/2012 11:42:58 AM

# RAILCAMP THREE
## PLAN




LEGEND

- COMMUNAL BUILDING
- ACCOMMODATION UNIT
- DISABLED UNIT
- LAUNDRY
- PATH
- INFRASTRUCTURE
- COMMUNAL OPEN SPACE
- DETENTION BASIN

1 - Recreation Centre/ Wet Mess IT & Telephone
2 - BBQ & Shelter Areas
3 - Gym
4 - Kitchen/Dining
5 - Waste
6 - Maintenance / Linen Store
7 - Office
8 - Ablution M&F
9 - Ablution (Disabled)
10 - First Aid
11 - Lockers
12 - Water Treatment Plant
13 - Generator
14 - Detention Basin
15 - Sewerage Treatment Plant
16 - Communal Open Space
17 - Fire Break (30M wide)
18 - Central Path (3M wide) with Freestanding Awning
19 - Walking Track / Maintenance (1.2M - 2.5M wide)

- Fire Tank Water
- Catch Drain
- Perimeter Bund
- Perimeter Fence

| | |
|---|---|
| ACCOMMODATION UNITS | 405 |
| DISABLED UNITS | 2 |
| CAR PARKING | 125 |
| DISABLED CARPARKING | 2 |
| BUS PARKING | 2 |
| EFFULENT DISPOSAL (based on 100m² per person) | 4 ha |
| DETENTION BASIN | .34ha |
| TOTAL OPEN SPACE (including firebreak) | 5.66 ha |
| TOTAL SITE AREA | 9.38 ha |

0 10 20 30 40 50 100
Scale 1:1500 @ A3 - Dimensions in metres

Cardno Shaping the Future

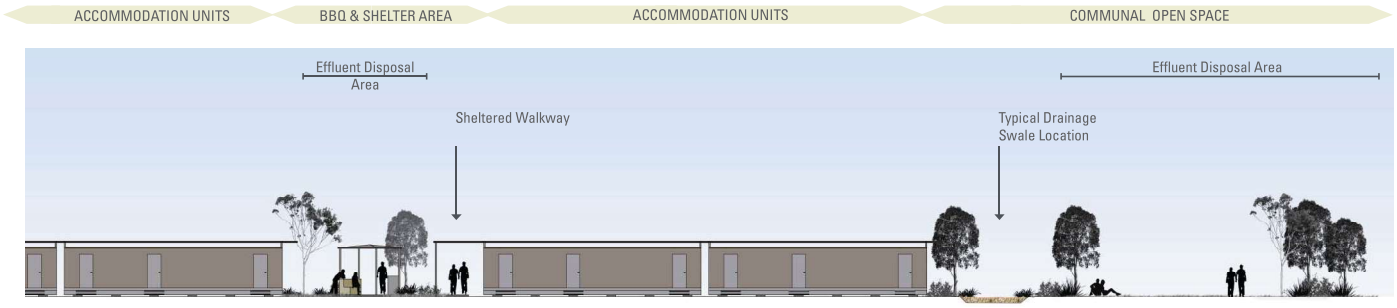
landscape architecture
urban design
environmental management

ADAMIN MINING Pty Ltd **RAIL CAMP 3**

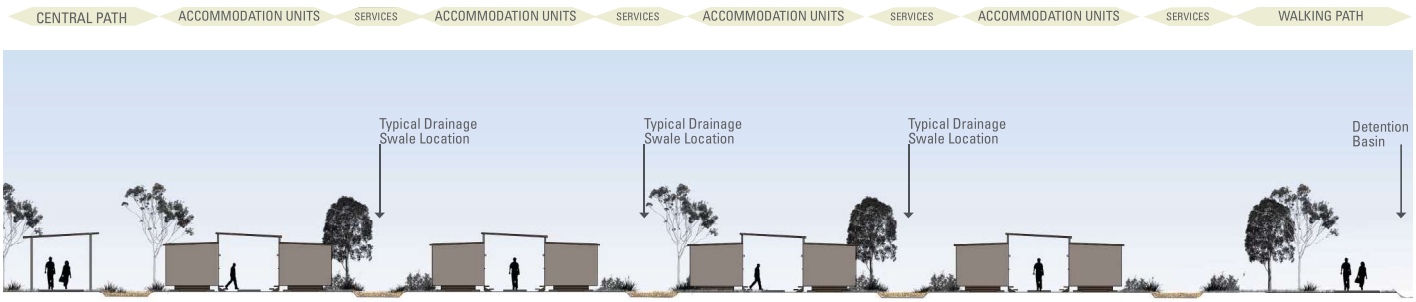
| DATE | DRAWING NO | ISSUE |
|---|---|---|
| 18.10.12 | SP126801 -RC03-02 | A |

# RAILCAMP THREE
## SECTIONS

SECTION ONE




SECTION TWO




Cardno
Shaping the Future

landscape architecture
urban design
environmental management

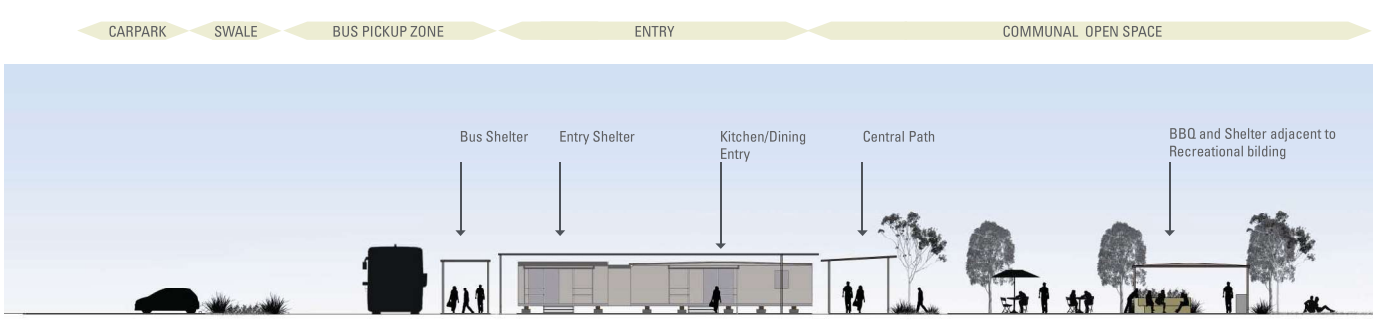
0 1 2 3 5 10m
SCALE 1:250 @ A3

ADAMIN MINING Pty Ltd **RAIL CAMP 3**

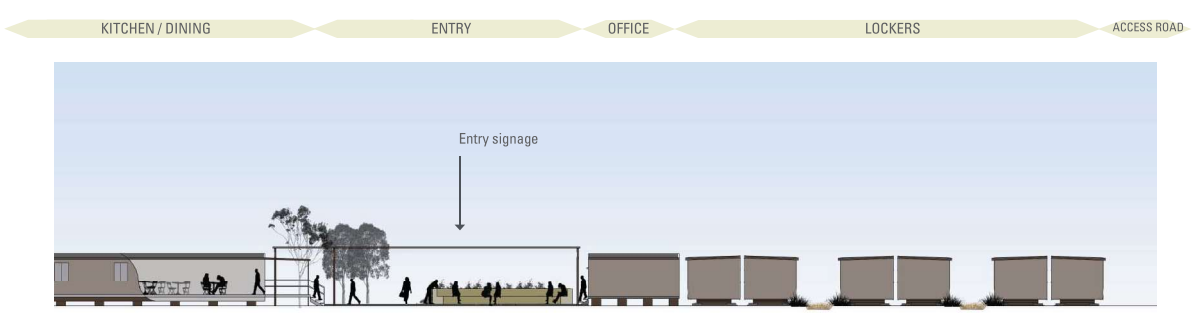
| DATE | DRAWING NO | ISSUE |
|---|---|---|
| **18.10.12** | **SP126801 -RC03-03** | **A** |

# RAILCAMP THREE
## SECTIONS

SECTION THREE




SECTION FOUR




Cardno
Shaping the Future

landscape architecture
urban design
environmental management

0 1 2 3 5 10m
SCALE 1:250 @ A3

ADAMIN MINING Pty Ltd **RAIL CAMP 3**

| DATE | DRAWING NO | ISSUE |
|---|---|---|
| **18.10.12** | **SP126801 -RC03-04** | **A** |

# RAILCAMP THREE
## APPENDICES

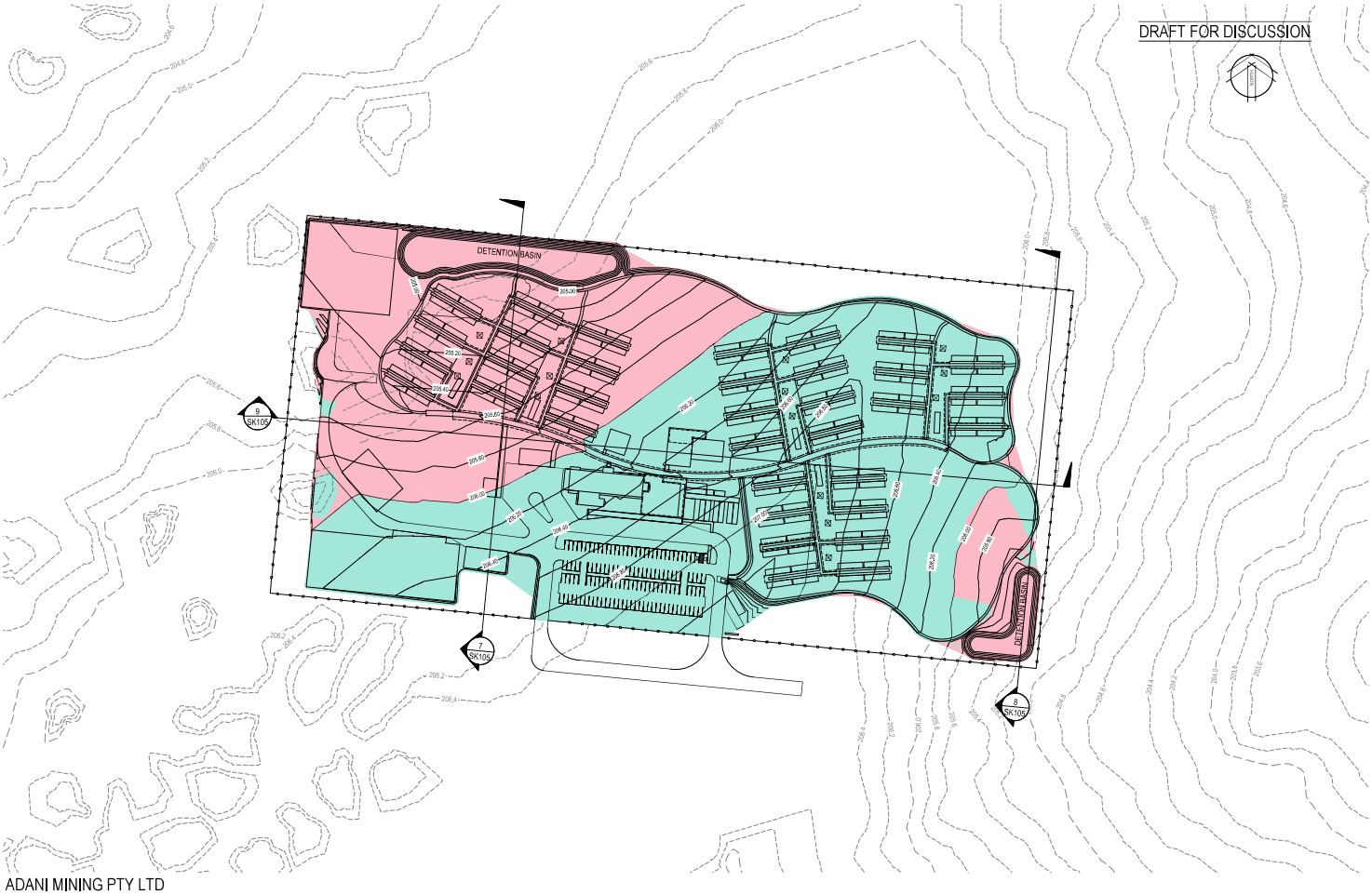
ADANI RAIL CAMP

ATCO - 14.4 x 3.25M Three person double
ATCO - 14.4 x 3.25M VIP Two person Disabled
ATCO - 45.0 x 19.5 M Kitchen Diner (400 person)
ATCO - 12.0 x 6.0 M Office
ATCO - 12.0 x 3.0 M Abulition Block
ATCO - 12.0 x 3.0 M Linen Store
ATCO - 12.0 x 12.0 M Gym
ATCO - 18.0 x 12.0 M Recreation Centre
ATCO - 12.0 x 3.0 M Laundry

# CIVIL ENGINEERING DRAWINGS PREPARED BY CARDNO

Cardno
Shaping the Future

DRAFT FOR DISCUSSION




ADANI MINING PTY LTD

CAMP 3 BULK EARTHWORKS LAYOUT

LEGEND - BULK EARTHWORKS

- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING CONTOUR
- AREA OF CUT
- AREA OF FILL
- SITE BOUNDARY

The contents of this plan are conceptual only. All areas and dimensions are approximate and subject to relevant studies, Survey, Engineering and Council approval.

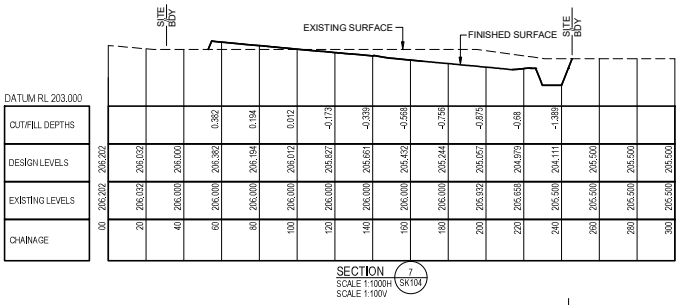
Cardno (Qld) Pty Ltd ACN: 051 074 992
Level 11, North Tower, 515 St Paul's Terrace, Fortitude Valley Qld 4006
Locked Bag 4006, Fortitude Valley Qld 4006
Phone (07) 3369 9822 Fax (07) 3369 9722
Email: cardno@cardno.com.au Web: www.cardno.com.au

REF NUMBER: 7508-90-SK104(—)
DATE: 22.10.2012

10 0 10 20 30 40 50m
1:1000 – A1 1:2000 – A3

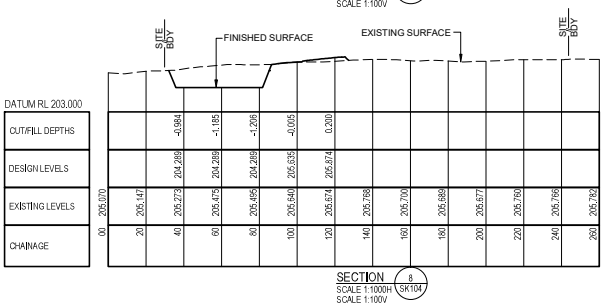
L:\7508-90 Carmichael Coal\004 Bulk Earthworks\Design and Documentation\Acad\Sketches\7508-90-SK100

DRAFT FOR DISCUSSION



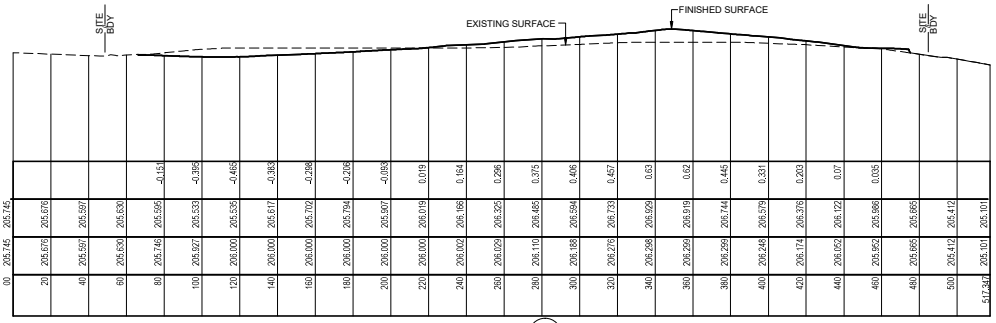

| DATUM RL 203.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CUT/FILL DEPTHS | | | | | | 0.382 | 0.194 | 0.012 | -0.173 | -0.339 | -0.568 | -0.756 | -0.875 | -0.68 | -1.388 | | | | | | | | | | | | | | | |
| DESIGN LEVELS | 206.202 | 206.032 | 206.000 | 206.000 | 206.382 | 206.194 | 206.012 | 205.827 | 205.661 | 205.432 | 205.244 | 205.057 | 204.979 | 204.111 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 |
| EXISTING LEVELS | 206.202 | 206.032 | 206.000 | 206.000 | 206.000 | 206.000 | 206.000 | 206.000 | 206.000 | 206.000 | 206.000 | 206.000 | 206.322 | 205.658 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 | 205.500 |
| CHAINAGE | 00 | 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 320 | 340 | 360 | 380 | 400 | 420 | 440 | 460 | 480 | 500 | 520 | 540 | 560 | 580 |

SECTION 7 SK104
SCALE 1:1000H
SCALE 1:100V




| DATUM RL 203.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CUT/FILL DEPTHS | | | -0.984 | -1.185 | -1.206 | -0.005 | 0.200 | | | | | | | | | | | | | | | | | | | | | | | |
| DESIGN LEVELS | | | 204.289 | 204.289 | 204.289 | 205.995 | 205.674 | | | | | | | | | | | | | | | | | | | | | | | |
| EXISTING LEVELS | 206.070 | 205.147 | 205.273 | 205.475 | 205.495 | 205.840 | 205.674 | 205.768 | 205.700 | 205.688 | 206.677 | 205.769 | 205.768 | 205.782 | | | | | | | | | | | | | | | | |
| CHAINAGE | 00 | 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 320 | 340 | 360 | 380 | 400 | 420 | 440 | 460 | 480 | 500 | 520 | 540 | 560 | 580 |

SECTION 8 SK104
SCALE 1:1000H
SCALE 1:100V




| DATUM RL 220.000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CUT/FILL DEPTHS | | | | -0.151 | -0.395 | -0.466 | -0.383 | -0.298 | -0.206 | -0.093 | 0.019 | 0.164 | 0.296 | 0.375 | 0.406 | 0.457 | 0.63 | 0.62 | 0.445 | 0.331 | 0.203 | 0.07 | 0.035 | | | | | | | |
| DESIGN LEVELS | 205.745 | 205.676 | 205.597 | 205.630 | 205.595 | 205.533 | 205.535 | 205.617 | 205.702 | 205.794 | 205.907 | 206.019 | 206.166 | 206.325 | 206.485 | 206.584 | 206.733 | 206.909 | 206.919 | 206.744 | 206.579 | 206.376 | 206.122 | 205.986 | 205.695 | 205.412 | 205.101 | | | |
| EXISTING LEVELS | 205.745 | 205.676 | 205.597 | 205.630 | 205.745 | 205.927 | 206.000 | 206.000 | 206.000 | 206.000 | 206.000 | 206.000 | 206.002 | 206.059 | 206.110 | 206.188 | 206.276 | 206.298 | 206.299 | 206.299 | 206.248 | 206.174 | 206.052 | 205.962 | 205.695 | 205.412 | 205.101 | | | |
| CHAINAGE | 00 | 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 | 320 | 340 | 360 | 380 | 400 | 420 | 440 | 460 | 480 | 500 | 517.347 | | | |

SECTION 9 SK104
SCALE 1:1000H
SCALE 1:100V

ADANI MINING PTY LTD

CAMP 3 BULK EARTHWORKS SECTIONS

The contents of this plan are conceptual only. All areas and dimensions are approximate and subject to relevant studies, Survey, Engineering and Council approval.

Cardno (Qld) Pty Ltd ACN: 051 074 992
Level 11, North Tower, 515 St Paul's Terrace, Fortitude Valley 4006
Locked Bag 4006, Fortitude Valley Qld 4006
Phone (07) 3369 9822 Fax (07) 3369 9722
Email: cardno@cardno.com.au Web: www.cardno.com.au

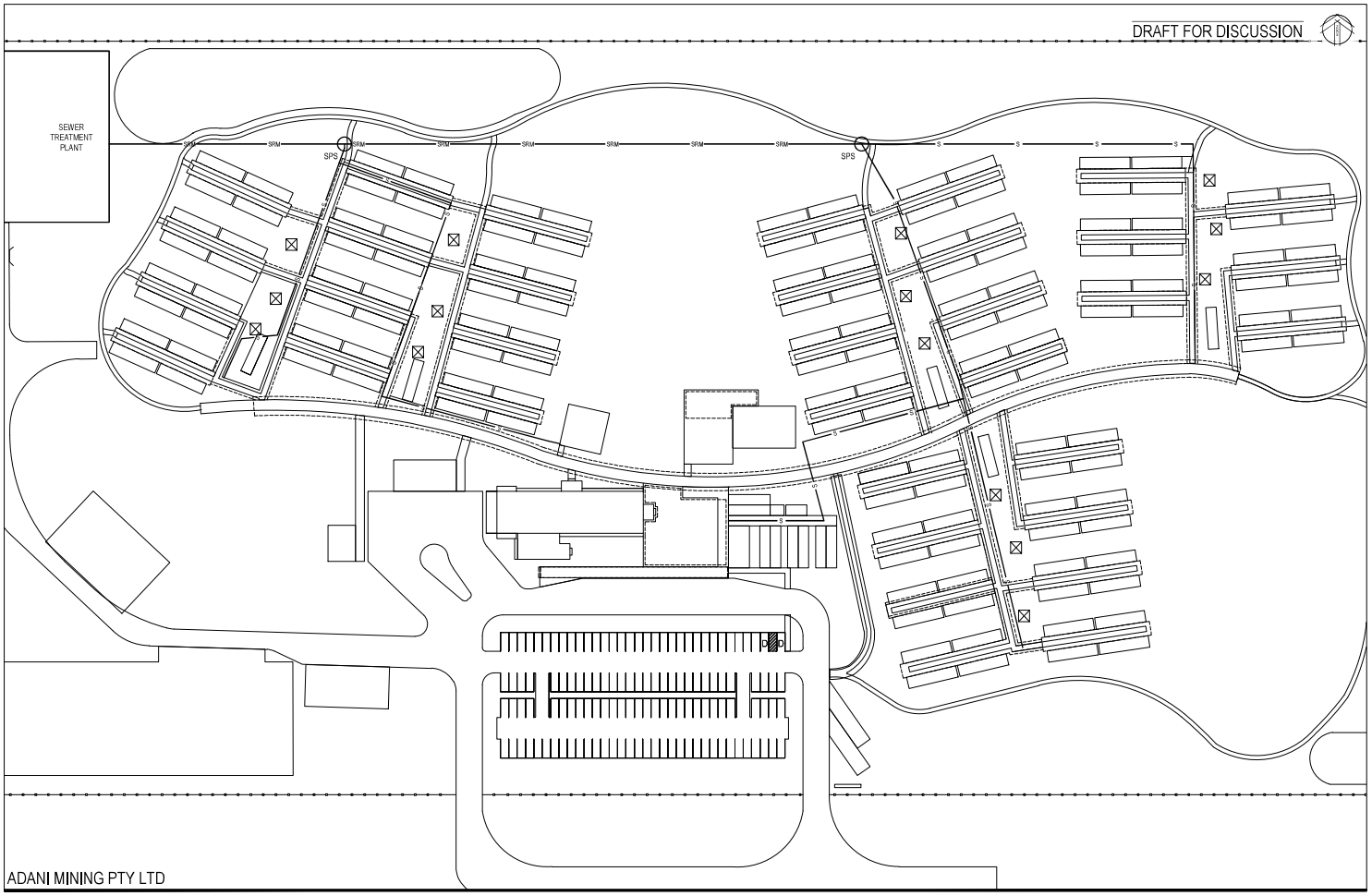
REF NUMBER: 7508-90-SK105(—)
DATE: 22.10.2012

10 0 10 20 30 40 50m
1:1000 - A1 1:2000 - A3

1 0 1 2 3 4 5m
1:100 - A1 1:200 - A3

L:\7508-90 Carmichael Coal\004 Bulk Earthworks\Design and Documentation\Acad\Sketches\7508-90-SK101

DRAFT FOR DISCUSSION




ADANI MINING PTY LTD

CAMP 3 SEWER RETICULATION LAYOUT

LEGEND - SEWER

S - PROPOSED GRAVITY SEWER

SRM - PROPOSED SEWER RISING MAIN

SPS - PROPOSED SEWER RISING MAIN PUMP STATION

The contents of this plan are conceptual only. All areas and dimensions are approximate and subject to relevant studies, Survey, Engineering and Council approval.

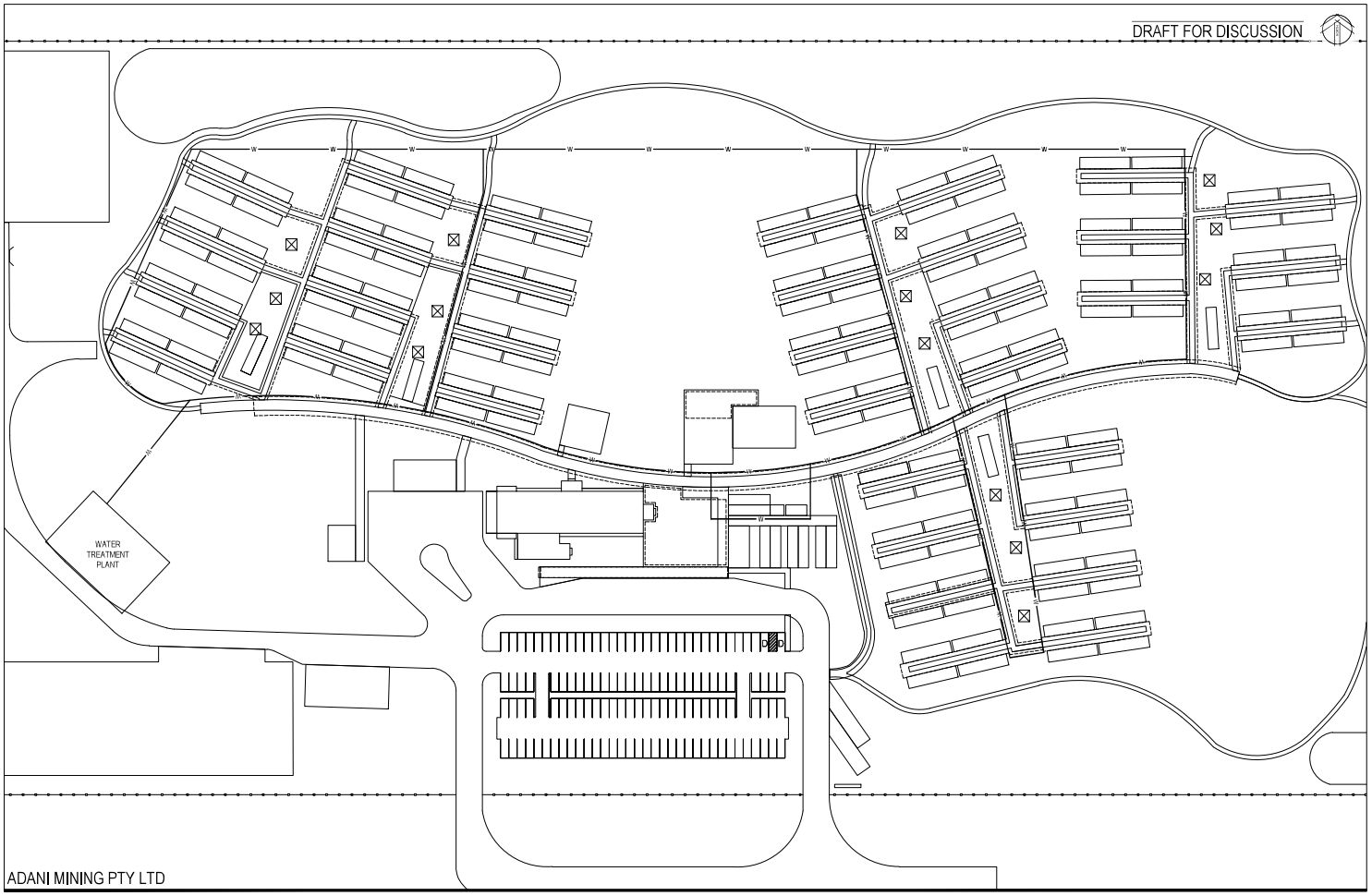
Cardno (Qld) Pty Ltd ACN: 051 074 992
Level 11, North Tower, 515 St Paul's Terrace, Fortitude Valley 4006
Locked Bag 4006, Fortitude Valley Qld 4006
Phone (07) 3369 9822 Fax (07) 3369 9722
Email: cardno@cardno.com.au Web: www.cardno.com.au

REF NUMBER: 7508-90-SK303(-)
DATE: 22.10.2012

5 0 5 10 15 20 25m
1:500 - A1 1:1000 - A3

L:\7508-90 Carmichael Coal\004 Bulk Earthworks\Design and Documentation\Acad\Sketches\7508-90-SK303

DRAFT FOR DISCUSSION




ADANI MINING PTY LTD

CAMP 3 WATER RETICULATION LAYOUT

LEGEND - WATER

W - PROPOSED WATERMAIN

The contents of this plan are conceptual only. All areas and dimensions are approximate and subject to relevant studies, Survey, Engineering and Council approval.

Cardno (Qld) Pty Ltd ACN: 051 074 992
Level 11, North Tower, 515 St Paul's Terrace, Fortitude Valley Qld 4006
Locked Bag 4006, Fortitude Valley Qld 4006
Phone (07) 3369 9822 Fax (07) 3369 9722
Email: cardno@cardno.com.au Web: www.cardno.com.au

REF NUMBER: 7508-90-SK403(-)
DATE: 22.10.2012

5 0 5 10 15 20 25m
1:500 - A1 1:1000 - A3

L:\7508-90 Carmichael Coal\004 Bulk Earthworks\Design and Documentation\Acad\Sketches\7508-90-SK403

# **Appendix D** – EMR / CLR search

Department of Environment and Heritage Protection (EHP)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454 Brisbane QLD 4001 AUSTRALIA
www.ehp.qld.gov.au

# SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Transaction ID: 49749778 EMR Site Id: 02 September 2014
This response relates to a search request received for the site:
Lot: 662 Plan: PH1491

## EMR RESULT

The above site is NOT included on the Environmental Management Register.

## CLR RESULT

The above site is NOT included on the Contaminated Land Register.

## ADDITIONAL ADVICE

If you have any queries in relation to this search please phone 13QGOV (13 74 68)

**Registrar**
**Administering Authority**

# **Appendix E** – Traffic Impact Assessment

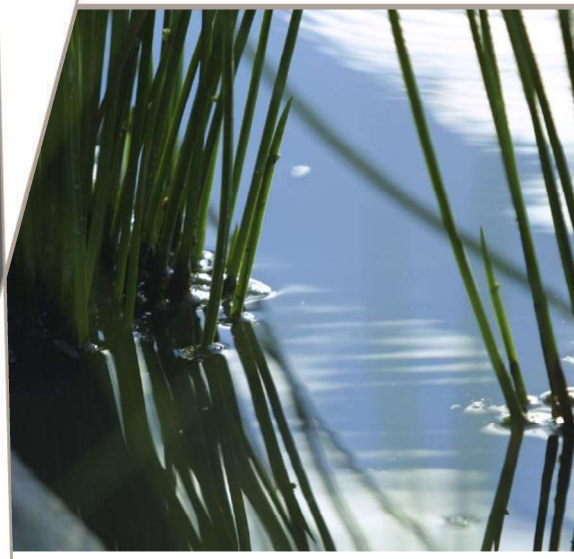
# TRAFFIC IMPACT ASSESSMENT PREPARED BY CARDNO

Cardno
Shaping the Future

# Adani Rail/Mining Camp

## Transport Statement – Camp 3

750890



Prepared for
Adani Mining Pty Ltd

October 2012

Cardno
Shaping the Future

# Document Information

| | |
|---|---|
| Prepared for | Adani Mining Pty Ltd |
| Project Name | Transport Statement – Camp 3 |
| File Reference | Document3 |
| Job Reference | 750890 |
| Date | October 2012 |

# Contact Information

**Cardno (Qld) Pty Ltd**
ABN 57 051 074 992

Level 11 Green Square North Tower
515 St Paul's Terrace
Locked Bag 4006
Fortitude Valley Qld 4006

Telephone: 07 3369 9822
Facsimile: 07 3369 9722
International: +61 7 3369 9822

transportqld@cardno.com.au
www.cardno.com.au

# Document Control

| Version | Date | Author | Author Initials | Reviewer | Reviewer Initials |
|---|---|---|---|---|---|
| 1 | 31 October 2012 | Neale McCracken | NM | Andrew Johnston | ASJ |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

© Cardno 2012. Copyright in the whole and every part of this document belongs to Cardno and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person other than by agreement with Cardno.

This document is produced by Cardno solely for the benefit and use by the client in accordance with the terms of the engagement. Cardno does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

# Table of Contents

**1 Introduction** **1**

**2 Existing Situation** **3**

2.1 Study Area and Subject Site 3

2.2 Moray-Bulliwallah Road 3

2.3 Moray-Carmichael Road/Moray-Carmichael Boundary Road 4

2.4 Moray-Carmichael Road/Moray-Bulliwallah Road/ Moray-Carmichael Boundary Road Intersection 4

2.5 Traffic Volumes 4

2.6 Crash Data 4

**3 Proposed Development** **5**

3.1 Development Overview 5

3.2 Internal Layout 5

3.3 Access Route Layout 7

3.4 Vehicle Parking 8

3.5 Traffic Generation 9

3.6 Intersection Geometry Requirements 11

**4 Summary & Conclusions** **16**

# Tables

Table 1-1 Road Naming Convention 1

Table 2-1 Recorded Traffic Volumes Near Moray-Bulliwallah Road 4

Table 3-1 Rail Construction Camp 3 - Traffic Generation 9

# Figures

Figure 1-1 General Outline of Rail Corridor and Camp Locations (Indicative Only) 2

Figure 2-1 Rail Construction Camp 3 – Locality Plan 3

Figure 3-1 Proposed Site Layout – Rail Construction Camp 3 6

Figure 3-2 Expected Traffic Flow at Camp 3 Moray-Bulliwallah Road/Site Access Intersection 10

Figure 3-3 Expected Traffic Flow at Moray-Bulliwallah Road/Moray-Carmichael Road/ Moray-Carmichael Boundary Road Intersection 11

Figure 3-4 Turn Warrant Analysis: Camp 3 Moray-Bulliwallah Road/Site Access 12

Figure 3-5 Turn Warrant Analysis: Moray-Bulliwallah Road/Moray-Carmichael Road/Moray-Carmichael Boundary Road 13

Figure 3-6 Auxiliary Left Turn (AUL) Treatment 13

Figure 3-7 Sight Distance Measurement 14

Figure 3-8 Components of a Deceleration Lane 15

# 1 Introduction

Cardno has been commissioned by Adani Mining Pty Ltd, the proponent of the Carmichael Coal Mine and Rail Project, to provide traffic and transport advice in relation to the construction accommodation camps, east of Moranbah in the Isaac Regional Council area, Queensland.

Adani proposes to develop an open cut and underground coal mine in the north Galilee Basin known as the Carmichael Coal Mine Project. The proposed mine will have a total per annum production of approximately 60 million tones and an operational lifespan of 90 years. The mine site is situated approximately 160km northwest of Clermont and is proposed to be serviced by a new 179km rail corridor along which all coal will be transported.

The construction of the proposed coal mine and rail corridor requires the employment of large volumes of workers that are separate from those that will be employed when the mine is in operation. These workers must be accommodated in locations that are within close proximity to the rail corridor and the mine site itself to reduce travel times to the required work locations. Given the remote nature of the locality and lack of accommodation infrastructure, temporary construction workers accommodation camps must be established.

The construction of the required rail infrastructure involves the establishment of a total of three temporary rail construction camps at regular intervals along the rail corridor each containing a total of 407 beds. The construction of the mine facility requires the establishment of one camp located at the mine site itself accommodating a total of 510 beds.

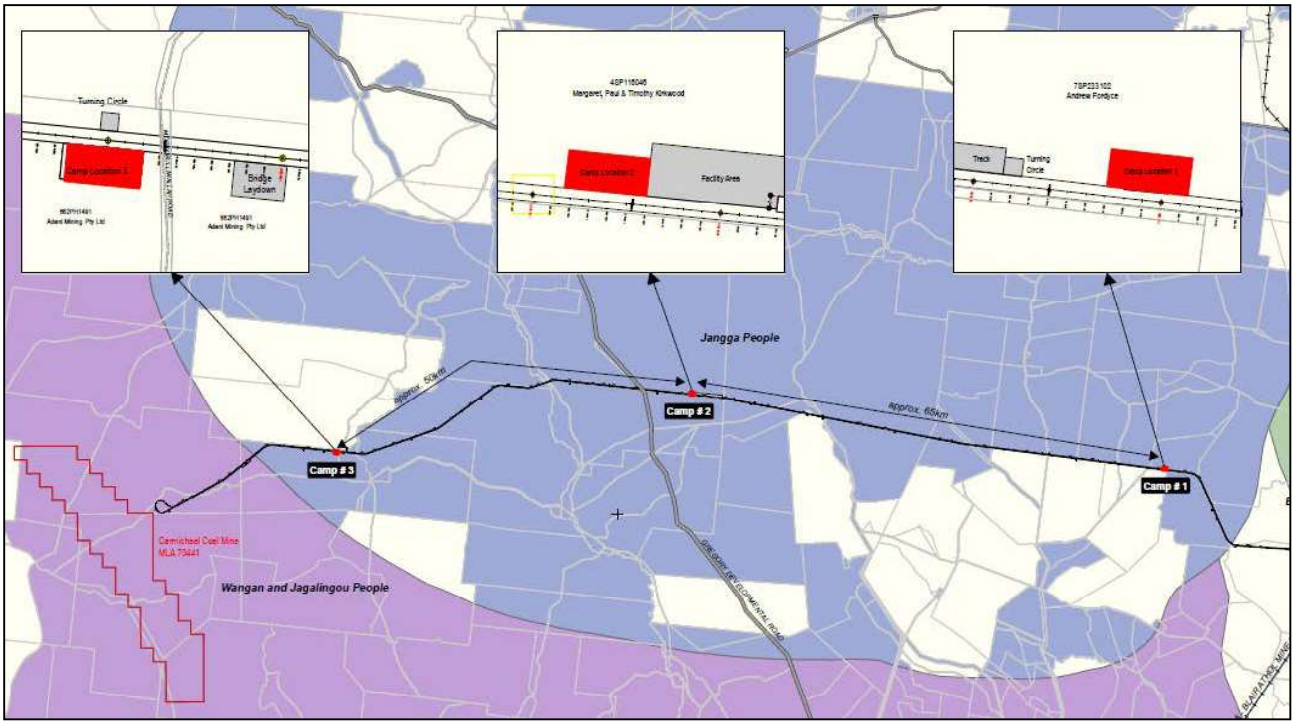
Figure 1-1 below provides a general illustration of the overall proposal including the three proposed rail construction camps. It is noted that the proposed mine camp is not shown on the figure below, but lies west of Camp 3 along the proposed rail line. Note that the exact locations of Camps 2 & 3 have altered slightly since this drawing was produced.

It should be note that following discussions with Isaac Regional Council, it has been identified that certain road names have changed in the area around Camp 3. To maintain consistency with other documents submitted in support of this project, the following naming convention is adopted in this technical memorandum.

**Table 1-1 Road Naming Convention**

| Previous Road Name (used in this document) | Current Road Name |
|---|---|
| Moray-Carmichael Road | Doongmabullah Road |
| Moray-Bulliwallah Road | Bulliwallah Road |
| Moray-Carmichael Boundary Road | Elgin Road |

**Figure 1-1 General Outline of Rail Corridor and Camp Locations (Indicative Only)**



# 2 Existing Situation

## 2.1 Study Area and Subject Site

The subject area is located in Queensland's Central West region. The site is situated in an isolated location that is a substantial distance from the nearest urban centres of Clermont to the south and Moranbah to the east. The region is dominated by cattle grazing and extractive industry uses.

The subject site is located 2.4km from the proposed access to Moray-Bulliwallah Road, as shown in Figure 2. The access point itself is located approximately 1.7km from the intersection of at the Moray-Carmichael Road Moray-Bulliwallah Road Moray-Carmichael Boundary Road Intersection

It is noted that the nearest Airport for fly-in/fly-out construction workers is located south of the construction camp, west of Clermont, along Clermont-Alpha Road. This airport is approximately 200km from the construction camp and would entail a journey time of approximately four hours.

The next nearest airport is located south of Moranbah. Using the current road network layout, this journey would be approximately 260km in length and take approximately four and a half hours. Current information from Adani states that it is likely that Moranbah Airport would be utilised by fly-in/fly-out trips.

**Figure 2-1 Rail Construction Camp 3 – Locality Plan**




## 2.2 Moray-Bulliwallah Road

Moray-Bulliwallah Road is part of the local road network and is therefore under the control of Isaac Regional Council. This road runs on an approximate north-south alignment and lies within a road reserve of approximately 60 metres south of the proposed site access and 100m north of the proposed site access. The road begins at an intersection with Moray-Carmichael Road and Moray-Carmichael Boundary Road, travelling north towards Gregory Developmental Road. The road is unsealed for its entire length within the Isaac Regional Council jurisdiction.

## 2.3 Moray-Carmichael Road/Moray-Carmichael Boundary Road

Moray-Carmichael Road/Moray-Carmichael Boundary Road is part of the local road network and is therefore under the control of Isaac Regional Council. This road runs on an approximate east-west alignment and lies within a road reserve of approximately 60 metres. Moray-Carmichael Road begins at Moray-Bulliwallah Road and departs west towards Carmichael. Moray-Carmichael Boundary Road begins at Moray-Bulliwallah Road and departs east towards Gregory Developmental Road. The route is unsealed for its entire length within the Isaac Regional Council jurisdiction.

## 2.4 Moray-Carmichael Road/Moray-Bulliwallah Road/ Moray-Carmichael Boundary Road Intersection

This intersection is located approximately 1.7km south of the proposed site access point. The intersection is a basic priority controlled T-intersection, with Moray-Bulliwallah Road and Moray-Carmichael Boundary Road forming the north-south leg and Moray-Carmichael Road departing to the west. The road surface is entirely unsealed in the vicinity of the intersection.

## 2.5 Traffic Volumes

Traffic volume data received from Isaac Regional Council for roads in the vicinity of the site are presented in Table 2-1. It is noted these traffic volumes are based on an average of a continuous count over a period of approximately 40 days on each road. No peak data is available although from the counted volume it is apparent these roads serve the equivalent of perhaps two or three dwellings or other properties.

**Table 2-1 Recorded Traffic Volumes Near Moray-Bulliwallah Road**

| Road | Year | AADT | HV % |
|---|---|---|---|
| Moray-Bulliwallah Road | 2012 | 8 | 15% |
| Moray-Carmichael Road | 2012 | 14 | 54% |
| Moray-Carmichael Boundary Road | 2012 | 18 | 35% |

## 2.6 Crash Data

Cardno has requested a detailed crash history from TMR for the both Moray-Bulliwallah Road and Moray-Carmichael Road. The received information indicates there is no crash record along either of these roads.

# 3 Proposed Development

## 3.1 Development Overview

The proposed mixed use development will consist of temporary and demountable accommodation units arranged to form a fully functioning worker community. The camp is intended to be established for the entire period that is required for construction of this particular section of the railway corridor. At this point in time it is estimated that this will take approximately 2 years to complete.

The proposed mixed use development site is spread over an area of 9.38 hectares and will consist of the following land uses:

- 405 Accommodation Units
- 2 Disabled Units
- 123 Car Parking Spaces
- 2 Disabled Car Parking Spaces
- 2 Bus Parking Spaces

## 3.2 Internal Layout

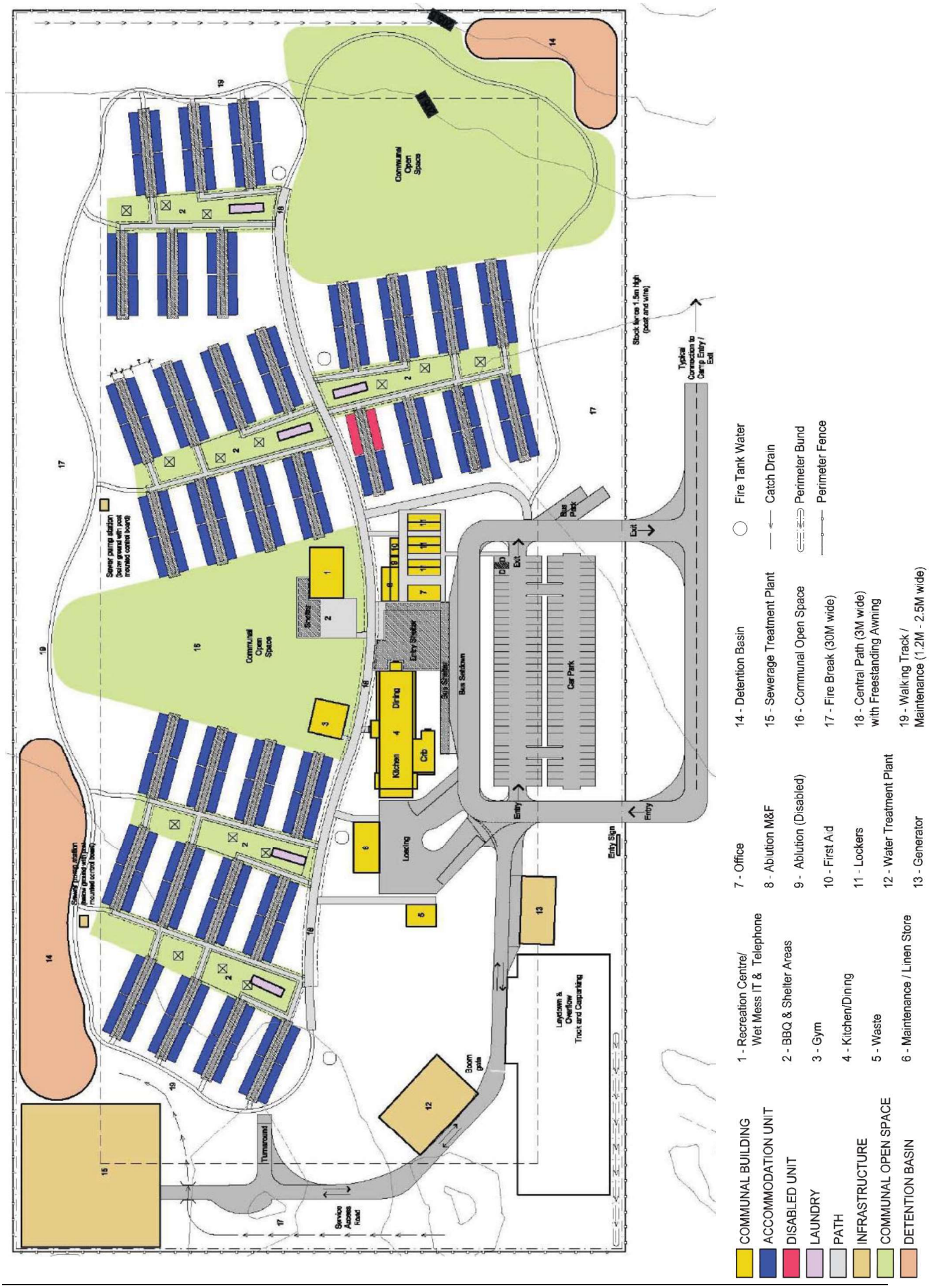
### 3.2.1 General Layout

The proposed site layout is shown in Figure 3-1 below. The site is bisected by a central spine road, with the workers accommodation units arranged in groups either side. Communal buildings are in the centre of the development site and will provide recreational, dining and gym facilities as well as being the collection point for transport to and from the rail construction sites.

The access road from Moray-Bulliwallah Road and the main circulatory road within the site are proposed to be a minimum of 7.5 metres wide, allowing two heavy vehicles to pass if required.

A one-way road system is used in the pick-up/set-down area and within the car park, this will provide a legible route through the site, simplifying traffic flow and minimising accident potential.

**Figure 3-1 Proposed Site Layout – Rail Construction Camp 3**



### 3.2.2 Service Vehicles

All roads, intersections and service vehicle turning points within the site have been designed using swept path analysis, with a 19 metre articulated vehicle used as the largest expected vehicle.

The service road accessing the sewage treatment plant is proposed to be a minimum of 5.0 metres wide, and will provide access for a 19m semi-trailer. Vehicles accessing the sewage treatment plant will be required to use the turnaround area before reversing into the loading position, this will allow one-way traffic to safely utilise this facility.

The electricity generator has been positioned to be accessed from the sewage treatment plant service road, and will therefore share the turning area with the sewage treatment plant. Feasibly the overflow truck parking area could be used to turn around rather than using the full length of the service road.

General servicing required for the day-to-day operation of the construction camp will take place in a dedicated loading bay located next to the communal buildings. The loading area will be provided with a turning circle, as shown in Figure 3-1, and will accommodate all manner of vehicles, including articulated vehicles and buses should the need arise.

The location of the sewage treatment plant access road, the car park exit and the loading bay creates an intersection with five approaches in close proximity. Normally this would be of concern; however, the servicing areas will be used at most four times a day, and general traffic flow within the site is expected to be very low compared to an urban residential development.

### 3.2.3 Pedestrian Facilities

While no specific walking or cycling facilities will be provided beyond the boundary of the camp, all areas of the camp will be readily accessible on foot.

Footpaths within the site have been arranged adhere to pedestrian desire lines, minimising walking distances and provide maximum connectivity between the accommodation units and focal points such as the communal facilities and safe, convenient access to buses. It is noted the sheltered bus waiting area is approximately 250 metres from the furthest accommodation block, a two minute walk at a leisurely pace.

Recreational walking/cycling trails are also proposed to be provided around the perimeter of the accommodation units and within communal open spaces.

### 3.2.4 Public Transport Facilities

It is proposed that construction workers are transported to the construction sites by bus and/or four-wheel drive vehicles. A pick-up and set-down area will be provided within the site and will provide extensive sheltered waiting areas, protecting workers from the weather while queuing to board a bus. The waiting area is designed to be large enough to accommodate the tidal nature of workers travelling to and from the construction sites.

The bus stop is generously apportioned at over 40 metres long and will accommodate up to three standard buses or coaches, or two articulated buses. Two bus parking spaces are provided off the exit roadway while an overflow area is provided off the sewage treatment plant service road. It is also feasible that the loading area could be used to temporarily accommodate buses if required.

### 3.2.5 Parking Provision

Parking provision is discussed in Section 3.4 of this report.

## 3.3 Access Route Layout

It is proposed to access the camp along the property boundary, west of the Moray-Bulliwallah Road and south of the proposed rail corridor. Access to the external road network will be taken from a priority controlled intersection with Moray-Bulliwallah Road. The alignment of the proposed access route is as highlighted in red on Figure 2-1.

Moray-Bulliwallah Road connects to Moray-Carmichael Road and Moray-Carmichael Boundary Road at three-way intersection approximately 1.7km south of the site access point.

## 3.4 Vehicle Parking

### 3.4.1 Parking Requirements – Rural Zone Code

Acceptable Solution AS19.1 of the Rural Zone Code states that car parking must be provided in accordance with the requirements set out in Schedule 1, Division 2 of the scheme. This particular section of the scheme identifies car parking number requirements for defined uses. In regard to 'Residential Activities' the scheme states that one space per 'accommodation unit' must be provided for a proposed development.

The unique nature of the development means that it does not fit easily into the category of 'Residential Activities', especially given the proposed fly-in/fly-out nature of the development with bus transport being provided for residents.

The specification of one space per residential dwelling is therefore not considered to be appropriate for an isolated location where residents will be bussed to and from work. Therefore, performance criteria PC19 is applicable to the proposal. PC 19 states the following:

"Vehicle parking and service vehicle provision is adequate for the "use" and ensures safe and functional operation for motorists and pedestrians."

This performance criteria outlined in the local plan allows for a reasonable provision of parking provision to be provided based on the intended operation and use of the site.

### 3.4.2 Parking Provision

In consultation with Adani and in accordance with their specific requirements, it is proposed to provide a total of 123 sealed car parking spaces and two disabled spaces located opposite the communal buildings. Two dedicated bus parking spaces will also be provided as part of the proposed camp designs.

An unsealed overflow parking area is also proposed to be provided, accommodating all manner of vehicles that will be used to access and service the camp. It is noted that the overflow car park would also be accommodate excess heavy vehicles and buses in a double parked arrangement if these were required on special occasions.

The main car park will be used for parking of site management vehicles, four-wheel drives, visitor parking and other vehicles used to transfer workers to and from the construction site. These vehicles will not be used to access the external road network on a day-today basis, but will instead simply be used to get to and from the camp to the construction site on tracks running alongside the rail line.

The number of parking spaces provided on site have been specified by Adani to match the maximum operational requirement to traffic staff to and from site, and to accommodate service vehicles and buses. It is important to note that this car park is not likely to be used to accommodate workers personal vehicles.

All parking spaces within the main car park have been designed to comply with Australian Standard AS2890.1 Off-Street Parking. Parking spaces and aisle width have been specified for User Class 1, suitable for day-long employee and commuter parking.

Parking for disabled users has been designed to comply with AS2890.6, Off-Street Parking for People with Disabilities. This entails a standard space 2.4 metres wide, with a 2.4 metre wide dedicated shared area provided alongside.

Footways have been provided between the parking rows in each aisle, this will minimise pedestrian-vehicle interaction within the car park.

## 3.5 Traffic Generation

### 3.5.1 Rail Construction Camp Traffic

It is important to note from the outset that the majority of traffic movements will not impact the external road network, but will be largely confined within the camp and along tracks servicing the rail line construction sites that will run from the camp alongside the rail line as construction progresses. This has been confirmed in discussions with Adani.

Therefore the only vehicles that will typically impact the external road network are those which transfer workers to and from airports and urban centres such as Clermont and Moranbah, and those providing essential services to the camp. This has also been confirmed in discussions with Adani.

The traffic generation associated with typical day-to-day operations is therefore as specified in Table 3 below.

**Table 3-1 Rail Construction Camp 3 - Traffic Generation**

| Trip Type | Mode | Weekly Volume | Daily Volume | Peak Hour Volume |
|---|---|---|---|---|
| Fly-in/Fly-out | Coach | 10 vehicles in/out | 2 in/out | 2 in/out |
| Servicing | AV (semi-trailer) | 10 vehicles in/out | 4 in/out | 2 in/out |
| Total | | 20 vehicles in/out | 6 in/out | 4 in/out |

Table 3-1 indicates that on a typical day, traffic generation is expected to be minimal. The peak hour for vehicles movements will not necessarily interact with the peak flow on the external road network. The main activity will be from servicing, and tasks such as deliveries will be coordinated and will largely occur outside of times when peak construction worker trips are occurring. This is undertaken mainly as a safety precaution to minimise interaction of heavy service vehicles with camp residents as they travel to and from work; however it will also have the effect of reducing peak hour vehicle activity.

### 3.5.2 Rail Construction Camp Traffic Distribution

Fly-in/fly-out worker trips and service vehicles will arrive and depart from the accommodation camp via Moray-Bulliwallah Road, south of the site access and use Moray-Carmichael Boundary Road to reach Gregory Developmental Road.

### 3.5.3 External Traffic

Existing traffic volumes on the external roads in the vicinity of the site are very low at approximately 8 vpd along Moray-Bulliwallah Road and less than 20 vpd elsewhere. For the purposes of this assessment it will be assumed that half of the existing traffic flow occurs during the peak hour.

The Environmental Impact Statement (EIS) prepared by GHD indicates that Moray-Carmichael Road will function as a transport corridor for the delivery of materials to the rail corridor construction and mine construction sites. The GHD report indicates this section of Gregory Developmental Road will serve the following transport corridors:

> TC01: Townsville to Rail Camp 2, Rail Camp 3 and Mine Camp – Gregory Developmental Road/Flinders Highway. 525 vpd worst case.

In combination with the existing traffic and construction camp traffic, this indicates an overall flow of approximately 550 vpd, and approximately 70 to 80 vehicles in the peak hour along Moray-Carmichael Road and Moray-Carmichael Boundary Road. It is noted that the majority of the traffic associated with transporting materials for the construction of the rail line will be heavy vehicles.

It is assumed that Moray-Bulliwallah Road will carry 50% of the construction materials delivery traffic for the rail line (TC01), around 260 vpd, and will therefore Moray-Bulliwallah Road carry at most 280 vpd, and around 30 vehicles in the peak hour, as outlined below.

In terms of traffic flow on Moray-Carmichael Road, upon review of the EIS, traffic associated with the delivery of materials is based on a return journey, and while individual vehicles may not make the return journey in the same day, others from the previous day will, creating a balanced daily two-way flow. Therefore the

directional split of construction traffic is expected to be 50/50 east/west along Moray-Carmichael Road on a daily basis in the vicinity of the site access. The EIS further indicates that the peak for deliveries would be approximately 10% of the daily total in a one hour period. Figure 3-2 shows the expected peak hour traffic flow at the camp access to the external road network

The additional traffic associated with the mine accommodation camp is assumed to be four vehicles in either direction, travelling along Moray-Carmichael Road and Moray-Carmichael Boundary Road only. This has been added to the traffic flows considered at this intersection.

Traffic flows are expected to reach 30 vehicles during the peak hour along Moray-Bulliwallah Road (50% of the existing AADT plus eight movements associated with Camp 3 plus 26 vehicles associated with delivery of construction materials). Figure 3-2 and Figure 3-3 shows the expected peak hour traffic flow at the Camp 3 Site Access intersection and Moray-Bulliwallah Road/Moray-Carmichael Road/Moray-Carmichael Boundary Road intersection.

**Figure 3-2 Expected Traffic Flow at Camp 3 Moray-Bulliwallah Road/Site Access Intersection**

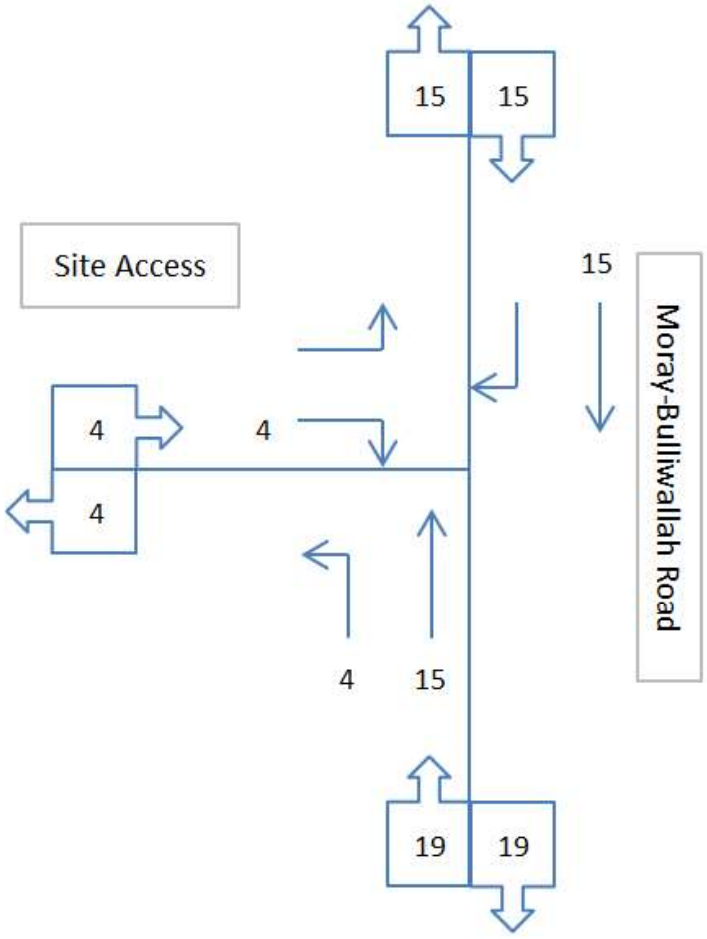
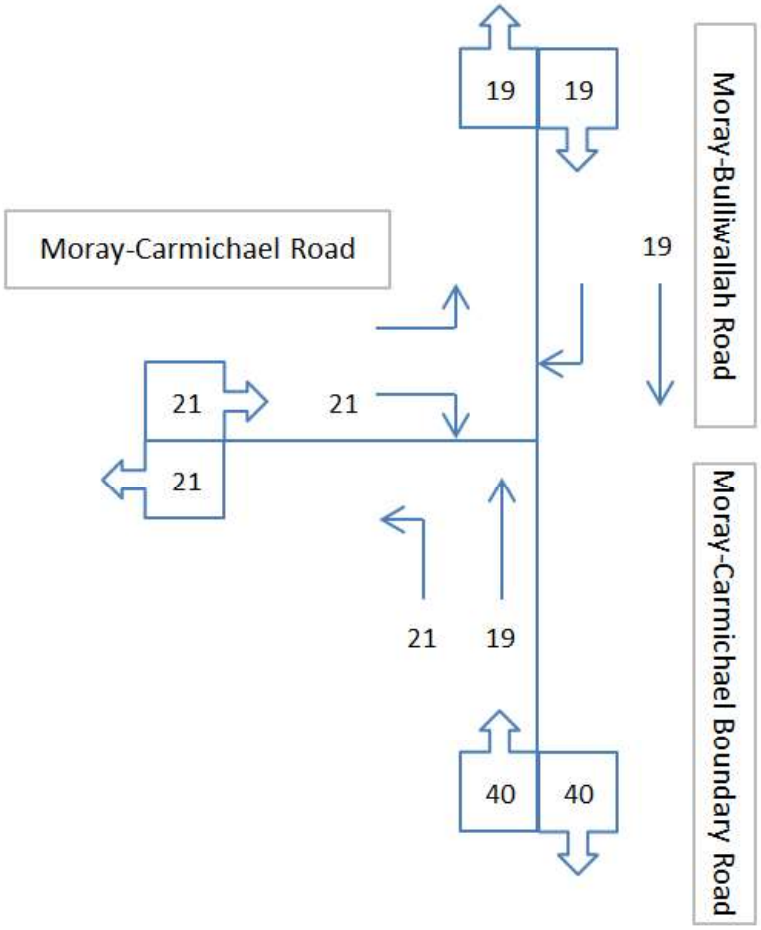


**Figure 3-3 Expected Traffic Flow at Moray-Bulliwallah Road/Moray-Carmichael Road/ Moray-Carmichael Boundary Road Intersection**




## 3.6 Intersection Geometry Requirements

The following commentary sets out the general geometry requirements for both the Camp 3 site access intersection with Moray-Bulliwallah Road and the Moray-Bulliwallah Road/ Moray-Carmichael Road/Moray-Carmichael Boundary Road intersection.

### 3.6.1 Turn Warrants

A turn warrant assessment identifies when a turn treatment is required to improve road safety. Rural turn lane warrants at both key intersections have been assessed in accordance with the procedure described in Austroads Guide to Road Design, Part 4A: Signalised and Unsignalised Intersections.

It is also important to note that the method used measures the cost of providing an improved turning treatment compared to the cost of potential crashes occurring over a ten year period. The construction camp is likely to be in operation for only two years and therefore the usual method for turn warrant analysis is not wholly appropriate.

Furthermore, the turning movements and general traffic flows are sufficiently low that, dedicated turning treatments would technically not be required in this instance. However, in evidence of this, a turn warrant analysis has been carried out at both study intersections. This has been undertaken for the peak hour using the traffic flows specified in Figure 3-2 and Figure 3-3; the results are illustrated in Figure 3-4 and Figure 3-5 respectively.

**Figure 3-4 Turn Warrant Analysis: Camp 3 Moray-Bulliwallah Road/Site Access**

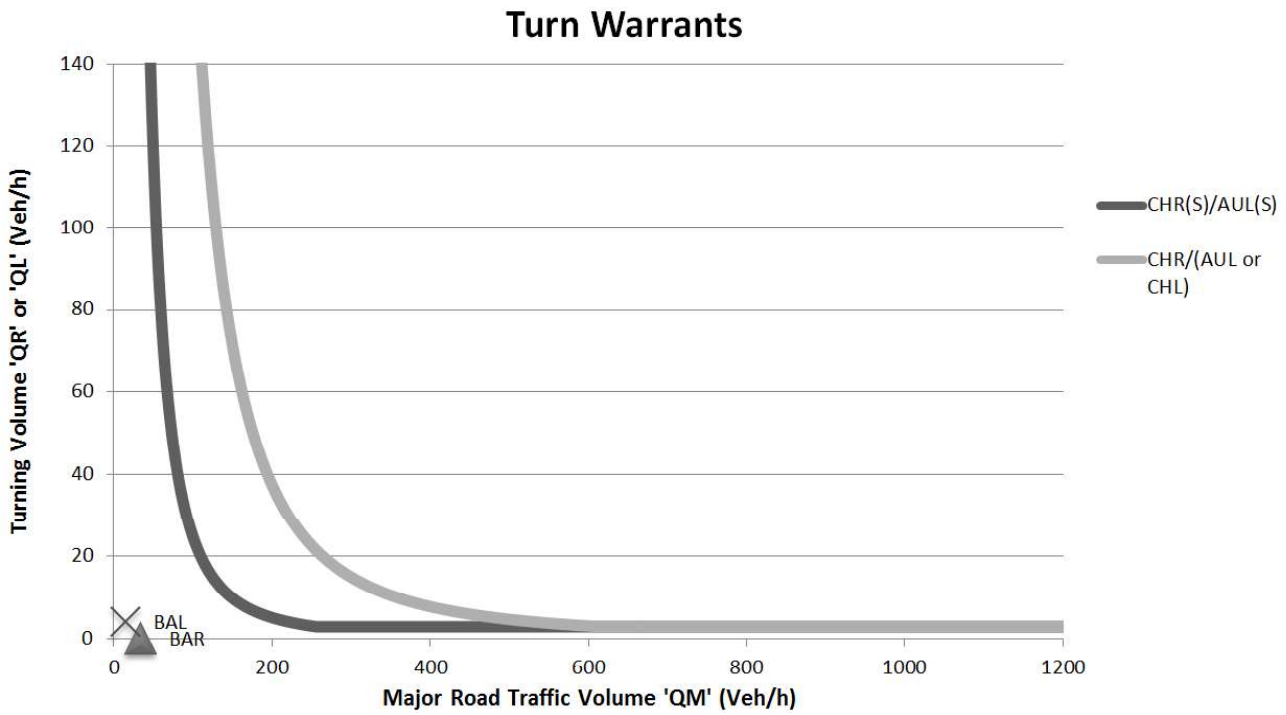
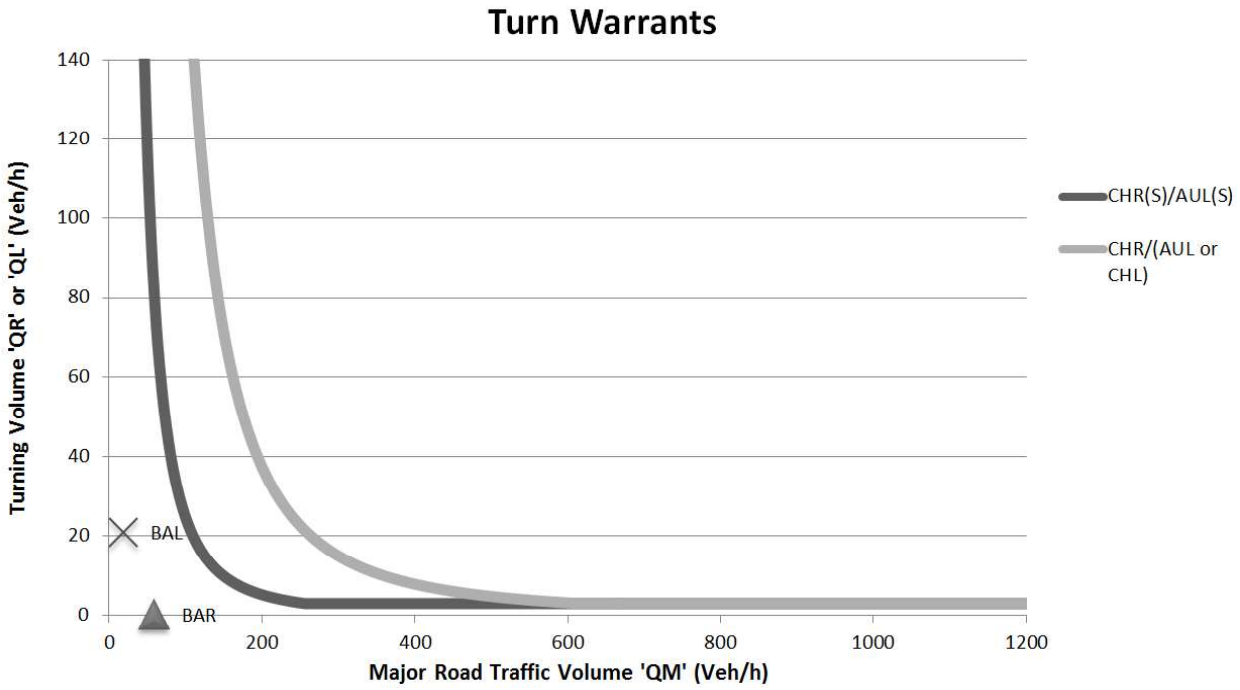


**Figure 3-5 Turn Warrant Analysis: Moray-Bulliwallah Road/Moray-Carmichael Road/Moray-Carmichael Boundary Road**




The results illustrated in Figure 3-4 and Figure 3-5 confirm that dedicated turning treatments are not required at either intersection. However, to minimise accident potential, a major-minor left turning treatment should be provided at both intersections for the following reasons:

- The majority of vehicles will approach each intersection from a southerly direction and will therefore turn left into the minor arms;
- The majority of traffic in the area will be heavy vehicles
- Heavy vehicles may travel in convoys with reduced headways rather than being spread apart

Alternative rural left turn treatments are shown in Figure 3-6 below. Figure 3-6 shows an Auxiliary Left turn (AUL) arrangement with localised road widening where turning vehicles would break from through traffic into a turning lane, vehicles making the opposing right turn from the major road would yield to the left turn in this instance.

**Figure 3-6 Auxiliary Left Turn (AUL) Treatment**

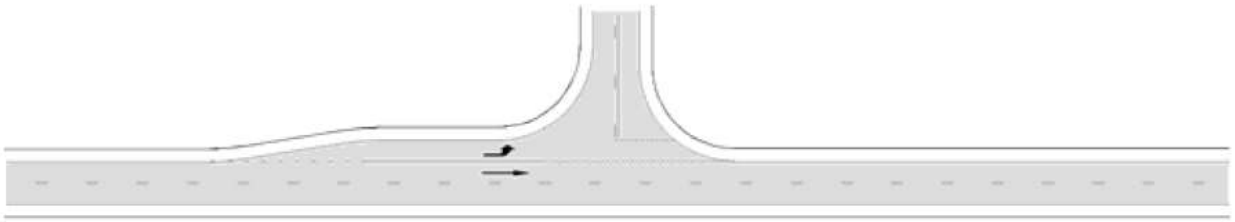


Figure 3-6 shows a Channelised Left turn (CHL) arrangement where turning vehicles would break from through traffic into a turning lane, vehicles making the opposing right turn from the major road would have priority over the left turn in this instance.

At both intersections the left turn is expected to be greater than the right turn movement and therefore the AUL treatment (Figure 3-6) is the recommended arrangement at the Moray-Carmichael Road/Moray=Bulliwallah/ Moray –Carmichael Road intersection

### 3.6.2 Sight Distances

Sight distance at intersections provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle on a minor road approach moving into a collision situation (e.g. in the worst case, stalling across the traffic lanes) and to decelerate to a stop before reaching the collision point. Sight distance also allows traffic waiting in the minor road to assess gaps in the traffic in the major road traffic flow.

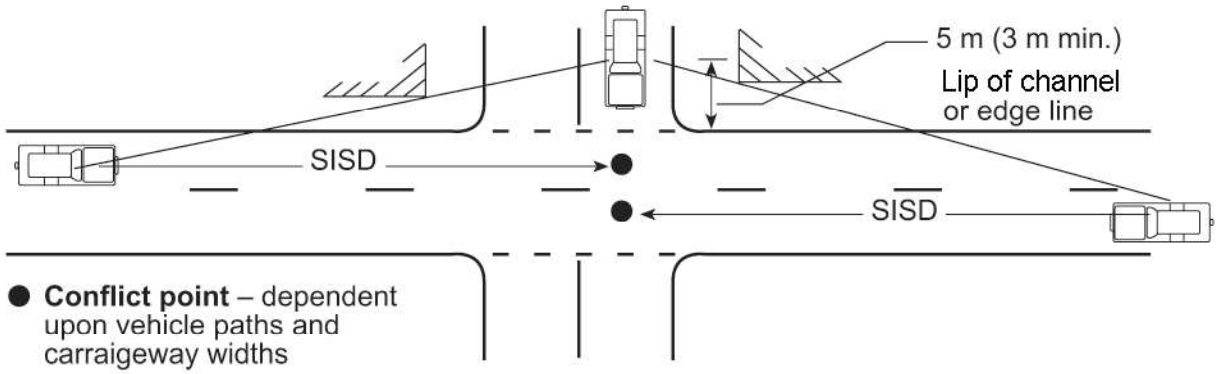
Guidance on required safe intersection sight distance (SISD) is set out in Austroads Guide to Road Design, Part 4A: Signalised and Unsignalised Intersections. SISD is dependent on the design speed of the road, which is approximated using the posted speed +10 km/h.

At both intersections it is assumed that the maximum speed for the vehicles travelling these roads is 100 km/h.

Under these circumstances the required SISD at the site access is 248 metres, and should be measured as illustrated in Figure 10. Given that both study intersections are expected to be lightly trafficked; it is considered that 248 metres SISD is sufficient at both intersection locations.

In order to ensure that this sight distance can be met it is proposed that the area required for sight lines would be kept clear of vegetation and permanent obstructions to visibility such as signage and electric/street light poles.

**Figure 3-7 Sight Distance Measurement**



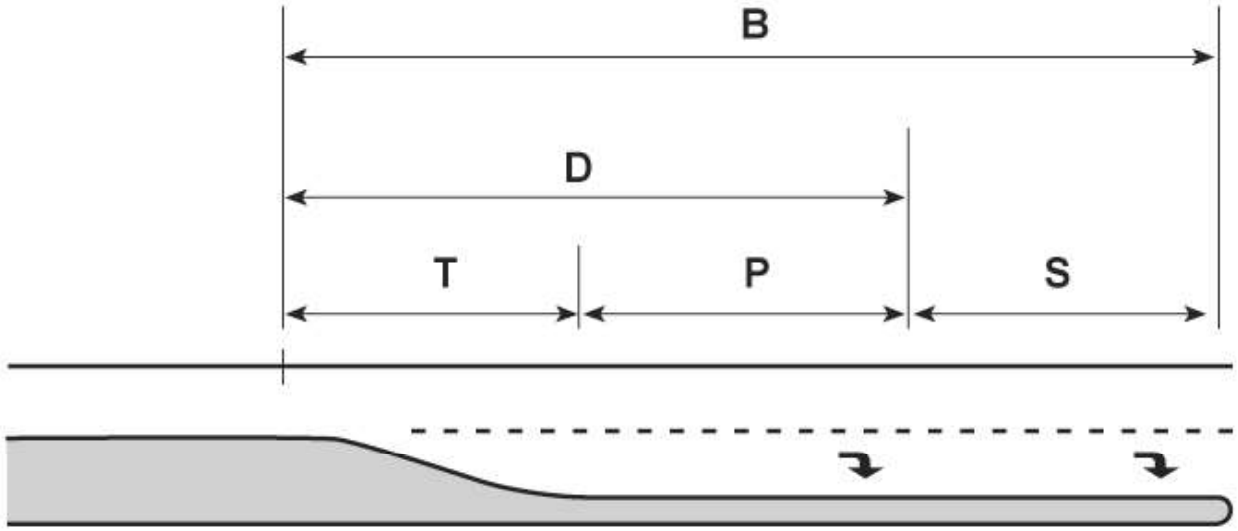

### 3.6.3 Geometry

The salient characteristics of the proposed AUL arrangement are specified in in Section 5 of the Austroads Guide to Road Design, Part 4A: Signalised and Unsignalised Intersections. These components are shown in Figure 11, and for a 100 km/h design speed are as follows:

- D - Deceleration Length:155m, consisting of
  - T – Physical Taper: 33m
  - P – Parallel: 122m
- S – Storage Length: Nil

It is noted the above parameters are in agreement with the TMR Road Planning and Design Manual, Chapter 13: Intersections at Grade.

**Figure 3-8 Components of a Deceleration Lane**




The following geometric elements should be adopted at both the Camp 3 site access intersection with Moray-Bulliwallah Road and the Moray-Bulliwallah Road/ Moray-Carmichael Road/Moray-Carmichael Boundary Road intersection:

- The minor arm should have one entry and one exit lane as separate left and right turning lanes are not required due to the low flow.
- The entry and exit radii should be 15m allow heavy articulated and rigid vehicles to enter and exit easily.

# 4 Summary & Conclusions

This Transport Statement set out to assess the impact of the proposed rail construction accommodation camp upon the surrounding road network and has provided advice on the transport infrastructure within the development site and its connection with Moray-Bulliwallah Road and Moray-Carmichael Road/Moray-Carmichael Boundary Road.

Construction workers will be accommodated within 407 demountable units in a temporary village. Buses will collect workers and transport them to and from the rail construction sites. These buses will use tracks running alongside the rail line as construction progresses.

External traffic movements are expected to be low but will consist largely of heavy vehicles, and when combined with the additional heavy vehicle movements expected on Moray-Bulliwallah Road and Moray-Carmichael Road/Moray-Carmichael Boundary Road, it is recommended that a an Auxiliary Left turn (AUL) be provided at both the Camp 3 site access intersection with Moray-Bulliwallah Road and the Moray-Bulliwallah Road/ Moray-Carmichael Road/Moray-Carmichael Boundary Road intersection.

Aside from this, the impacts of the proposed construction camp on the external road network are expected to be negligible; therefore this transport statement has focused on the internal aspects of the site.

Pedestrian access within the site has been designed to facilitate pedestrian movement along desire lines between accommodation units and communal buildings, the bus stops and open space.

The bus stop is designed to accommodate up to three buses or two articulated buses; a sheltered waiting area has been provided of sufficient size to manage the tidal nature of workers travelling to and from the construction sites.

Servicing the accommodation camp will take place from a dedicated loading area and turning circle adjacent the communal buildings, as well as from a service road linking to the sewage treatment plant. It is recommended that any heavy vehicle manoeuvring and waiting areas are provided in reinforced concrete.

In conclusion, the development of these lands for temporary construction worker accommodation has been considered in detail from a transport perspective. The result will be the delivery of a safe internal layout for camp residents and a safe connection to the external road network for site traffic movements.

# **Appendix F** – Stormwater Management Plan

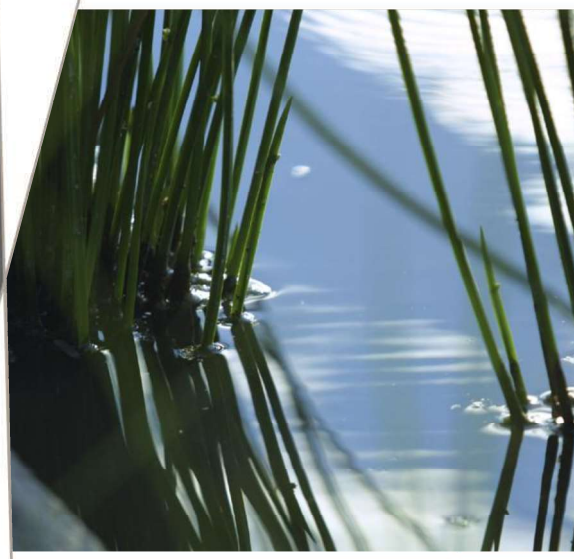
# STORMWATER MANAGEMENT PLAN
# PREPARED BY CARDNO

Cardno
Shaping the Future

# Stormwater Management Strategy

## Carmichael Coal Mine Rail Construction Camp 3

750890/008



Prepared for
Adani Mining Pty Ltd

30/10/2012

Cardno
Shaping the Future

# Document Information

| | |
|---|---|
| Prepared for | Adani Mining Pty Ltd |
| Project Name | Carmichael Coal Mine Rail Construction Camp 3 |
| File Reference | P:\750890 - Adani Rail\02 Project Management\Reports\Camp 3\V3\Camp 3 SWMS V3.docx |
| Job Reference | 750890/008 |
| Date | 30/10/2012 |

# Contact Information

**Cardno (Gold Coast)**
**Trading as Cardno (QLD) Pty Ltd**
ABN 57 051 074 992

Level 2 Podium Level
Emerald Lakes Town Centre
1/3321 Central Place
Carrara QLD 4211

P.O. Box 391
Nerang Qld 4211
Australia

Telephone: 07 5539 9333
Facsimile: 07 5538 4647
gco@cardno.com.au
www.cardno.com.au

# Document Control

| Version | Date | Author | Author Initials | Reviewer | Reviewer Initials |
|---|---|---|---|---|---|
| 1 | 19/10/2012 | Patrick Hayes | PH | Carlo de Byl | CD |
| 2 | 23/10/2012 | Patrick Hayes | PH | Carlo de Byl | CD |
| 3 | 30/10/2012 | Carlo de Byl | CD | Aiden Cunningham | AC |

© Cardno 2012. Copyright in the whole and every part of this document belongs to Cardno and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person other than by agreement with Cardno.

This document is produced by Cardno solely for the benefit and use by the client in accordance with the terms of the engagement. Cardno does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

# Table of Contents

**1 Introduction 1**

**2 Existing Site and Proposed Development 2**

2.1 Existing Site Description 2

2.2 Developed Site Description 2

**3 Performance Criteria 3**

**4 Stormwater Management Strategy 4**

4.1 Stormwater Quality 4

4.1.1 Available Management Practices 4

4.1.2 Adopted Strategy 7

4.2 Stormwater Quantity 8

**5 Stormwater Quality Assessment 9**

5.1 Soil Loss Calculations 9

5.2 Sediment Basin Calculations 10

**6 Stormwater Quantity Assessment 11**

6.1 Existing Conditions 11

6.2 Developed Condition 12

6.3 Preliminary On-Site Detention 13

6.4 Other Drainage Issues 14

6.4.1 Diversion of External Catchments 14

**7 Monitoring and Maintenance Schedules 15**

7.1 Monitoring Schedule 15

7.2 Maintenance Schedule 16

**8 Conclusions 18**

**9 References 19**

# Appendices

**A REFERENCE DRAWINGS**

**B FIGURES & SKETCHES**

**C WATER QUALITY CALCULATIONS**

**D WATER QUANTITY CALCULATIONS**

# Tables

**Table 3-1 Discharge Performance Criteria**
**Table 4-1 Stormwater Management Practices**
**Table 5-1 Catchment Parameters**
**Table 5-2 Soil Loss Parameters**
**Table 5-3 Sediment Basin Calculations**
**Table 6-1 Existing Time of Concentration Parameters**
**Table 6-2 Catchment A Existing Condition Discharge Parameters**
**Table 6-3 Catchment B Existing Condition Discharge Parameters**
**Table 6-4 Catchment A Developed Condition Discharge Parameters**
**Table 6-5 Catchment B Developed Condition Discharge Parameters**
**Table 7-1 Monitoring Program for Sediment Basins**
**Table 7-2 Monitoring Program for Rainwater Tanks**
**Table 7-3 Monitoring Program for Level Spreader Devices**
**Table 7-4 Monitoring Program for Vegetated Swales**
**Table 7-5 Maintenance Program for Sediment Basins**
**Table 7-6 Maintenance Program for Rainwater Tanks**
**Table 7-7 Maintenance Program for Level Spreader Devices**
**Table 7-8 Maintenance Program for Vegetated Swales**

# 1 Introduction

This conceptual Stormwater Management Strategy (SWMS) report has been prepared on behalf of Adani Mining Pty Ltd for the proposed Carmichael Coal Mine Rail Construction Camp 3 (the subject site).

The intent of this strategy is to provide an overview of the stormwater management aspects to support the Material Change of Use application for the rail construction camp. This SWMS report includes detailed policies, performance criteria and procedures to minimise the impact of the development on the physical and social environment.

This SWMS intends to address the operational phase of the construction camp that is expected to have a design life of approximately 2 years.

# 2 Existing Site and Proposed Development

## 2.1 Existing Site Description

The site of the Carmichael Coal Mine Rail Construction Camp 3 is located approximately 100km west by north of Moranbah, Queensland in the Isaac Regional Council. The proposed 9.3 hectare development area is situated on Lot 662 on PH1491, with the closest main road being Moray Bulliwallah Road situated approximately 2km east of the site. Refer to Cardno drawing number SP126801-RC03-01 for the Rail Camp 3 context plan.

A review of available aerial contour information showed that the camp site is situated at a level of approximately RL 206 m AHD. The existing site topography separates into two catchments with catchment A grading to the north-west and catchment B grading to the south-eastern corner of the lot. Catchment A and B generally grade at 0.3% and 0.4% respectively. Refer to Cardno drawing number 7508/90/08/-3.01 for the existing topography of the rail camp site.

## 2.2 Developed Site Description

It is proposed to establish a workers camp to support the construction of the proposed railway linking the Carmichael Coal Mine with the port terminals situated to the east. The developed site is to contain accommodation units to house approximately 400 staff with all associated services including sewerage and water treatment plants.

As minimal bulk earthworks are anticipated in order to construct the camp site, the developed condition site topography is expected to generally resemble the existing conditions with the subject site"s catchments to continue to grade to the west and the south-eastern corner of the camp. Refer to Cardno drawing number 7508/90/08/-3.02 for the proposed development layout of Rail Camp 3.

# 3 Performance Criteria

As the lifespan for Rail Construction Camp 3 is anticipated to be only approximately 2 years, the establishment and operation of the camp site has been considered as a construction site for the lifetime of the rail construction project.

Based on this, the construction and operational phases of the proposed rail camp will be governed by the same performance criteria as outlined below.

The *'Queensland Water Quality Guidelines (2009)'* (QWQ guidelines) (which is referenced by the Environmental Protection (Water) Policy (2009), a subordinate document of the Environmental Protection Act (1994)) provides a summary of design objectives for the management of stormwater quality and flow for the construction phase of developments in Queensland. This summary provided in Table 8.2.1 of the QWQ guidelines outlines design objectives for a number of pollutants including sediment, nutrients, litter and hydrocarbons.

Based on the above information, the release criteria for controlled runoff events or pumped discharges from the construction site is to be as shown in **Table 3-1** below.

**Table 3-1 Discharge Performance Criteria**

| Parameter | Release Criteria | Criteria Type |
|---|---|---|
| Total Suspended Solids | < 50 mg/L | Maximum |
| Coarse Sediments | To be retained on site | Descriptive |
| Turbidity (NTU) | < 10% above receiving water | Maximum |
| Nutrients (N and P) | Manage through Sediment Control | Descriptive |
| pH | 6.5-8.5 | Range |
| Litter | No visible litter washed from site | Descriptive |
| Hydrocarbons | No visible sheen on receiving water | Descriptive |
| Dissolved Oxygen | > 6 mg/L | Minimum |
| Stormwater drainage/flow management | Peak flows for 1-year and 100-year ARI event to match the pre-development condition of the site | Maximum |

For the management of sediments, Table 8.2.1 of the QWQ guidelines outlines the following:

> Testing of suspended solids and pH within any temporary sediment basins is to occur prior to any controlled discharges.

> Testing of turbidity within the temporary sediment basins and the receiving waters, is to be performed before the controlled discharging of the sediment basins. If the turbidity of the sediment basin is greater than 10% above the receiving waters further dosing with gypsum or lime is required until acceptable levels are reached.

# 4 Stormwater Management Strategy

## 4.1 Stormwater Quality

Based on the limited lifespan of Rail Construction Camp 3 and the site"s proximity to the adjacent railway corridor construction area, the primary objective of the proposed stormwater quality management strategy will be to control soil erosion on site and minimise sediment discharge to the downstream receiving local water courses using appropriate best management practices.

Refer to Cardno drawing number 7508/90/08/-3.02 for an indicative layout of the stormwater quality management measures proposed to be adopted to treat the contributing local catchment areas of rail construction camp 3.

### 4.1.1 Available Management Practices

A wide range of stormwater quality improvement devices are available to achieve the best practice stormwater management of runoff from a developed site. **Table 4-1** lists the most common stormwater quality improvement devices currently used locally, including their treatment efficiencies and the constraints of their use.

**Table 4-1 Stormwater Management Practices**

| Treatment Technique | Pollutant Removal Efficiency (1) | | | | | | | Scale (2) | Constraints |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Nutrients | | | | | |
| | Litter & Debris | Coarse Sediment | Fine Sediment | Dissolved | Particulate | Metals | Hydrocarbons | | |
| Litter baskets / racks | L-M | | | | | | | Local | Requires frequent maintenance |
| Sediment basins | L | M-H | L-M | | L | L | L | Regional | Aesthetic and safety issues |
| Gross pollutant traps | H | H | L | | L | L | L | Local/ Regional | Requires regular maintenance |
| Filter strips / buffer strips | L | M | L-M | L | L-M | L-M | L | Lot/Local | Requires flat terrain |
| Grass / vegetated swales | L | M-H | L-M | L | L-M | L-M | L | Local | Requires flat terrain |
| Extended detention basins | M | H | L-M | L | M | M | L | Regional | Requires pre-treatment, Large land area required |
| Infiltration trenches | L | M-H | M | L-M | M | M | M | Local | Requires pre-treatment |
| Bio-retention systems | L | M-H | M | L | M | M | L-M | Local | Requires pre-treatment |
| Porous pavements | | L-M | L-M | L | M | M | M | Local | Not appropriate for steep sites and heavy traffic |

| Treatment Technique | Pollutant Removal Efficiency (1) | | | | | | | Scale (2) | Constraints |
|---|---|---|---|---|---|---|---|---|---|
| | Litter & Debris | Coarse Sediment | Fine Sediment | Nutrients: Dissolved | Nutrients: Particulate | Metals | Hydrocarbons | | |
| Constructed wetlands | M-H | H | M | H | H | M-H | M | Regional | Requires pre-treatment, Not appropriate for steep sites, Large land area required |
| Community education | | | | | | | | Regional | Community participation |

Information Source: Queensland Urban Drainage Manual Table 11.05.4 (Typical pollutant removal efficiencies of treatment systems (2007). Benefit Ranking: L = Low Benefit, M = Medium Benefit, H = High Benefit.

Notes:

(1) Removal rates are provided for information only with the efficiency rating subject to adequate design. The actual removal rates used for detailed water quality modelling purposes should be in accordance with *MUSIC Modelling Guidelines Version 1.0 – 2010* prepared by Water by Design.

(2) Scales: Lot – less than 1 ha; Local – 1 to 10 ha; Regional – greater than 10 ha.

Given the features of the subject site, a number of the measures listed in **Table 4-1** above would not be considered appropriate to be incorporated into the stormwater treatment train for the proposed camp site.

Provided below is information on a number of the listed stormwater quality improvement devices including the suitability of these devices to be incorporated into the development of the subject site to treat stormwater runoff from the proposed construction camp site.

### Litter Baskets/Racks

Litter baskets and trash racks are generally located upstream of other treatment measures such as extended detention basins or constructed wetlands. They are primarily used as a pre-treatment device for stormwater runoff, removing litter, debris and other gross pollutants from the runoff before it discharges into other secondary and tertiary treatment devices located downstream.

### Gross Pollutant Traps (GPT) / Oil & Grit Separators

GPT / Oil and Grit Separators incorporated into the stormwater treatment train can contribute to the effective removal of solid pollutants, sediments and hydrocarbons from stormwater runoff from driveway and roadway areas of the proposed development site.

Generally GPTs and Oil and Grit Separators shall be designed to treat flows generated by the 3 month Average Recurrence Interval (ARI) rainfall event.

### Sediment Basins

During the construction phase of the development sediment loads are expected to be higher due to areas being cleared and exposed for the construction of roads, services and buildings. It is recommended that as part of the erosion and sediment control plan prepared for the construction phase of the development some form of sediment basin will be utilised to help manage sediment transport off-site.

The use of sediment basins is considered appropriate for this rail construction camp development.

### Vegetated Filter Strips / Buffer Strips

Filter / buffer strips can be either areas of planted vegetation or strips of retained vegetation left in its natural state. These vegetated areas may provide both an effective way of reducing peak flows and improving stormwater runoff quality. During the construction phase of the development the retention of existing vegetation in-conjunction with other erosion control measures can assist to stabilise exposed areas. In the case of the proposed development areas that grade away from the proposed road drainage network buffer strips along the rear of the allotments are considered one of the key stormwater management techniques, particularly where no other stormwater treatment techniques are possible. Upon completion of the rail camp construction works any exposed areas should be turfed, seeded or landscaped as soon as possible to reduce the risk of erosion.

It should be noted that in order for buffer strips to be effective, flow must be overland, and not concentrated. Therefore, flow spreaders may be required in conjunction with buffer strips to ensure optimal performance, particularly for those areas which drain away from the road.

The use of vegetated filter / buffer strips is considered appropriate for this development.

### Grassed / Vegetated Swales

Grassed / vegetated swales are designed to treat stormwater runoff by ensuring sufficient detention time to allow the removal of nutrients and fine sediments. This is achieved through filtration and infiltration. Hydrocarbon removal will also be achieved through filtration and attachment to vegetation where biological breakdown of the hydrocarbons can occur.

Swale lengths and widths can vary dependent on the site conditions, however to operate most effectively swales need to be located on relatively flat grades no steeper than 4-5%. The use of vegetated swales is limited in steep slope areas, unless suitable scour protection measures are incorporated.

The use of grassed / vegetated swales is considered appropriate for this development.

### Infiltration Trenches

Infiltration trenches are predominantly dry shallow grassed areas that trap the first flush runoff. The trapped runoff then infiltrates through the filtration medium removing fine sediment and nutrients. The base of the infiltration trench should be lined with an adequately designed sub-surface perforated pipe drainage network to convey filtered runoff to the trench outlet before discharging to the downstream receiving environment.

### Bio-retention Systems

Similar to vegetated swales, bio-retention systems are designed to treat stormwater runoff by ensuring sufficient detention time to allow the removal of nutrients and fine sediments. This is achieved through filtration, plant uptake, adsorption and biological degradation. Hydrocarbon removal will also be achieved through filtration and attachment to vegetation where the biological breakdown of hydrocarbons can occur.

Bio-retention systems contain an infiltration filter media, typically filled with sandy loam. All runoff collected within the system for the design storm event must pass through this filter. The filter media must be capable of sustaining vegetation growth as the vegetation is responsible for much of the uptake of nutrients within the system. The base of the bio-retention systems should be lined with an adequately designed sub-surface perforated pipe drainage network to convey the filtered runoff to the system outlet before discharging to the receiving system.

Bio-retention systems can be used in both flat areas and in steeper areas by stepping the system. Bio-retention systems can also be incorporated into the base of detention basins combining both stormwater quality and quantity into one area.

### Porous Pavements

Porous pavements vary with design, but generally incorporate a surface material consisting of a grid / lattice system, modular clay / concrete blocks, or open-graded asphalt / concrete pavements with much of the fine aggregate material omitted. The surface material is bedded on a coarse sand filter layer constructed over a gravel drainage layer. The use of porous pavements can assist in the removal of fine particulate matter, hydrocarbons, nutrients and soluble pollutants from stormwater runoff.

Porous pavements are suited most to areas of low traffic volume and low runoff volume. Porous pavements are most effective when used at grades of less than 5%. Because of this, porous pavements are recommended to be used in the parking areas only.

**Rainwater Tanks**

In addition to providing a low cost supply of water to assist in reducing demand on water supply, rainwater tanks can also provide a reduction in peak flow rates from rainfall events with the provision of additional storage volume.

**Level Spreader Devices**

For roof area drainage that cannot be connected to a piped drainage network the concentrating of roof water runoff at a single discharge outlet can lead to erosion and scour problems. By utilising a level spreader at the outlet to disperse the overflows over a larger area, the flows will be less concentrated and velocities will be reduced, reducing the risk of erosion and the incidence of re-suspension of sediments. Level / flow spreaders should be located away from high pedestrian traffic areas and be directed towards vegetated buffer strips or other landscaped areas.

**Constructed Wetlands**

Constructed wetlands are a water quality treatment system comprising of an inlet pond, to remove coarse sediments, and a macrophyte zone, to remove fine particulates and soluble pollutants. Additionally, constructed wetlands also provide landscape value, passive recreation, wildlife habitat and flood control.

Wetlands are particularly useful on sites constrained by water and environmental sensitivity as they can be incorporated as an upstream component of existing waterbodies and environmentally sensitive aquatic features.

The dominant feature of the wetland is the macrophyte zone which comprises of vegetated marshes, shallow and deep pools.

Wetlands require reasonably large flat areas of land. Currently, bio-retention systems provide superior performance with a reduced footprint compared to wetlands. Given the relatively low rainfall and high evaporation that occurs in the region, there are also concerns in relation to constructed wetlands being dry for prolonged periods. Therefore this type of treatment device is not considered appropriate for the rail construction camp site.

### 4.1.2 Adopted Strategy

Based on the site constraints the following stormwater quality improvement devices and management practices are considered appropriate to be incorporated in the development of rail construction camp 3.

**Rainwater tanks and level spreader devices**

Due to the flat grades of the rail camp site it may not be possible to direct all roof area drainage to a piped drainage network that will be able to free drain to the nominated stormwater treatment and detention basins. Therefore in these instances it is suggested that the roof area drainage discharge to rainwater tank with a level spreader device attached to the outlet. As indicated above, this would assist in dispersing the outflows over a larger area to reduce the risk of erosion and the incidence of re-suspension of sediments.

**Vegetated Swales**

As grades across rail camp 3 are expected to be generally less than 4-5% the use of vegetated swales for stormwater treatment is considered appropriate. As noted above, due to the relatively flat grades across the subject site vegetated swales will be used for conveyance purposes throughout much of the site as an alternative to conventional piped drainage which is expected to be limited by depth.

**Sediment Basins**

As the primary target of this stormwater management strategy is to control soil erosion and minimise sediment transport from the camp site this type of device is considered the most appropriate control device for the rail construction camp.

With the lifespan of the construction camp anticipated to be approximately 2 years, the use of alternative devices such as bio-retention basins are limited as these types of devices generally take a period of approximately 2 years to appropriately establish.

The flexibility in the shape of sediment basins combined with the efficient pollutant retention rates for sediments that these systems provide make sediment basins ideal for the rail construction camp site.

In addition to the above listed stormwater management practices, other principals of water sensitive urban design that can be incorporated into the development of the rail construction camp include:

> Retention of existing drainage features, where possible;

> Protection of natural systems by limiting development to non-sensitive areas and providing adequate buffers between development and natural systems;

> Non-worsening of peak flow rates from site.

It should be noted that this stormwater management strategy has been based on a preliminary layout. Although stormwater treatment practices have been recommended for use in certain areas throughout the subject site, a number of treatment measures may be appropriate and the key principles of the stormwater management strategy will remain applicable despite potential layout changes.

Should the detailed design bring about changes to the proposed layout, Section 4.1.1 of this stormwater management strategy provides a list of alternative treatment practices that may be suitable for the site and could potentially be designed to meet the nominated water quality objectives. The key aim of this stormwater management strategy is that the practices listed as suitable for the site should be used in a manner which results in best practice stormwater management measures being incorporated into the development.

## 4.2 Stormwater Quantity

The intent of this stormwater quantity strategy for rail construction camp 3 is to manage runoff generated from the local contributing catchment area (i.e. the camp site area) only. Based on this, it is proposed to construct perimeter bunds along the upstream boundaries of the subject site to divert the local external contributing catchment areas around the camp site.

A regional hydrologic and hydraulic assessment of the railway corridor is currently being undertaken by others.

The purpose of this stormwater quantity management strategy is to avoid impacts on the downstream receiving properties and infrastructure, by ensuring that the peak flows discharging from the developed condition camp site area are equivalent to, or less than the peak flows expected from the existing condition site. It is proposed to incorporate an on-site detention basin into the rail camp site to control the developed condition peak flows discharging from the subject site for rainfall events up to and including the 100 year ARI event.

To control the peak rates of discharge from the proposed detention basin it will be necessary for the outlet arrangement to be designed to maintain peak flows equivalent to the existing condition peak discharges. It is noted that where a free draining piped outlet cannot be provided to drain the proposed detention basin within the footprint of the camp site area, a pump system will need to be provided.

The proposed detention basin will also be utilised as a sediment retention basin for water quality purposes. All water trapped within the sediment / detention basin is to be tested for compliance with the release criteria outlined in **Table 3-1** prior to a controlled release from the site or alternatively the water could be used for dust suppression or irrigation.

Due to the flat nature of the site, not all stormwater runoff generated within the camp site will be able to be conveyed to the proposed on-site detention basin with the use of a conventional pit and pipe drainage system. As a result it is proposed to use drainage swales to convey runoff to the nominated detention basin location.

The indicative location and minimum size of the proposed basin are shown on Cardno drawing number 7508/90/08/-3.02. Calculations for the sizing of the detention basin can be found in Section 6 of this report.

# 5 Stormwater Quality Assessment

As outlined above, the lifespan for Rail Construction Camp 3 is anticipated to be only approximately 2 years and therefore the operation of the camp site has been considered as a construction site for the lifetime of the rail construction project.

The works to be carried out on the site of rail construction camp 3 have the potential to increase the level of sediment laden runoff discharging from the site for the lifespan of the construction project. Based on this, the following assessment for the rail camp site has been undertaken to determine the on-site sediment retention storage requirements that will be necessary to retain the expected soil loss generated from the camp site construction area. Refer to Cardno drawing number 7508/90/08/-3.02 for the subject site local catchment areas adopted for the preliminary on-stormwater quality assessment.

## 5.1 Soil Loss Calculations

Data obtained from the Australian Soil Resource Information System on the 12th October 2012 shows the soils to be expected on the subject site are medium clays with an approximate clay content of 40 – 50%. The data obtained was from the national soil grid. This soil type is considered to be a dispersive soil (type D) and based on the Revised Universal Soil Loss Equation (RUSLE) the predicted soil loss rate has been estimated for each of the disturbed catchment areas located within the subject site.

Catchment parameters for the disturbed area of the subject site were based on existing contour information. These catchment parameters have been summarised in **Table 5-1** below.

**Table 5-1 Catchment Parameters**

| Catchment No. | Internal / Site Catchment Area (ha) | Approx. Average Site Slope (%) |
|---|---|---|
| A | 6.57 | 0.29 |
| B | 2.76 | 0.44 |

The results of the soil loss assessment using the revised soil loss equation are summarised in **Table 5-2** below. For more detailed information refer to the sediment loss calculations provided in Appendix C of this report.

**Table 5-2 Soil Loss Parameters**

| Catchment No. | Rainfall Erosivity Factor (R) | Soil Erodibility Factor (K) | Slope Length / Gradient Factor (LS) | Erosion Control Practice Factor (P) | Ground Cover (C) | Soil Loss (A) (t/ha/yr) | Sediment Storage Volume ($m^3$) |
|---|---|---|---|---|---|---|---|
| A | 2370 | 0.02 | 0.24 | 1.3 | 1.0 | 11 | 120 |
| B | 2370 | 0.02 | 0.24 | 1.3 | 1.0 | 11 | 50 |

Based on the information above, the soil loss within the disturbed area of catchments A and B have been estimated to be equivalent to Soil Loss Class 1 (0 to 150 tonnes/ha/yr), which classifies the site as a very low erosion risk as outlined in Table 3.1 of the „Best Practice Erosion and Sediment Control (2008)" guidelines prepared by the International Erosion Control Association – Australasia.

## 5.2 Sediment Basin Calculations

In conjunction with the above information, the calculations for the total sediment basin volumes have been carried out and shown in **Table 5-3** below.

**Table 5-3 Sediment Basin Calculations**

| Basin I.D | Volumetric Runoff Coefficient (Cv) | Catchment Area of Basin (A) | 5 day total rainfall depth (R) [85%ile, 5day | Settling Zone Volume (10xCvxAxR) | Total Basin Volume ($m^3$) |
|---|---|---|---|---|---|
| A | 0.58 | 6.57 | 32.50 | 1238 | 1358 |
| B | 0.58 | 2.76 | 32.50 | 520 | 570 |

A comparison of the total storage volumes required for sediment retention and for on-site detention will be carried out in Section 6 of this report. This comparison will be made to determine which design conditions will be considered as the critical case.

# 6 Stormwater Quantity Assessment

The local catchment peak discharges from the site of rail construction camp 3 are expected to increase in comparison to the existing condition peak flows as a result of the proposed development. This expected increase in peak discharge is the result of the increase in the percentage of impervious area and the reduction in flow travel time post development. Based on this, the following assessment of the pre-development and post development local catchment flows for the rail camp site has been undertaken to determine if there is an increase in post development flows from the subject site, and estimate the on-site detention storage requirements that may be necessary to attenuate any increase in flows discharging off-site. Refer to Cardno drawing number 7508/90/08/-3.02 for the subject site local catchment areas adopted for the preliminary on-site detention assessment.

## 6.1 Existing Conditions

The Rational Method was used to estimate the existing condition peak flow rates discharging from the local catchment areas of rail construction camp 3.

The Coefficient of Runoff value for the pre-developed site conditions was determined from Tables 4.05.3(a) *(Table of C10 values)* and 4.05.3(b) *(C10 values for Zero Fraction Impervious)* of the Queensland Urban Drainage Manual 2007 (QUDM). Based on available data of the subject site, the existing condition of the rail camp site was considered to have a fraction impervious of 0.0 and a land description equivalent to poor grass cover / low density pasture. A resultant C10 value of 0.66 was adopted for the pre-development site conditions.

A rainfall intensity frequency duration (IFD) chart was developed for the camp 3 area using the design rainfall IFD data available from the Bureau of Meteorology (BOM) website.

The Time of Concentration value for the existing site conditions of camp 3 was determined in accordance with Section 4.06 of QUDM. The Bransby-Williams[ii] equation was used to estimate the overland flow travel time for the camp 3 local catchment area. The pre-development flow travel time for rail camp 3 was estimated based on the following parameters shown in **Table 6-1** below.

**Table 6-1 Existing Time of Concentration Parameters**

| Catchment | Catchment Area (ha) | Stream flow path length (m) | Equal area of slope (%) |
|---|---|---|---|
| A | 6.57 | 340 | 0.29 |
| B | 2.75 | 224 | 0.44 |

A summary of the parameters determined to estimate the pre-development 2, 5, 10, 20, 50 and 100 year ARI peak flow rates from the local catchment areas of rail construction camp 3 are provided in **Table 6-2** and **Table 6-3** below.

**Table 6-2 Catchment A Existing Condition Discharge Parameters**

| Parameter | 2 yr | 5 yr | 10 yr | 20 yr | 50 yr | 100 yr |
|---|---|---|---|---|---|---|
| Coefficient of Runoff | 0.56 | 0.63 | 0.66 | 0.69 | 0.76 | 0.79 |
| Area (ha) | 6.57 | 6.57 | 6.57 | 6.57 | 6.57 | 6.57 |
| Time of Concentration (min) | 20 | 20 | 20 | 20 | 20 | 20 |
| Rainfall Intensity (mm/hr) | 69.2 | 90.9 | 104 | 121 | 144 | 162 |
| Discharge ($m^3/s$) | 0.71 | 1.04 | 1.25 | 1.53 | 1.99 | 2.34 |

**Table 6-3 Catchment B Existing Condition Discharge Parameters**

| Parameter | 2 yr | 5 yr | 10 yr | 20 yr | 50 yr | 100 yr |
|---|---|---|---|---|---|---|
| Coefficient of Runoff | 0.56 | 0.63 | 0.66 | 0.69 | 0.76 | 0.79 |
| Area (ha) | 2.76 | 2.76 | 2.76 | 2.76 | 2.76 | 2.76 |
| Time of Concentration (min) | 15 | 15 | 15 | 15 | 15 | 15 |
| Rainfall Intensity (mm/hr) | 80 | 102 | 120 | 137 | 162 | 185 |
| Discharge ($m^3/s$) | 0.34 | 0.49 | 0.61 | 0.73 | 0.94 | 1.12 |

## 6.2 Developed Condition

Similar to the existing condition flows, the Rational Method was used to estimate the peak flow rates discharging from the developed condition local catchment area of rail camp 3.

As discussed above, the Coefficient of Runoff value for the developed site conditions was determined from Table 4.05.3(a) of QUDM. Based on the available rail construction camp 3 development layout plan, the developed condition of the rail camp site was considered to have a fraction impervious of 0.60, with a resultant $C_{10}$ value of 0.75 adopted for the post-development site conditions.

The Time of Concentration value for the developed site conditions was determined for the contributing local catchment area in accordance with Section 4.06 of QUDM. From Table 4.06.2 *(Recommended roof drainage system travel times)* a standard inlet time of 5 minutes was adopted for the flow travel time to the surface drainage.

Due to the flat grades expected across the development area of rail camp 3, surface drainage utilised throughout the camp site is expected to be limited to the use of swale drains / open channels. Pipe drainage is expected to be limited to cross culverts utilised under roadways and footpaths to maintain trafficability during lower ARI events. Based on this, the additional surface drainage travel time was estimated using Figure 4.09 *(Flow travel time in pipes and channels)* of QUDM.

A summary of the parameters determined to calculate the 2, 5, 10, 20, 50 and 100 year ARI developed peak flow rates (with no detention) from the contributing local catchment areas of rail camp 3 are provided in **Table 6-4** and **Table 6-5** below.

**Table 6-4 Catchment A Developed Condition Discharge Parameters**

| Parameter | 2 yr | 5 yr | 10 yr | 20 yr | 50 yr | 100 yr |
|---|---|---|---|---|---|---|
| Coefficient of Runoff | 0.64 | 0.71 | 0.75 | 0.79 | 0.86 | 0.90 |
| Area (ha) | 6.57 | 6.57 | 6.57 | 6.57 | 6.57 | 6.57 |
| Time of Concentration (min) | 10 | 10 | 10 | 10 | 10 | 10 |
| Rainfall Intensity (mm/hr) | 90.6 | 120 | 137 | 160 | 191 | 215 |
| Discharge ($m^3/s$) | 1.05 | 1.56 | 1.88 | 2.30 | 3.01 | 3.53 |

**Table 6-5 Catchment B Developed Condition Discharge Parameters**

| Parameter | 2 yr | 5 yr | 10 yr | 20 yr | 50 yr | 100 yr |
|---|---|---|---|---|---|---|
| Coefficient of Runoff | 0.64 | 0.71 | 0.75 | 0.79 | 0.86 | 0.90 |
| Area (ha) | 2.76 | 2.76 | 2.76 | 2.76 | 2.76 | 2.76 |
| Time of Concentration (min) | 6 | 6 | 6 | 6 | 6 | 6 |
| Rainfall Intensity (mm/hr) | 109 | 144 | 166 | 194 | 231 | 260 |
| Discharge ($m^3/s$) | 0.53 | 0.79 | 0.95 | 1.17 | 1.53 | 1.79 |

A comparison of the existing condition peak flows in **Table 6-2** and **Table 6-3** with the developed condition peak flows in **Table 6-4** and **Table 6-5** found that there is expected to be an increase in the peak flows discharging off site due to the increase in impervious area and the reduction in flow travel time on site.

On-site detention is proposed to be incorporated into the development works. This is to avoid impacts on downstream properties and infrastructure and to maintain the existing peak flow rate of runoff discharging from the developed site for all rainfall events up to and including the local catchment 100 year ARI event. The proposed on-site detention will help control the rate of discharge leaving the site.

## 6.3 Preliminary On-Site Detention

A preliminary assessment of the on-site detention storage requirements for the proposed rail camp 3 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 6.2 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 rail camp site 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 $1905m^3$ for catchment A and 650 $m^3$ catchment B 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 be verified as part of the detailed design of the civil works for rail camp 3.

It is proposed to incorporate the stormwater detention and treatment into one common basin for each catchment. A comparison of the total storage volumes required for sediment retention, as outlined in Section 5 of this report, and for on-site stormwater detention has indicated that the volume required for on-site stormwater detention is more critical. Therefore the total storage volume adopted for the rail camp 3 stormwater treatment and detention basin A is a minimum of $1905m^3$ and basin B is a minimum of $650m^3$. Refer to Cardno drawing number 7508/90/08/-3.02 for the indicative layout and configuration of the stormwater treatment and detention basins for rail construction camp 3.

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.

## 6.4 Other Drainage Issues

### 6.4.1 Diversion of External Catchments

As the intent of this strategy is to manage the runoff from the rail construction camp area only, it is proposed to construct perimeter bunds along the upstream boundaries of the subject site to divert the local external contributing catchment areas around the camp site. Refer to Cardno drawing number 7508/90/08/-3.02 for the indicative locations of the external catchment diversion bunds proposed for rail camp 3. The final alignment and profile required for the diversion bunds will be confirmed as part of the detailed design of the civil works for rail camp 3.

# 7 Monitoring and Maintenance Schedules

## 7.1 Monitoring Schedule

A monitoring program will be established for the stormwater management devices as outlined below and shown in **Table 7-1**, **Table 7-2**, **Table 7-3** and **Table 7-4**.

**Table 7-1 Monitoring Program for Sediment Basins**

| MONITORING ACTIVITY | FREQUENCY |
|---|---|
| Inspect sediment basin | - During construction<br>- After each runoff event<br>- Weekly during wet season<br>- Prior to “stop work” or “site shutdown” |
| Inspect submerged inflow pipes | After each runoff event |
| Testing of Suspended Solids, pH, and Dissolved Oxygen | - Prior to controlled release<br>- Immediately following rain events > 25mm in a 24 hour period |

To maximise the effectiveness of the stormwater management measures for the roof drainage areas that do not connect directly to a piped drainage system, the following activities are suggested to regularly visually monitor the condition of the rainwater tanks and level spreader outlets.

**Table 7-2 Monitoring Program for Rainwater Tanks**

| MONITORING ACTIVITY | FREQUENCY |
|---|---|
| Observe water surcharging from surcharge weir/pipe/pit of tank | After major storm events > 25mm in 24 hrs |
| Inspect silt / litter trap | After major storm events > 25mm in 24 hrs or 3 monthly |
| Inspect structural integrity / condition of device | 6 monthly |

**Table 7-3 Monitoring Program for Level Spreader Devices**

| MONITORING ACTIVITY | RECOMMENDED FREQUENCY |
|---|---|
| Inspect for incidents of erosion / scour of soils | After major storm events > 25mm in 24 hrs or 3 monthly |
| Inspect for weed inundation / litter accumulation | 3 monthly |
| Inspect for excessive wear & damage | |
| Inspect for build-up of sediments | |
| Inspect health of vegetation | |

In the case of vegetated buffers and vegetated swales, the collection of water quality samples is unlikely to yield valuable results. Given this, no sample based monitoring is recommended for these treatment systems. Instead, an inspection based monitoring and maintenance scheme as detailed below is considered appropriate for these types of devices.

**Table 7-4 Monitoring Program for Vegetated Swales**

| MONITORING ACTIVITY | FREQUENCY |
|---|---|
| Inspect for erosion / scour of invert & batters | After major storm events > 25mm in 24 hrs or 3 monthly |
| Inspect for weed inundation / litter & debris accumulation | 3 monthly |
| Inspect for inappropriate access, excessive wear & damage to invert & batters | 3 monthly |
| Inspect for build-up of sediments | 3 monthly |
| Inspect condition of vegetation such as vegetation health & density | 3 monthly |
| Inspect condition of inlet & outlet structures | After major storm events > 25mm in 24 hrs or 3 monthly |

## 7.2 Maintenance Schedule

The on-going performance of the stormwater management devices will be dependent on the maintenance conducted.

The maintenance programs as outlined below and detailed in **Table 7-5**, **Table 7-6**, **Table 7-7** and **Table 7-8** are to be implemented for the stormwater treatment devices.

**Table 7-5 Maintenance Program for Sediment Basins**

| MAINTENANCE ACTIVITY | FREQUENCY |
|---|---|
| Clean out accumulated sediment | Every 2 years as per sediment basin calculations or as required by results of monitoring |
| Check visible pipes for leaks | 6 monthly or as required by results of monitoring |
| Check fill material for settlement | 6 monthly or as required by results of monitoring |
| Remove all trash from basin and riser | 6 monthly or as required by results of monitoring |
| De-silt submerged inflow pipes | 6 monthly or as required by results of monitoring |

Sediment basins must be operated and maintained in an effective operational condition. These structures must not be allowed to accumulate sediment volumes in excess of forty per cent (40%) sediment storage design capacity. Where sedimentation basins are used a marker shall be placed within the basin to show the level above which the design capacity occurs. Materials removed from sediment retention devices must be disposed of in a manner approved by the consent authority that does not cause pollution.

**Table 7-6 Maintenance Program for Rainwater Tanks**

| MAINTENANCE ACTIVITY | FREQUENCY |
|---|---|
| Clean out silt / litter trap | 6 monthly or as required by results of monitoring |
| Remove debris from surcharge weir / pipe / pit | |
| Dewater and clean out / de-silt tank | As required by monitoring |

**Table 7-7 Maintenance Program for Level Spreader Devices**

| MAINTENANCE ACTIVITY | FREQUENCY |
|---|---|
| Repairs to landscaping / level spreaders | As required by monitoring |
| Watering, re-vegetating, grass cutting | |
| Removal of litter, debris, weeds & excessive sediment build up | |

**Table 7-8 Maintenance Program for Vegetated Swales**

| MAINTENANCE ACTIVITY | FREQUENCY |
|---|---|
| Repairs to swale profile | As required by results of monitoring |
| Irrigating, infilling of vegetation to maintain sufficient cover | As required by results of monitoring |
| Removal of litter, debris, weeds & excessive sediment build up | 6 monthly or as required by results of monitoring |
| Mowing / pruning of swale vegetation to maintain optimal vegetation height | As required by results of monitoring |

Reforming of any swale profile will be required when the design flow area of the swale is reduced by 25%.

# 8 Conclusions

In preparing this conceptual stormwater management strategy preliminary water quality and quantity assessments were undertaken for rail construction camp 3.

The objectives of this stormwater management strategy were to meet the performance criteria outlined in **Table 3-1** of this report. The outcome of this preliminary investigation has recommended the inclusion of a number of stormwater quality and quantity management measures detailed herein and summarised as follows:

> Numerous vegetated swales for treatment and conveyance purposes as indicatively shown on Cardno 7508/90/08/-3.02; and

> Two constructed sediment basins as described in Sections 5 and 6, and indicatively shown on Cardno 7508/90/08/-3.02.

The detailed design of the treatment and detention devices will need to comply with the information outlined within this stormwater management strategy, and with the relevant authority guidelines.

# 9 References

Department of Environment and Resource Management 2009, *Queensland Water Quality Guidelines (2009)*, Version 3 September 2009, Brisbane, QLD

Water by Design 2010, *MUSIC Modelling Guidelines Version 1.0 – 2010*, Brisbane, QLD

International Erosion Control Association (Australasia) 2008, *Best Practice Erosion and Sediment Control*, November 2008, Picton, NSW

Department of Natural Resources and Water 2007, *Queensland Urban Drainage Manual 2007 (QUDM)*, Volume 1 Second Edition 2007, Brisbane, QLD

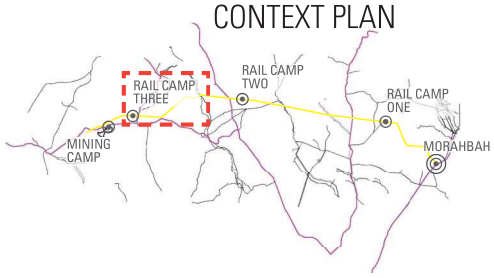
# APPENDIX A

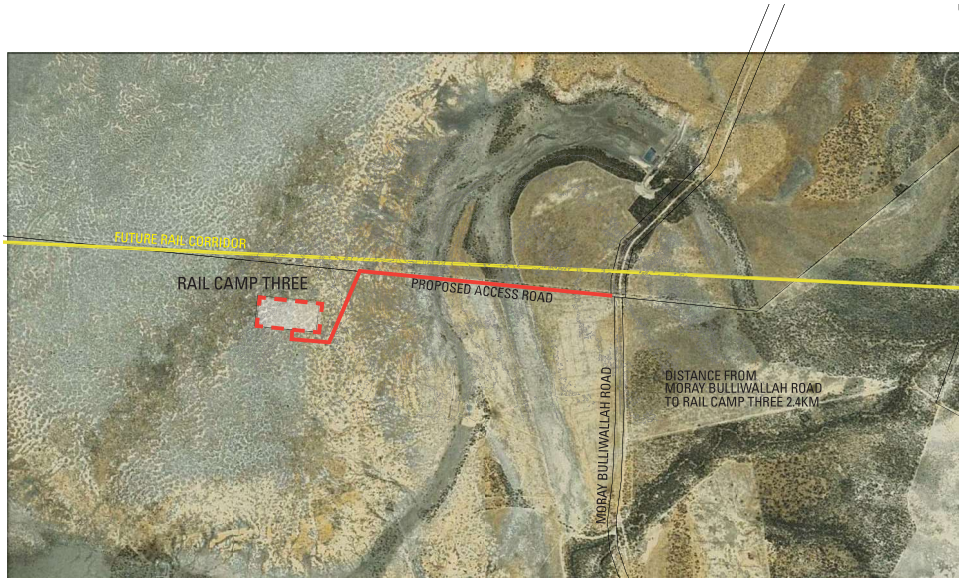
## REFERENCE DRAWINGS

Cardno
Shaping the Future

# RAILCAMP THREE

## CONTEXT PLAN




scale 1:15,000 @ A3

TYPICAL SITE PHOTOS









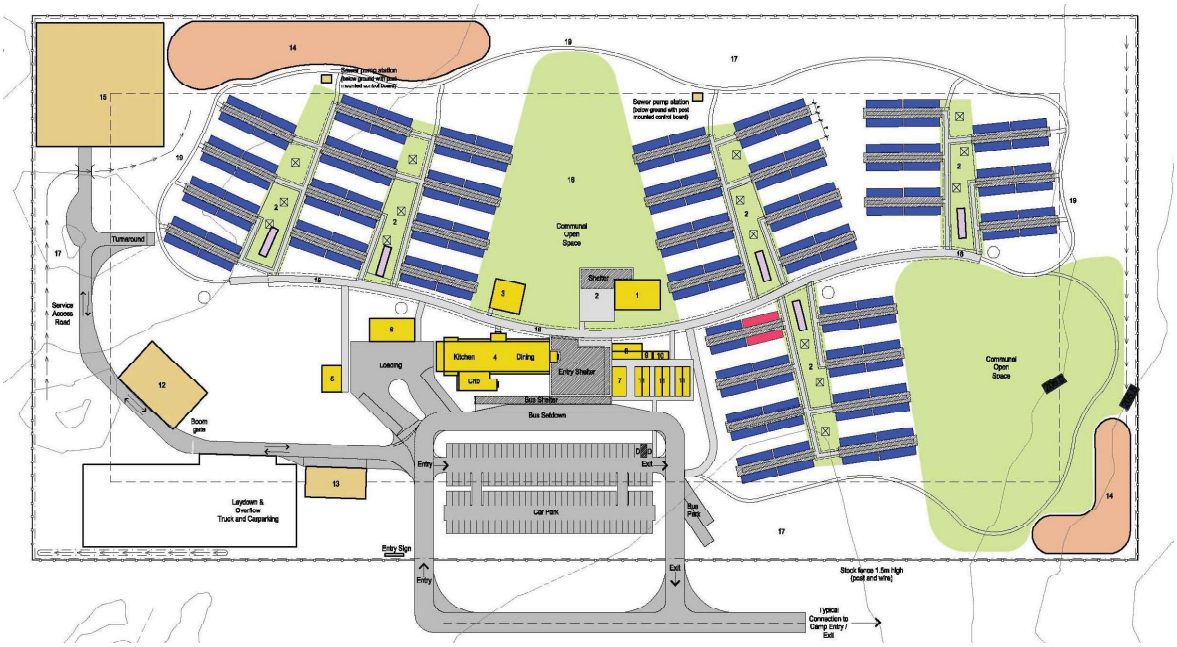
Cardno
Shaping the Future

landscape architecture
urban design
environmental management

ADAMIN MINING Pty Ltd **RAIL CAMP 3**

| DATE | DRAWING NO | ISSUE |
|---|---|---|
| **18.10.12** | **SP126801 -RC03-01** | **A** |

# RAILCAMP THREE
## PLAN




LEGEND

- COMMUNAL BUILDING
- ACCOMMODATION UNIT
- DISABLED UNIT
- LAUNDRY
- PATH
- INFRASTRUCTURE
- COMMUNAL OPEN SPACE
- DETENTION BASIN

1 - Recreation Centre/ Wet Mess IT & Telephone
2 - BBQ & Shelter Areas
3 - Gym
4 - Kitchen/Dining
5 - Waste
6 - Maintenance / Linen Store
7 - Office
8 - Ablution M&F
9 - Ablution (Disabled)
10 - First Aid
11 - Lockers
12 - Water Treatment Plant
13 - Generator
14 - Detention Basin
15 - Sewerage Treatment Plant
16 - Communal Open Space
17 - Fire Break (30M wide)
18 - Central Path (3M wide) with Freestanding Awning
19 - Walking Track / Maintenance (1.2M - 2.5M wide)

- Fire Tank Water
- Catch Drain
- Perimeter Bund
- Perimeter Fence

| | |
|---|---|
| ACCOMMODATION UNITS | 405 |
| DISABLED UNITS | 2 |
| CAR PARKING | 125 |
| DISABLED CARPARKING | 2 |
| BUS PARKING | 2 |
| EFFULENT DISPOSAL (based on 100m² per person) | 4 ha |
| DETENTION BASIN | .34ha |
| TOTAL OPEN SPACE (including firebreak) | 5.66 ha |
| TOTAL SITE AREA | 9.38 ha |

0 10 20 30 40 50 100
Scale 1:1500 @ A3 - Dimensions in metres

Cardno Shaping the Future

landscape architecture
urban design
environmental management

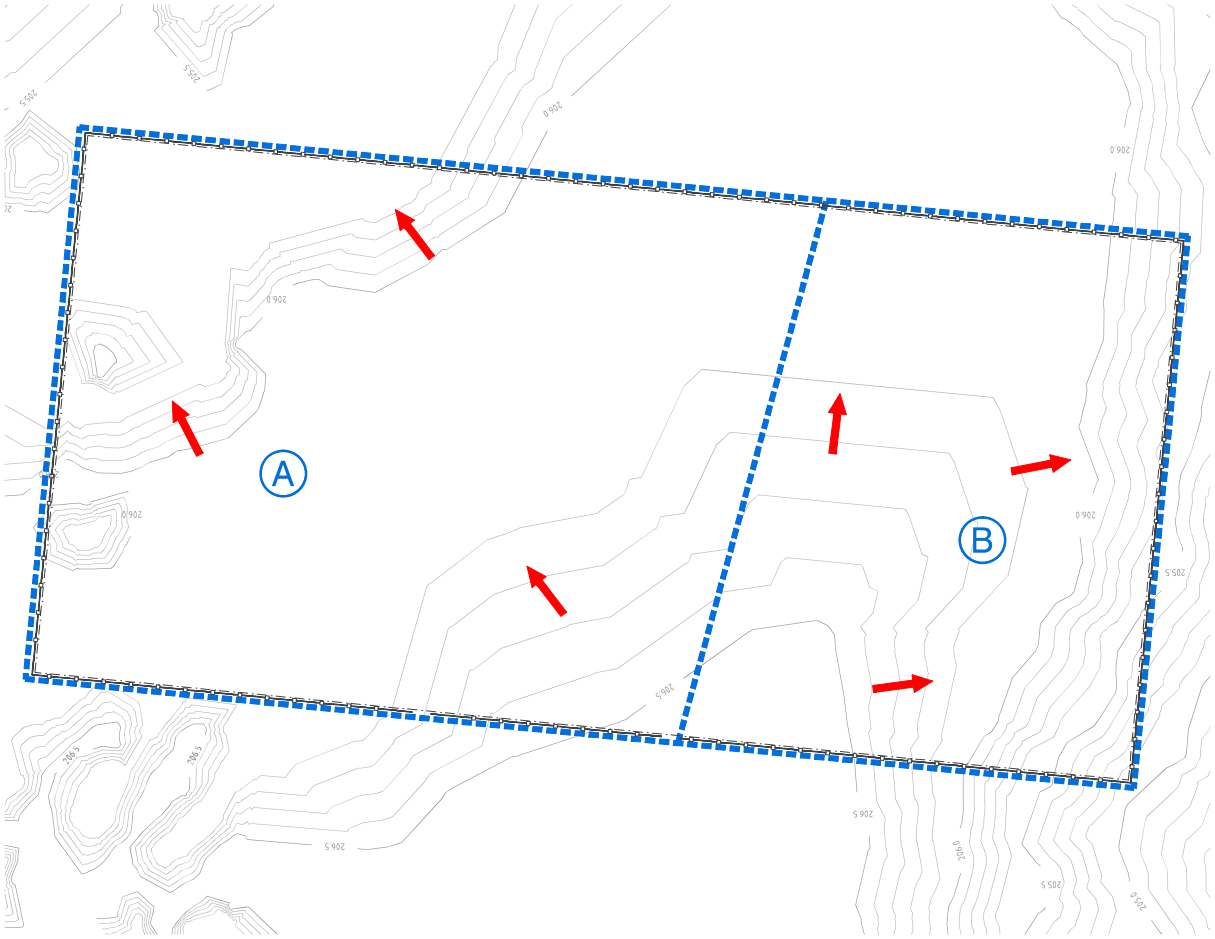
ADAMIN MINING Pty Ltd **RAIL CAMP 3**

| DATE | DRAWING NO | ISSUE |
|---|---|---|
| 18.10.12 | SP126801 -RC03-02 | A |

# APPENDIX B

## FIGURES & SKETCHES

Cardno
Shaping the Future




PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

**LEGEND**

- 258.0 — EXISTING SURFACE CONTOURS (0.1m INTERVALS)
- EXISTING OVERLAND FLOW DIRECTION
- CATCHMENT BOUNDARY
- (A) CATCHMENT LABEL

**NOTES:**

1. CONTOURS ARE BASED ON AERIAL SURVEY. DETAILED SURVEY WILL BE REQUIRED TO DETERMINE CONTRIBUTING CATCHMENT AREAS.

ADANI MINING PTY LTD - CARMICHAEL COAL MINE PROJECT

RAIL CAMP 3 - STORMWATER MANAGEMENT STRATEGY
EXISTING FEATURES LAYOUT PLAN

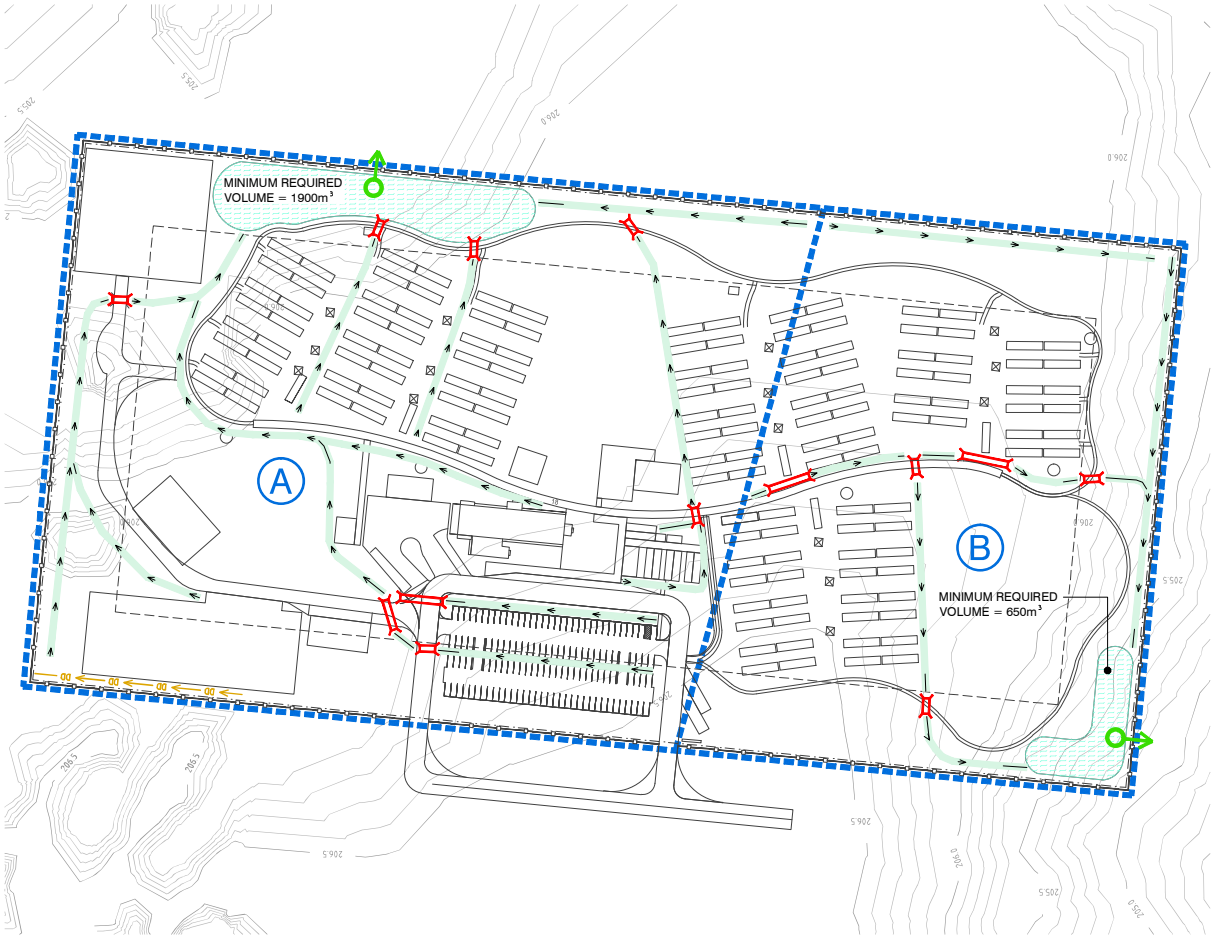
The contents of this plan are conceptual only. All areas and dimensions are approximate and subject to relevant studies, Survey, Engineering and Council approval.

Cardno (Qld) Pty Ltd ACN: 051 074 992
Level 2 Podium Level - Emerald Lakes Town Centre
1/3321 Central Place, Gold Coast, Qld 4211
PO Box 391, Carrara, Qld 4211
Tel:07 5539 9333 Fax:07 5536 4647
Email: gco@cardno.com.au Web: www.cardno.com.au

REF NUMBER: 7508/90/08-3.01 (A)
DATE: 19/10/2012

7.5 0 7.5 15 22.5 30 37.5m
1:750 – A1 1:1500 – A3

P:\7508990 – Adani Rail\03 Design\Cad\03 Sketches\SWMP SKETCHES\7508908 – CAMP 3




PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

## LEGEND

- EXISTING SURFACE CONTOURS (0.1m INTERVALS)
- DEVELOPED CATCHMENT BOUNDARY
- A — CATCHMENT LABEL
- INTERNAL STORMWATER DRAINAGE SWALE AND FLOW DIRECTION (INDICATIVE LOCATION ONLY)
- PROPOSED CULVERT (INDICATIVE LOCATION ONLY)
- DD — PROPOSED DIVERSION DRAIN. REFER NOTE 6.
- PROPOSED SEDIMENT/DETENTION BASIN AND INDICATIVE OUTLET. REFER NOTE 7.

## NOTES:

1. CONTOURS ARE BASED ON AERIAL SURVEY. DETAILED SURVEY WILL BE REQUIRED TO CONFIRM CONTRIBUTING CATCHMENT AREAS FOR DETAILED DESIGN.
2. WHERE THE ROOF AREA DRAINAGE CANNOT BE PROVIDED WITH A FREE DRAINING CONNECTION TO THE PROPOSED SEDIMENT/DETENTION BASIN THE ROOF AREA DRAINAGE TO DISCHARGE TO RAINWATER TANK WITH A LEVEL SPREADER ATTACHED TO OUTLET.
3. SOME MINOR RE-GRADING WILL BE REQUIRED ONCE EXACT SITE CONDITIONS ARE DETERMINED.
4. WHERE A FREE DRAINING PIPED OUTLET CANNOT BE PROVIDED TO DRAIN THE SEDIMENT/DETENTION BASIN WITHIN THE FOOTPRINT OF THE CAMP SITE AREA, A PUMP WILL NEED TO BE PROVIDED.
5. ALL WATER TRAPPED WITHIN THE SEDIMENT/DETENTION BASIN IS TO BE TESTED FOR COMPLIANCE WITH THE RELEASE CRITERIA OUTLINED IN THE SWMS PRIOR TO A CONTROLLED RELEASE OFF-SITE.
6. CONSTRUCT DIVERSION BUND TO DIVERT EXTERNAL LOCAL CONTRIBUTING CATCHMENTS AROUND THE RAIL CAMP SITE. EXTENT AND SIZE OF THE BUND TO BE CONFIRMED AS PART OF THE DETAILED DESIGN. VELOCITY CONTROL MEASURES TO BE PROVIDED AT THE DOWNSTREAM END OF DIVERSION BUNDS TO DISPERSE CONCENTRATED FLOWS.
7. BASIN SPILLWAY LOCATION AND SIZE TO BE CONFIRMED AS PART OF THE DETAILED DESIGN.

# ADANI MINING PTY LTD - CARMICHAEL COAL MINE PROJECT

RAIL CAMP 3 - STORMWATER MANAGEMENT STRATEGY
DEVELOPED CONDITIONS LAYOUT PLAN

The contents of this plan are conceptual only. All areas and dimensions are approximate and subject to relevant studies, Survey, Engineering and Council approval.

Cardno (Qld) Pty Ltd ACN: 051 074 992
Level 2 Podium Level - Emerald Lakes Town Centre
1/3321 Central Place, Gold Coast, Qld 4211
PO Box 391, Carrara, Qld 4211
Tel:07 5539 9333 Fax:07 5536 4647
Email: gco@cardno.com.au Web: www.cardno.com.au

REF NUMBER: 7508/90/08-3.02 (A)
DATE: 19/10/2012

7.5 0 7.5 15 22.5 30 37.5m
1:750 - A1 1:1500 - A3

P:\7508\90 - Adani Rail\03 Design\Civil\03 Sketches\SWMP SKETCHES\7508908 - CAMP 3

# APPENDIX C

## WATER QUALITY CALCULATIONS

Cardno
Shaping the Future

## VOLUME OF SEDIMENT BASIN: TYPE D SOILS

**PROJECT:-** Carmichael Coal Mine - Camp No. 3 Catchment A
**DESIGNER:-** P.H
**JOB No:-** 750890
**DATE:-** 18/Oct/12

**Basin Volume = Settling Zone Volume + Sediment Storage Zone Volume**

### Sediment Storage Zone Volume

Sediment storage zone taken as 50% of settling zone capacity or
the storage capacity required for the 2 year soil loss as calculated by the RUSLE

**A** **R.K.LS.P.C (RUSLE (Appendix E - IECA))**

| | | | | | |
|---|---|---|---|---|---|
| **A** | = | Computed soil loss (tonnes/ha/yr) | | | |
| **S** | = | 2 Year ARI, 6 Hour Storm Event | = | 10.40 | *mm/hr* |
| **R** | = | Rainfall Erosivity Factor | = | 1804 | (Appendix E Tables E1 or E2 - IECA) |
| or | = | $164.74\ (1.1177)^{S}\ S^{0.6444}$ | = | **2370.05** | *(use if no chart exists)* |
| **R** | = | from above | = | 2370 | |
| **K** | = | Soil Erodibility Factor | = | 0.02 | (Appendix E Tables E4 or E5 - IECA) |
| **LS** | = | Slope Length / Gradient Factor | = | 0.24 | (Appendix E Table E3 - IECA) |
| **P** | = | Erosion Control Practice Factor | = | 1.30 | (Appendix E Table E11 - IECA) |
| **C** | = | Ground Cover | = | 1.00 | (Appendix E Tables E6 - E10 - IECA) |

**A Soil Loss** = **11.092** **(tonnes/ha/yr)**

**V Volume** = **9** **($m^3$/ha/yr)**

Disturbed Surface Area (ha) = 6.57 *ha*

**Computed soil loss** = **59** *$m^3$/yr*

**Sediment Storage Zone Volume** = **120** *$m^3$ (Assuming regeneration after 2 years)*

### Settling Zone Volume

**Settling Zone Volume** = **10 x Cv x A x R(y%ile, 5day)**

| | | | | | |
|---|---|---|---|---|---|
| **10** | = | Unit Conversion Factor | = | 10.00 | |
| **Cv** | = | Volumetric Runoff Coefficient | = | 0.58 | (Appendix B Table B7 - IECA) |
| **A** | = | Catchment Area of the Basin (ha) | = | 6.57 | *ha* |
| **R(y%ile, 5day)** | = | 5 day total rainfall depth (mm) which is not exceeded in y percent of rainfall events. | = | 32.50 | (Appendix B Tables B5 or B6 - IECA) |

**Settling Zone** = **1238.45** **$m^3$ Settling Zone Volume**

**Depth of Basin** = Basin Depth, min. 0.6 m = 1.00 *m*

**TOTAL BASIN VOLUME** = **Settling Zone Volume + Sediment Storage Zone Volume**
= **1358.45** **$m^3$**
= **1358** **$m^3$**

**BASIN VOLUME PER HECTARE** = **207** **$m^3$**

**Using a ratio of 1:3, pond size** = **21 x 64 m**

## VOLUME OF SEDIMENT BASIN: TYPE D SOILS

**PROJECT:-** Carmichael Coal Mine - Camp No. 3 Catchment B
**DESIGNER:-** P.H
**JOB No:-** 750890
**DATE:-** 11/Oct/12

**Basin Volume = Settling Zone Volume + Sediment Storage Zone Volume**

### Sediment Storage Zone Volume

Sediment storage zone taken as 50% of settling zone capacity or
the storage capacity required for the 2 year soil loss as calculated by the RUSLE

**A** **R.K.LS.P.C (RUSLE (Appendix E - IECA))**

| | | | | | |
|---|---|---|---|---|---|
| **A** | = | Computed soil loss (tonnes/ha/yr) | | | |
| **S** | = | 2 Year ARI, 6 Hour Storm Event | = | 10.40 | *mm/hr* |
| **R** | = | Rainfall Erosivity Factor | = | 1804 | (Appendix E Tables E1 or E2 - IECA) |
| or | = | $164.74\ (1.1177)^{S}\ S^{0.6444}$ | = | **2370.05** | *(use if no chart exists)* |
| **R** | = | from above | = | 2370 | |
| **K** | = | Soil Erodibility Factor | = | 0.02 | (Appendix E Tables E4 or E5 - IECA) |
| **LS** | = | Slope Length / Gradient Factor | = | 0.24 | (Appendix E Table E3 - IECA) |
| **P** | = | Erosion Control Practice Factor | = | 1.30 | (Appendix E Table E11 - IECA) |
| **C** | = | Ground Cover | = | 1.00 | (Appendix E Tables E6 - E10 - IECA) |

**A Soil Loss** = **11.092** **(tonnes/ha/yr)**

**V Volume** = **9** **($m^3$/ha/yr)**

Disturbed Surface Area (ha) = 2.76 *ha*

**Computed soil loss** = **25** *$m^3$/yr*

**Sediment Storage Zone Volume** = **50** *$m^3$ (Assuming regeneration after 2 years)*

### Settling Zone Volume

**Settling Zone Volume** = **10 x Cv x A x R(y%ile, 5day)**

| | | | | | |
|---|---|---|---|---|---|
| **10** | = | Unit Conversion Factor | = | 10.00 | |
| **Cv** | = | Volumetric Runoff Coefficient | = | 0.58 | (Appendix B Table B7 - IECA) |
| **A** | = | Catchment Area of the Basin (ha) | = | 2.76 | *ha* |
| **R(y%ile, 5day)** | = | 5 day total rainfall depth (mm) which is not exceeded in y percent of rainfall events. | = | 32.50 | (Appendix B Tables B5 or B6 - IECA) |

**Settling Zone** = **520.26** **$m^3$ Settling Zone Volume**

**Depth of Basin** = Basin Depth, min. 0.6 m = 1.00 *m*

**TOTAL BASIN VOLUME** = **Settling Zone Volume + Sediment Storage Zone Volume**
= **569.96** **$m^3$**
= **570** **$m^3$**

**BASIN VOLUME PER HECTARE** = **207** **$m^3$**

**Using a ratio of 1:3, pond size** = **14 x 41** **m**

# APPENDIX D

## WATER QUANTITY CALCULATIONS

Cardno
Shaping the Future

**Camp Site No.3 - 2 year ARI flow**

**Existing Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_2xC_{10}$ | 0.56 | |
| $C_2$ | 0.56 | |
| Time of conc | 20 | mins |
| Intensity | 69.2 | mm/hr |
| Flow | 0.71 | $m^3/s$ |
| Total Flow | 0.71 | $m^3/s$ |
| Volume | 850.2 | $m^3$ |

**Developed Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_2xC_{10}$ | 0.64 | |
| $C_2$ | 0.64 | |
| Time of conc | 10 | mins |
| Intensity | 90.6 | mm/hr |
| Flow | 1.05 | $m^3/s$ |
| Total Flow | 1.05 | $m^3/s$ |
| Volume | 632.4 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 1.05 | $m^3/s$ |
| Peak outflow | 0.71 | $m^3/s$ |
| Volume | 843.26 | $m^3$ |
| r | 0.33 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 152.59 | 276.47 | 160.33 | 214.53 | 276.47 |

Applying peak flow only factor 2

Required volume is - 553 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 29.6 | 12.0 | 354.7 | |
| 1.0 | 37.6 | 20.0 | 751.2 | 552.9 |

**Existing Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_2xC_{10}$ | 0.56 | |
| $C_2$ | 0.56 | |
| Time of cor | 15 | mins |
| Intensity | 80 | mm/hr |
| Flow | 0.34 | $m^3/s$ |
| Total Flow | 0.34 | $m^3/s$ |
| Volume | 309.7 | $m^3$ |

**Developed Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_2xC_{10}$ | 0.64 | |
| $C_2$ | 0.64 | |
| Time of cor | 6 | mins |
| Intensity | 109 | mm/hr |
| Flow | 0.53 | $m^3/s$ |
| Total Flow | 0.53 | $m^3/s$ |
| Volume | 191.8 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 0.53 | $m^3/s$ |
| Peak outflo | 0.34 | $m^3/s$ |
| Volume | 255.71 | $m^3$ |
| r | 0.35 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 51.56 | 90.56 | 54.00 | 71.06 | 90.56 |

Applying peak flow only factor 2

Required volume is - 181 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 6.3 | 12.0 | 75.8 | |
| 1.0 | 14.3 | 20.0 | 286.4 | 181.1 |

**Camp Site No.3 - 5 year ARI flow**

**Existing Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_5xC_{10}$ | 0.63 | |
| $C_5$ | 0.63 | |
| Time of conc | 20 | mins |
| Intensity | 90.9 | mm/hr |
| Flow | 1.04 | $m^3/s$ |
| Total Flow | 1.04 | $m^3/s$ |
| Volume | 1248.2 | $m^3$ |

**Developed Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_5xC_{10}$ | 0.71 | |
| $C_5$ | 0.71 | |
| Time of conc | 10 | mins |
| Intensity | 120 | mm/hr |
| Flow | 1.56 | $m^3/s$ |
| Total Flow | 1.56 | $m^3/s$ |
| Volume | 936.2 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 1.56 | $m^3/s$ |
| Peak outflow | 1.04 | $m^3/s$ |
| Volume | 1248.30 | $m^3$ |
| r | 0.33 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 231.23 | 416.18 | 242.79 | 323.71 | 416.18 |

Applying peak flow only factor 2

Required volume is - 832 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 47.0 | 12.0 | 564.3 | |
| 1.0 | 55.0 | 20.0 | 1100.5 | 832.4 |

**Existing Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_5xC_{10}$ | 0.63 | |
| $C_5$ | 0.63 | |
| Time of cor | 15 | mins |
| Intensity | 102 | mm/hr |
| Flow | 0.49 | $m^3/s$ |
| Total Flow | 0.49 | $m^3/s$ |
| Volume | 441.3 | $m^3$ |

**Developed Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_5xC_{10}$ | 0.71 | |
| $C_5$ | 0.71 | |
| Time of cor | 6 | mins |
| Intensity | 144 | mm/hr |
| Flow | 0.79 | $m^3/s$ |
| Total Flow | 0.79 | $m^3/s$ |
| Volume | 283.2 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 0.79 | $m^3/s$ |
| Peak outflo | 0.49 | $m^3/s$ |
| Volume | 377.57 | $m^3$ |
| r | 0.38 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 83.12 | 142.22 | 86.81 | 112.67 | 142.22 |

Applying peak flow only factor 2

Required volume is - 284 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 12.8 | 12.0 | 153.3 | |
| 1.0 | 20.8 | 20.0 | 415.5 | 284.4 |

**Camp Site No.3 - 10 year ARI flow**

**Existing Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_{10}xC_{10}$ | 0.66 | |
| $C_{10}$ | 0.66 | |
| Time of conc | 20 | mins |
| Intensity | 104 | mm/hr |
| Flow | 1.25 | $m^3/s$ |
| Total Flow | 1.25 | $m^3/s$ |
| Volume | 1503.2 | $m^3$ |

**Developed Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_{10}xC_{10}$ | 0.75 | |
| $C_{10}$ | 0.75 | |
| Time of conc | 10 | mins |
| Intensity | 137 | mm/hr |
| Flow | 1.88 | $m^3/s$ |
| Total Flow | 1.88 | $m^3/s$ |
| Volume | 1125.1 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 1.88 | $m^3/s$ |
| Peak outflow | 1.25 | $m^3/s$ |
| Volume | 1500.15 | $m^3$ |
| r | 0.33 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 276.22 | 498.01 | 290.08 | 387.11 | 498.01 |

Applying peak flow only factor 2

Required volume is - 996 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 57.3 | 12.0 | 687.0 | |
| 1.0 | 65.3 | 20.0 | 1305.0 | 996.0 |

**Existing Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_{10}xC_{10}$ | 0.66 | |
| $C_{10}$ | 0.66 | |
| Time of cor | 15 | mins |
| Intensity | 120 | mm/hr |
| Flow | 0.61 | $m^3/s$ |
| Total Flow | 0.61 | $m^3/s$ |
| Volume | 546.5 | $m^3$ |

**Developed Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_{10}xC_{10}$ | 0.75 | |
| $C_{10}$ | 0.75 | |
| Time of cor | 6 | mins |
| Intensity | 166 | mm/hr |
| Flow | 0.95 | $m^3/s$ |
| Total Flow | 0.95 | $m^3/s$ |
| Volume | 343.6 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 0.95 | $m^3/s$ |
| Peak outflo | 0.61 | $m^3/s$ |
| Volume | 458.16 | $m^3$ |
| r | 0.36 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 96.01 | 166.70 | 100.42 | 131.35 | 166.70 |

Applying peak flow only factor 2

Required volume is - 333 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 15.8 | 12.0 | 190.1 | |
| 1.0 | 23.8 | 20.0 | 476.8 | 333.4 |

**Camp Site No.3 - 20 year ARI flow**

**Existing Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_{20}xC_{10}$ | 0.69 | |
| $C_{20}$ | 0.69 | |
| Time of conc | 20 | mins |
| Intensity | 121 | mm/hr |
| Flow | 1.53 | $m^3/s$ |
| Total Flow | 1.53 | $m^3/s$ |
| Volume | 1836.4 | $m^3$ |

**Developed Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_{20}xC_{10}$ | 0.79 | |
| $C_{20}$ | 0.79 | |
| Time of conc | 10 | mins |
| Intensity | 160 | mm/hr |
| Flow | 2.30 | $m^3/s$ |
| Total Flow | 2.30 | $m^3/s$ |
| Volume | 1379.7 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 2.30 | $m^3/s$ |
| Peak outflow | 1.53 | $m^3/s$ |
| Volume | 1839.60 | $m^3$ |
| r | 0.33 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 342.34 | 615.35 | 359.40 | 478.84 | 615.35 |

Applying peak flow only factor 2

Required volume is - 1231 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 71.9 | 12.0 | 863.0 | |
| 1.0 | 79.9 | 20.0 | 1598.4 | 1230.7 |

**Existing Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_{20}xC_{10}$ | 0.69 | |
| $C_{20}$ | 0.69 | |
| Time of cor | 15 | mins |
| Intensity | 137 | mm/hr |
| Flow | 0.73 | $m^3/s$ |
| Total Flow | 0.73 | $m^3/s$ |
| Volume | 655.1 | $m^3$ |

**Developed Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_{20}xC_{10}$ | 0.79 | |
| $C_{20}$ | 0.79 | |
| Time of cor | 6 | mins |
| Intensity | 194 | mm/hr |
| Flow | 1.17 | $m^3/s$ |
| Total Flow | 1.17 | $m^3/s$ |
| Volume | 421.7 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 1.17 | $m^3/s$ |
| Peak outflo | 0.73 | $m^3/s$ |
| Volume | 562.21 | $m^3$ |
| r | 0.38 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 124.65 | 212.83 | 130.17 | 168.74 | 212.83 |

Applying peak flow only factor 2

Required volume is - 426 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 21.6 | 12.0 | 259.2 | |
| 1.0 | 29.6 | 20.0 | 592.1 | 425.7 |

**Camp Site No.3 - 50 year ARI flow**

**Existing Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_{50}xC_{10}$ | 0.76 | |
| $C_{50}$ | 0.76 | |
| Time of conc | 20 | mins |
| Intensity | 144 | mm/hr |
| Flow | 1.99 | $m^3/s$ |
| Total Flow | 1.99 | $m^3/s$ |
| Volume | 2393.6 | $m^3$ |

**Developed Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_{50}xC_{10}$ | 0.86 | |
| $C_{50}$ | 0.86 | |
| Time of conc | 10 | mins |
| Intensity | 191 | mm/hr |
| Flow | 3.01 | $m^3/s$ |
| Total Flow | 3.01 | $m^3/s$ |
| Volume | 1803.9 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 3.01 | $m^3/s$ |
| Peak outflow | 1.99 | $m^3/s$ |
| Volume | 2405.17 | $m^3$ |
| r | 0.34 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 451.43 | 809.45 | 473.80 | 630.44 | 809.45 |

Applying peak flow only factor 2
Required volume is - 1619 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 96.2 | 12.0 | 1154.2 | |
| 1.0 | 104.2 | 20.0 | 2083.6 | 1618.9 |

**Existing Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_{50}xC_{10}$ | 0.76 | |
| $C_{50}$ | 0.76 | |
| Time of cor | 15 | mins |
| Intensity | 162 | mm/hr |
| Flow | 0.94 | $m^3/s$ |
| Total Flow | 0.94 | $m^3/s$ |
| Volume | 848.4 | $m^3$ |

**Developed Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_{50}xC_{10}$ | 0.86 | |
| $C_{50}$ | 0.86 | |
| Time of cor | 6 | mins |
| Intensity | 231 | mm/hr |
| Flow | 1.53 | $m^3/s$ |
| Total Flow | 1.53 | $m^3/s$ |
| Volume | 549.9 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 1.53 | $m^3/s$ |
| Peak outflo | 0.94 | $m^3/s$ |
| Volume | 733.19 | $m^3$ |
| r | 0.38 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 165.22 | 280.71 | 172.44 | 222.96 | 280.71 |

Applying peak flow only factor 2
Required volume is - 561 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 30.1 | 12.0 | 361.1 | |
| 1.0 | 38.1 | 20.0 | 761.8 | 561.4 |

**Camp Site No.3 - 100 year ARI flow**

**Existing Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_{100}xC_{10}$ | 0.79 | |
| $C_{100}$ | 0.79 | |
| Time of conc | 20 | mins |
| Intensity | 162 | mm/hr |
| Flow | 2.34 | $m^3/s$ |
| Total Flow | 2.34 | $m^3/s$ |
| Volume | 2809.9 | $m^3$ |

**Developed Case**
Internal Catchment A

| | | |
|---|---|---|
| Area | 6.57 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_{100}xC_{10}$ | 0.90 | |
| $C_{100}$ | 0.90 | |
| Time of conc | 10 | mins |
| Intensity | 215 | mm/hr |
| Flow | 3.53 | $m^3/s$ |
| Total Flow | 3.53 | $m^3/s$ |
| Volume | 2118.8 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 3.53 | $m^3/s$ |
| Peak outflow | 2.34 | $m^3/s$ |
| Volume | 2825.10 | $m^3$ |
| r | 0.34 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 531.09 | 951.86 | 557.39 | 741.48 | 951.86 |

Applying peak flow only factor 2

Required volume is - 1904 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 114.0 | 12.0 | 1367.8 | |
| 1.0 | 122.0 | 20.0 | 2439.7 | 1903.7 |

**Existing Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.66 | |
| $F_{100}xC_{10}$ | 0.79 | |
| $C_{100}$ | 0.79 | |
| Time of cor | 15 | mins |
| Intensity | 185 | mm/hr |
| Flow | 1.12 | $m^3/s$ |
| Total Flow | 1.12 | $m^3/s$ |
| Volume | 1011.0 | $m^3$ |

**Developed Case**
Internal Catchment B

| | | |
|---|---|---|
| Area | 2.76 | ha |
| (using QUDM Vol 1. Book 2. Chapter 4.0) | | |
| $C_{10}$ | 0.75 | |
| $F_{100}xC_{10}$ | 0.90 | |
| $C_{100}$ | 0.90 | |
| Time of cor | 6 | mins |
| Intensity | 260 | mm/hr |
| Flow | 1.79 | $m^3/s$ |
| Total Flow | 1.79 | $m^3/s$ |
| Volume | 645.8 | $m^3$ |

**Detention Basin Sizing (preliminary)**

| | | |
|---|---|---|
| Peak inflow | 1.79 | $m^3/s$ |
| Peak outflo | 1.12 | $m^3/s$ |
| Volume | 861.12 | $m^3$ |
| r | 0.37 | |

Required storage volume

| Culp | Boyd | Carroll | Basha | Maximum |
|---|---|---|---|---|
| 187.54 | 321.93 | 195.94 | 254.73 | 321.93 |

Applying peak flow only factor 2

Required volume is - 644 $m^3$.

Assuming a rectangular basin with 1 in 4 side slopes
and maximum depth of 1.0 metres, required surface area is.....

| Depth (m) | Length (m) | Width (m) | Area ($m^2$) | Volume ($m^3$) |
|---|---|---|---|---|
| 0.0 | 35.2 | 12.0 | 422.9 | |
| 1.0 | 43.2 | 20.0 | 864.8 | 643.9 |

# **Appendix G** – Electrical Report

# ELECTRICAL REPORT PREPARED BY CARDNO

Cardno
Shaping the Future

Cardno ITC

Shaping the Future

# Adani Temporary Rail Camps 1, 2, 3

Electrical Load Estimate

**Prepared for: Cardno**

**Date: 23 October 2012**

# 1.0 ELECTRICAL LOAD ESTIMATE

## 1.1 The Proposed Development

The proposed development includes the staged construction of a workers' accommodation village and includes 405 air conditioned single-bed accommodation units and associated central facilities – including dining halls, recreational facilities and administration – and distributed facilities such as laundries and car parking.

## 1.2 Occupancy and Operation

Occupancy on the site will be variable both throughout the day/week and throughout the year. The exact occupancy of the camp, including the proportional split between shifts, is not yet known and in any case is subject to change over time. For the purposes of maximum demand in this report, the worst case – 100% of workers on day shift returning at 7pm – is assumed.

The operation and utilisation of central facilities will also be subject to these bulk worker movements (for example, meal preparation leading up to worker arrival, and food/beverage service after arrival); however these facilities will operate on a more or less continuous basis.

4.3 Typical Accommodation Block Load Estimate

The table below is based on the Atco 14.4 x 3.3 three person unit drawing. There will be other types of units installed such as disabled access units however the four person unit will be the typical unit installed.

| **Accommodation Electrical Load Items** | **Per Unit (Watts) 1 phase** | **Averaged 3 phase load per unit (Watts)** |
|---|---|---|
| Lighting | 60 | |
| Television | 50 | |
| Fridge (Westinghouse WRM1300WC) | 100 | |
| General Power (laptop, phone charger) | 100 | |
| Hot Water (Rheem 235 Litre heat pump) | 250 | |
| Air-conditioning (TECO 2.66kW split system) | 740 | |
| **Accommodation Electrical Load Estimate** | **1,300 1ph** | **434 3ph** |

## 1.3 Site Based Load Estimate

The table below illustrates various insulation and air conditioners for the accommodation units.

| **Description** | **Qty / Area** | **Per Unit (kVA)** | **Total (kVA)** |
|---|---|---|---|
| Accommodation Unit Power (three phase load) | 405 | 0.434 | 176.4 |
| Kitchen Diner Power (40VA/$m^2$) | 590 | 0.04 | 23.6 |
| Kitchen Diner Air Conditioning (80VA/$m^2$) | 590 | 0.08 | 47.2 |
| Office Power (40VA/$m^2$) | 72 | 0.04 | 2.9 |
| Office Air Conditioning (80VA/$m^2$) | 72 | 0.08 | 5.8 |
| Gym Power (40VA/$m^2$) | 144 | 0.04 | 5.8 |
| Gym Air Conditioning (80VA/$m^2$) | 144 | 0.08 | 11.6 |
| Recreation Centre Power (30VA/$m^2$) | 216 | 0.03 | 6.5 |
| Recreation Centre Air Conditioning (80VA/$m^2$) | 216 | 0.08 | 17.3 |
| Laundry Power (60VA/$m^2$) | 36 | 0.06 | 2.2 |
| Exterior Lighting (1VA/$m^2$) | 56000 | 0.001 | 56 |
| Sewer Treatment Plant | 1 | 50 | 50 |
| Subtotal | | | 404.9 |
| Contingency 20% | 20% | | 81 |
| **Total Electrical Demand** | | | **486 kVA** |

Insignificant electrical loads such as ablution and linen electrical loads are included in the contingency allowance

## 1.4 Sustainable Options

Solar panels can be installed to reduce the daytime electrical loading however a solar system will not however reduce the site's peak demand which is expected to occur around 6-8pm. As a result this system will reduce daytime diesel usage costs but not generator sizes.

## 1.5 Generator Recommendation

### *1.5.1 Investigation / Feasibility*

The camp will be supplied via onsite diesel generation plant with associated fuel storage.

Based on our experience, and advice from colleagues at Power and Water Corporation (Northern Territory), two likely plant suppliers were identified – Cummins and Caterpillar. Of these, it is understood that Cummins have better plant availability and so we have held initial discussions with them. This does not preclude the consideration of Caterpillar or other suppliers at the next stage of design.

To serve the site's maximum demand of 486kVA, a total of two (2) 600kVA 415V generators would be required (one duty, one standby). The larger kVA rating is required as the generators are designed for 0.8 power factor and the anticipated power factor for the mining camp is close to unity. The location of these generators needs to be carefully considered due to the noise and emissions implications of large diesel generation sets.

### *1.5.2 Fuel Storage*

The camp will be supplied via onsite diesel generation plant with associated fuel storage. At full load a single Cummins C700 640kVA prime rated generator uses approximately 140 litres of diesel per hour at full load. Based on a six day refuelling schedule a single 20,000L double bunded diesel tank is required to service both generators. Refer to figure 7 below.




*Figure 7 – typical self-bunded diesel storage units.*

### *1.5.3 Available Capacity and Timeframe*

The standard lead time for the generators is 12 weeks if there are not units available onshore. The lead time for the 20,000 litre fuel tanks is 12 weeks.

### *1.5.4 Operation and Maintenance Costs*

Assuming the generators are loaded on average to 75% of their rated capacity with a fuel usage of 100 litres per hour and an assumed price of diesel at $1.60/litre results in a monthly fuel cost of approximately $115,000/month.

The anticipated maintenance cycle for the generators would be 1,000 hours. Assuming approximately 12 hours/day duty, each set would require maintenance every 12 weeks. Oil changes would occur every 4,000 hours or every 11 months per set. Major overhaul of each set would be required every three years. On this basis maintenance costs would be in the order of $40,000 per year.

# 2.0 RECOMMENDATIONS AND CONCLUSION

Based on the above, it is recommended that for the purposes of design and supply to the site, a 'base' (worst case) maximum demand value of **486kVA** be adopted. This value allows for an occupancy of 405 units all on day shift, and further includes a 20% design contingency.

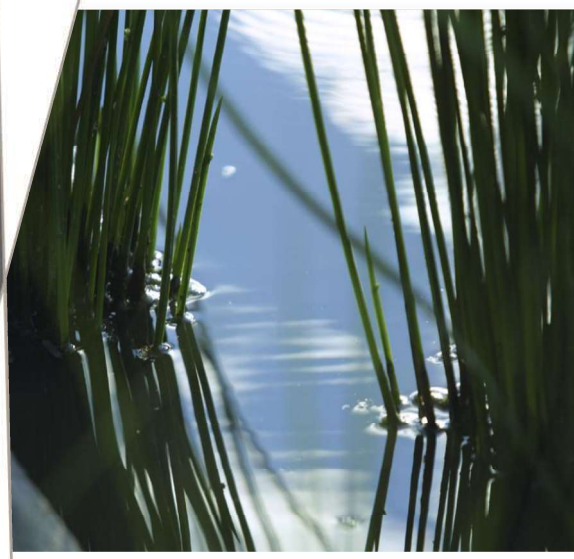
It is recommended two generators are installed in a duty / standby arrangement. The recommended generator size is **600kVA** with a **20,000 litre** double bunded diesel tank to serve both generators on a six day refuelling schedule.

# **Appendix H** – Supporting Information for ERAs

# INFORMATION IN SUPPORT OF APPLICATION FOR MULTIPLE ENVIRONMENTALLY RELEVANT ACTIVITIES PREPARED BY CARDNO

Cardno
Shaping the Future

# Carmichael Mine and Coal Rail Project-Construction Camps – Rail Camp 3



## Information in Support of Development Application

**7508-90**

Prepared for
Adani Mining Pty Ltd

30 October 2012

Cardno
Shaping the Future

**Cardno (Qld) Pty Ltd**
ABN 57 051 074 992
Level 11 Green Square North Tower
515 St Paul's Terrace
Fortitude Valley Qld 4006
Locked Bag 4006 Fortitude Valley
Queensland 4006 Australia
Telephone: 07 3369 9822
Facsimile: 07 3369 9722
International: +61 7 3369 9822
cardno@cardno.com.au
**www.cardno.com.au**

# Document Information

| | |
|---|---|
| Prepared for | Adani Mining Pty Ltd |
| Project Name | Carmichael Coal Project Construction Camps |
| File Reference | \\bnecfs02p\Adani\Mine Camp EIS and DA Submission\06 Working Drafts\ERA Applications\Adani ERA Application Rail Camp 3 Report V3.docx |
| Job Reference | 7508-90 |
| Date | 30 October 2012 |

# Document Control

| Version | Date | Author | Author Initials | Reviewer | Reviewer Initials |
|---|---|---|---|---|---|
| 1 | 19 October 2012 | Amy Flynn | AF | Lynn Morrissey | LM |
| 2 | 23 October 2012 | Amy Flynn | AF | Lynn Morrissey | LM |
| 3 | 30 October 2012 | Amy Flynn |  | Lynn Morrissey |  |

© Cardno 2012. Copyright in the whole and every part of this document belongs to Cardno and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person other than by agreement with Cardno.

This document is produced by Cardno solely for the benefit and use by the client in accordance with the terms of the engagement. Cardno does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

# Executive Summary

Adani Mining Pty Ltd proposes to develop a rail construction accommodation camp located approximately 145km north-west of Clermont, 2km West of Bulliwallah Road, and 2km North of Moray Carmichael Boundary Road, Belyando herein referred to as Rail Camp 3. Development approval is being sought from Isaac Regional Council, for Material Change of Use – for a Temporary Rail Workers Camp. An EIS Report has also been prepared in support of the development application.

Rail Camp 3 is required in relation to the construction of a new rail corridor that is proposed to service the proposed Carmichael Coal Mine Project, previously assessed by the Office of the Co-ordinator General as a 'state significant' project under separate legislation. Rail Camp 3 is to include 400 rooms, a temporary Sewage Treatment Plant (STP) and a temporary generator facility with associated diesel aboveground tank fuel storage and day tank storage to provide power to the site.

The fuel storage and onsite STP are activities that constitute Environmentally Relevant Activities (ERAs), as defined in Schedule 2 of the *Environmental Protection Regulation* 2008. Therefore these activities also require a development approval for *Material Change of Use for an Environmentally Relevant Activity* and registration certificate.

Cardno (Qld) Pty Ltd (Cardno) has been commissioned by Adani Mining Pty Ltd to prepare information in support of an application for these activities and an associated Site Based Management Plan (SBMP).

The ERAs which are the subject of the application are consistent with the definition of:

> ERA 8(3)(a) – Chemical Storage (10 to 500 cubic metres of chemicals class C1 or C2 combustible liquids); and

> ERA 63(2)(b)(i) – Sewage Treatment (operating a sewage treatment works, other than a no-release works with a total daily peak design capacity of more than 100 to 1500EP, if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme).

The subject development application is intended to be provided to the Coordinator General as part of the overall Environmental Impact Statement (EIS) submission for the Carmichael Coal Mine Project. The purpose of the inclusion of this document within the EIS is to facilitate particular exemptions from the supplementary IDAS process that are afforded under the *State Development and Public Works Organisation Act 1971.*

**Table 1-1 ERA Summary Information**

| Activity | Chemical Storage | Sewage Treatment |
|---|---|---|
| Scale | 28,000L fuel (27,438L diesel storage tank + contingency storage)<br>Minor packaged oils & lubricants | Total peak capacity of up to 80kL per day (ADWF assuming 200L/EP/day for 400 persons) |
| Scope | Bulk fuel storage for refuelling of generators on site<br>Oils and lubricants for generator maintenance | Sewage treatment for 400 person construction camp - 400 Equivalent Persons (EP)<br>Disposal of treated effluent to dedicated irrigation area of up to 4.0ha. |
| Location (Lot numbers) | Part of Lot 662 PH1491 | Part of Lot 662 PH1491 |
| ERA Threshold | 10 to 500 $m^3$ of chemicals. | 100 to 1500 EP. |
| Environmental Management | Double lined proprietary tank for fuel storage.<br>Minor fuel storages and flammable liquids appropriately designed, signed and registered and emergency management systems in | Effluent managed by irrigation to land on site (up to 4.0 ha irrigation area with public access).<br>Effluent concentration: 10mg/L median Nitrogen, 5mg/L median Phosphorous.<br>9 days wet weather storage volume in tank farm (up to 720 kL total storage volume). |

| Activity | Chemical Storage | Sewage Treatment |
|---|---|---|
| | place. | Contingency tanker removal of effluent from storage in extreme wet weather conditions where irrigation cannot occur. |

The supporting information contained in this document provides further information on the activities, the site and how the activities are to be conducted to facilitate assessment by Council and DEHP.

The SBMP has also been prepared in accordance with DEHP's SBMP guideline licensing requirements and describes in full detail the ERAs to be carried out at the site and how they are to be managed. The SBMP identifies the environmental management measures which will be adopted onsite to address potential environmental impacts associated with the proposed ERAs.

# Table of Contents

**1 Proposed Activities 1**
1.1 Environmentally Relevant Activities (ERAs) 1
**2 Site Characteristics 2**
2.1 Climate 2
2.2 Land Use and Topography 3
2.3 Soils and Geology 3
2.4 Waterways and Ambient Water Quality 3
2.5 Groundwater 4
2.6 Vegetation 4
2.7 Nearest Residential Receptors 4
**3 Proposed ERA Information 5**
3.1 Fuel Storage Area 5
3.2 Sewage Treatment Activity 5
3.3 Elements of the Proposed STP 6
3.4 STP Process Flow Diagram 7
3.4.1 Effluent Quantity 8
3.4.2 Effluent Quality 8
3.4.3 Noise and Odour 8
3.4.4 Waste Disposal 8
3.5 Irrigation System 9
3.5.1 Wet Weather Storage and Emergencies 9
**4 Irrigation Activity Details 10**
4.1 Proposed Irrigation Scheme 10
4.2 Water Balance 10
4.3 Selection of Irrigation Areas and Irrigation Management 11
**5 Potential Environmental Impacts 13**
**6 Site Based Management Plan 14**
6.1 Preamble to the Site Based Management Plan 14
6.1.1 Legislation and Policy Framework 14
6.1.2 Terminology 14
6.2 SBMP Objectives 15
6.3 SBMP Structure 15
6.3.1 Environmental Commitment 16
6.3.2 Responsibilities and Training 16
6.3.3 Site Induction 16
6.3.4 Environmental Audits and Reviews 17
6.3.5 Environmental Records 17
6.3.6 Environmental Non-Compliance with SBMP 17
**7 Environmental Management Measures ERA 8 18**
7.1 ELEMENT 1: Air Quality (Odour and Emissions) 18
7.2 ELEMENT 2: Noise 20
7.3 ELEMENT 3: Storage and Use of Hazardous Materials 22
7.4 ELEMENT 4: Water Quality & Stormwater Control 24
7.5 ELEMENT 5: Waste Management 26
7.6 ELEMENT 6: Environmental Emergencies 28

**8 Environmental Management Measures ERA 63 31**
8.1 ELEMENT 1: STP Operation 31
8.2 ELEMENT 2: Effluent Quality Management 33
8.3 ELEMENT 3: Odour and Noise 35
8.4 ELEMENT 4: Solid Waste Management from STP 37
8.5 ELEMENT 5: STP Hazardous Material Storage and Handling 38
8.6 ELEMENT 6: Irrigation Management 39
8.7 ELEMENT 7: Complaint and Incident Mitigation 41

# Tables

Table 1-1 ERA Summary Information iii
Table 2-1 Climate Data for Bulliwallah / Clermont 2
Table 2-2 Isaac River Water Quality Objectives 3
Table 3-1 Treatment Plant Information 6
Table 3-2 Expected Effluent Quality Discharge 8
Table 4-1 Proposed Irrigation Parameters 10
Table 8-1 Expected Effluent Quality Discharge 33
Table 8-2 Water Quality Monitoring Programme 34

# Figures

Figure 1 Site Location
Figure 2 Site Layout

# Appendices

Appendix A Corrective Action Request

# 1 Proposed Activities

This report relates to the proposed development of a rail construction camp ("the development") which is required for the construction of a new rail corridor that is proposed to service the proposed Carmichael Coal Mine Project, and is to temporarily provide 400 residential units for construction workers, bus and truck parking, central recreational facilities, site office, wet mess, laundry, kitchen and dining facilities, ablutions, temporary STP and generator facility with associated fuel storage. The development will cater for up to 400 construction personnel.

Cardno has been commissioned by Adani Mining Pty Ltd to prepare an application including supporting information and a SBMP for activities associated with the accommodation to be provided for Rail Camp 3, located 20km south-west of Belyando, 150km west of Moranbah and 145km north-west of Clermont (Figure 1).

This report and accompanying SBMP is intended to support an application for *Material Change of Use for Environmentally Relevant Activity* for a 400EP temporary STP and temporary 28,000L fuel storage ("the activities") associated with development on part of Lot 662 on PH 1491 ("the site"). The layout of the various proposed activities listed above is shown in Figure 2.

## 1.1 Environmentally Relevant Activities (ERAs)

Of the activities proposed, a number meet the criteria of ERAs under Schedule 2 of the *Environmental Protection Regulation 2008 (EP Reg 2008)*. The ERAs to be carried out may be defined as follows:

> ERA 8(3)(a) – Chemical Storage (10 to 500 cubic metres of chemicals class C1 or C2 combustible liquids); and

> ERA 63(2)(b)(i) – Sewage Treatment (operating a sewage treatment works, other than a no-release works with a total daily peak design capacity of more than 100 to 1500EP, if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme).

It should be noted that the ERAs are for a temporary sewage treatment plant and temporary fuel storage to accommodate Rail Camp 3 and will be decommissioned once completion of the proposed rail corridor is complete.

# 2 Site Characteristics

The subject site area of 9.33ha which incorporates the temporary STP, associated irrigation scheme and temporary fuel storage activity occurs on part of Lot 662 on PH1491. The lot is bound to the:

> north by undeveloped land;

> east by undeveloped land;

> south by a tributary of Belyando River and further south Moray Carmichael Boundary Road and undeveloped land; and

> west by a tributary of Belyando River and further west Bulliwallah Road.

The STP and fuel storage activity are expected to occupy a total area of approximately 0.7ha located in the north-eastern extent of the lot. The proposed locations for these activities are shown on Figure 2.

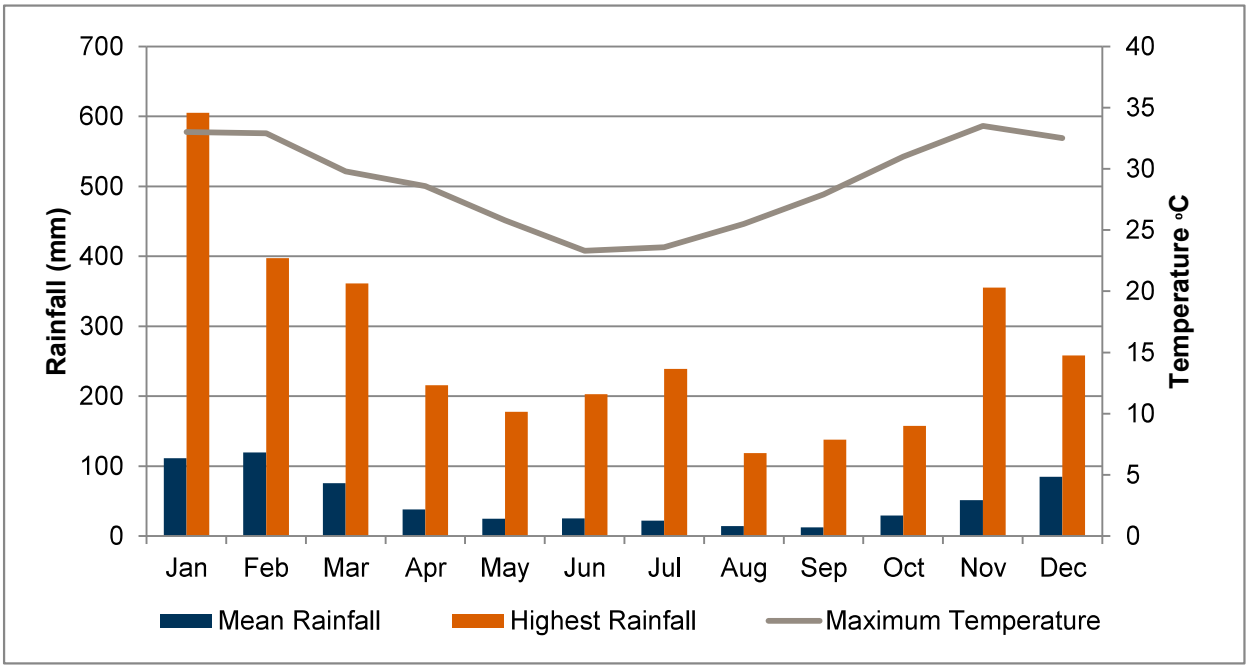
The irrigation scheme associated with the STP activity is expected to occupy up to 4ha of land, consisting of irrigation of landscaped communal open space and buffer areas. The proposed locations of the irrigation scheme are shown on Figure 2. On-site sewage treatment and subsequent irrigation disposal is required for the development as the site is not currently sewered.

It should be noted that the ultimate area of the irrigation scheme has been conservatively estimated, as it is anticipated that much of the effluent generated by the STP may ultimately be used as on-site dust suppression during construction works and the use of recycled water from the STP will serve to further reduce the overall water demand from Rail Camp 3.

## 2.1 Climate

Historical climatic data was obtained from the Bureau of Meteorology (BOM) for Bulliwallah (BOM station #036010 and Clermont (Clermont Airport Qld BOM Station #035124). Table 2-1 shows that mean monthly rainfall and maximum temperature are greatest in January, November and December. For the Clermont and Bulliwallah weather observation sites, the mean annual maximum temperature is 28.95°C and rainfall is 599.70mm. These matters will be required to be considered when planning and managing the activities.

**Table 2-1 Climate Data for Bulliwallah / Clermont**



## 2.2 Land Use and Topography

The site land is currently used for rural grazing. Pursuant to the *Belyando Shire Planning Scheme* the site is zoned as Rural. The topography of the development site is generally flat without distinctive topographical features. A gentle slope runs towards the northern and north-eastern boundary with natural surface elevations ranging from approximately 207m to 209m AHD.

## 2.3 Soils and Geology

Site specific soil and geotechnical investigations have not been conducted for the purposes of the development application; therefore the irrigation scenarios presented assume irrigation activity in the worst case scenario; that is irrigation of clay soils, allowing 100m$^2$ per person for effluent disposal.

The site has not been mapped within the Belyando Shire Planning Scheme as being at risk of the occurrence of acid sulfate soils as it is located inland and above 20m (Australian Height Datum) AHD. Acid sulphate soils are not considered to be a risk factor in non-coastal areas and on land above 20m AHD.

## 2.4 Waterways and Ambient Water Quality

Stormwater from the catchment of the site discharges to a tributary of Belyando River, however stormwater arrangements will be such that the majority of stormwater flows will be captured and returned to the site where possible as specified in the Development Application. The stormwater detention basin at the site will be designed in accordance with the requirements to maximise the retention of stormwater and achieve required pollutant load reduction.

The site is not located within a designated flood or floodplain area and is not considered likely to be subject to flooding based on the elevation of the selected location.

Pursuant to the findings of the Carmichael Mine and Coal Rail Project EIS the northern tributaries of the Belyando River are listed as having a range of Environmental Values including:

- aquatic ecosystems;
- irrigation;
- farm supply/use;
- stock water;
- other values (floodplain); and
- cultural and spiritual values.

Relevant Water Quality Objectives (WQOs) for the Belyando River catchment are not currently defined in the *Queensland Water Quality Guidelines 2009* (QWQG, 2006), however it is anticipated that to support and protect relevant environmental values for these waters, typical water quality objectives for the Belyando River Basin will be similar to those for the nearby Isaac River Catchment as shown in Table 2-2 below.

**Table 2-2 Isaac River Water Quality Objectives**

| Water Quality Parameter | Water Quality Objective (for slightly to moderately disturbed lowland streams) |
|---|---|
| Ammonia Nitrogen | >20 µg/L |
| Oxidised Nitrogen (Nitrite and Nitrate) | <60 µg/L |
| Organic Nitrogen | <420 µg/L |
| Total Nitrogen | <500 µg/L |
| Filterable Reactive Phosphorous | <20 µg/L |
| Total Phosphorous | <50 µg/L |
| Chlorophyll-*a* | <5.0 µg/L |
| Dissolved Oxygen | 85 – 110 % sat. |
| Turbidity | <50 NTU |

| Water Quality Parameter | Water Quality Objective (for slightly to moderately disturbed lowland streams) |
|---|---|
| Suspended Solids | <55 mg/L |
| pH | 6.5-8.5 |
| Oils and Grease | No visible films or odours |
| Litter/Gross Pollutants | No anthropogenic material greater than 5mm in any dimension |

It is anticipated generally that discharge quality to creeks within this catchment will be required to be such as to enable WQOs for streams in dry tropics to be achieved. These are expected to be similar to those specified in Table 2.2 and are due to be published in early 2013.

Nonetheless the WQOs for the catchment are considered to be of limited relevance for the purposes of the current application as the STP arrangement will be such that there will be no discharge to receiving waterways. Application to land from irrigation scheme is the preferred effluent management strategy.

## 2.5 Groundwater

Groundwater levels are not available for this location at present; however it is assumed that the groundwater regime in vicinity of the site is consistent with that described in the Carmichael Mine and Coal Rail Project EIS, which indicates that groundwater resources are located at significant depths below ground level.

It is not proposed to carry out site specific groundwater investigations for the purposes of the application, as the irrigation activity is designed as a deficit irrigation scheme and is unlikely to impact on groundwater

## 2.6 Vegetation

The site contains vegetation consisting predominantly of medium length grass with sparse scatterings of native trees. The site is considered to be relatively low ecological value and is mapped as non-remnant and as such does not contain *endangered*, *of concern*, or *least concern* remnant vegetation. Additionally no areas of high value regrowth vegetation of *endangered*, *of concern* and *least concern* vegetation were mapped as occurring within the site pursuant to the VM Act.

Based on an inspection of the relevant trigger maps, the site is not considered to contain any Referrable Wetlands or Areas of High Ecological Significance.

The site is considered to be in a low to medium risk bushfire area according to the *Belyando Shire Planning Scheme* Risk Hazard Mapping.

## 2.7 Nearest Residential Receptors

The site is situated in an isolated location that is a substantial distance from the nearest urban centres of Clermont to the south, Moranbah to the east and Belyando to the north-east. The nearest residential dwellings to the temporary STP and temporary fuel storage facility will be the Rail Camp 3 accommodation blocks adjacent to the activities. These blocks are anticipated to be a distance greater than 20m from the STP and fuel storage area so as to provide for adequate noise level reduction at the accommodation blocks from these sources.

# 3 Proposed ERA Information

Details of the ERAs which are the subject of this application and which will be required for the operation of Rail Camp 3 are provided in the following Sections.

## 3.1 Fuel Storage Area

The proposed fuel storage area includes a bulk fuel storage tank and generator (Genset) for the facilitation of electricity to the site. The fuel storage area is to be completely enclosed to protect the fuel storage area from vehicular collisions. An indicative layout of the fuel storage area is shown in Figure 2.

The bulk diesel storage tank proposed is an aboveground proprietary double lined tank. The single tank will have the capacity to store the total volume proposed (27,438L) of diesel. This total volume is consistent with the threshold fuel storage volumes for application of ERA 8(3) (a) chemical storage. The proposed tank is a self-bunded (i.e. double-skinned or double-lined tank) tank which complies with or exceeds *AS1692-2206* – Steel Tanks for Flammable & Combustible Liquids and *AS1940-2004 - The Storage & Handling of Flammable & Combustible Liquids* requirements amongst others, and as it will be double walled/lined, installation within a tank bund will not be required. The tank is integrated with a single fuel delivery hose, self-bunded refuelling compartment, an overflow protection valve with warning alarm and a bunded fill point (overflow bunding).

A small amount of diesel will also be stored in the Genset. The Genset will have the capacity to store generally one day's operation and is designed to siphon diesel from the diesel storage tank via piping. Piping is to be aboveground and run from the bulk storage tank to the Genset. The Genset consists of a fully enclosed system, with a double lined tank, inlet solenoid valves and overfill/return valves to return diesel to the diesel storage tank.

Other minor chemical storages will also be required however these are unlikely to amount to significant volumes for the purpose of this application.

The arrangement for the fuel storage will incorporate best practice environmental management as follows:

> All ground surfaces beneath the tanks shall be impervious (i.e. concrete or asphalt) with a self bunded refuelling compartment to assist with management of contamination as a result of spills from refuelling. Spill kits will be provided for a rapid spill clean-up response, and all operators of the fuel storage and refuelling facility will be trained on its proper and effective use.

> The ground surface beneath the tanker refuelling area (as identified on Figure 2) shall be impervious (i.e. concrete or asphalt) to assist with management of contamination as a result of the unlikely event of tanker rupture. In the unlikely event of a tanker rupture spill kits will be provided for a rapid spill clean-up response, and all tanker refuelling operators will be trained on its proper and effective use.

> Minor storages of solvents, oils, greases and other flammable liquids will be appropriately stored in bunded areas on site. Due to the small volumes of the chemicals stored at any one time, only minor spillages should occur and spill kits will be provided for a rapid spill clean-up response.

Given the nature of the containment systems for the fuel storage areas, the fuel storage area is not ordinarily expected to generate any discharges. Refer to Element 4 – ERA 8 of the SBMP for environmental management details.

## 3.2 Sewage Treatment Activity

An onsite package sewerage treatment plant (STP), storages and irrigation scheme will be required to treat and dispose of all wastewater flows from Rail Camp 3 due to the lack of sewerage mains to the site. It is anticipated that there will be a maximum of 400 construction workers at any given time onsite, with expected flows to consist of domestic sewerage from toilets, showers, the laundry and kitchen facilities. The operational life of the STP is expected to be up to 2 years.

For the purposes of this approval, the proposed STP, irrigation areas and effluent storage dimensions have been conservatively modelled on experience and knowledge with a similar site and development. It is

anticipated that the detailed design of the STP, irrigation areas and effluent storage will be confirmed using the modelling tool MEDLI.

The flows expected to the STP are approximately those for a 400 EP sewerage treatment plant, based on a conservatively high estimate of daily flow per capita of 200L/person/day (i.e. higher than expected volumes to be used in calculating the reference design). As such the reference STP will have the capacity to treat up to 80kL/day of wastewater. It is anticipated that due to the short duration of the STP operation that there will be minimal inflow and infiltration to the system required to be treated.

Effluent reuse is proposed via a combination of surface irrigation and usage for dust suppression on the Adani rail construction site, with effluent from the package treatment plant to be treated to a Class A standard. Nutrient removal and disinfection capabilities will be such as to provide effluent suitable for irrigation of public open spaces.

The final plant specification to be chosen by Adani Mining Pty Ltd is subject to confirmation, however the reference case of a 400EP plant has been proposed for consideration for approval purposes as it is likely to represent the eventual scale of development. The nominated wastewater flows of 80kL/day gives an approximation of the likely irrigation requirements and management requirements for the STP.

Proposed details of the wastewater treatment system are included in Table 3-1:

**Table 3-1 Treatment Plant Information**

| Parameter | Details |
|---|---|
| Maximum Plant Capacity (kL/day) | Plant to treat up to 80 (ADWF) |
| Expected Sewage Volumes (L/person/day) | Up to 200 |
| Equivalent Persons (EP) | 400 |
| Treatment Type | Proprietary Package Treatment Plant |
| Annual Irrigation Volume Generated (ML/year) | 29.20 ML/year (sewage effluent volume may be adjusted downwards for reduced effluent volume as a result of reduced water due to dust suppression usage) |
| Nutrient Output | 10 mg/L Nitrogen: 5 mg/L Phosphorous |
| Effluent Class | Class A |
| Storage (no of days) | 9 days |
| Storage Volume for 9 days storage (Total) | 720,000L |

## 3.3 Elements of the Proposed STP

The contract for supply, installation and operation of the STP has not been awarded, however it is envisaged that the STP will be a proprietary package treatment plant incorporating, chemical and biological nutrient removal, filtration and disinfection using Sodium Hypochlorite and/or Ultra Violet light (UV) system as required.

Construction of the proposed STP is expected to involve the following works:

> installation of an automated STP with instrumentation and monitoring equipment;

> construction of an enclosed building for housing STP equipment;

> installation of pumps as required for the transfer treated effluent from the STP to the nominated irrigation areas and to Rail Camp 3 toilets;

> installation of wet weather storage tank equipped with isolation valves;

> installation of treated wastewater pipelines from the STP to all irrigation areas; and

> installation of a metered or manual irrigation system to the designated irrigation areas.

A description of the elements of a typical STP follows:

**Element 1: Inlet Works**

Incoming sewage will be received into the treatment plant through the inlet works. The inlet works will consist of a screenings and grit removal system as appropriate.

**Element 2: Bioreactor Tank**

The screen-degritted waste will flow to a bioreactor tank through either a gravity fed or pump flow to a bioreactor tank. The bioreactor chamber/tank will consist of aerobic zones for the aerobic biological reduction of $BOD_5$ and nitrogen. The reactor is likely to have aeration blowers, submersible mixers and return activated sludge pumps.

**Element 3: Sludge Tank**

Waste sludge from the treatment process will be tankered offsite for further treatment.

**Element 4: Filtration**

Clarified supernatant from the aerobic zone of the bioreactor will be treated in the filtration unit to satisfy turbidity requirements.

**Element 5: UV Disinfection**

Filtered effluent water from the filtration unit will pass through the UV system if required to achieve disinfection rates. Any UV system will be designed to provide minimum dose level of 40mw/cm$^2$ at peak flows, incorporating continuous intensity monitoring, lamp failure alarms and auto wiping mechanism.

**Element 6: Chlorination**

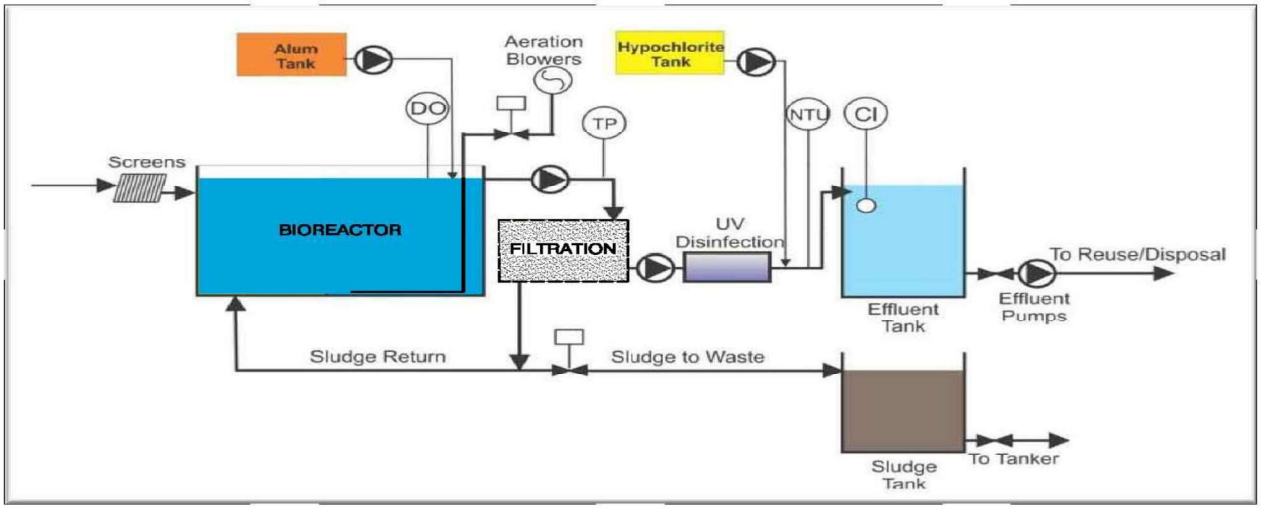
The final effluent will be dosed with Sodium Hypochlorite for disinfection before storage/reuse.

## 3.4 STP Process Flow Diagram

A package plant which will provide the stated level of treatment, methodology and compliance to the aforementioned standards, is readily available. The ultimate design, upgrade and layout considerations will be finalised as part of a comprehensive performance based supply chain process. In the interim and for the purposes of the application a generalised process flow diagram is shown below for the treatment system.

The STP will utilise Programmable Logic Control liked with Supervisory Control and Data Acquisition (SCADA) computer interface system to provide point and click operation and value entry controls. Remote monitoring and alarming systems will be in place regarding process and effluent parameters to be monitored.

**Typical Layout for the Proprietary Package Treatment Process**



### 3.4.1 Effluent Quantity

As discussed the flow (ADWF) to the STP per day has been calculated as 80 kL/day based on a total expected number of 400 room construction camp.

Average Dry Weather Flow = 400EP x 200L/EP/day

= 80 kL/day

The plant capacity (in accordance with the stated thresholds of the EP Reg 2008) of the plant is therefore expected to be 400EP using 200L/EP/day. This activity will generate 29.2ML/year approximately of effluent to be irrigated/disposed to land or recycled.

The effluent will also be used at the camp for dust suppression during construction of the Carmichael Coal Project which may, as such, further reduce the volume of effluent required to be irrigated (both due to reduced overall water demand for the camp and reduced volume for irrigation).

### 3.4.2 Effluent Quality

Effluent will be treated to comply with the quality specified for Class A effluent suitable for irrigation of sites requiring unrestricted public access as required for general dust suppression usage in accordance with the *Public Health Regulation 2005* and *National Water Quality Management Strategy Australian Guidelines for Water Recycling: Managing Health and Environmental Risks 2006.*

The expected effluent quality discharges are shown in Table 3-2 below.

**Table 3-2 Expected Effluent Quality Discharge**

| Parameter | Quality Required | Release Limit |
|---|---|---|
| pH | 6.5-8.5 | range |
| Turbidity | < 2 NTU | maximum |
| Suspended Solids | < 15mg/L | maximum |
| Biochemical Oxygen Demand | < 10 mg/L | maximum |
| Total Nitrogen | < 10 mg/L | maximum |
| Total Phosphorous | < 5 mg/L | maximum |
| Residual Chlorine | 0.5-1.0 mg/L free chlorine | range |
| *Escherichia coli* | < 10 cfu/100ml* | Maximum |

*cfu = colony forming units

The STP is to be designed with an emergency overflow/return valve so that treated effluent can be returned to the inlet if the quality of the treatment effluent fails to meet the quality criteria for disposal by land irrigation or for use as dust suppressant within the camp.

In the event that monitoring indicates inadequate treatment of wastewater, appropriately qualified service technicians are to be contacted to service and repair the STP equipment as necessary. Refer to Element 2 – ERA 63 of the SBMP for monitoring details.

### 3.4.3 Noise and Odour

The closest sensitive receptors are anticipated to be located at least 20m distance from the proposed location of the STP. The STP is not expected to generate noise or odour levels at a nuisance level due to the system being fully enclosed and the pumps submersible. In order to provide for mitigation of noise and odour it is anticipated the STP will be arranged in such a manner that appropriate noise reduction at the nearest sensitive residence will be achieved, and that visual screening will be provided to limit any potential for the perception of odour from the STP.

### 3.4.4 Waste Disposal

Wastes identified for the STP include the following.

> Sludge.

> Grit/Screenings.

> Waste water pumped out from wet weather storage tank.

Grit, screenings and sludge shall be removed from site and disposed of to an appropriately licenced facility.

Any waste water pumped out from the wet weather storage tank shall be collected by a licensed regulated waste transporter and disposed of at Council's STP. Refer to Element 4 – ERA 63 of the SBMP for waste management and monitoring details.

## 3.5 Irrigation System

Treated effluent from the STP is to be irrigated on landscaped communal open space and buffer areas located on the site. Based on Cardno's experience with similar sites for similar developments, the Total Land Application Area required is up to 4ha. Irrigation design will be confirmed using the MEDLI modelling tool at a later date.

Treated effluent shall be stored in the wet weather storage tank via a diversion valve during wet weather periods until conditions are appropriate for irrigation.

The proposed STP wet weather storage tank and irrigation areas will be located approximately 1km from a tributary of Belyando River. Additionally an appropriate setback of 20m will be maintained from drainage lines, drainage swales in the design of the irrigation system and irrigation shall not occur during rainfall events (refer to Figure 2). Overflows are not expected from the activity due to the adequate storage capacity of the system, however off-site tankering will be retained as a contingency in the event that there is a risk of an overflow occurrence.

The potential impacts to groundwater have been considered as part of the irrigation management plan for the scheme. The management of potential groundwater impacts will occur through the confirmation of irrigation parameters, and the establishment of irrigation scheme in such a manner so as to prevent nutrient leaching.

Recycled water use will be carried out in accordance with the requirements of the *National Water Quality Management Strategy Australian Guidelines for Water Recycling: Managing Health and Environmental Risks* in terms of the level of treatment, effluent quality, effluent monitoring and monitoring frequency and specified controls and requirements where appropriate.

Thus it is anticipated that under normal circumstances there would be no discharge to waters from the STP as the treated effluent generated would be irrigated to land with minimal run-off, used as recycled water or held in wet weather storage during wet weather conditions.

### 3.5.1 Wet Weather Storage and Emergencies

The proposed wet weather storage tank shall be lined, and sized to provide approximately 9 days treated effluent storage. Treated effluent shall be stored in the wet weather storage tank via a diversion valve during wet weather periods. When treated effluent levels reach 90% capacity (i.e. within 10% of the top of the storage tank), alarms will be triggered and will indicate the level where action is required to prevent a potential overflow. Effluent storage dimensions will be confirmed using the MEDLI modelling tool at a later date.

Notwithstanding, a contingency is in place for the unlikely event that an overflow from the wet weather storage tank could occur from extreme wet weather conditions (over 9 days). In this event an appropriately licensed tanker removal contractor will collect and dispose of treated effluent and dispose at a Council STP such as Moranbah or Clermont.

It should be noted that the wet weather storage capacity for treated effluent provided includes several storage tanks rather than a single tank. Hence in the unlikely event of a treatment plant failure it is proposed that an isolation valve be used to manually isolate an empty effluent storage tank which may be temporarily used to store untreated sewage in emergencies prior to vacuum truck removal.

# 4 Irrigation Activity Details

## 4.1 Proposed Irrigation Scheme

Sufficient land area is available on the site which is suitable for irrigation for the 400 EP STP. Suitable land areas which may be used for the irrigation scheme are shown in Figure 2.

The proposed irrigation areas and effluent storage dimensions will be confirmed following detailed design of the STP using the modelling tool MEDLI however for the purposes of approval a conservative irrigation area estimate of 100m$^2$ per person has been calculated and proposed.

In support of this proposal, the maximum flow possible to the plant from this development stage is estimated to be 80 kL/day under Average Dry Weather Flow (ADWF) conditions. The flow contribution from wet weather inflow and infiltration is expected to be negligible over the life of the STP as this is a temporary STP with a proposed life span of 2 years.

An effluent with a median TN concentration of 10 mg/L and TP concentration of 5 mg/L has been proposed and the irrigation scheme proposed is considered to be capable of recycling effluent at this concentration based on Cardno's experience with similar projects.

Under clay soil conditions an irrigation area of 4.0 hectares would be optimal for disposal of effluent, with a wet weather treated effluent storage volume of 720 kL (sufficient for approximately 9 days irrigation storage for wet weather).

With this area and storage volume, approximately 90% of the effluent would be recycled, and an insignificant leaching of nitrogen or phosphorus would be expected.

Irrigation is most likely to occur by means of subsurface drip. An automatic scheduling system with soil-moisture monitoring and automatic shut-off during rain periods is preferred for larger irrigation schemes by DEHP, however given the limited scale of this scheme, manual shutoff and management systems are considered appropriate. Irrigation should not occur during rain periods, and should be avoided in areas when and where ponding occurs.

The proposed irrigation parameters for the site are shown in Table 4-1 below. Implementation of the irrigation scheme will provide an average irrigation contribution sufficient for site landscaping and maintenance.

**Table 4-1 Proposed Irrigation Parameters**

| Parameter | Clay |
|---|---|
| Irrigation Trigger | Soil water deficit >10mm |
| Irrigation Application | To Drained Upper Limit |
| Grass Species | Kikyiu |
| Nutrient Concentration (mg/L) | 10:5 N:P |
| Holding tank size (kL) | 720 |
| Soil Type | Clay |

## 4.2 Water Balance

Considering parameters such as irrigation scheduling, irrigation area, plant type and storage volumes, it is considered that the correct management of the activity in accordance with the SBMP would generate minimal overflows from the effluent storage tanks.

The combination that produced an acceptable outcome in terms of the above requirements is summarised below.

> Effluent Production: 29.2ML/year (plant caters 400 persons for 200L/person/day).

> Buffer Storage capacity: Approximately 9 days wet-weather storage.

- Application Rate: Up to 7.3 ML/ha/year over 4.0 ha (the system includes no contribution from infiltration and rainfall directly on the buffer storage as tank is enclosed).
- Vegetation Irrigated: Kikuyu (or equivalent grass or pasture). It would be assumed that occasional slashing and removal of the grass off-site would be practised.
- Irrigation schedule Irrigate to drained upper limit when soil water deficit 10mm. No irrigation occurs if soil is saturated, and/or rainfall is occurring.

Under the above conditions, approximately 90% of the effluent was recycled (thereby producing a 10% rate of overflow of the system which is acceptable).

According to NSW DECC guidelines for managing STP overflows, where medium strength treated effluent is used for irrigation (as in the case here), overflow of the buffer storage is acceptable, provided it occurs in less than 25% of years (i.e. is sufficient to prevent 75$^{th}$ percentile of years overflows), therefore the balance between the irrigation rate and the storage capacity of the system is considered acceptable.

## 4.3 Selection of Irrigation Areas and Irrigation Management

Proposed irrigation areas have been selected from landscaped communal open space and suitable buffer areas around the site. (Refer to Figure 2). The irrigation storage facility will be co-located with the STP.

Potential impacts associated with the operation of the proposed effluent irrigation scheme may include the following.

- Contamination of the receiving environment (including land, groundwater and surface waters) as a result of an untreated or treated effluent spill.
- Contamination of the receiving environment (including land, groundwater and surface waters) as a result of failure of components used in the effluent irrigation scheme.
- Sedimentation of receiving waters as a result of the erosion and sediment wash-off from the irrigation area, as a result of degradation of the vegetation cover.

Mitigation of these impacts will be achieved through implementation of proposed management measures and periodic monitoring of the receiving environment.

Generally, management measures will consist of effluent quality and quantity monitoring, infrastructure inspection and environmental monitoring in order to minimise the environmental risk associated with the operation of the effluent irrigation scheme.

The following procedural requirements will be complied with during operation of the effluent irrigation scheme.

1. Irrigation shall be restricted to the maximum rate used in the analyses that are carried out to size the irrigation area.
2. Only treated effluent of the appropriate standard shall be used for irrigation. Should the quality of effluent be determined by testing to be unsuitable for land irrigation, the effluent is to be pumped back into the inlet balancing storage tank for re-treatment.
3. Adequate buffer distances to watercourses shall be maintained (not relevant for this development).
4. Meters will be installed in the area to determine the soil moisture at the commencement of irrigation, to eliminate the possibility of surface water ponding or runoff occurring where appropriate.
5. There is to be no effluent irrigation during rain events. Irrigation shall only re-commence a minimum of 4 hours following cessation of rainfall.
6. There is to be no ponding of effluent at the irrigation area. Should ponding occur, irrigation shall cease until such time as the soil moisture content has sufficiently reduced to eliminate further ponding.
7. Appropriate signage indicating that recycled water is not suitable for drinking shall be provided and maintained at every accessible outlet from the treated effluent distribution system. Signs shall be easily visible and maintained regularly. Signage shall also be provided and maintained at the irrigation area informing of the use of treated effluent for land irrigation.

8. To avoid overflow of the wet weather storage, when and if the storage level rises to within 10% of its overflow level the contingency arrangements for the possible necessity for offsite removal to increase freeboard will be activated.

9. The irrigation area shall be maintained in a well-grassed state to minimise the risk of erosion and sediment wash-off during storm events. Where necessary, turf, pasture grass or trees will be replaced to maintain the vegetation cover.

The Irrigation Management Element of the Site Based Management Plan (SBMP) discusses the implementation of this strategy in further detail.

# 5 Potential Environmental Impacts

There are potential environmental and public health impacts associated with the onsite treatment, storage and disposal of effluent and fuel storage activities as presented. The potential impacts associated with the operation of the ERAs are identified as follows:

> odour emissions and gaseous chemical release;

> noise from operation of equipment; and

> release of contaminants to land, surface water or groundwater due to effluent or sludge spill, fuel tanker rupture, tank leakage or diesel spill.

The potential impacts associated with the contaminant releases are identified below:

> contamination of land, surface water or groundwater due to poor effluent quality;

> contamination of land, surface water or groundwater due to incorrect effluent irrigation application rates;

> contamination of land, surface water or groundwater due to uncontrolled effluent and untreated stormwater discharge;

> contamination of land, surface water or groundwater due to tank leakage or rupture;

> contamination of land, surface water or groundwater due to diesel spills;

> sedimentation of receiving waters as a result of the erosion and sediment wash-off from the irrigation area, as a result of degradation of the vegetation cover;

> over nitrification or salination of soils through excessive nutrient loadings and salinity loadings;

> degradation of soil structure and increases in sodicity over time leading to reduction in agricultural/landscaping use value of the soils;

> odour emission from STP and irrigation areas;

> odour emission from fuel storage infrastructure and spilled fuels;

> public health risks due to uncontrolled access to plant and equipment, volatile organic compounds or solvents or exposure to irrigation spray aerosols; and

> public health risks due to fire from ignition or explosion of flammable liquids.

Environmental and public health impacts associated with release of untreated effluent and diesel or changes in the ambient environment will be minimised through adherence to the mitigation and control measures proposed in the SBMP for the ERAs (Section 6 onwards).

# 6 Site Based Management Plan

The following Sections discuss the site based management plan as appropriate to the various ERAs to be conducted onsite. This SBMP identifies the management strategies to be adopted to ensure the activity is managed in accordance with best practice environmental management (BPEM).

The purpose of this SBMP is to demonstrate that persons carrying out the ERAs have in place a structured framework to:

> set the environmental objectives or standards to be achieved;

> identify the potential environmental harm that may occur from the operation of the ERAs and establish and document control measures to prevent this harm as far as practicable;

> identify extraordinary factors that may cause environmental harm, and establish contingency plans to deal with these;

> ensure that all persons carrying out the activities are aware of the environmental risks, and are trained in the measures and contingency plans to deal with them;

> ensure the effectiveness of the measures and contingency plans as required, by implementing monitoring of environmental performance;

> ensure record keeping to assist in the communication of environmental performance throughout the organisation and to DEHP; and

> ensure periodic reviews of environmental performance and continual improvement.

The SBMP is to be adopted by Adani Mining Pty Ltd in the planning and management of the ERAs.

## 6.1 Preamble to the Site Based Management Plan

### 6.1.1 Legislation and Policy Framework

The primary environmental legislation relevant to this SBMP is the *Environmental Protection Act 1994* (EP Act) and subordinate legislation, specifically the *Environmental Protection Regulation 2008* (EP Reg) and the *Waste Reduction and Recycling Act 2011* and sub-ordinate legislation. The EP Act protects environmental values through the development and implementation of environmental protection policies, and regulates environmentally relevant activities prescribed in Schedule 2 of the EP Reg.

The *Environmental Protection (Air) Policy 2008* (EPP Air) ensures protection of ambient air quality and specifies indicators and air quality goals for control of the release of airborne contaminants.

The *Environmental Protection (Noise) Policy 2008* (EPP Noise) specifies an acoustic quality objective for protection of the well-being and amenity of individuals and the community in residential areas.

The *Environmental Protection (Water) Policy 2009* (EPP Water) ensures protection of environmental values from activities that may result in the release of contaminants to waterways or stormwater drains.

*The Work Health and Safety Act 2011* ensures protection of all personnel and the environment when storing and handling dangerous goods.

### 6.1.2 Terminology

The term **Contractor** refers to any party of company performing works associated with the operation of an ERA and includes all employees of the Contractor and sub-contractors.

The term **Council** or **IRC** refers to the Isaac Regional Council.

The term **DEHP** or **Administering Authority** refers to the Department of Environment and Heritage Protection.

The term **Environmental Harm** refers to any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration or frequency) on an environmental value, and includes environmental nuisance.

The term **Operator** refers to The Adani Mining Pty Ltd or any party or company responsible for the operation of the ERAs to achieve compliance with this SBMP and for ensuring all statutory requirements are understood and permits obtained. It is anticipated that the Operator with respect to these ERAs will be the principal construction Contractor.

The term **Plant** refers to all matters associated with the operation of the sewage treatment plant (STP) and associated infrastructure.

The term **SBMP** refers to this Site Based Management Plan.

The term **Site** refers to the proposed development located on part of Lot 662 on PH1491.

The term **the Operation** refers to all matters associated with the operation of the ERAs at the proposed site.

## 6.2 SBMP Objectives

The objectives of this SBMP are to minimise adverse impacts on the environment by:

> Ensuring all environmental safeguards are carried out correctly; and

> Managing site activities effectively.

## 6.3 SBMP Structure

The components of this SBMP include strategies to manage the following elements.

> Air quality (odours and dusts)

> Noise management

> Storage and use of hazardous materials

> Stormwater control and water quality

> Waste management

> Environmental emergencies

> Complaints Management

> STP Operation

> Effluent Quality Management

> Irrigation Management

Each element of the SBMP includes the following key components.

> ***Rationale***: identification of the element to be managed and the potential environmental impact of activities associated with each element.

> ***Objective/Target***: identification of the environmental objective(s) and target(s) to be achieved in line with the rationale and in compliance with applicable legislation.

> ***Implementation Strategy***: management measures to be implemented in order to achieve the stated objectives and targets and to ensure impact mitigation.

> ***Performance Indicators***: measurable indicators and standards set to assess the efficiency of management measures and determine compliance with the SBMP.

> ***Monitoring***: monitoring requirements to measure compliance with the performance indicators and frequency of monitoring.

> ***Record Keeping***: details of record keeping requirements over the life of the SBMP.

- ***Reporting and Review***: the requirements for reporting of monitoring results and review of management measures where required.
- ***Corrective Action***: measures to be undertaken should monitoring indicate non-compliance with performance indicators

### 6.3.1 Environmental Commitment

Adani Mining Pty Ltd is responsible for ensuring that its activities are undertaken in an environmentally sustainable manner and aims to minimise environmental impacts and continuously improve its environmental performance.

The preparation of this SBMP forms an integral part of the commitment to minimise the environmental risks of its activities.

### 6.3.2 Responsibilities and Training

The Operator or representative assumes responsibility through its Operations Manager and other relevant line managers for the implementation of this SBMP.

All persons employed in the operation of the site shall be instructed as to Adani Mining Pty Ltd.'s corporate responsibilities and their individual responsibilities as set out in this SBMP and as provided by the EP Act, including:

- **General Environmental Duty –** whereby a person in the performance of their duties shall not do so in a manner which will cause, or is likely to cause, environmental harm unless the person takes all reasonable and practical measures to prevent or minimise such harm.
- **Duty to Notify Environmental Harm –** whereby if a person in the performance of their duties becomes aware that serious or material environmental harm is caused or may be caused by their activity or by someone else's' activity, that person must as soon as practicable report the nature and circumstances of the relevant event to the Operator whereupon the Operator must immediately notify DEHP.
- **Compliance with SBMP –** whereby a person in the performance of their duties shall do so in a manner that ensures that the provisions of this SBMP are complied with.

All personnel entering the site will be inducted as necessary, with particular emphasis on environmental control measures and emergency response.

### 6.3.3 Site Induction

It is the responsibility of the Operations Manager to ensure all site personnel receive appropriate awareness training and environmental induction prior to commencement of works.

The induction shall include instruction regarding the following environmental objectives and policies:

1. Due diligence, including:
   - development, establishment and operation of a pollution prevention system;
   - ensuring that people with ultimate responsibility receive reports;
   - ensuring those with the ultimate responsibility know the environmental laws; and
   - ensuring those with the ultimate responsibility deal personally with system failures.
2. Duty of Care:
   - all management and staff have an environmental duty of care. Where deemed appropriate for short term personnel and contractors, the Operations Manager may elect to provide a brief environmental explanation/induction and control access to the site.

The Operations Manager shall maintain a signed register of all inductees and monitor the existing workforce to ascertain whether additional training is required.

### 6.3.4 Environmental Audits and Reviews

Environmental performance shall be monitored throughout the project to determine if and when additional environmental auditing activities are required.

The SBMP shall be reviewed and updated as required on changes to the activity, with the updated copy kept onsite.

### 6.3.5 Environmental Records

The results of any monitoring from the operation of the development and any corrective actions taken in respect thereof shall be recorded in the environmental management records for the site pursuant to this SBMP.

A copy of the latest copy of the SBMP, relevant development approvals and environmental records shall be retained onsite in the site office.

All environmental records shall be kept for a period of five years.

Adani Mining Pty Ltd Group shall make all records available for inspection by relevant authorities upon request.

### 6.3.6 Environmental Non-Compliance with SBMP

Adani Mining Pty Ltd and its representatives shall assume responsibility for implementation of this SBMP. Where the Operator becomes aware of a site or operational condition that does not comply with stated performance indicator(s) of this SBMP, there is a requirement for corrective action to be undertaken.

A Corrective Action Request (CAR) form is to be completed and authorised where appropriate in general compliance with the example CAR form provided in Appendix A of this document. The Operator is also required to maintain a register of CARs, which shall demonstrate that appropriate actions have been completed within a suitable timeframe.

It is the responsibility of management to notify DEHP in the event of a notifiable incident/complaint (as defined in s320 of the EP Act).

In some instances, further investigation or monitoring may be required to establish whether the Operator has failed to adequately implement the SBMP, or has failed to comply with relevant legislation, guidelines and statutes. In these instances, an independent party, such as a Consultant, shall carry out the investigation or monitoring.

Any CAR registered in accordance with this SBMP shall be provided to the Local, State or Commonwealth Government Department, any statutory authority or other person, consensually or as lawfully required.

# 7 Environmental Management Measures ERA 8

## 7.1 ELEMENT 1: Air Quality (Odour and Emissions)

**Rationale**

Air emissions and associated odours from the site may be produced from vehicle movements, exhaust emissions, plant and equipment servicing, fuel storage and refuelling activities amongst others.

**Objective/Target**

To minimise activities resulting in the introduction of excessive fumes and dust to the local atmosphere as far as practicable, and comply with performance indicators.

**Implementation Strategy**

All vehicles and equipment shall be operated and maintained in accordance with the manufacturer's specifications.

Refuelling shall only occur in the defined area, and fuel and oil storage areas shall be maintained and operated to minimise emissions to the atmosphere via leakages or spills.

The fuel storage area shall be maintained in a neat and tidy condition at all times.

Spilt product shall be cleaned up using dry methods as quickly as practicable to prevent wind-blown materials and fumes.

Tank integrity shall be tested and maintained in accordance with the manufacturer's specifications.

Tank leak tests shall be conducted regularly in accordance with the manufacturer's specifications.

All chemicals to be stored as per the Material Safety Data Sheets (MSDS) requirements.

All refuelling areas are to be sealed with an impervious surface.

**Performance Indicators**

No air quality (odour, particulate matter, dust) complaints received from nearby sensitive places.

Compliance with the conditions of the DA.

**Monitoring**

At the request of the Administering Authority and in response to a complaint (other than a complaint which is frivolous or vexatious) being lodged about unreasonable air emissions, monitoring shall be undertaken for the relevant emission type (e.g. dust/volatile organic compounds/odour).

**Record Keeping**

The Operator shall maintain a record at the site office of:

> all complaints received in relation to air quality;

> all tank integrity testing and leak tests conducted; and

> any monitoring results undertaken including details of corrective actions and/or repairs undertaken.

The Operator shall make all records available for inspection to the Administering Authority upon request.

**Reporting And Review**

Environmental monitoring results shall be submitted to the Administering Authority within 14 days of completion of monitoring.

**Corrective Action**

In the event of non-compliance with performance indicators the following corrective actions are to be implemented:

- identification of the contaminant source(s);
- implementation of appropriate mitigation measures as determined by the Operator within an agreed timeframe;
- undertake validation monitoring of emission levels at nominated locations as required by the Administering Authority;
- provision of validation monitoring results to Administering Authority;
- notification of complete corrective actions; and
- review of implementation strategy to ensure sufficiency and prevention of recurrence.

The Operator shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

## 7.2 ELEMENT 2: Noise

**Rationale**

Operation of the STP and fuel storage facility will involve the use of equipment and vehicles that will produce noise (e.g. tanker refuelling, generator noise, alarms, pumps, etc.) which may have a potential impact on the acoustic environment through the emission of nuisance noise affecting surrounding noise sensitive receivers. The nearest residential land is located adjacent to the proposed development.

**Objective/Target**

To control noise generated by activities and to ensure acceptable levels of noise amenity at the closest sensitive receptors to prevent nuisance complaints.

No receipt of noise complaints from nearby noise sensitive receptors.

**Implementation Strategy**

All noise generating equipment shall be operated and maintained in accordance with the manufacturer's specifications to minimise noise emissions.

Ensure that silencers fitted to air compressors, pumps, fans and blowers and other noisy machinery are effective.

All vehicles are to be maintained in accordance with manufacturer's specifications to reduce noise emissions.

Should complaints about noise be received, the Operator is to undertake corrective actions as required. The Operator is committed to conduct noise monitoring should there be a complaint or a monitoring request by the administering authority.

**Performance Indicators**

No noise complaints received from nearby sensitive receptors.

Noise emissions from the activity must comply with the EPP (Noise) objectives. No noise complaints received from nearby sensitive receptors.

Compliance with the conditions of the DA.

The Operator's complaints procedure is to be complied with at all times.

**Monitoring**

At the request of the Administering Authority in response to a reasonable noise complaint, noise monitoring shall be undertaken.

Noise monitoring undertaken in accordance with the requirements of the Administering Authority and latest edition of DEHP's *Noise Measurement Manual*.

**Record Keeping**

The Operator shall maintain records at the site office of:

> all complaints received in relation to noise emissions; and

> any monitoring results undertaken including details of corrective actions and/or repairs undertaken.

The Operator shall make all records available for inspection by Administering Authority upon request.

**Reporting And Review**

Noise monitoring results are to be submitted to the Administering Authority within 14 days of completion of monitoring.

**Corrective Action**

In the event of non-compliance with performance indicators the following corrective actions are to be implemented:

> identification of the source(s) and timing of nuisance noise;

- implementation of appropriate mitigation measures to reduce nuisance issue as determined by the Operator within an agreed timeframe;
- liaise with the Administering Authority and/or complainant over remedial action;
- undertake noise validation monitoring of noise levels at nominated locations as required by the Administering Authority;
- provision of noise validation monitoring results to the Administering Authority;
- notification of complete corrective action(s); and
- review of implementation strategy to ensure sufficiency and prevention of recurrence.

The Operator shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

## 7.3 ELEMENT 3: Storage and Use of Hazardous Materials

**Rationale**

Hazardous materials are substances that, because of their chemical, physical or biological properties, can potentially cause harm to people, property and the environment.

Fuel and oil have the potential to enter the environment in a number of different ways including inappropriate use, leaks and spills. These substances require careful storage and handling to ensure no adverse impacts are caused to human health, property or the environment.

Other hazardous substances such as solvents, chemicals and oils may also be stored on site in small quantities and while these present a lesser risk, still need to be managed appropriately.

**Objective/Target**

To reduce the risk of potential environmental harm or incidence caused through the storage and use of hazardous materials.

To comply with the legislative requirements and relevant Australian Standards and Material Safety Data Sheets (MSDS) for the handling of hazardous materials.

**Implementation Strategy**

The type, quantity, Material Safety Data Sheet (MSDS) and storage location of all hazardous materials, along with all emergency contacts, shall be kept in a dedicated register onsite. Hazardous materials shall be used only in accordance with the manufacturer's instructions.

Tank integrity shall be tested and maintained in accordance with the manufacturer's instructions.

The aboveground tank refilling operations are to be supervised by a competent fuel supplier contractor at all times.

The handling and storage of dangerous goods shall be in accordance with standards contained in AS1940-2004 *Storage and Handling of Flammable and Combustible Liquids*. An up-to-date copy of AS1940-2004 and any tank operation and maintenance shall be kept onsite at all times.

The facility shall maintain absorbent materials, spill kits, fire extinguishers and other containment equipment in clearly identified and unobstructed positions for ready deployment in the event of a spill. Material used to clean spills shall be disposed of in appropriate lidded containers.

Bulk hazardous materials (including hazardous waste materials) in containers of 20L or greater are to be stored within bunded areas and only be disposed of by a licensed contractor and in accordance with relevant statutory approvals.

**Performance Indicators**

Hazardous materials are handled and stored in accordance with *AS1940-2004 Storage and Handling of Flammable and Combustible Liquids* and the *Work Health & Safety Act 2011* legislation.

No spills or leaks as a result of inappropriate handling and storage of hazardous materials.

No oil films or surfactants observed on any stormwater discharges from the site.

**Monitoring**

Regular inspections of stormwater discharges to identify oil films or surfactants following significant rainfall events.

**Record Keeping**

Records are to be maintained of routine inspections, inventory checks, discrepancies, investigations into any identified discrepancies and subsequent corrective actions.

The Operator is to keep copies of all waste tracking documents relating to regulated wastes removed from the site. Waste tracking documentation shall include the volume of regulated waste material removed and the final destination of the waste.

All records are to be made available for inspection by the relevant Administering Authority on request.

**Reporting And Review**

The Operator shall regularly evaluate procedures for fuel and hazardous materials storage and refuelling, and may implement further strategies to ensure significant problems do not emerge.

The Operator shall report to the Administering Authority at the time of an environmental audit the requirements to complete a CAR and the actions taken in respect of the CAR.

**Corrective Action**

Emergency response procedures shall be implemented in the event of an emergency in accordance with Element 6- ERA 8 (Environmental Emergencies) of this SBMP.

In the event of non-compliance relating to hazardous materials handling and storage the following corrective actions are to be implemented.

> Investigate details of the cause of the non-compliance, incident, or complaint.

> Response to complainant, if relevant, outlining procedure for corrective actions and proposed timeframe for implementation of corrective actions.

> Increase rate of inspections and maintenance of bunds and containment systems.

> Implementation of appropriate mitigation measures as determined through the CAR process and within the agreed timeframe noted on the CAR.

> Review of implementation strategy to ensure adequacy and prevention of recurrence.

> Conduct validation monitoring, as appropriate.

> Document non-compliance and any corrective and/or preventative actions taken.

The Operator shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

## 7.4 ELEMENT 4: Water Quality & Stormwater Control

**Rationale**

Management of stormwater runoff from the facility is necessary to ensure local receiving waters are not adversely impacted by contaminated stormwater. Impacts from the facility could include the release of contaminants through inappropriate or unauthorised activities, uncontrolled stormwater runoff, fuel or oil spills, damaged vehicles, accidental or emergency discharges during tank filling operations, inappropriate storage of wastes and waste disposal.

**Objective/Target**

To manage facility operations to ensure no contaminants are discharged or released from the site to any waters, or bed and banks of any waterways.

**Implementation Strategy**

Stormwater runoff that has been in contact with any contaminants at the site shall not be released (discharged) to any waters, roadside gutter or stormwater drains without appropriate treatment.

Activities with the potential to release contaminants are to be prevented from occurring near stormwater drains.

Spills and leaks are to be cleaned up as soon as practicable, and prevented from accessing any stormwater drains. Any leaks and bund integrity compromise must be fixed as soon as practicable.

Hardstand areas in the fuel storage area and tanker refuelling area are to be cleaned by sweeping rather than hosing where possible.

Fuel delivery and bulk tank filling activities shall be supervised and carefully conducted to prevent tank overfilling and spillage. Bulk tank filling activities and transport of dangerous goods must only be conducted by licensed persons.

Spill kits, absorbent material and other containment equipment must be maintained in clearly identified and unobstructed locations ready for use in the event of a spill.

Minor storages of solvents, oils, greases and other flammable liquids will be appropriately stored in bunded areas on site.

Any stormwater drains, sumps, pits and pipes must be clean and free from potential blockages (e.g. litter, sediments, organic matter, solids, etc.).

Visual inspections shall be carried out during significant rainfall events in order to identify any visible signs of hydrocarbon contaminated stormwater or contaminated run-off leaving the site.

All reasonable and practicable erosion protection measures and sediment control measures to be implemented and maintained to minimise erosion and the release of sediment. Reasonable and practicable measures are outlined in *Soil and Erosion Control. Engineering Guidelines for Queensland Construction Sites* (June, 1996) published by the Institution of Engineers, Australia, Queensland Division.

Erosion control and sediment control structures must be maintained at all times and must be checked, repaired or replaced as required after each rain event.

**Performance Indicators**

Compliance with EPP (Water) Policy 2009.

All stormwater conveyance and treatment devices are functioning appropriately.

No visible oil, grease or litter in stormwater discharges.

Discharge of stormwater from the site must achieve the following criteria:

> pH 6.5 – 8.5;

> suspended solid concentrations do not exceed 50mg/L;

> dissolved oxygen is maintained at >80% saturation; and

> no visible oil films and/or surfactants on any stormwater discharges from the site.

Compliance with the conditions of the DA.

**Monitoring**

Reviews shall be carried out at a frequency of not less than monthly to assess the effectiveness of the stormwater management system and shall include the following tasks.

> Visually inspect stormwater discharges to ensure no hydrocarbons or other contaminants are being discharged from the site.

> Monitoring of all treatment devices for maintenance requirements shall be undertaken as per the manufacturer's requirements but not less than monthly.

If required by the Administering Authority stormwater discharge shall be monitored at points of exit from site, and quality compared against the stated performance indicators.

**Record Keeping**

The Operator shall maintain records at the site office of:

> all complaints received in relation to water quality; and

> any monitoring results undertaken including details of corrective actions and/or repairs undertaken.

The Operator shall make all records available for inspection by Administering Authority upon request.

**Reporting And Review**

The Operator shall report to the Administering Authority at the time of an environmental audit any requirement to complete a CAR and the actions taken in respect of the CAR.

The Operator shall advise the Administering Authority of any significant pollution incident. A significant incident with respect to pollution would be an incident in which pollutants are released to the surrounding environment in quantities which cannot immediately (i.e. in less than 15 minutes) be recovered by emergency procedures outlined in Element 6 (Environmental Emergencies) of this SBMP.

**Corrective Action**

In the event of a fuel or oil spill, emergency procedures shall be implemented in accordance with Element 6 – ERA 8 (Environmental Emergencies) of this SBMP.

An incident and/or failure resulting in a corrective action may include:

> contaminated stormwater discharged from the site to receiving waters; and

> poorly maintained or damaged control devices.

Should non-compliance or an incident occur, any source(s) of contamination is to be located immediately, and the following measures implemented.

> Investigate details of non-compliance/incident.

> Isolation of contaminant, if possible, until remedial measures are fully implemented. Appropriate mitigation measures may require consultation with relevant experts (where required).

> Increase rate of inspections, maintenance and clean-outs as appropriate.

> Review of implementation strategy to ensure adequacy and prevention of recurrence.

> Conduct validation monitoring, as appropriate.

> Document non-compliance and any corrective and/or preventative actions taken.

The Operator shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

## 7.5 ELEMENT 5: Waste Management

**Rationale**

Appropriate storage and handling of all wastes associated with the ERAs conducted on site is required to ensure that environmental harm is not caused through the release of contaminants to the receiving environment.

**Objective/Target**

To ensure procedures are implemented during operations to minimise any adverse environmental impacts associated with the storage, management and disposal of waste materials.

**Implementation Strategy**

The Operator shall maintain a regular waste removal schedule and document all waste removed for disposal.

The Operator shall provide appropriate methods for the collection and lawful disposal of any wastes produced at the site during operations including:

> location of waste receptacles in designated areas suitable for collection by waste disposal vehicles;

> collection and disposal of all waste of by appropriately licensed contractors at appropriate intervals;

> location of waste containers in convenient locations to encourage use; and

> facilities for the reception of wastes shall include provision for a range of materials likely to be produced, specifically spilt fuel collection materials, and shall be well labelled and sign posted.

Implement the waste management hierarchy of avoidance, reuse, recycling, energy recovery and disposal.

Wastes are to be segregated as far as practicable for reuse and recycling (e.g. cardboard, plastics, metals, etc.).

All wastes are to be stored securely in roofed or sealed waste receptacles to prevent rainwater ingress.

Waste oil generated from spills, leaks and waste oil or contaminated stormwater water collecting in bunds is to be stored separately from other wastes and in a bunded container or area and recycled if practicable.

No burning of waste relating to the activity is to be conducted onsite or offsite.

All waste must be removed from the site by a suitably licensed waste removal contractor and transported to a suitably licensed disposal site.

All regulated waste removed from the site must be removed by a person who holds a current authority to transport such waste under the provisions of the *Environmental Protection Act 1994*.

**Performance Indicators**

No uncontrolled release of waste of any kind.

Compliance with the *Environmental Protection (Waste Management) Policy 2000*.

Compliance with the conditions of the DA.

**Monitoring**

Waste collection areas shall be inspected daily to ensure wastes are stored appropriately and waste pickups arranged as required.

**Record Keeping**

Copies are to be kept of all waste tracking documents relating to regulated wastes removed from the site. Waste tracking documents shall include the volume of material removed and final destination of waste.

All records are to be made available for inspection by the relevant Administering Authority on request.

**Reporting And Review**

Maintenance of waste tracking documentation will be as required by the *Environmental Protection (Waste Management) Regulation 2000*.

Maintain a register of all wastes removed from site, their quantity and type.

**Corrective Action**

In the event of non-compliance relating to waste management the following corrective actions are to be actioned:

> investigate details of non-compliance and/or incident;

> implementation of appropriate mitigation measures as determined in consultation with relevant experts (where required) and within the agreed timeframe noted on the CAR; and

> sign off and recording of the CAR.

## 7.6 ELEMENT 6: Environmental Emergencies

**Rationale**

The most likely environmental emergencies which may occur on site are fuel spills and fire. Operational and emergency procedures and safety management systems will minimise the potential health and safety risks associated with operating the facility.

**Objective/Target**

To minimise impacts to the natural and built environment and human health arising as a result of emergencies and/or incidents.

**Implementation Strategy**

Signs provided to inform staff of necessary actions in the case of a spill or fire.

Spill kits maintained on site.

In the case of a fuel spill to land:

1. immediately enclose the spill area with temporary bunding (containment socks, sand bags, etc.) to prevent spreading;
2. immediately block off any stormwater drains to prevent contamination of waters;
3. apply bulk absorbent over the spilt material;
4. let the absorbent material absorb the spilt material;
5. collect the absorbent spilt material using appropriate tools (e.g. shovel or vacuum truck). Remediation may include removal of topsoil layer for spills on unsealed surfaces;
6. place saturated absorbent into a container for disposal in an authorised land fill;
7. repeat points 3 to 6 until area is clean;
8. collect all contaminated materials and dispose of in a dedicated metal bin with tight fitting lid labelled accordingly for disposal in an authorised landfill; and
9. inspect and re-stock the spill kits as required.

In the case of fire:

> sound the alarm;

> ring 000: Notify the fire brigade and give your name, location, type of fire (explosion, fuel fire, etc.), and details of injuries, if any. Notify ambulance and/or police service, if necessary;

> notify all relevant staff;

> evacuate the site to the assembly point and count heads - ensure the safety and wellbeing of everyone, and notify a senior member of staff if anyone is missing;

> keep the public away at a safe distance;

> turn off computers, power, gas bottles, and fuel sources, if safe to do so;

> isolate the fire by shutting off doors and windows, closing hatches and/or vents, if safe to do so. Do not close off your means of escape;

> fight the fire, if the fire is small and you are not in immediate danger. DO NOT TAKE RISKS;

> if available, an extra staff member should be sent to the roadway to direct the fire brigade;

> take action to minimise or contain environmental damage, if safe to do so; and

> immediately after the fire is over, make diary notes detailing your involvement in the emergency.

As soon as practicable after becoming aware of any emergency or incident that results in the significant release of contaminants not in accordance with the conditions of the DA, the Operator, the Administering Authority must be notified of the release by telephone or facsimile. Details shall include:

> the name of the holder of the DA;

> the location of the emergency or incident;

> the development approval reference and/or Registration Certificate reference;

> the name and telephone number of the designated contact person;

> the time of the release;

> the time the holder of the DA became aware of the release;

> the suspected cause of the release;

> the environmental harm caused, threatened, or suspected to be caused by the release; and

> actions taken to prevent any further release and mitigate any environmental harm caused by the release.

Within 14 days following the initial notification of a significant emergency or incident written advice must be provided to the Administering Authority detailing:

> proposed actions to prevent a recurrence of the emergency or incident;

> outcomes/actions taken to prevent or minimise environmental harm; and

> results of environmental monitoring.

Accurate record keeping of daily procedures will be kept to ensure that communication lines are followed in regard to operational activities.

**Performance Indicators**

Environmental harm from emergency and incident situations is minimised through implementation of emergency procedures.

Compliance with the conditions of the DA.

**Monitoring**

Stocks of fire-fighting and spill management equipment shall be checked on a monthly basis, and re-stocked as required.

Staff induction and training shall be undertaken as necessary to ensure all staff are trained in appropriate emergency management procedures.

Emergency Plans must be maintained, periodically reviewed and fire/evacuation drills regularly conducted.

**Record Keeping**

A written record of all inspections and maintenance actions undertaken shall be maintained at the site office and provided to the Administering Authority upon request.

Accurate records shall be maintained of all monitoring results.

The Operator shall make all records available for inspection to the Administering Authority upon request.

**Reporting And Review**

Environmental emergencies and incidents must be reported to the Administering Authority as soon as practicably possible.

Any environmental monitoring results shall be submitted to the Administering Authority within 14 days of completion of monitoring.

**Corrective Action**

Following an environmental emergency event the following corrective actions are to be implemented.

> Investigate details of non-compliance and/or incident.

> Implementation of appropriate mitigation measures as determined in consultation with relevant experts (where required) and within the agreed timeframe noted on the CAR.

> Sign off and recording of the CAR.

The Operator shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

# 8 Environmental Management Measures ERA 63

## 8.1 ELEMENT 1: STP Operation

**Rationale**

This Element details the operational requirements of the STP to minimise environmental harm, minimise pollutant loads to land and minimise discharges to water during operation. Effluent irrigation management is addressed in a separate irrigation management element within this plan.

Operation of the STP and effluent disposal system will be conducted in accordance with the manufacturer's management and maintenance procedures to ensure operational standards are maintained and protection of environmental values is achieved. Maintenance and management measures are required to ensure no significant impacts occur to receiving environments.

**Objective/Target**

To ensure that the STP and effluent disposal system is operated in accordance with appropriate operations and management procedures, and that the release criteria are met.

**Tasks/Actions**

> The Operator shall hold a valid registration certificate pursuant to the EP Act.

> Operational staff shall be educated in the safe use of recycled water and procedures for the operation of the STP.

> The Operator shall provide an induction program for new employees, site visitors and contractors including risk management principles.

> Staff shall be informed of provisions of the *Workplace Health and Safety Act 1995*.

> The STP shall only be operated by persons who have undergone sufficient training to be capable of operating the facility safely and efficiently.

> An alarm system shall be installed as part of the STP to inform the Operator of the STP failure. In the event that the Operator is not present onsite a 24 hour on-call system shall be established to ensure alerts raised are addressed at the earliest opportunity.

> Only authorised persons shall be permitted to access the STP at all times.

> The wet weather storage tank shall be appropriately designed and sized to prevent infiltration, stratification and algal blooms.

> Stormwater quality at the STP is to comply with stormwater quality objectives for the development in accordance with the *Queensland Water Quality Guidelines 2008* and stormwater infrastructure is to be maintained in good working order as per ERA 8 and 63 Element 4.

> Fittings with connections to the effluent irrigation system shall be colour coded and be distinguished from those of the potable water system to prevent cross connection. The pipe colour coding system shall be as follows:

- recycled water = purple pipes;
- fire suppression water = blue pipes; and
- potable Water = steel or black PVC.

> Bursts within the irrigation system shall be isolated and repaired as soon as practicable.

**Performance Indicators**

Failure of the operation of the STP and impacts on receiving environments shall indicate non-compliance with this SBMP.

**Monitoring**

Weekly inspections of the plant shall be undertaken for monitoring of plant operations and inspections of plant equipment and components. Weekly monitoring shall include visual inspections of all irrigation system infrastructure including all visible pipelines and fittings, the treated effluent storage tanks, all pumps infrastructure and connections and any stormwater diversion banks surrounding the irrigation area.

An annual audit of compliance on completion or decommissioning of the activity whichever is sooner, with conditions of development approval shall be undertaken.

**Record Keeping**

A written record of all equipment inspections and any repairs/maintenance actions undertaken shall be maintained and provided to the Administering Authority on request.

A written record of all complaints, monitoring and remediation measures shall be maintained and provided to the Administering Authority on request. This should include details of corrective actions and/or repairs undertaken.

Accurate records shall be maintained of all monitoring results. These monitoring results shall be forwarded to DEHP as part of the annual report.

**Reporting and Review**

The Operator shall report any non-compliance or emergency situations to DEHP as soon as practicable after the emergency situation occurs.

The Operator shall make all records available for inspection by relevant authorities on request.

**Corrective Action**

Non compliances with this element shall include:

> overflows, exfiltration and other effluent spill;

> consistent failure to reach the required effluent quality criteria; and

> STP offline due to equipment failure.

Should there be non-compliance with the stated performance indicator the following corrective actions are to be implemented.

> Identification of the cause of the non-compliance.

> Implementation of appropriate mitigation measures as determined by the Operator.

> Relevant validation monitoring to confirm that the nominated corrective actions have been effective.

The Operator shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

## 8.2 ELEMENT 2: Effluent Quality Management

**Rationale**

The processes involved in treatment of effluent within the STP have the potential to cause environmental impacts to water where improperly managed. Spills and leakages may occur during operations of the STP which may result in release of contaminants to receiving water environments.

The storage and irrigation of treated effluent has the potential to impact on the quality of surface waters in the locality of the STP. While the intention is to reuse all treated effluent, there will be occasions when extended wet weather periods result in an overflow of wet weather storage. The water quality management and effluent disposal strategy for the STP is to provide a wet weather storage tank which is unlikely to overtop. This element identifies the requirements for managing the quality of effluent and preventing releases of contaminants to water.

**Objective/Target**

To minimise and manage impacts to receiving water environments as a result of contaminant/effluent release and ensure that Water Quality Objectives are met.

**Tasks/Actions**

> Effluent quality monitoring instrumentation shall be provided for determining the quality of the treated effluent for parameters. Laboratory tests shall be conducted for remaining effluent quality parameters which cannot be measured onsite.

> Stormwater diversion drains shall be constructed in such a manner as to prevent stormwater contact with areas of the site where potentially contaminating activities have occurred.

> The treatment facility shall be maintained in accordance with manufacturers requirements so that the highest quality of effluent is produced and to ensure minimal risk of failure.

> The Operator shall inspect all infrastructure over the facility on a weekly basis to ensure any defects are identified and actions can be taken promptly.

**Performance Indicators**

Quality of effluent released from the STP is to comply with the following target values.

**Table 8-1 Expected Effluent Quality Discharge**

| Parameter | Quality Required | Release Limit |
|---|---|---|
| pH | 6.5-8.5 | range |
| Turbidity | < 2 NTU | maximum |
| Suspended Solids | < 15mg/L | maximum |
| Biochemical Oxygen Demand | < 10 mg/L | maximum |
| Total Nitrogen | < 10 mg/L | maximum |
| Total Phosphorous | < 5 mg/L | maximum |
| Residual Chlorine | 0.5-1.0 mg/L free chlorine | range |
| *Escherichia coli* | < 10 cfu/100ml* | Maximum |

*cfu = colony forming units

**Monitoring**

Monitoring of treated effluent shall be undertaken according to the following programme

**Table 8-2 Water Quality Monitoring Programme**

| Parameters | Location | Frequency |
|---|---|---|
| Turbidity (NTU) and Residual Chlorine | Outlet of the STP | Continuous |
| BOD, DO, SS, pH, TN, TP and Faecal Coliforms | Outlet of the STP | Monthly |
| BOD, DO, SS, pH, TN, TP and Faecal Coliforms | Point of outtake from wet weather storage to irrigation system | Monthly |
| BOD, DO, SS, pH, TN, TP and Faecal Coliforms | Overflow point from the wet weather storage tank | During any overflow event |
| BOD, DO, SS TN, TP, Faecal Coliforms | Drainage lines adjacent to the irrigation areas (if applicable) | Monthly where there is sufficient rainfall in the preceding 24 hours to cause run-off from the irrigation area (minimum rainfall required to cause run-off should be 30mm or greater). where flows are occurring |

Weekly monitoring of the condition of all infrastructure within the facility shall be undertaken to ensure any defects are identified and corrective actions undertaken. During the weekly inspection, visual inspection of the condition of all above ground distribution infrastructure over the site shall be undertaken including all visible distribution pipes and pump sheds on a weekly basis.

**Record Keeping**

The Operator shall maintain a record of any identified infrastructure detects or failure in relation effluent quality management including any corrective actions undertaken.

The Operator shall maintain a record of any monitoring results undertaken including details of corrective actions and/or repairs undertaken.

**Reporting and Review**

The Operator shall submit annual reports of all monitoring data to DEHP on annual basis or as specified in the development approval conditions.

**Corrective Action**

Non compliances of this element shall include:

> failure to reach the required effluent quality criteria;

> poorly maintained stormwater control devices; and

> contaminated waters discharging from the site to receiving waters.

Should there be non-compliance with the stated performance indicator the following corrective actions are to be implemented.

> Identification of the cause of the non-compliance.

> Implementation of appropriate mitigation measures as determined by the Principal and Consultant in consultation with the Operator.

> Relevant validation monitoring to confirm that the nominated corrective actions have been effective.

The Operator shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

## 8.3 ELEMENT 3: Odour and Noise

**Rationale**

Operation of the STP and effluent disposal system may result in emissions of odour and noise from plant and equipment. Such emissions may cause amenity impacts to surrounding land users. Adequate maintenance and management of the facilities will be required to ensure impact mitigation.

**Objective/Target**

To maintain and manage the STP and effluent disposal system to prevent emissions that may result in health or amenity impacts.

To comply with the stated performances indicators for noise and odour levels in the locality of the works.

**Tasks/Actions**

**Odour**

> All tanks within the STP facility shall be adequately sealed to minimise emission of odour.

> The effluent disposal areas shall be managed to prevent release of aerosols beyond the boundaries of the irrigation areas.

> Should complaints about odour be received, the operator of the STP shall investigate the cause of the odour and undertake corrective actions as required.

> Actions shall include visiting the complainant's locality to determine appropriate mitigation measures and the validity of the complaint. In the event of a dispute, an independent party such as a Consultant shall conduct odour monitoring if necessary.

**Noise Emissions**

> The proposed STP and associated equipment shall be fitted with noise minimisation equipment to minimise noise emissions if required. Equipment shall be securely fixed to mounting plates to prevent vibration.

> Should complaints about noise be received, the Operator of the STP shall investigate the cause of the noise and undertake corrective actions as required.

> Actions shall include visiting the complainant's locality to determine appropriate mitigation measures and the validity of the complaint. In the event of a dispute, an independent party such as a Consultant shall conduct noise monitoring if necessary.

**Performance Indicators**

Emissions of odour and noise shall not cause a nuisance at any sensitive place. In the event that complaints are received these will be investigated as soon as practicable and corrective actions identified.

**Monitoring**

Weekly inspections of the plant shall be undertaken for monitoring of plant operation and inspection of plant equipment and components.

Complaint driven noise monitoring shall be carried out at the request of the Administering authority only.

**Record Keeping**

The Operator shall maintain a record of all complaints received in relation to odour and noise disturbance including complainant details, nature of the complaint and corrective actions undertaken.

The Operator shall maintain a record of any monitoring results undertaken including details of corrective actions and/or repairs undertaken.

**Reporting and Review**

A written record of all inspections and maintenance actions undertaken shall be maintained and provided to regulatory authorities on request.

A written record of all complaints and subsequent odour monitoring and remediation measures shall be maintained and provided to regulatory authorities on request.

The Operator shall submit annual reports of all monitoring data to DEHP on annual basis or as specified in the development approval conditions.

**Corrective Action**

Should a complaint relating to excessive emission of noise or odour from the works site be received the following corrective actions are to be implemented:

> response to complainant outlining procedure for corrective action;

> identification of the source(s) of the excessive emission of noise or odour;

> implementation of appropriate mitigation measures as determined by the Consultant in consultation with the Operator;

> relevant validation monitoring of noise or odour concentrations at nominated locations; and

> notification of complainant that complaint has been closed out, with details of corrective actions undertaken.

The Operator shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

## 8.4 ELEMENT 4: Solid Waste Management from STP

**Rationale**

Waste management is to focus on appropriate methods to avoid, reuse, recycle and dispose of waste materials generated as a result of the works

**Objective/Target**

Comply with the provisions of the *Waste Reduction and Reuse Act 2011*.

**Tasks/Actions**

The Contractor shall have due regard for the waste management hierarchy detailed in the *EPP Waste.* The waste management hierarchy lists the types of waste management practices in preferred order of adoption, as detailed below.

1. Waste avoidance
2. Waste re-use
3. Waste recycling
4. Energy recovery from waste
5. Waste disposal

Grit and screenings shall be removed from site and disposed of to landfill.

Sludge materials shall be disposed of to an off-site facility and shall be collected by licensed regulated waste transporters.

**Performance Indicators**

Comply with the provisions of the EPP Waste.

Lawful disposal of all sludge, grit and screenings to a licenced waste management facility.

**Record Keeping**

Accurate records shall be maintained of the method of disposal of all waste. These records shall be made available to DEHP as required.

Records shall be maintained of removal of sludge and grit and screening materials and regulated waste certificates shall be kept at the site for the duration of the project and at Adani Mining Pty Ltd usual place of business for 3 years following project completion.

**Reporting and Review**

The Operator shall make all records available for inspection by relevant authorities on request.

**Corrective Action**

Should there be non-compliance with the stated performance indicator the following corrective actions are to be implemented:

> identification of the cause of the non-compliance;

> implementation of appropriate mitigation measures as determined by the Consultant in consultation with the Operator; and

> relevant validation monitoring to confirm that the nominated corrective actions have been effective.

The Operator shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

## 8.5 ELEMENT 5: STP Hazardous Material Storage and Handling

**Rationale**

Effluent treatment to achieve Class A effluent will involve disinfection by chlorine dosing. Maintenance of the STP will involve the storage of Hydrochloric Acid (UN No. 1789), Alum flocculent and Sodium Hypochlorite. The site is required to be managed to prevent impacts on human health and the receiving environment as a result of accidental release or spillage of hazardous substances.

**Objective/Target**

To effectively manage the safe storage, handling and disposal of dangerous or hazardous materials within the site in accordance with the *Work Health & Safety Act 2011.*

**Tasks/Actions**

Storage is in accordance with the product's Material Safety Data Sheets (MSDS), which are to be displayed with each hazardous substance.

A sufficient supply of sodium hypochlorite and other chemicals required for the operation of the STP is to be maintained.

Where hazardous substances are transferred into, or from, a container:

> spill containment is provided that can hold at least the quantity of the largest container;

> the transfer is done in a manner that avoids splashing or spillage of the substance;

> the place where the transfer occurs is set aside for that purpose, is not within the storage area, and free of obstructions;

> spill clean-up equipment is kept close by;

> the container receiving the substance cannot be damaged by the transferred substance; and

> the receiving container does not require marking.

**Performance Indicators**

Chemical storage areas are inspected and maintained accordingly to ensure no uncontrolled release from the storage area.

**Record Keeping**

A written record of all inspections and maintenance actions undertaken is maintained and provided to regulatory authorities on request.

The Operator shall make all records available for inspection by relevant authorities on request.

**Reporting and Review**

A register is maintained of all hazardous substances stored in a central location within the site. The register shall include a copy of all associated MSDS.

**Corrective Action**

Non-compliance with the element culminating in corrective action may include:

> inadequate storage of hazardous materials;

> chemical spills during transfer or unloading; or

> human health impacts from poor storage and ventilation and handling of hazardous materials.

The Contractor shall implement the corrective action as required within the agreed time frames noted on the CAR.

## 8.6 ELEMENT 6: Irrigation Management

**Rationale**

Effluent irrigation may result in the release of contaminants to soils surface waters and groundwater. Management measures are required to ensure no significant impacts occur to soils, surface waters or groundwater within the irrigation areas and the receiving environment. Class A treated effluent is to be irrigated into the designated irrigation areas in such a way as to prevent environmental harm to waters, including groundwater, soils or plant cover.

This Element provides requirements to ensure that efficient and appropriate application of treated effluent occurs within the bounds of the site and to ensure that the effluent irrigation system and irrigation area are maintained in a proper condition.

**Objective/Target**

To protect the environmental values of the receiving environment including of the soil, surface water and groundwater.

**Tasks/Actions**

> A system which restricts irrigation to land during unsuitable soil conditions shall be installed (i.e. manual or automated) which triggers or restricts irrigation from the irrigation management system and effluent storage tanks.

> Only treated effluent of the required standard shall be used for irrigation.

> All external stormwater runoff upslope of the land application area is to be diverted around the irrigation area via appropriate bunding and/or diversion drains.

> A buffer distance of 20m is to be applied and maintained from the effluent irrigation area to stormwater infrastructure (i.e. swales).

> Irrigation shall be limited to that which is sufficient to wet the soil to its undrained limit to prevent effluent runoff or ponding.

> Corrective actions shall be undertaken if the vegetation within the irrigation area is determined to be visibly degraded.

> Use of nitrogen fertiliser within irrigation areas shall be limited and applied only as required. Nitrogen deficiency shall be indicated by vegetation monitoring. Use of phosphorus based fertiliser shall be restricted.

> Erosion control measures shall be installed on areas of exposed soils.

> Irrigation shall be restricted to the maximum rate used in the analyses that are carried out to size the irrigation area.

> Visual inspection of the area will be undertaken to determine the soil moisture at the commencement of irrigation, to eliminate the possibility of surface water ponding or runoff occurring.

> There is to be no effluent irrigation during rain events. Irrigation shall only re-commence a minimum of 4 hours following cessation of rainfall. A rain sensor shall be installed to trigger the ceasing of irrigation during rainfall.

> There is to be no ponding of effluent at the irrigation area. Should ponding occur, irrigation shall cease until such time as the soil moisture content has sufficiently reduced to eliminate further ponding.

> Appropriate signage indicating that recycled water is not suitable for drinking shall be provided and maintained at every accessible outlet from the treated effluent distribution system. Signs shall be easily visible and maintained regularly. Signage shall also be provided and maintained at the irrigation area informing of the use of treated effluent for land irrigation.

> When and if the storage level rises to within 10% of its overflow level an alarm will sound which indicates the necessity for tanker removal.

> The irrigation area shall be maintained in a well-grassed state to minimise the risk of erosion and sediment wash-off during storm events. Where necessary, turf, pasture grass or trees will be replaced to maintain the vegetation cover.

**Performance Indicators**

Degradation of soil quality within irrigation areas shall indicate non-compliance with this SBMP.

Degradation of water quality within receiving environments shall indicate non-compliance with this SBMP.

Visible areas of soil erosion and poor vegetation health within irrigation areas shall indicate non-compliance with this SBMP.

Signs of soil erosion or sodicity shall indicate non-compliance with this SBMP.

**Monitoring**

Soil conditions shall be monitored at nominated sampling locations within each of the irrigation sites (refer to Figure 2). Samples from representative sites within the irrigation areas shall be collected from each of the topsoil and sub-soil strata every two years or on completion of the project, whichever is the sooner.

Soils monitoring shall include analysis of soil pH, Sodium Adsorption Ratio, Calcium/Magnesium Ratio, Exchangeable Cations, Total Cations, Electrical Conductivity, Nitrogen, Phosphorous, Calcium, Magnesium, Chloride and Sodium.

A daily recording of the volume of treated effluent released to the irrigation areas shall be recorded from the irrigation metering system.

Monthly monitoring shall include a visual inspection of the condition of the vegetation and evidence of soil erosion within irrigation areas.

**Record Keeping**

The Operator shall maintain accurate record of all effluent quality and quantity monitoring data and records shall be retained on the premises.

Accurate records shall be maintained of all monitoring results. These monitoring results shall be forwarded to DEHP as part of the annual report.

Any signs of soil erosion or deterioration of vegetation health shall be noted and appropriate corrective actions taken and recorded.

Records shall be maintained of any failure of irrigation system components and of any repairs or corrective actions undertaken.

**Reporting and Review**

The Operator shall make all records available for inspection by relevant authorities on request.

**Corrective Action**

Should there be non-compliance with the stated performance indicator the following corrective actions are to be implemented:

> identification of the cause of the non-compliance;

> implementation of appropriate mitigation measures as determined by the Consultant in consultation with the Operator; and

> relevant validation monitoring to confirm that the nominated corrective actions have been effective.

The Operator shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

Corrective action for this item may include the application of suitable soil amendments and ongoing monitoring of heavy metal accumulation in order to rectify deterioration associated with irrigation.

## 8.7 ELEMENT 7: Complaint and Incident Mitigation

**Rationale**

The operation of the STP and effluent disposal scheme has the potential to result in unplanned situations such as the uncontrolled release of effluent. Contingency procedures are required to provide for effective management of these situations.

Accidental spillage/leakage or release of contaminated material to receiving environments shall indicate non-compliance with this SBMP.

**Objectives**

To prevent degradation of the receiving environment.

To prevent the risk of health impacts on the public.

**Tasks/Actions**

**Minor Effluent Spills**

Should a minor effluent spill occur during the operation of the facilities the following response procedure shall be implemented.

1. An assessment of the size and origin of the spill is to be made by the Operator.
2. Actions shall be taken to safely stop further release of effluent from the process train. Actions may include the isolation of valves or pumps within the process train.
3. Actions shall be taken to safely contain the spilled effluent and prevent the release of the effluent to the receiving environment. Actions may include, for example, the use of sandbags or earth bunding.
4. Actions shall be taken to safely pump any captured effluent back into the balancing influent tank for treatment.
5. An assessment shall be made of the size of the spill and of the requirement to notify DEHP.

**Major Effluent Spills**

Should a major effluent spill occur during the operation of the facilities the following response procedure shall be implemented.

1. An assessment of the size and origin of the spill is to be made by the Operator.
2. If it is possible, actions shall be taken to safely stop any further release of effluent.
3. Actions shall be taken to notify DEHP of the effluent spill and an emergency spill response shall be co-ordinated in conjunction with DEHP.
4. Actions shall be taken to safely contain the effluent if this is possible. Actions may include, for example, the use of sandbags or earth bunding to aid in containing the effluent.

Clean-up of the site shall be undertaken as quickly as is practicable and appropriate actions shall be taken as instructed by DEHP.

**Complaints Management**

The Operator shall implement the following procedure should a community complaint be received which relates directly to the operation of the STP and effluent disposal scheme.

1. Complete a Complaint register form.
2. Determine if the complaint is valid and if further action is required.
3. Determine whether notification to DEHP is required.
4. The complainants shall be notified within 24 hours advising of actions that will be taken.
5. If the issue cannot be investigated and finalised within 24 hours, then information regarding the preliminary assessment of the complaint and a date when a full response will be available shall be provided within 24 hours.

6. The complaint response must be signed off by the Operator indicating that it has been dealt with satisfactorily.
7. Should the investigation of a complaint reveal a non-conformance with the requirements of DEHP, then a non-conformance is to be raised and the corrective action process initiated.

**Environmental Incidents**

The Operator shall make an assessment of any events that may be considered an environmental incident.

The Operator shall notify DEHP of any incidents that have cause of environmental harm.

An Environmental Incident Form shall be completed for any environmental incidents.

All Environmental Incident Forms shall be completed as non-conformances and corrective action initiated.

**Performance Indicators**

Complaints and incidents are dealt with expeditiously and in accordance with this procedure.

**Reporting and Review**

This SBMP element shall be continually reviewed and maintained to ensure that the best possible contingency situation management procedures are in place.

The Principal shall report any emergency situations to DEHP as soon as is practicable after the emergency situation occurs.

**Corrective Action**

Should there be non-compliance with the stated performance indicator the following corrective actions are to be implemented:

> identification of the cause of the non-compliance;
> implementation of appropriate mitigation measures as determined by the Consultant in consultation with the Operator; and
> relevant validation monitoring to confirm that the nominated corrective actions have been effective.

The Operator shall implement the corrective action(s) as required within the agreed time frame noted on the CAR.

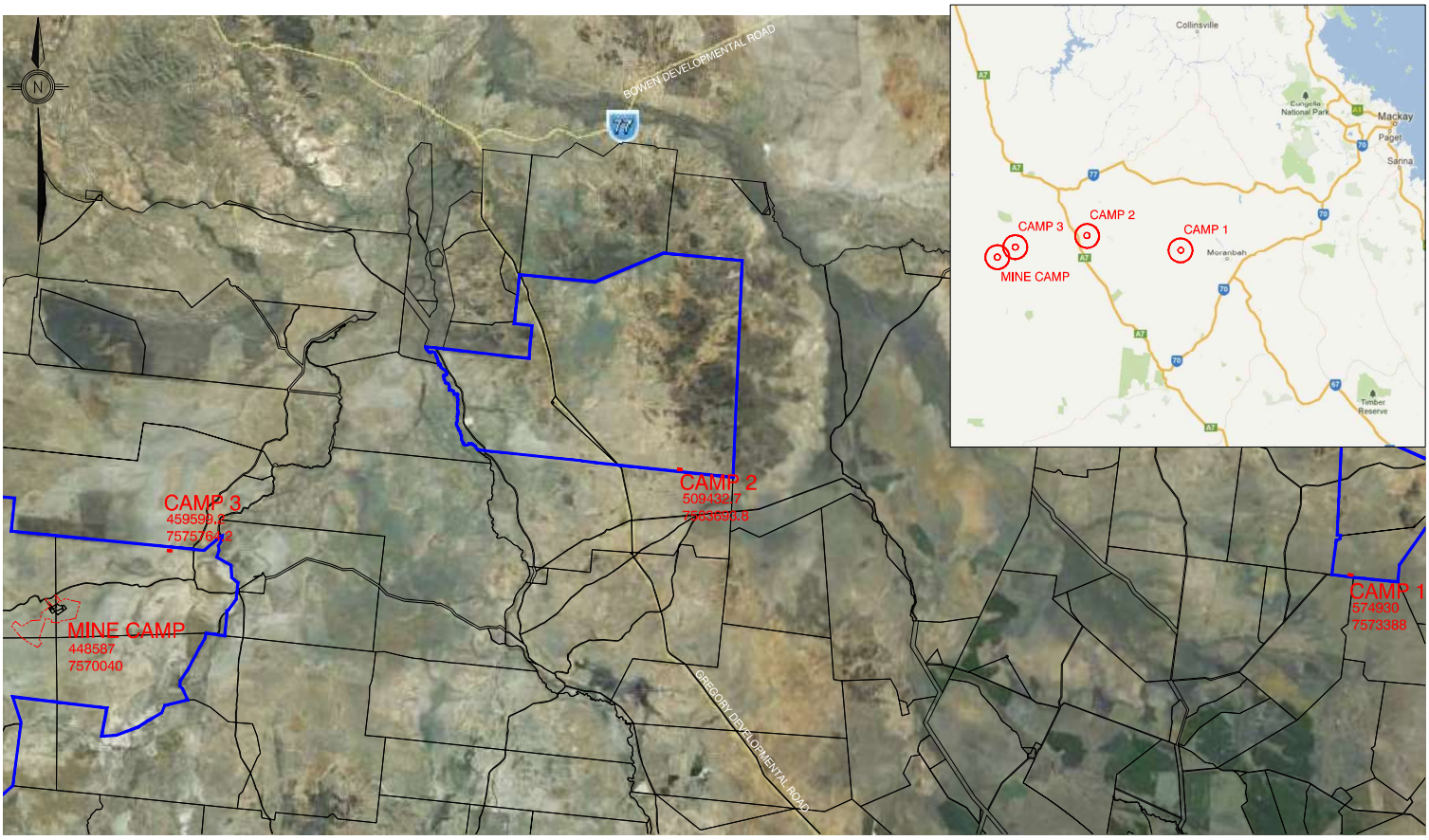
Carmichael Coal Project Construction Camps

# FIGURES

Figure 1 Site Location

Figure 2 Site Layout

Cardno
Shaping the Future




3.5 0 3.5 7.0 10.5 14.0 17.5 0km
1:350,000

Scale 1:350,000 (A3)

**FIGURE 1**
**CAMP SITE LOCATIONS**

© Cardno (Qld) Pty. Ltd. All Rights Reserved 2012.
Copyright in the whole and every part of this drawing belongs to Cardno (Qld) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or on any media, to any person other than by agreement with Cardno (Qld) Pty Ltd.

This document is produced by Cardno (Qld) Pty. Ltd (Qld) for the benefit of and use by the client in accordance with the terms of the retainer. Cardno (Qld) Pty Ltd does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by third party on the content of this document.

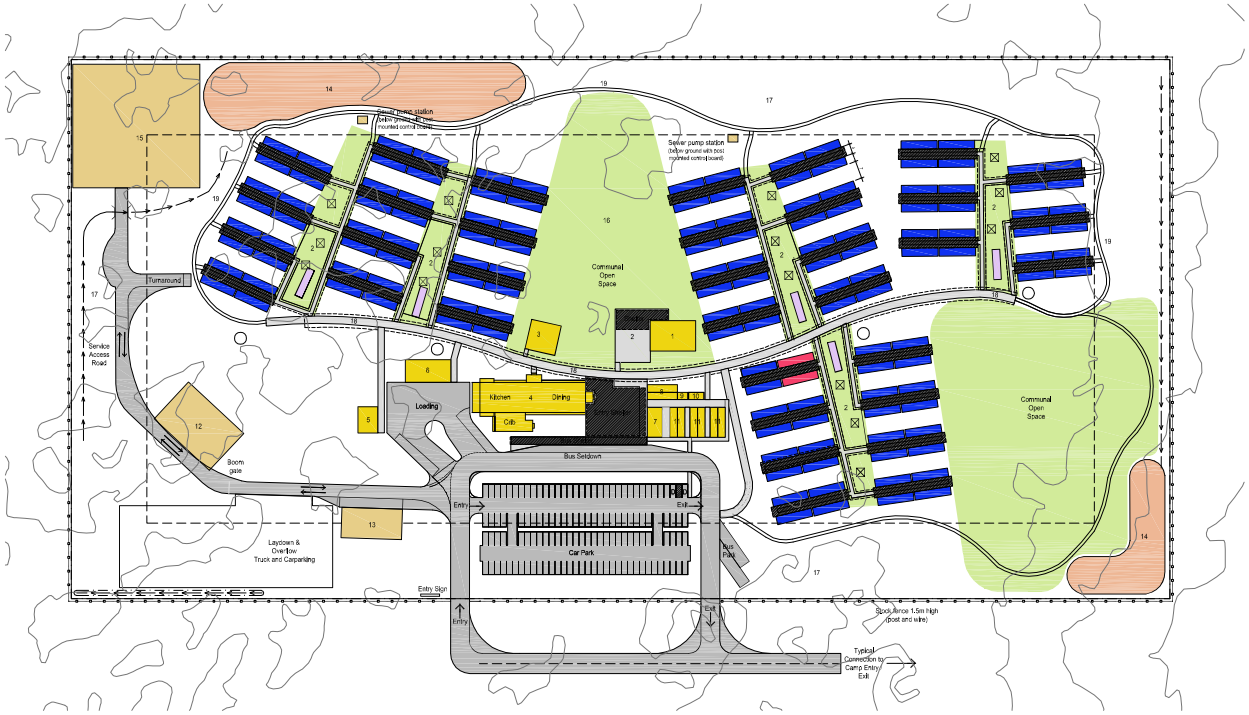
Rev: 0 | Drawn: J.M. | Checked: L.M. | Date: 16/10/2012

Project No.: 7508/90

Adani

CAD FILE: I:\7508-90 Adani\Acad\Misc\Camp locations.dwg
XREFs: DCDB

PRINT DATE: 23 October, 2012 - 8:25am




## LEGEND

1 - Recreation Centre/ Wet Mess IT & Telephone
2 - BBQ & Shelter Areas
3 - Gym
4 - Kitchen/Dining
5 - Waste
6 - Maintenance / Linen Store
7 - Office
8 - Ablution M&F
9 - Ablution (Disabled)
10 - First Aid
11 - Lockers
12 - Water Treatment Plant
13 - Generator
14 - Detention Basin
15 - Sewerage Treatment Plant
16 - Communal Open Space
17 - Fire Break (30M wide)
18 - Central Path (3M wide) with Freestanding Awning
19 - Walking Track / Maintenance (1.2M - 2.5M wide)
Fire Tank Water
Catch Drain
Perimeter Bund
Perimeter Fence

| | |
|---|---|
| ACCOMMODATION UNITS | 405 |
| DISABLED UNITS | 2 |
| CAR PARKING | 125 |
| DISABLED CARPARKING | 2 |
| BUS PARKING | 2 |
| EFFLUENT DISPOSAL (based on 100m² per person) | 4 ha |
| DETENTION BASIN | .34ha |
| TOTAL OPEN SPACE (including firebreak) | 5.66 ha |
| TOTAL SITE AREA | 9.38 ha |

0 10 20 30 40 50 100
Scale 1:1500 @ A3 - Dimensions in metres

Use figured dimensions in preference to scaling. Verify the dimensions before proceeding any work with this document and any discrepancies shall be reported immediately.
© Cardno (NSW/ACT) Pty Ltd All Rights Reserved 2012.
Copyright in the whole and every part of this drawing belongs to Cardno (NSW/ACT) Pty Ltd and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in any media, to any person other than by agreement with Cardno (NSW/ACT) Pty Ltd.

| Issue | Date | Details | Approved |
|---|---|---|---|
| A | 15.10.2012 | For Discussion | DM |
| B | 16.10.2012 | For Discussion | DM |
| C | 16.10.2012 | For Discussion | DM |
| D | 17.10.2012 | For Client Approval | DM |

COMMUNAL BUILDING
ACCOMMODATION UNIT
DISABLED UNIT
LAUNDRY
PATH
INFRASTRUCTURE
COMMUNAL OPEN SPACE
DETENTION BASIN

NOT FOR CONSTRUCTION

Cardno
landscape architecture
urban design
environmental management
Green Square Nth Tower,
515 St. Pauls Terrace,
Locked Bag 4006
Fortitude Valley Q 4006
T +61 7 3254 3277
F +61 7 3254 3299
splat@cardnovcm.eu
www.cardno.com.au/splat

Project:
RAIL CAMP

Drawing:
CAMP 3 - 400 PERSON

Client:
ADANI MINING PTY LTD

Consultants:

| Designed by: | Drawn by: | Checked: | |
|---|---|---|---|
| DM | MJ | SP | |

| Drawing No.: | Project No.: | Sheet No.: | Issue: |
|---|---|---|---|
| | SP126801 | 03 | D |

Carmichael Coal Project Construction Camps

# APPENDIX A

## Corrective Action Request

Cardno
Shaping the Future

# CORRECTIVE ACTION REQUEST

Report No: _____

Date: _____

| |
|---|
| DETAILS OF NON-CONFORMANCE:<br><br>Inspected by: |
| DETAILS OF PROPOSED ACTION<br><br>Passed to Principal (as applicable): y/n Date:<br>Reply required by: |
| CONSULTANT/PRINCIPAL ADVICE (as required):<br><br>Date action required by (if applicable):<br>Signed (by Principal or Principal's representative): Date: |
| AUTHORITY TO PROCEED<br><br>Sign: Date: |
| ACTION CARRED OUT<br><br>Sign: Date: |
| ELEMENT RE-INSPECTED BY<br><br>Sign: Date: |
| COPY ISSUED TO PRINCIPAL Date:<br><br>Sign: |

# **Appendix I** – Species List

# EXISTING SPECIES LIST PREPARED BY SAUNDERS HAVILL GROUP

Cardno
Shaping the Future

### 1.1.1 Camp 3 Area

Plant Species (D – Dominant; C – codominant; A – associated; S – Suppressed)

| Rel. dom. | Scientific Name | Common Name | Conservation Status (NCA92) | EPBC Status |
|---|---|---|---|---|
| A | *Acacia cambagei* | Gidgee | Least Concern Listed | Not Listed |
| A | *Acacia farnesiana* | Mimosa Bush | Least Concern | Not Listed |
| D | *Acacia harpophylla* | Brigalow | Least Concern | Not Listed |
| A | *Archidendropsisbasalttica* | Dead Finish | Least Concern | Not Listed |
| A | *Aristidalatifolia* | Feathertop Wiregrass | Least Concern | Not Listed |
| A | *Astreblalappacea* | Curly Mitchell Grass | Least Concern | Not Listed |
| A | *Bothrichloabladhii* | Forest Bluegrass | Least Concern | Not Listed |
| A | *Capparislassiantha* | Wait-A-While | Least Concern | Not Listed |
| CD | *Carissa ovata* | Currant Bush | Least Concern | Not Listed |
| A | *Chlorisvirgata* | Feathertop Rhodes Grass | Introduced | Introduced |
| A | *Dichanthium sericeum* | Queensland Bluegrass | Least Concern | Not Listed |
| A | *Enteropogonacicularis* | Curly Windmill Grass | Least Concern | Not Listed |
| A | *Eremophilamitchellii* | False Sandlewood | Least Concern | Not Listed |
| A | *Eriocereusmartinii* | Harrisia cactus | Introduced | Introduced |
| A | *Panicumdecompositum* | Native Millet | Least Concern | Not Listed |
| A | *Partheniumhysterophorus* | Parthenium weed | Introduced | Introduced |
| A | *Pennisetumciliare* | Buffel Grass | Introduced | Introduced |
| A | *Seneciolautus* | Fireweed | Introduced | Introduced |
| A | *Sporobolus caroli* | Fairy Grass | Least Concern | Not Listed |
| A | *Terminalia oblogata* | Yellow-wood | Least Concern | Not Listed |

# **Appendix J** – Rehabilitation Plan

# REHABILITATION PLAN PREPARED BY CARDNO CHENOWETH

Cardno
Shaping the Future

# Carmichael Coal Project Rail Camp Three Rehabilitation Plan

## Carmichael Coal Project



October 2012

Prepared for Adani Mining Pty Ltd

15 October 2012

Cardno
Shaping the Future

Prepared for Adani Mining Pty Ltd

# Document Information

| | |
|---|---|
| Prepared for | Adani Mining Pty Ltd |
| Project Name | Carmichael Coal Project |
| File Reference | CEL12014 Camp 3 161012 |
| Job Reference | CEL12014 |
| Date | 15 October 2012 |

# Contact Information

**Cardno Chenoweth**
ABN 43076992991

Level 11, 40 Creek Street
Brisbane, Qld, Australia 4000

Telephone: 07 3831 8582
Facsimile: 07 3831 8587
International: +61 3 38318582

mail@chenoweth.com.au
http://www.chenoweth.com.au/

# Document Control

| Version | Date | Author | Author Initials | Reviewer | Reviewer Initials |
|---|---|---|---|---|---|
| 1 | 12/10/12 | D.Mohr | DM | Alan Chenoweth | AC |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

© Cardno 2012. Copyright in the whole and every part of this document belongs to Cardno and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person other than by agreement with Cardno.

This document is produced by Cardno solely for the benefit and use by the client in accordance with the terms of the engagement. Cardno does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

# Table of Contents


| | | |
|---|---|---|
| **1** | **Introduction** | **4** |
| **2** | **Methodology** | **4** |
| **3** | **Site Description** | **4** |
| **4** | **Rehabilitation Procedure** | **5** |
| 4.1 | Preclearance Inspection | 5 |
| 4.2 | Site Preparation | 5 |
| 4.3 | Seeding | 6 |
| 4.4 | Maintenance | 6 |
| 4.5 | Monitoring | 6 |
| **5** | **Conclusion** | **8** |
| **6** | **References** | **9** |
| **Appendix A** | **Site Mapping** | **10** |

# 1 Introduction

To facilitate the construction of a rail corridor associated with the Carmichael Coal Project, temporary construction camps are required in several locations. Following completion of construction and decommissioning of these construction camps, the sites require rehabilitation, generally to their previous condition and land use. This rehabilitation plan for Camp Site 3 (*the Site*) has the primary goal of returning the Site to its former state ie. pasture for cattle grazing, and addresses issues of site preparation, seeding, establishment and monitoring.

This rehabilitation plan does not constitute an erosion / sediment control plan. Works associated with erosion and sediment control may be necessary prior to or in parallel with site rehabilitation, depending on time-lag between decampment and appropriate seed-sowing times. It has been assumed that Buffel Grass (*Cenchrus ciliaris*) pasture was present on the Site prior to camp construction, and is to be restored to similar condition after the construction camp is no longer required.. Any alternatives (such as more suitable pasture types) should be integrated into the current plan prior to seeding.

The primary objective of the report is to ensure that the Site can be rehabilitated to a state equivalent to or greater than its previous state in terms of vegetative cover (in this case Buffel Grass pasture).

# 2 Methodology

The following documentation has been reviewed to assist in understanding Site dynamics and associated processes that will be required to rehabilitate the Site following decampment:

> CAD drawings showing site location and structure;

> Spatial layers showing Regional Ecosystems, contour, drainage, soil type, geology and other relevant site characteristics;

> Associated site reporting;

> Aerial imagery.

Following review the rehabilitation procedure was developed and confirmed by consulting with local agricultural service providers to ensure feasibility.

# 3 Site Description

The Site is located on Lot 662 on PH1491, approximately 34km west of the township of Moranbah, where rainfall is generally concentrated in the months from November to February (BOM, 2012).The Regional Ecosystem Preclear mapping (Qld Herbarium 2009) shows the site to on Landzone 4.

Aerial photography shows the area as predominately cleared pasture with some timbered vegetation to the west. The Site is approximately 9.3 ha in size. A site map is provided in Appendix A.

Contour mapping shows the area to be of very low gradient (ie. less than 10%).

# 4 Rehabilitation Procedure

The rehabilitation procedure has been developed with reference to the Department of Agriculture, Fisheries and Forestry guidelines for Buffel Grass planting (DAFF, 2012) and further consultation with local agricultural contractors.

## 4.1 Preclearance Inspection

A preclearance (ie. preconstruction) inspection of the Site should be undertaken to gain a full appreciation of:

> Site grass cover utilising the Grass Check (Forge, 1994) methodology, including coverage and dominant species);

> Site weed cover, focussing on declared weeds and non-declared weeds with the potential to invade pastures (eg. African Lovegrass);

> Suitability of rehabilitation plan in terms of Site rehabilitation.

> Location of photopoints and pre-construction photographs, as a basis for later monitoring.

To maximise rehabilitation effectiveness, the rehabilitation plan should be updated following Site Preclearance inspection and survey.

## 4.2 Site Preparation

Following decampment, the following tasks should be implemented, preferably in the listed order:

> An erosion and sediment control plan should be implemented if required.

> Garbage and coarse waste (including building materials should be removed from the site.

> Any construction materials such as roadbase should be scraped and taken from the site.

> Topsoil and subsurface material (if removed) should be returned to the site. If unavailable, suitable fill should be utilised to recontour the Site, with a minimum 100mm of local topsoil utilised to cap the Site (for areas where topsoil has been removed only.

> Weeds identified in the Site Preclearance Inspection should be treated utilising an appropriate treatment method for the weed species as recommended by the Department of Primary Industries (e.g. registered herbicide at the listed rate).

> Cattle should be isolated from the Site using existing fencing or temporary fencing, preferably until the crop has both seeded and spread over a minimum 70% of the site .

> The Site should be tilled / cultivated in preparation for seeding. Such cultivation should be avoided following heavy rains to avoid soil clods which will hamper seeding.

## 4.3 Seeding

**Seeding will be undertaken as follows:**

> The seed is best sown just ahead of the expected rainy season (November to February). Weather outlooks available at the time of the project will provide better guidance on this matter.

> The site should be lighly watered immediately prior to seeding (or within the same pass) to reduce dust assist the adhesion of seed to the ground surface.

> Seeding rate: Bare seed at 4kg/ha (Seed coated to prevent predation and facilitate spread will be required at 8kg/ha). Seed mix can be either pure Buffel Grass or a local mix such as a “Miner’s Mix” which contains other cover crop species. Seed must be within its viability period.

> Seed can be sown through special buffer seed drills fitted with agitators in the seedbox to separate the seed, or with an augur device to perform the same function. Seed will not be sown at a depth greater than 10mm. The method utilised to broadcast the seed will be dependent on site moisture conditions at the time.

## 4.4 Maintenance

> Following germination, the soil must remain moist for 4-5 days for successful seedling growth. This may be in the form of retained on-site moisture, follow up-up rains or site irrigation (eg. Tractor mounted boom sprays).

> Livestock and traffic should be excluded from the Site during pasture development using existing fencing or temporary fencing, preferably until the crop has both seeded and spread over a minimum 80% of the site .

> Macropods such as kangaroos should be monitored during the growth phase of the pasture and measures such as control programs or the application of alum-based products should be implemented to deter their use of the Site should they be consitantly overgrazing the site.

> Large gaps (ie. greater than 500m$^2$) in germination should be reseeded as above.

## 4.5 Monitoring

6 months following seeding, a monitoring inspection should be undertaken to gauge rehabilitation effectiveness. Key aspects to inspect and report on include:

> Site grass cover utilising the Grass Check (Forge, 1994) methodology, including coverage and dominant species).

> Grazing by cattle or feral animals such as kangaroos.

> Presence of waste / debris.

> Photographs from identified photopoints.

> Presence of invasive weeds, including  data and control measures regarding weeds that have the capacity to seriously inhibit pasture development.

Key performance criteria include:

1. Site has been cultivated prior to seeding.

2. Site has been sown with viable Buffel Grass seed (ie. within ‘use by’ period) to a minimum of 4kg/ha (uncoated) or 8kg/ha (coated)..
3. Sown pasture species cover a minimum 80% of the ground area.
4. Class 1 or 2 Weeds declared under the Land Protection (Pest and Stockroute Act) 2002 are absent or <1% of the area, and other invasive weeds are <15% of the ground area.
5. All waste / debris have been removed from the site.

If key performance criteria have been met then rehabilitation will be deemed successful and no further reporting or actions are required.

Should any key performance criteria not be met then exclusion of grazing or further works (such as reseeding or weed control) and monitoring will be required until they have been met.

# 5 Conclusion

The re-establishment of Buffel Grass pasture in an area previously vegetated with the same pasture is likely to be successful, provided the site is prepared, any weeds removed and seeding rates are adequate, as specified in this Rehabilitation Plan. However the pasture should be monitored and allowed to establish before grazing recommences. When implemented the Rehabilitation Plan will ensure that the Site is returned to a state similar to its previous condition in terms of pasture coverage.

# 6 References

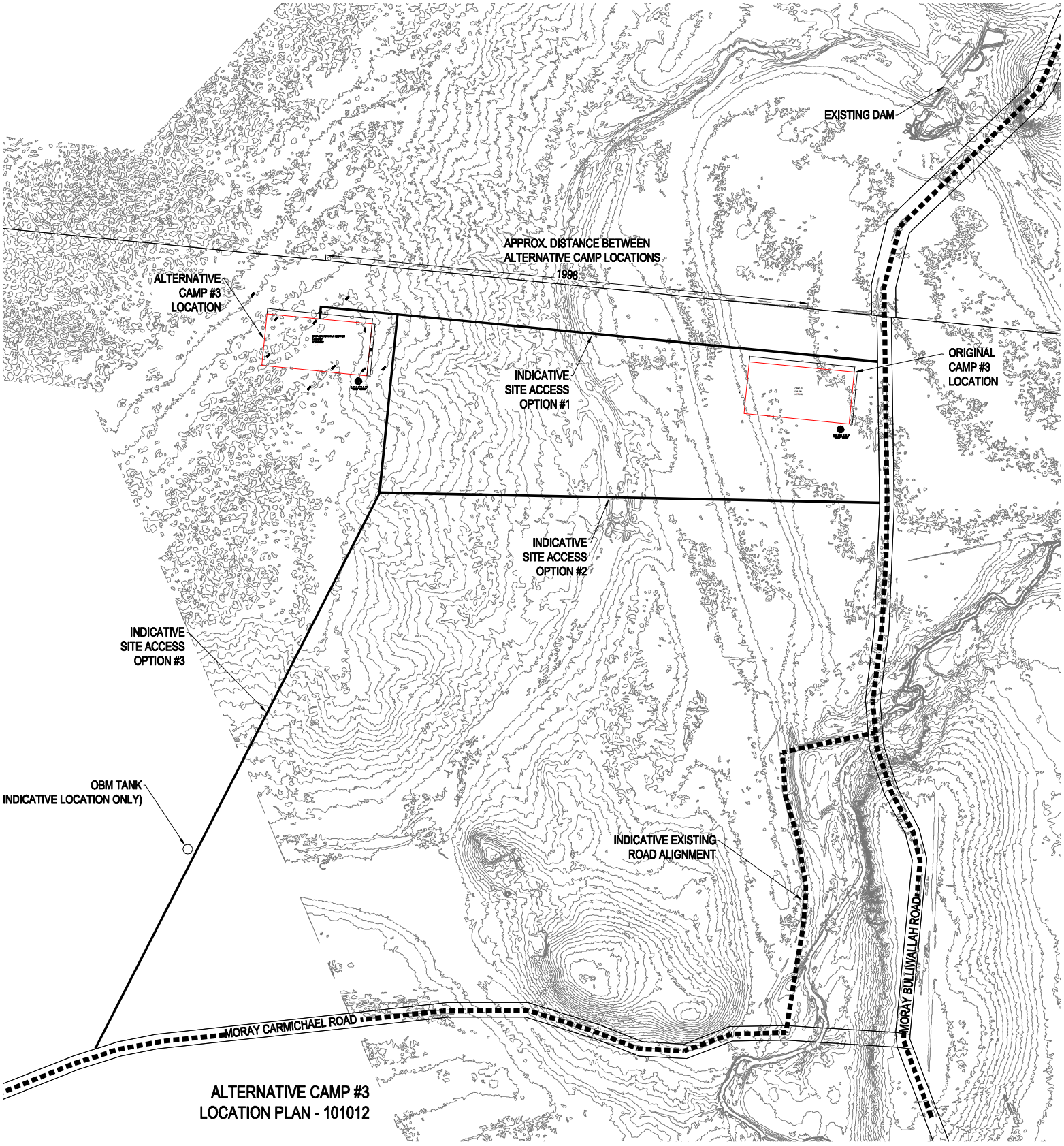
Commonwealth Bureau of Meteorology, As viewed on 15/October/2012, Rainfall Statistics, as viewed at: http://www.bom.gov.au/climate/data.

Commonwealth Department of Agriculture, Fisheries and Forestry, As viewed on 15/October/2012, Guidelines for Planting Buffel Grass, as viewed at http://www.daff.qld.gov.au/26_18055.htm#Sowing

Forge, K. 1994. GRASS Check : Grazier Rangeland Assessment for Self-Sustainability. Department of Primary Industries.

QLD Herbarium. 2009. Preclearance Mapping version 6.1.

# Appendix A Site Mapping




ALTERNATIVE CAMP #3
LOCATION PLAN - 101012

# **Appendix K** – SDAP Code Assessment

**Response column key:**
☑ Achieved
**P/S** Performance solution
**N/A** Not applicable

## 4.1 Concurrence environmentally relevant activities state code

**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** Both of the following apply:<br>(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 any edge effects on the areas<br>(2) the activity does not have an adverse effect beyond the site.<br>OR | **N/A** | Refer to comments for **AO1.2** below. |
| | **AO1.2** Both of the following apply:<br>(1) Areas of high conservation value and special significance likely to be affected by the proposal are identified and evaluated and any adverse effects on the areas are minimised, including any edge effects on the areas<br>(2) Critical design requirements will prevent emissions having an irreversible or widespread impact on adjacent areas. | ☑ | A Land Use Study undertaken as part of the preparation of the EIS has assisted in determining the location for the proposed Rail Camp 6. Environmental values were considered in the selection of the rail corridor and associated infrastructure, avoiding areas of native vegetation wherever possible. As a result, the proposed location of the Rail Camp 6 footprint is within a larger area that contains areas previously cleared for agricultural development. Remnant vegetation within the surrounding landscape persists as isolated remnants in the riparian corridor along Belyando River and in narrow fringes along the Moray Carmichael Road. However these environmental values are not within the proposed footprint for Rail Camp 6.<br>Mitigation measures for noise and air quality impacts are discussed in sections 8.9.2 and 8.10.2 of the planning report. Mitigation measures for the construction and operational phases of Rail Camp 6 are also detailed in the Rail Environmental Management Plan (EMP) of the Carmichael Coal Mine and Rail Project Supplementary EIS, Appendix W. |
| **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.<br>OR | **N/A** | Refer to comments for **AO2.2** below. |
| | **AO2.2** Both of the following apply: | ☑ | A detailed examination of the area was completed and |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| | (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.<br>(2) Areas used for storing environmentally hazardous materials in bulk are located to take into consideration the likelihood of flooding. | | assisted in the determination of the proposed location for Rail Camp 6. The proposed location is considered to represent a sound combination of environmental and logistical considerations.<br>The site is located approximately 20km south-west of Belyando, 150km west of Moranbah and 145km north-west of Clermont. The nearest residential dwellings to the temporary Sewage Treatment Plant (STP) will be the Rail Camp 6 accommodation blocks adjacent to the activity. These blocks are anticipated to be a distance greater than 20m from the STP so as to provide for adequate noise level reduction at the accommodation blocks from this source.<br>The STP is not expected to generate noise or odour levels at a nuisance level due to the system being fully enclosed and the pumps submersible. In order to provide for mitigation of noise and odour it is anticipated the STP will be arranged in such a manner that appropriate noise reduction at the nearest sensitive residence will be achieved, and that visual screening will be provided to limit any potential for the perception of odour from the STP.<br>The site is not located within a designated flood or floodplain area and is not considered to be subject to flooding. The site is generally flat with only a slight change in level. The site's highest point is RL207 Australian Height Datum (AHD) and its lowest point is RL205AHD. It is noted that the distance between these two levels is significant and the grade on the site is extremely low. The site is therefore not susceptible to landslide or erosion. |
| **PO3** The activity avoids adverse impacts on matters of state environmental significance or, where this is not reasonably possible, impacts are minimised and, where this is not reasonably possible, an environmental offset is provided for any significant residual impacts to matters of state environmental matters that are prescribed environmental matters. | **AO3.1** Matters of state environmental significance likely to be affected by the activity are identified and evaluated, and any adverse effects on the matters of state environmental significance are avoided or, where this cannot be reasonably achieved, impacts are minimised, and where this cannot be reasonably achieved, an environmental offset is provided for any significant residual impacts to matters of state environmental significance that are prescribed environmental matters.<br><br>Editor's note: Applications for development should identify anticipated losses, and outline what actions are proposed to be undertaken to offset the loss in accordance with the relevant Queensland Environmental Offset Policy. | ☑ | The Carmichael Coal Mine and Rail Project was declared a 'controlled action' requiring assessment and approval under the EPBC Act. The Commonwealth Minister for the Environment's approval of 'controlled action' subject to conditions was granted on 24 July 2014.<br>The proposed Rail Camp 6 does not propose any significant impacts on Matters of National Environmental Significance and no further approvals under the *Environmental Protection and Biodiversity Conservation Act 1999* are required in addition to those sought and approved under the EIS.<br>For further information, refer to the Carmichael Coal Mine and Rail Project EIS Volume 3, Chapter 5 and Volume 4 Appendix J. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| **Critical design requirements** | | | |
| **PO4** 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 environmental management. | **AO4.1** The activity does not involve the storage, production, treatment or release of hazardous contaminants, or involve a regulated structure.<br>OR | **N/A** | The proposed Rail Camp 6 includes a proposed fuel storage area which does not exceed the thresholds for ERA 8 – Chemical Storage. Refer to comments for **AO4.2** below. |
| | **AO4.2** Development ensures that—<br>(1) All storage provided for hazardous contaminants includes secondary containment to prevent or minimise releases to the environment from spillage or leaks.<br>(2) Regulated structures must comply with the *Manual for assessing consequence categories and hydraulic performance of structures,* Department of Environment and Heritage Protection, 2013.<br>(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.<br>(4) The design of the facility—<br>(a) prevents or minimises the production of hazardous contaminants and waste, or<br>(b) contains and treats hazardous contaminants, rather than releasing them. | ☑ | This application does not trigger ERA 8 – Chemical Storage as the proposed fuel storage area will not exceed the thresholds. The proposed fuel storage area includes a bulk fuel storage tank and generator (Genset) for the facilitation of electricity to the site. The fuel storage area is to be completely enclosed protecting the fuel storage area from vehicular collisions. An indicative layout of the fuel storage area is shown in Appendix A of the ERA Report contained in Appendix H of the planning report.<br>Use, storage and disposal of hazardous chemicals, dangerous goods and flammable or combustible substances will be undertaken in accordance with the relevant Australian Standards. |

**Table 4.1.3: Environmentally relevant activities in a wild river area**

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| **Concurrence ERAs (other than ERA 16 (extractive and screening activities))**<br>**Riparian and wildlife corridor functions and water quality** | | | |
| **PO1** Riparian areas and wildlife corridors along streams in a wild river high-preservation area, or along nominated waterways in the wild river area, are preserved, and pollutants from the activity have a low probability of affecting water quality in adjacent waterways. | **AO1.1** The activity is set back from a nominated waterway in the wild river area in accordance with the minimum distance prescribed in Schedule 3 of the relevant *wild river declaration,* available from the Department of Environment and Heritage Protection website.<br>OR | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO1.2** If the activity is in a high-preservation area, the activity is set back from the outer bank of a stream in accordance with the minimum distance prescribed in Schedule 3 of the relevant *wild river declaration,* available from the Department of Environment and Heritage Protection website. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| **PO2** Contaminated wastewater and stormwater does not degrade the quality of any receiving waters (both watercourse and groundwater).<br>Note: There will be no degradation of the quality of the receiving waters if water quality downstream of the activity is consistent with water quality upstream of the activity. | **AO2.1** Contaminated wastewater or stormwater is treated to the quality of the receiving waters prior to discharge.<br>OR | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO2.2** Contaminated wastewater or stormwater is retained or stored on site. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| **Concurrence ERAs (other than ERA 16 (extractive and screening activities))**<br>**Geomorphic processes** | | | |
| **PO3** The activity will not result in the increased delivery of sediment to adjacent waterways. | **AO3.1** Activities are not located on slopes of a greater value than prescribed in Schedule 3 of the relevant *wild river declaration*, available from the Department of Environment and Heritage Protection website. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| **Concurrence ERA 63 (sewage treatment) and ERA 64 (water treatment) in a wild river high-preservation area**<br>**Riparian and wildlife corridor functions and water quality** | | | |
| **PO4** Water quality in watercourses and lakes is not adversely affected.<br>Note: Water quality will not be adversely affected if water quality immediately downstream of the activity is consistent with | **AO4.1** Wastewater is treated to the quality of the receiving waters prior to discharge.<br>OR | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO4.2** Water is reclaimed or re-used. | **N/A** | This development application does not seek approval for |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| water quality immediately upstream of the activity. | | | environmentally relevant activities in a wild river area. |
| **Concurrence ERA 16 (extractive and screening activities)—other than riverine quarry extraction**<br>**Riparian and wildlife corridor functions and water quality** | | | |
| **PO5** Riparian areas and wildlife corridors along streams in a wild river high-preservation area, or along nominated waterways in the wild river area, are preserved. | **AO5.1** Provision must be made for fish passage during works during the carrying out of the activity.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO5.2** Clearing of riparian vegetation is limited to the minimum area required for the activity to be carried out. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| **Concurrence ERA 16 (extractive and screening activities)—other than riverine quarry extraction**<br>**Geomorphic processes** | | | |
| **PO6** Bed and bank stability is preserved. | **AO6.1** Excavation in the bed of a stream is limited to scour depth.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO6.2** Excavation in the bed of a stream is less than one-third of the bed width.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO6.3** Clearing of in-stream vegetation is limited to the minimum area required for the activity to be carried out.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO6.4** The final stream profile does not direct flow into a bank. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| **Concurrence ERA 16 (extractive and screening activities)—riverine quarry material extraction**<br>**Geomorphic and hydrological processes** | | | |
| **PO7** Extraction must occur from areas of active deposition including:<br>(1) aggrading bars, or<br>(2) sand slugs, or<br>(3) benches and islands, or<br>(4) sediment pockets in bedrock channels. | No acceptable outcome is prescribed. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| **PO8** Excavation must not occur below the current bed level of a watercourse or | No acceptable outcome is prescribed. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| waters. | | | |
| **PO9** Bed and bank stability is preserved during the operation or the carrying out of the activity. | **AO9.1** Vehicle access tracks and crossings associated with the activity have scour protection on the bed immediately downstream of the crossing.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO9.2** Access ramps and tracks are kept to a minimum and constructed to minimise erosion and turbulence problems at times of high flow.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO9.3** Ramps cut into the bank for vehicle access are orientated downstream.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO9.4** Vehicle crossings are orientated perpendicular to the stream channel ±10°.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO9.5** Where vehicle crossings are required, these will be at stream-bed level; OR if it can be demonstrated that stream-bed level crossings are inappropriate, any culverts for vehicle crossing are aligned with the direction of natural stream flow, when that flow is of a depth equal to the culvert height.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO9.6** The activity includes measures to prevent stormwater erosion in drains and cuttings on the bank.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO9.7** Stream-bed controls are located upstream and downstream of the site.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO9.8** Excavation in the stream-bed is less than one-third of the bed width.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO9.9** Clearing of in-stream vegetation is limited to the minimum area required for the activity to occur. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| **PO10** Bed and bank stability is preserved. | **AO10.1** The stream is rehabilitated as near as possible to its natural state after the activity has been conducted.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO10.2** Exposed bank areas are prepared to facilitate natural regeneration of native plant species.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO10.3** Stream-bed and bank controls are retained upstream and downstream of the site of the activity. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| **Concurrence ERA 16 (extractive and screening activities)—riverine quarry material extraction**<br>**Riparian and wildlife corridor functions** | | | |
| **PO11** Riparian areas and wildlife corridors along watercourses are preserved. | **AO11.1** Provision is made for fish passage during the carrying out of the activity.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO11.2** The width of the vegetation clearing in the riparian zone is limited to that required for the activity plus 2 metres each side.<br>AND | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| | **AO11.3** Areas of riparian zone cleared of vegetation and not required for the final stage of the activity will be prepared to facilitate natural regeneration of native plant species. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| **Concurrence ERA 1 (aquaculture) in a wild river preservation area** | | | |
| **PO12** Riparian and wildlife corridors along nominated waterways are preserved. | **AO12.1** The development is set back from a nominated waterway by at least the distance detailed in schedule 3 of the relevant *wild river declaration* available from the Department of Environment and Heritage Protection website. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| **PO13** The development will not result in the increased delivery of sediment to adjacent waterways. | **AO13.1** The slope of the land on which the development occurs is less than the value detailed in schedule 3 of the relevant *wild river declaration* available from the Department of Environment and Heritage Protection website. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |
| **PO14** Waste water and stormwater does not degrade the quality of any receiving waters. | **AO14.1** Measures are adopted to contain or prevent leakage from ponds or tanks and overflow from ponds or tanks due to rainfall or floodwaters. | **N/A** | This development application does not seek approval for environmentally relevant activities in a wild river area. |

**Table 4.1.4: Intensive animal industries**

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| **Surface water** | | | |
| **PO1** The structures containing and controlling run-off from the activity and waste re-use areas minimise adverse effects on surface waters external to the activity.<br>Editor's note: To meet the requirements of this performance outcome, it is recommended that the applicant develop a management system for the activity, detailing:<br>(1) environmental hazards<br>(2) risk assessment processes<br>(3) an auditable, risk-based management system for the operation of the activity<br>(4) procedures for annual review<br>(5) proposed maintenance operations<br>(6) stock numbers<br>(7) monitoring of pens, sheds, ponds, drainage and any obvious dust, noise and odour impacts.<br>Note: Development should have regard to the following industry guideline for surface water for the applicable ERA.<br>(1) **Cattle:** *National guidelines for beef cattle feedlots in Australia, 3rd Edition*, Meat & Livestock Australia, 2012<br>(2) **Cattle and sheep**: *National beef cattle feedlot environmental code of practice, 2nd Edition*, Meat & Livestock Australia, 2012<br>(3) **Pig keeping:** *National environmental guidelines for piggeries, 2nd Edition (Revised)*, Tucker, RW, McGahan, EJ, Galloway, JL and O'Keefe for Australian Pork Limited, 2010<br>**Poultry farming**: *Queensland guidelines for meat chicken farms*, Department of Agriculture, Fisheries and Forestry, 2012 | No acceptable outcome is prescribed. | **N/A** | This development application does not seek approval for environmentally relevant activities for intensive animal industries. |
| **Groundwater** | | | |
| **PO2** The activity is designed and managed to prevent or minimise adverse effects on groundwater or any associated surface ecological systems.<br>Editor's note: Development should have regard to the following industry guideline for | No acceptable outcome is prescribed. | **N/A** | This development application does not seek approval for environmentally relevant activities for intensive animal industries. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| groundwater for the applicable ERA.<br>(1) **Cattle:** *National guidelines for beef cattle feedlots in Australia, 3rd Edition*, Meat & Livestock Australia, 2012<br>(2) **Cattle and sheep**: *National beef cattle feedlot environmental code of practice, 2nd Edition*, Meat & Livestock Australia, 2012<br>(3) **Pig keeping:** *National environmental guidelines for piggeries, 2nd Edition (Revised),* Tucker, RW, McGahan, EJ, Galloway, JL and O'Keefe for Australian Pork Limited, 2010<br>(4) **Poultry farming**: *Queensland guidelines for meat chicken farms*, Department of Agriculture, Fisheries and Forestry, 2012 | | | |
| **Amenity** | | | |
| **PO3** The activity is designed and managed to minimise adverse effects on the amenity of the surrounding community. | No acceptable outcome is prescribed. | **N/A** | This development application does not seek approval for environmentally relevant activities for intensive animal industries. |
| **Native flora and fauna** | | | |
| **PO4** The activity is designed and managed to minimise adverse effects on ecological communities.<br>Editor's note: Development should have regard to the following industry guideline for native flora and fauna for the applicable ERA.<br>(1) **Cattle:** *National guidelines for beef cattle feedlots in Australia, 3rd Edition*, Meat & Livestock Australia, 2012<br>(2) **Cattle and sheep**: *National beef cattle feedlot environmental code of practice, 2nd Edition*, Meat & Livestock Australia, 2012<br>(3) **Pig keeping:** *National environmental guidelines for piggeries, 2nd Edition (Revised),* Tucker, RW, McGahan, EJ, Galloway, JL and O'Keefe for Australian Pork Limited, 2010<br>(4) **Poultry farming**: *Queensland guidelines for meat chicken farms*, Department of Agriculture, Fisheries and Forestry, 2012 | No acceptable outcome is prescribed. | **N/A** | This development application does not seek approval for environmentally relevant activities for intensive animal industries. |

**Response column key:**
☑ Achieved
**P/S** Performance solution
**N/A** Not applicable

## 17.1 Public passenger transport state code

**Table 17.1.1: Material change of use and reconfiguration of a lot**

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| **All development** | | | |
| **PO1** During construction, development ensures bus-stops continue to function and pedestrian access to the bus stop is maintained at all times. | No acceptable outcome is prescribed. | ☑ | Construction of Rail Camp 6 will not impact the function of existing bus stops. |
| **Accommodation activity (other than a residential care facility), educational establishment, airport, hospital, shopping centre or business activities** | | | |
| **PO2** Development allows for safe, convenient and efficient access for public passenger transport and allows for the progressive staging or extension of public passenger transport to the development. | **AO2.1** Where a development proposes a new or modified road network it must provide for bus movement through the site whilst avoiding backtracking, looping or indirect routes.<br>Editor's note: To demonstrate compliance with this acceptable outcome, it is recommended that a Public Transport Impact Assessment be prepared in accordance with Appendix 1 of the State Development Assessment Provisions Supporting Information – Public Passenger Transport, Department of Transport and Main Roads, 2014.<br>AND | ☑ | Access to Rail Camp 6 will be from Moray Bulliwallah Road to the east of the proposed site via a new 2.5km access road. Vehicles accessing the site will enter via a single dedicated access point and will exit via a designated single exit point.<br>A bus stop will be provided within the Rail Camp 6 site. This bus stop is not a public bus stop and will be used for the purpose of transporting workers between the rail construction sites and the camp. The bus stop is designed to accommodate up to three buses or two articulated buses; a sheltered waiting area has been provided of sufficient size to manage the tidal nature of workers travelling to and from the construction sites.<br>The Traffic Impact Assessment (TIA) prepared for Rail Camp 6 concluded that the transport infrastructure proposed for the site will result in the delivery of a safe internal layout for camp residents and a safe connection to the external road network for site traffic movements. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| | | | Refer to TIA in Appendix E of the Planning Report. |
| | **AO2.2** Roads intended to allow the movement of buses are designed in accordance with the code for IDAS prescribed in the Transport Planning and Coordination Regulation 2005. | ☑ | The bus stop is designed to accommodate up to three buses or two articulated buses; a sheltered waiting areas has been provided of sufficient size to manage the tidal nature of workers travelling to and from the construction sites.<br>The TIA recommended that any heavy vehicle manoeuvring and waiting areas are provided in reinforced concrete.<br>Refer to TIA in Appendix E of the Planning Report. |
| **PO3** New or modified road accesses and modifications to the road network do not conflict with existing bus stops or a public passenger service.<br>Editor's note: To demonstrate compliance with this performance outcome, it is recommended that a Public Transport Impact Assessment be prepared in accordance with Appendix 1 of the State Development Assessment Provisions Supporting Information – Public Passenger Transport, Department of Transport and Main Roads, 2014. | No acceptable outcome is prescribed. | ☑ | Access to Rail Camp 6 will be from Moray Bulliwallah Road to the east of the proposed site via a new 2.5km access road.<br>The new access will not impact existing services.<br>A bus stop will be provided within the Rail Camp 6 site and buses will collect workers and transport them to and from the rail construction sites. This bus stop is not a public bus stop.<br>Refer to TIA in Appendix E of the Planning Report. |
| **Accommodation activity (other than residential care facility), airport, hospital, hotel, major sport recreation and entertainment facility, hardware and trade supplies, shop, shopping centre, showroom, tourist attraction or business activities** | | | |
| **PO4** Upgraded or new public passenger transport infrastructure is provided to accommodate the demand for public passenger transport generated by the development.<br>Editor's note: To demonstrate compliance with this performance outcome, it is recommended that a Public Transport Impact Assessment be prepared in accordance with Appendix 1 of the State Development Assessment Provisions Supporting Information – Public Passenger Transport, Department of Transport and Main Roads, 2014. | No acceptable outcome is prescribed. | ☑ | A bus stop will be provided within the Rail Camp 6 site and buses will collect workers and transport them to and from the rail construction sites. This bus stop is not a public bus stop.<br>The bus services are sufficient for the number of workers that will be travelling to and from the camp.<br>Refer to TIA in Appendix E of the Planning Report. |
| **PO5** The location of public passenger transport infrastructure avoids creating indirect or inefficient routes for public | No acceptable outcome is prescribed. | ☑ | All access to the site will be via the new access road off Moray Bulliwallah Road. The proposed bus stop and shelter is integrated within the internal road network of the Rail |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| passenger services.<br>Editor's note: To demonstrate compliance with this performance outcome, it is recommended that a Public Transport Impact Assessment be prepared in accordance with Appendix 1 of the State Development Assessment Provisions Supporting Information – Public Passenger Transport, Department of Transport and Main Roads, 2014. | | | Camp 6 site. This bus stop is not a public bus stop and will be used for the purpose of transporting workers between the rail construction sites and the camp.<br>Refer to TIA in Appendix E of the Planning Report. |
| **Airport, hospital, hotel, major sport ,recreation and entertainment facility, residential care facility, shop, shopping centre, showroom, short-term accommodation or tourist attraction** | | | |
| **PO6** On site circulation ensures the safety of public passenger transport, and pedestrians. | **AO6.1** On site pedestrian crossings are located to provide safe sight distances for pedestrians and public passenger transport.<br>AND | **N/A** | The proposed Rail Camp 6 is non-resident workforce accommodation and does not include the uses specified (airport, hospital, hotel, major sport, recreation and entertainment facility, residential care facility, shop, shopping centre, showroom, short-term accommodation or tourist attraction). |
| | **AO6.2** On site circulation is designed and constructed so that public passenger transport can enter and leave in a forward gear at all times.<br>AND | **N/A** | The proposed Rail Camp 6 is non-resident workforce accommodation and does not include the uses specified. |
| | **AO6.3** Development does not result in public passenger transport movements through car parking aisles. | **N/A** | The proposed Rail Camp 6 is non-resident workforce accommodation and does not include the uses specified. |
| **PO7** Development provides safe and convenient pedestrian access to existing and future public passenger transport infrastructure. | No acceptable outcome is prescribed. | **N/A** | The proposed Rail Camp 6 is non-resident workforce accommodation and does not include the uses specified. |
| **PO8** Development provides taxi ranks which meet the anticipated demand of the proposed development and are located to provide convenient, safe and equitable access for patrons. | **AO8.1** A dedicated taxi rank is provided parallel to the kerb and adjacent to the main entrance.<br>AND | **N/A** | The proposed Rail Camp 6 is non-resident workforce accommodation and does not include the uses specified. |
| | **AO8.2** Taxi ranks are designed in accordance with:<br>(1) AS2890.5–1993 Parking facilities – on-street parking and AS1428.1–2009 Design for access and mobility – general requirements for access – new building work<br>(2) AS1742.11–1999 Parking controls – manual of | **N/A** | The proposed Rail Camp 6 is non-resident workforce accommodation and does not include the uses specified. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| | uniform traffic control devices<br><br>(3) AS/NZS 2890.6–2009 Parking facilities – off-street parking for people with disabilities<br><br>(4) Disability standards for accessible public transport 2002 made under section 31(1) of the Disability Discrimination Act 1992<br><br>(5) AS/NZS 1158.3.1 – Lighting for roads and public spaces, Part 3.1: Pedestrian area (category P) lighting – Performance and design requirements. | | |
| **Educational establishments** | | | |
| **PO9** Educational establishments accommodate the safe and efficient operation of public passenger transport and provide safe and convenient pedestrian access to public passenger transport. | **AO9.1** Educational establishments are designed in accordance with public passenger transport provisions of the Planning for Safe Transport Infrastructure at Schools, Department of Transport and Main Roads, 2011. | **N/A** | The proposed Rail Camp 6 is not an educational establishment. |

**Response column key:**
☑ Achieved
**P/S** Performance solution
**N/A** Not applicable

## 18.1 Filling, excavation and structures state code

**Table 18.1.1: All development**

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| **All development** | | | |
| **PO1** Buildings, services, structures and utilities do not adversely impact on the safety or operation of:<br>(1) state transport corridors<br>(2) future state transport corridors<br>(3) state transport infrastructure | **AO1.1** Buildings, structures, services and utilities are not located in a railway or future railway land.<br>AND | ☑ | As per Section 2.1.1 of the Planning Report, the location for the proposed temporary Rail Camp 6 as has been determined based on a combination of environmental and logistical considerations.<br>The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| | **AO1.2** Buildings and structures are set back horizontally a minimum of three metres from overhead line equipment.<br>Editor's note: *Part A.10 – Clearances* and *Part B.1 Setbacks* of the *Guide for development in a railway environment*, Department of Infrastructure and Planning, 2010, provides guidance on how to comply with this acceptable outcome.<br>AND | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| | **AO1.3** Construction activities do not encroach into a railway.<br>AND | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| | **AO1.4** The lowest part of development in or over a railway or future railway land is to be a minimum of:<br>(1) 7.9 metres above the railway track where the proposed development extends along the railway for a distance of less than 40 metres, or<br>(2) 9.0 metres above the railway track where the development extends along the railway for a distance of between 40 and 80 metres.<br>Editor's note: *Part A.10 – Clearances* of the *Guide for development in a railway environment*, Department of Infrastructure and Planning, 2010, provides guidance on how to comply with this acceptable outcome.<br>AND | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| | **AO1.5** Existing authorised access points and access | **N/A** | As discussed in Section 3.2.7 of the Planning Report, a TIA |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| | routes to state transport corridors for maintenance and emergency works are maintained.<br>AND | | report has been prepared for the proposed Rail Camp 6 in order to assess the impact of the proposal upon the surrounding road network and has provided advice on the transport infrastructure within the development site and its connection with Moray Bulliwallah Road. Moray Bulliwallah Road is not a state transport corridor.<br>A copy of the TIA report is contained within Appendix E of the Planning Report. |
| | **AO1.6** Pipe work, services and utilities can be maintained without requiring access to the state transport corridor.<br>AND | **N/A** | Details of infrastructure requirements to service the proposed Rail Camp 6 are provided in Section 3.3 of the Planning Report. These services can effectively be maintained without requiring access to a state transport corridor. |
| | **AO1.7** Pipe work, services and utilities are not attached to rail transport infrastructure.<br>AND | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| | **AO1.8** Buildings and structures are set back a minimum of three metres from a railway viaduct.<br>Editor's note: *Part A.14 – Viaducts* and *Part B.11 Viaducts* of the *Guide for development in a railway environment*, Department of Infrastructure and Planning, 2010, provides guidance on how to comply with this acceptable outcome.<br>AND | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| | **AO1.9** Development below or abutting a railway viaduct is to be clear of permanent structures or any other activity that may impede emergency access or works and maintenance of rail transport infrastructure.<br>Editor's note: Temporary activities below or abutting a railway viaduct could include, for example, car parking or outdoor storage. | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| **PO2** Development prevents unauthorised access to:<br>(1) state transport corridors,<br>(2) future state transport corridors,<br>(3) state transport infrastructure, | **AO2.1** Fencing is provided along the property boundary with the railway.<br>Editor's note: Where fencing is provided it is to be in accordance with the railway manager's standards.<br>AND | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| by people, vehicles and projectiles. | **AO2.2** Accommodation activities with a publicly accessible area located within 10 metres from the boundary of a railway or 20 metres from the centreline of the nearest railway track (whichever is the shorter distance), include throw protection screens for the publicly accessible area as follows:<br>(1) openings of no greater than 25 mm x 25 mm<br>(2) height of 2.4 metres vertically above the highest toe hold if see-through, or 2 metres if non see-through.<br>Editor's note: Expanded metal is considered see-through.<br>AND | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| | **AO2.3** Development in a railway or future railway land includes throw protection screens.<br>Editor's note: Throw protection screens in a railway or future railway land designed in accordance with the relevant provisions of the *Civil Engineering Technical Requirement CIVIL-SR-005 Design of buildings over or near railways*, Queensland Rail, 2011, and the *Civil Engineering Technical Requirement CIVIL-SR-008 Protection screens*, Queensland Rail, 2011, comply with this acceptable outcome.<br>AND | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| | **AO2.4** Built to boundary walls and solid fences abutting a railway are protected by an anti-graffiti coating.<br>AND | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| | **AO2.5** Road barriers are installed along any proposed roads abutting a railway.<br>Editor's note: Road barriers designed in accordance with Queensland Rail *Civil Engineering Technical Requirement CIVIL-SR-007 Design and selection criteria for road/rail interface barriers* comply with this acceptable outcome.<br>AND | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| | **AO2.6** Proposed vehicle manoeuvring areas, driveways, loading areas or carparks abutting a railway include rail interface barriers.<br>Editor's note: A Registered Professional Engineer of Queensland (RPEQ) certified barrier design complies with this acceptable | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| | outcome. | | |
| **PO3** Buildings and structures in, over or below a railway or future railway land are able to sustain impacts to their structural integrity in the event of an impact from a derailed train. | **AO3.1** Buildings and structures, including piers or supporting elements, located in, over or below a railway or future railway land are designed and constructed in accordance with *AS5100 Bridge design*, *AS 1170 Structural design actions* and *Civil Engineering Technical Requirement CIVIL-SR-012 Collision protection of supporting elements adjacent to railways*, Queensland Rail, 2011.<br>Editor's note: *Part A.9 – Collision protection* of the *Guide for development in a railway environment*, Department of Infrastructure and Planning, 2010, provides guidance on how to comply with this acceptable outcome. | **N/A** | The buildings, structures, services and utilities located on site are not located in a railway or future railway land. |
| **PO4** Buildings and structures in, over, below or within 50 metres of a state-controlled transport tunnel or a future state-controlled transport tunnel have no adverse impact on the structural integrity of the state-controlled transport tunnel. | **AO4.1** Development in, over, below or within 50 metres of a state-controlled transport tunnel or future state-controlled transport tunnel ensures that the tunnel is:<br>(1) not vertically overloaded or affected by the addition or removal of lateral pressures<br>(2) not adversely affected as a result of directly or indirectly disturbing groundwater or soil.<br>Editor's note: To demonstrate compliance with this acceptable outcome, it is recommended that a Registered Professional Engineer of Queensland (RPEQ) certified geotechnical assessment, groundwater assessment and structural engineering assessment be prepared and submitted with the application. | **N/A** | The proposed Rail Camp 6 is not located in, over, below or within 50 metres of a state-controlled transport tunnel or future state-controlled transport tunnel. |
| **PO5** Development involving dangerous goods adjacent to a railway or future railway land does not adversely impact on the safety of a railway. | **AO5.1** Development involving dangerous goods, other than hazardous chemicals below the threshold quantities listed in table 5.2 of the *State Planning Policy guideline: State interest – emissions and hazardous activities, Guidance on development involving hazardous chemicals*, Department of State Development, Infrastructure and Planning, 2013, ensures that impacts on a railway from a fire, explosion, spill, gas emission or dangerous goods incident can be appropriately mitigated.<br>Editor's note: To demonstrate compliance with this acceptable outcome, it is recommended that a risk assessment be undertaken in accordance with *Attachment 1: Risk assessment guide* of the *Guide for development in a railway environment*, Department of Infrastructure and Planning, 2010. | **N/A** | As per Section 6.2.5 of the Planning Report, the use, storage and disposal of hazardous chemicals, dangerous goods and flammable or combustible substances will be undertaken in accordance with the relevant Australian Standards. A report addressing the relevant environmentally relevant activity application requirements has been prepared by Cardno and is contained within Appendix H of the Planning Report.<br>The storage of hazardous chemicals, dangerous goods and flammable or combustible substances located on site are not located in a railway or future railway land. |
| **PO6** Any part of the development located within 25 metres of a state-controlled road or future state-controlled road minimises the potential to distract drivers | **AO6.1** Advertising devices proposed to be located within 25 metres of a state-controlled road or future state-controlled road are designed to meet the relevant standards for advertising outside the boundaries of, but | **N/A** | The proposed Rail Camp 6 does not require advertising devices proposed to be located within 25 metres of a state-controlled road or future state-controlled road. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| and cause a safety hazard. | visible from, a state-controlled road, outlined within the *Roadside advertising guide*, Department of Transport and Main Roads, 2013. | | |
| **PO7** Filling, excavation and construction does not adversely impact on or compromise the safety or operation of:<br>(1) state transport corridors,<br>(2) future state transport corridors,<br>(3) state transport infrastructure. | **AO7.1** Filling and excavation does not undermine, cause subsidence of, or groundwater seepage onto a state transport corridor or future state transport corridor.<br>Editor's note: To demonstrate compliance with this acceptable outcome for a state-controlled road, it is recommended that a filling and excavation report assessing the proposed filling and excavation be prepared in accordance with the requirements of the *Road planning and design manual*, Department of Transport and Main Roads, 2013.<br>Editor's note: If a development involves filling and excavation within a state-controlled road, an approval issued by the Department of Transport and Main Roads under section 33 of the *Transport Infrastructure Act 1994* may be required.<br>AND | **N/A** | As detailed in Section 3.3.1 of the Planning Report, construction of Rail Camp 6 will generally comprise bulk earthworks and some volume of suitable construction material for use in load bearing areas. The project will be designed in order to maximise the balance between cut and fill. However, there might be some surplus spoil from earthworks and construction of stormwater infrastructure such as the detention pond, swales and drains – mostly material that might not be suitable for reuse as fill material, based on soil properties.<br>Civil engineering drawings depicting the earthworks proposed as part of the development have been prepared and are contained within Appendix C of the Planning Report. The plans submitted as part of the application also include water reticulation layout plans and sewer reticulation layout plans.<br>Filling and/or excavation will not undermine, cause subsidence of, or groundwater seepage onto a state transport corridor or future state transport corridor. |
| | **AO7.2** Development within 25 metres of a railway and involving excavation for basement levels or structural piling does not result in vibration impacts during construction which would compromise the safety and operational integrity of the railway.<br>Editor's note: To demonstrate compliance with this acceptable outcome it is recommended that an RPEQ certified geotechnical report be prepared and submitted with the application.<br>Editor's note: Development within 25 metres of a railway may require an RPEQ certified vibration monitoring plan for the construction phase of development as a condition of approval. | **N/A** | The proposed Rail Camp 6 is not located within 25 metres of a railway. |
| **PO8** Filling and excavation does not interfere with or impact on existing or future planned services or public utilities on a state-controlled road. | **AO8.1** Any alternative service and public utility alignment must satisfy the standards and design specifications of the service or public utility provider, and any costs of relocation are borne by the developer.<br>Editor's note: An approval issued by the Department of Transport and Main Roads under section 33 of the *Transport Infrastructure Act 1994* may be required. | **N/A** | Filling and excavation does not interfere with or impact on existing or future planned services or public utilities on a state-controlled road. |
| **PO9** Retaining or reinforced soil | **AO9.1** Retaining or reinforced soil structures (including | **N/A** | Any retaining or reinforced soil structures to contain fill |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| structures required to contain fill and excavation:<br>(1) do not encroach on a state transport corridor<br>(2) are capable of being constructed and maintained without adversely impacting a state transport corridor<br>(3) are constructed of durable materials which maximise the life of the structure. | footings, rock anchors and soil nails) are not located in a state transport corridor or future state transport corridor.<br>AND | | and/or excavation (if required) are not located in a state transport corridor or future state transport corridor. |
| | **AO9.2** Retaining or reinforced soil structures in excess of an overall height of one metre abutting a state transport corridor are to be designed and certified by a structural RPEQ.<br>Editor's note: To demonstrate compliance with this acceptable outcome a RPEQ report should demonstrate that the works will not destabilise state transport infrastructure or the land supporting this infrastructure.<br>AND | **N/A** | Refer to comments for AO9.1 above. |
| | **AO9.3** Retaining or reinforced soil structures that are set back less than 750 millimetres from a common boundary with a state-controlled road are certified by a structural RPEQ and designed to achieve a low maintenance external finish.<br>AND | **N/A** | Refer to comments for AO9.1 above. |
| | **AO9.4** Retaining or reinforced soil structures adjacent to a state-controlled road, and in excess of an overall height of two metres, incorporate design treatments (such as terracing or planting) to reduce the overall height impact.<br>AND | **N/A** | Refer to comments for AO9.1 above. |
| | **AO9.5** Construction materials of all retaining or reinforced soil structures have a design life exceeding 40 years, and comply with the specifications approved by a RPEQ.<br>AND | **N/A** | Refer to comments for AO9.1 above. |
| | **AO9.6** Temporary structures and batters do not encroach into a railway. | **N/A** | Refer to comments for AO9.1 above. |
| **PO10** Filling and excavation does not cause siltation and erosion run-off from the property, or wind blown dust nuisance onto a state-controlled road. | **AO10.1** Compaction of fill is carried out in accordance with the requirements of *AS 1289.0 2000 – Methods of testing soils for engineering purposes*. | **N/A** | Mitigation measures detailed in the draft rail Environmental Management Plan (EMP) include erosion and sediment control requirements to be implemented and monitored throughout the life of the facility. An EMP for the rail corridor is included in the Carmichael Coal Mine and Rail Project SEIS, Volume 4, Appendix W and a revised version is provided in the AEIS. This includes erosion and sediment control requirements to be implemented and monitored throughout the operation phase of Rail Camp 6.<br>Moray Bulliwallah Road is not a state-controlled road. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| **PO11** Where the quantity of fill or excavated spoil material being imported or exported for a development exceeds 10 000 tonnes, and haulage will be on a state-controlled road, any impact on the infrastructure is identified and mitigation measures implemented. | **AO11.1** The impacts on the state-controlled road network are identified, and measures are implemented to avoid, reduce or compensate the effects on the asset life of the state-controlled road.<br>Editor's note: It is recommended that a pavement impact assessment report be prepared to address this acceptable outcome. Guidance for preparing a pavement impact assessment is set out in *Guidelines for assessment of road impacts of development (GARID)*, Department of Transport and Main Roads, 2006. | **N/A** | The quantity of fill or excavated spoil material being imported or exported for a development is unlikely to exceed 10,000 tonnes. |
| **PO12** Filling and excavation associated with providing a driveway crossover to a state-controlled road does not compromise the operation or capacity of existing drainage infrastructure. | **AO12.1** Filling and excavation associated with the design of driveway crossovers complies with the relevant Institute of Public Works Engineering Australia Queensland (IPWEAQ) standards.<br>Editor's note: The construction of any crossover requires the applicant to obtain a permit to work in the state-controlled road corridor under section 33 of the *Transport Infrastructure Act 1994* and a section 62 approval under the *Transport Infrastructure Act 1994* for the siting of the access and associated works. | **N/A** | The construction of the proposed Rail Camp 6 does not involve filling and excavation associated with providing a driveway crossover to a state-controlled road. |
| **PO13** Fill material does not cause contamination from the development site onto a state-controlled road. | **AO13.1** Fill material is free of contaminants including acid sulphate content, and achieves compliance with *AS 1289.0 – Methods of testing soils for engineering purposes* and *AS 4133.0-2005 – Methods of testing rocks for engineering purposes*. | **N/A** | The construction of the proposed Rail Camp 6 is unlikely to require importation of fill material. Further, the development site does not front a state-controlled road. |
| **PO14** Vibration generated through fill compaction does not result in damage or nuisance to a state-controlled road. | **AO14.1** Fill compaction does not result in any vibrations beyond the site boundary, and is in accordance with *AS 2436–2010 – Guide to noise and vibration control on construction, demolition and maintenance sites*. | **N/A** | Refer to comments for AO13.1 above. |

**Response column key:**
☑ Achieved
**P/S** Performance solution
**N/A** Not applicable

## 18.2 Stormwater and drainage impacts on state transport infrastructure state code

**Table 18.2.1: All development**

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| **Stormwater and drainage management** | | | |
| **PO1** Stormwater management for the development must ensure there is no worsening of, and no actionable nuisance in relation to peak discharges, flood levels, frequency or duration of flooding, flow velocities, water quality, ponding, sedimentation and scour effects on an existing or future state transport corridor for all flood and stormwater events that exist prior to development, and up to a 1 per cent annual exceedance probability. | **AO1.1** The development does not result in stormwater or drainage impacts or actionable nuisance within an existing or future state transport corridor.<br>Editor's note: It is recommended that basic stormwater information is to be prepared to demonstrate compliance with AO1.1.<br>OR | **N/A** | As discussed in Section 3.3.4 of the Planning Report, it is proposed to collect and store all stormwater from roofed areas of the development to ensure that erosion issues to do not occur. Moray Bulliwallah Road is not an existing or future state transport corridor.<br>A Stormwater Management Plan has been prepared for the proposed development and is provided in Appendix F of the Planning Report. |
| | **AO1.2** A stormwater management statement certified by an RPEQ demonstrates that the development will achieve a no worsening impact or actionable nuisance on an existing or future state transport corridor.<br>OR | **N/A** | Refer to comments for AO1.1 above. |
| | **AO1.3** A stormwater management plan certified by an RPEQ demonstrates that the development will achieve a no worsening impact or actionable nuisance on a state-controlled road.<br>OR | **N/A** | Refer to comments for AO1.1 above. |
| | **AO1.4** For development on premises within 25 metres of a railway, a stormwater management plan certified by an RPEQ demonstrates that:<br>(1) the development will achieve a no worsening impact or actionable nuisance on the railway<br>(2) the development does not cause stormwater, roofwater, ponding, floodwater or any other drainage to be directed to, increased or concentrated on the railway<br>(3) the development does not impede any drainage, stormwater or floodwater flows from the railway<br>(4) stormwater or floodwater flows have been designed to:<br>(a) maintain the structural integrity of the light rail transport infrastructure | **N/A** | The location of the proposed Rail Camp 6 is not located within 25 metres of a railway. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| | (b) avoid scour or deposition<br>(5) additional railway formation drainage necessitated by the development is located within the premises where the development is carried out<br>(6) retaining structures for excavations abutting the railway corridor provide for drainage. | | |
| **Lawful point of discharge** | | | |
| **PO2** Stormwater run-off and drainage are directed to a lawful point of discharge to avoid adverse impacts on a future or existing state transport corridor. | **AO2.1** Where stormwater run-off is discharged to a state transport corridor, the discharge is to a lawful point of discharge in accordance with section 1.4.3 of the *Road drainage manual*, Department of Transport and Main Roads, 2010 and section 3.02 of *Queensland urban drainage manual*, Department of Natural Resources and Mines, 2013.<br>OR | **N/A** | Refer to comments for AO1.1 above. |
| | **AO2.2** For development on premises within 25 metres of a railway, approval from the relevant railway manager for the railway, as defined in the *Transport Infrastructure Act 1994*, schedule 6 has been gained to verify the lawful point of discharge for stormwater onto the railway.<br>AND | **N/A** | The location of the proposed Rail Camp 6 is not located within 25 metres of a railway. |
| | **AO2.3** Development does not cause a net increase in or concentration of stormwater or floodwater flows discharging onto the state transport corridor during construction or thereafter.<br>AND | **N/A** | Refer to comments for AO1.1 above. |
| | **AO2.4** Development does not create any additional points of discharge or changes to the condition of an existing lawful point of discharge to the state transport corridor. | **N/A** | Refer to comments for AO1.1 above. |
| **Sediment and erosion management** | | | |
| **PO3** Run-off from upstream development is managed to ensure that sedimentation and erosion do not cause siltation of stormwater infrastructure in the state transport corridor. | **AO3.1** Development with a moderate to high risk of erosion incorporates erosion and sediment control measures.<br>Editor's note: For a state-controlled road where a development has a moderate to high risk of erosion as per section 13.5 of the *Road drainage manual*, Department of Transport and Main Roads, 2010, an erosion and sedimentation control plan should | | As discussed in Section 3.3.4 of the Planning Report, it is proposed to collect and store all stormwater from roofed areas of the development to ensure that erosion issues to do not occur. Further, Moray Bulliwallah Road is not an existing or future state transport corridor.<br>Section 8.6.2 of the Planning Report also notes that prior to |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| | be provided to support either a stormwater management statement or stormwater management plan. | | construction commencing, an Erosion and Sediment Control Plan (ESCP) will be developed in accordance with IECA, 2008, and will be used during the duration of the construction (refer to Carmichael Coal Mine and Rail Project EIS Volume 3, Section 13). The ESCP will focus on all aspects of construction and provide the required performance criteria for all controls to be implemented. |

**Response column key:**
☑ Achieved
**P/S** Performance solution
**N/A** Not applicable

## 19.1 Access to state-controlled roads state code

**Table 19.1.1: All development**

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| **Location of the direct vehicular access to the state-controlled road** | | | |
| **PO1** Any road access location to the state-controlled road from adjacent land does not compromise the safety and efficiency of the state-controlled road. | **AO1.1** Any road access location to the state-controlled road complies with a decision under section 62 of the TIA.<br>OR | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| | **AO1.2** Development does not propose a new or temporary road access location, or a change to the use or operation of an existing permitted road access location to a state-controlled road.<br>OR | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| | **AO1.3** Any proposed road access location for the development is provided from a lower order road where an alternative to the state-controlled road exists.<br>OR all of the following acceptable outcomes apply | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| | **AO1.4** Any new or temporary road access location, or a change to the use or operation of an existing permitted road access location, demonstrates that the development:<br>(1) does not exceed the acceptable level of service of a state-controlled road<br>(2) meets the sight distance requirements outlined in Volume 3, parts 3, 4, 4A, 4B and 4C of the Road planning and design manual, 2nd edition, Department of Transport and Main Roads, 2013<br>(3) does not exceed the acceptable operation of an intersection with a state-controlled road, including the degree of saturation, delay, queuing lengths and intersection layout<br>(4) is not located within and/or adjacent to an existing or planned intersection in accordance with Volume 3, parts 4, 4A, 4B and 4C of the Road planning and design manual, 2nd edition, Department of Transport and Main Roads, 2013<br>(5) does not conflict with another property's road access location and operation | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| | Editor's Note: To demonstrate compliance with this acceptable outcome, it is recommended a traffic impact assessment be developed in accordance with Chapters 1, 4, 6, 7, 8 and 9 of the Guidelines for assessment of road impacts of development (GARID), Department of Main Roads, 2006, and the requirements of Volume 3, parts 4, 4A, 4B and 4C of the Road planning and design manual, 2nd edition, Department of Transport and Main Roads, 2013, SIDRA analysis or traffic modelling.<br>AND | | |
| | **AO1.5** Development does not propose a new road access location to a limited access road.<br>Editor's note: Limited access roads are declared by the chief executive under section 54 of the TIA. Details can be accessed by contacting the appropriate DTMR regional office. | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| **Number of road accesses to the state-controlled road** | | | |
| **PO2** The number of road accesses to the state-controlled road maintains the safety and efficiency of the state-controlled road. | **AO2.1** Development does not increase the number of road accesses to the state-controlled road.<br>AND | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| | **AO2.2** Where multiple road accesses to the premises exist, access is rationalised to reduce the overall number of road accesses to the state-controlled road.<br>AND | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| | **AO2.3** Shared or combined road accesses are provided for adjoining land having similar uses to rationalise the overall number of direct accesses to the state-controlled road.<br>Editor's note: Shared road accesses may require easements to provide a legal point of access for adjacent lots. If this is required, then the applicant must register reciprocal access easements on the titles of any lots for the shared access. | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| Design vehicle and traffic volume | | | |
| **PO3** The design of any road access maintains the safety and efficiency of the state-controlled road. | **AO3.1** Any road access meets the minimum standards associated with the design vehicle.<br>Editor's note: The design vehicle to be considered is the same as the design vehicle set under the relevant local government | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| | planning scheme.<br>AND | | |
| | **AO3.2** Any road access is designed to accommodate the forecast volume of vehicle movements in the peak periods of operation or conducting the proposed use of the premises.<br>AND | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| | **AO3.3** Any road access is designed to accommodate 10 year traffic growth past completion of the final stage of development in accordance with GARID.<br>AND | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| | **AO3.4** Any road access in an urban location is designed in accordance with the relevant local government standards or IPWEAQ R-050, R-051 , R-052 and R-053 drawings.<br>AND | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| | **AO3.5** Any road access not in an urban location is designed in accordance with Volume 3, parts 3, 4 and 4A of the Road planning and design manual, 2nd edition, Department of Transport and Main Roads, 2013. | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| **Internal and external manoeuvring associated with direct vehicular access to the state-controlled road** | | | |
| **PO4** Turning movements for vehicles entering and exiting the premises via the road access maintain the safety and efficiency of the state-controlled road. | **AO4.1** The road access provides for left in and left out turning movements only.<br>AND | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| | **AO4.2** Internal manoeuvring areas on the premises are designed so the design vehicle can enter and leave the premises in a forward gear at all times.<br>Editor's note: The design vehicle to be considered is the same as the design vehicle set under the relevant local government planning scheme. | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| **PO5** On-site circulation is suitably designed to accommodate the design vehicle associated with the proposed land use, in order to ensure that there is no impact on the safety and efficiency of the state-controlled road**.** | **AO5.1** Provision of on-site vehicular manoeuvring space is provided to ensure the flow of traffic on the state-controlled road is not compromised by an overflow of traffic queuing to access the site in accordance with *AS2890 – Parking facilities*.<br>AND | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| | **AO5.2** Mitigation measures are provided to ensure that the flow of traffic on the state-controlled road is not disturbed by traffic queuing to access the site. | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| **Vehicular access to local roads within 100 metres of an intersection with a state-controlled road** | | | |
| **PO6** Development having road access to a local road within 100 metres of an intersection with a state-controlled road maintains the safety and efficiency of the state-controlled road. | **AO6.1** The road access location to the local road is located as far as possible from where the road intersects with the state-controlled road and accommodates existing operations and planned upgrades to the intersection or state-controlled road.<br><br>AND | **N/A** | The proposed Rail Camp 6 does not have access to a local road within 100 metres of an intersection with a state-controlled road. |
| | **AO6.2** The road access to the local road network is in accordance with Volume 3, parts 3, 4 and 4A of the Road planning and design manual, 2nd edition, Department of Transport and Main Roads, 2013, and is based on the volume of traffic and speed design of both the local road and intersecting state-controlled road for a period of 10 years past completion of the final stage of development.<br><br>AND | **N/A** | The proposed Rail Camp 6 does not have access to a local road within 100 metres of an intersection with a state-controlled road. |
| | **AO6.3** Vehicular access to the local road and internal vehicle circulation is designed to remove or minimise the potential for vehicles entering the site to queue in the intersection with the state-controlled road or along the state-controlled road itself. | **N/A** | The proposed Rail Camp 6 does not have access to a local road within 100 metres of an intersection with a state-controlled road. |

**Response column key:**
☑ Achieved
**P/S** Performance solution
**N/A** Not applicable

## 19.2 Transport infrastructure and network design state code

**Table 19.2.1: 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.<br>Editor's note: To demonstrate compliance with this performance outcome, it is recommended that a traffic impact assessment be prepared. A traffic impact assessment should identify any upgrade works required to mitigate impacts on the safety and operational integrity of the state transport corridor, including any impact on a railway crossing. An impact on a level crossing may require an Australian Level Crossing Assessment Model (ALCAM) assessment to be undertaken. | No acceptable outcome is prescribed. | ☑ | The State government's State Assessment and Referral Agency (SARA) mapping indicates that the Rail Camp 6 site is not within close proximity to any state transport infrastructure.<br>As discussed in Section 3.2.6 of the Planning Report, a Traffic Impact Assessment (TIA) report was prepared for the proposed Rail Camp 6 in order to assess the impact of the proposal upon the surrounding road network.<br>Vehicular access to the site is proposed to be gained via a new access road that travels directly west to the site from the Moray Bulliwallah Road. Moray Bulliwallah Road is not a state transport corridor. The TIA determined that the impacts of the proposed construction camp on the external road network are expected to be negligible.<br>Refer to TIA in Appendix E of the Planning Report. |
| **PO2** Development does not compromise planned upgrades to state transport infrastructure or the development of future state transport infrastructure in future state transport corridors.<br>Editor's note: Written advice from DTMR advising that there are no planned upgrades of state transport infrastructure or future state transport corridors that will be compromised by the development, will assist in addressing this performance outcome. | **AO2.1** The layout and design of the proposed development accommodates planned upgrades to state transport infrastructure.<br>AND | ☑ | SARA mapping indicates that the Rail Camp 6 site is not within close proximity to any state transport infrastructure.<br>Refer to TIA in Appendix E of the Planning Report. |
| | **AO2.2** The layout and design of the development accommodates the delivery of state transport infrastructure in future state transport corridors.<br>Editor's note: To demonstrate compliance with this acceptable outcome, it is recommended that a traffic impact assessment be prepared. | ☑ | SARA mapping indicates that the Rail Camp 6 site is not within close proximity to any future state transport corridors.<br>Refer to TIA in Appendix E of the Planning Report. |
| **State-controlled roads** | | | |
| **PO3** Development does not compromise the safe and efficient management or operation of state-controlled roads.<br>Editor's note: A traffic impact assessment will assist in addressing this performance outcome. | No acceptable outcome is prescribed. | **N/A** | The proposed Rail Camp 6 has no access to a state-controlled road. |
| **PO4** Development does not compromise | **AO4.1** The layout and design of the development | ☑ | The proposed Rail Camp 6 has no access to a state- |

| Performance outcomes | Acceptable outcomes | Response | Comment |
|---|---|---|---|
| planned upgrades of the state-controlled road network or delivery of future state-controlled roads.<br>Editor's note: Written advice from DTMR that there are no planned upgrades of state-controlled roads or future state-controlled roads which will be compromised by the development will assist in addressing this performance outcome. | accommodates planned upgrades of the state-controlled road<br>AND | | controlled road.<br>The TIA determined that the impacts of the proposed construction camp on the external road network are expected to be negligible. Additionally, the camp is temporary and will therefore not have any long-term impacts on the road network. Any planned upgrades of the state-controlled road network will not be impacted by the development.<br>Refer to TIA in Appendix E of the Planning Report. |
| | **AO4.2** The layout and design of the development accommodates the delivery of future state-controlled roads.<br>Editor's note: To demonstrate compliance with this acceptable outcome, it is recommended that a traffic impact assessment be prepared. | ☑ | According to the Department of Transport and Main Roads' (DTMR) mapping there are no future state-controlled roads proposed within the vicinity of Rail Camp 6.<br>The TIA determined that the impacts of the proposed construction camp on the external road network are expected to be negligible. Additionally, the camp is temporary and will therefore not have any long-term impacts on the road network.<br>Refer to TIA in Appendix E of the Planning Report. |
| **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 *Road planning and design manual*, 2nd edition, Department of Transport and Main Roads, 2013.<br>AND | **N/A** | No works are required to be undertaken on state-controlled roads as part of the proposed Rail Camp 6 development. |
| | **AO5.2** The design and staging of upgrade works on or associated with the state-controlled road network are consistent with planned upgrades. | **N/A** | No works are required to be undertaken on state-controlled roads as part of the proposed Rail Camp 6 development. |
| **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 lower order roads do not connect directly to a state-controlled road.<br>AND | ☑ | The proposed 2.5km access road from the camp connects to Moray Bulliwallah Road which is not a state-controlled road. |
| | **AO6.2** The layout and design of the development directs traffic generated by the development to use lower order roads. | ☑ | The proposed Rail Camp 6 has no access to a state-controlled road. |

GHD

145 Ann Street Brisbane QLD 4000
GPO Box 668 Brisbane QLD 4001
T: (07) 3316 3000  F: (07) 3316 3333  E: bnemail@ghd.com

© GHD 2014

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

G:\41\28122\WP\461653.docx

Document Status

| Rev No. | Author | Reviewer | | Approved for Issue | | |
|---|---|---|---|---|---|---|
| | | Name | Signature | Name | Signature | Date |
| 0 | J Mooney | B Wood |  | P Bradley |  | 24.09.14 |
| | | | | | | |
| | | | | | | |

www.ghd.com



# Appendix C | Tenure Search

CURRENT STATE TENURE SEARCH
QUEENSLAND TITLES REGISTRY PTY LTD

Request No: 51916792
Search Date: 20/05/2025 16:02 Title Reference: 40073581
Date Created: 24/05/2017

Previous Title: 17665183

DESCRIPTION OF LAND

Tenure Reference: TL 0/239745

Lease Type: ROLLING TERM LEASE

LOT 662 SURVEY PLAN 316209
Local Government: ISAAC

Area: 99400.000000 Ha. (ABOUT)

No Land Description

No Forestry Entitlement Area

Purpose for which granted:
PASTORAL

TERM OF LEASE

Term and day of beginning of lease

Term: 29 years 8 months commencing on 01/05/2017

Expiring on 31/12/2046

REGISTERED LESSEE

ADANI MINING PTY LTD A.C.N. 145 455 205

CONDITIONS

CONDITIONS

A127 SPECIFIED CONDITIONS FOR: Lease for a Term of Years
PURPOSE: Pastoral

---

STATUTORY CONDITIONS:

---

Statutory conditions are the general mandatory conditions of a lease and binds the lessee in accordance with Part 2 Division 1 of the Land Act.

1. Permitted Use: The lessee must use the land only for the purpose for which the tenure was issued under the Land Act 1994.
2. Duty of Care: The lessee has the responsibility for a duty of care, for the land under the Land Act 1994.
3. Rent/Instalment: The lessee must pay the annual rent/instalment in accordance with the Land Act 1994 and the Land Regulation 2009.
   For further information on how annual rent is determined, refer to the department's website at www.dnrm.qld.gov.au.
4. Noxious plants: The lessee must keep noxious plants on the land under control. If the lessee does not comply with this condition, the Minister may bring the noxious plants under control, the cost of which will be recovered from the lessee.
5. Information to Minister: The lessee must give the Minister administering the Land Act 1994, information the Minister asks for about the tenure.
6. Monies for Improvements: No money for improvements is payable by the State on the forfeiture, cancellation, surrender or expiry of this lease but money may be payable if the State receives payment from an incoming lessee or buyer for the improvements on the land. However, the previous lessee may apply to the Minister to remove the improvements that belong to the lessee, within a period of 3 months from the date of the forfeiture, surrender, or expiry of this lease. The lessee may only undertake the removal of the improvements in the presence of an authorised representative of the department, if required by the Minister. The lessee may only remove those improvements if all monies due from the lessee to the department under this lease have been paid.

REGULATORY-CONDITIONS:----------

---

A regulatory condition relates to a lease , in accordance with the Land Regulation.

1. Indemnity: The lessee indemnifies and agrees to keep indemnified the Minister, and the State of Queensland and its Representatives, (the "Indemnified parties") against all liability, costs, loss and expenses including claims in negligence (including any claims, proceedings or demands bought by any third party, and any legal fees, costs and disbursements on a solicitor and client basis) ("Claim") arising from or incurred in connection with:

CONDITIONS

a. the granting of this lease to the lessee;
b. the lessee 's use and occupation of the land; or
c. personal injury (including sickness and death) or property damage or loss in connection with the performance (or attempted purported performance or non-performance) of the lease or a breach of the lease by the lessee .

The lessee hereby releases and discharges to the full extent permitted by law, the Indemnified parties from all actions, claims, proceedings or demands and in respect of any loss, death, injury, illness or damage (whether personal or property and whether special, direct, indirect or consequential financial loss) arising out of the use and occupation of the lease.
To the full extent permitted by law, the Minister, the State of Queensland and their Representatives will not be liable to the lessee for any special, indirect or consequential damages, including consequential financial loss arising out of the use and occupation of the lease.

2. Public Liability: The lessee must effect a public liability insurance policy with an insurer authorised under the Insurance Act 1973 (Commonwealth) or, if not so authorised then only with the Minister's approval, which can be given or withheld in the Minister's sole discretion, naming the lessee as the insured covering legal liability for any loss of, or damage to any property and for the injury (including death) to any person arising out of anything done or omitted on or about the land or any improvements thereon and against all claims, demands, proceedings, costs, charges, and expenses whatsoever (including claims in negligence) Such policy must:
   a. be for an amount of not less than $20,000,000.00 and have no per event sublimit or such higher amounts as the Minister may reasonably require.
   b. be effected on a "claims occurring" basis; and
   c. be maintained at all times during the currency of the lease, and upon receipt of any notice of cancellation, the lessee must immediately effect another public insurance policy in accordance with the terms of the lease .

   The lessee must, as soon as practicable, inform the Minister, in writing, of the occurrence of any event that the lessee considers is likely to give rise to a claim under the policy of insurance effected and must ensure that the Minister is kept fully informed of subsequent actions and developments concerning the claim.
   The lessee must renew such policy, at the lessee's expense, each year during the currency of this lease.
   The condition will be satisfied if the lessee is the State of Queensland or a statutory authority eligible for cover under the Queensland Government Insurance Fund and is insured and continues to be insured by the Queensland Government Insurance Fund.
   This condition will be satisfied if the lessee is the Commonwealth of Australia or a statutory authority eligible for

CONDITIONS

cover under the Comcover Insurance Fund and is insured and continues to be insured by Comcover.

3. Access: The provision of access, further access or services to the land will not be the responsibility of the State.
4. Survey Costs: If the land needs to be surveyed or re-surveyed the lessee must do this at their own cost under the Survey and Mapping Infrastructure Act 2003. This survey plan must be lodged in the land registry within the specified time.
5. Jurisdiction: The lessee is subject to the Land Act 1994 and all other relevant Queensland and Commonwealth legislation.
6. Compliance with Laws: The lessee must comply with all lawful requirements of the -
   a. Local Government; and
   b. any department within the Queensland or Commonwealth governments (including the department administering the Land Act 1994), local authority or statutory instrumentality having jurisdiction over the land, or the development, use and occupation of the land, in regard to its use, occupation and development of the land.

SPECIAL-CONDITIONS:----------
---

These conditions relate to this lease.

Improvements or development on or to the land

1. The lessee must , to the satisfaction of the relevant authorities, maintain all improvements including fencing on the land in a good and substantial state of repair.
2. The lessee must remove the improvements and rehabilitate the area to the satisfaction of the Minister / Chief Executive of the Land Act 1994 from the date of termination of the tenure.
3. If the lessee fails to remove the improvements and rehabilitate the area as above, the Minister / Chief Executive administering the Land Act 1994 , can remove the improvements and is hereby authorised to do whatever is necessary to effect the said removal. The department may recover from the lessee the total cost incurred in the said removal.
4. The lessee must ensure that the development and use of the land meets with the Planning Scheme, Local Laws and requirements of the Isaac Regional Council, binding the lessee.

Provision of reasonable services, roads and infrastructure external to but servicing the land

1. The provision of access to the land will not be the responsibility of Isaac Regional Council and the State.

Quarry Material and Forest products

1. The lessee must allow any person authorised under the Forestry Act 1959 access to the land for the purpose of cutting and removing timber or removing other forest products, or quarry material, or other material from the land.
   The lessee must not interfere with any forest products or remove any quarry material (including any stone, gravel, sand, earth,

CONDITIONS

soil, rock, guano or clay which is not a mineral within the meaning of the Mineral Resources Act 1989) or other material upon the land without the permission of the Minister administering the Land Act 1994 except under the authority of and in compliance in every respect with the requirements of a permit, licence, agreement or contract granted or made under the Forestry Act 1959.

Other conditions the Minister considers appropriate

1. The lessee must, at all times during the currency of the lease, allow Ergon Energy, Telstra Corporation Limited and their authorised representatives free and unrestricted access to, from and across the leased land.

ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by Lease No. 40073581

2. EASEMENT No 718107980 23/06/2017 at 15:20
burdening the land to
LOT 661 ON SP282172 AND LOT 1 ON SP164918
OVER EASEMENT A ON SP282172

3. EASEMENT No 718107981 23/06/2017 at 15:20
burdening the land to
LOT 661 ON SP282172 AND LOT 1 ON SP164918
OVER EASEMENT B ON SP282172

4. EASEMENT No 718107982 23/06/2017 at 15:20
burdening the land to
LOT 661 ON SP282172 AND LOT 1 ON SP164918
OVER EASEMENT C ON SP282172

5. MORTGAGE No 721666443 05/05/2022 at 14:55
GLOBAL LOAN AGENCY SERVICES AUSTRALIA NOMINEES PTY LIMITED
A.B.N. 39 608 945 008 TRUSTEE
UNDER INSTRUMENT 721666443

ADMINISTRATIVE ADVICES

| Dealing | Type | Lodgement Date | Status |
|---|---|---|---|
| 708869202 | RESTORATION VEGETATION MANAGEMENT ACT 1999 | 02/08/2005 13:32 | CURRENT |
| 711882256 | VEG NOTICE VEGETATION MANAGEMENT ACT 1999 | 26/08/2008 15:46 | CURRENT |
| 714212362 | VEG NOTICE VEGETATION MANAGEMENT ACT 1999 | 12/12/2011 15:19 | CURRENT |
| 714787708 | VEG NOTICE VEGETATION MANAGEMENT ACT 1999 | 16/11/2012 14:29 | CURRENT |

ADMINISTRATIVE ADVICES (Continued)

| Dealing | Type | Lodgement Date | Status |
|---|---|---|---|
| 715259597 | VEG NOTICE<br>VEGETATION MANAGEMENT ACT 1999 | 15/08/2013 14:38 | CURRENT |
| 716715157 | ADMIN NOTING<br>SEE DEALING FOR RELEVANT LEGISLATION | 27/08/2015 09:08 | CURRENT |
| 717302854 | ADMIN NOTING<br>SEE DEALING FOR RELEVANT LEGISLATION | 09/06/2016 08:46 | CURRENT |
| 718205086 | NT DETERM<br>NATIVE TITLE ACT 1993 (CTH) | 10/08/2017 14:18 | CURRENT |
| 719767646 | EXEMPT CONS<br>SEC 322AA LAND ACT 1994 | 02/12/2019 08:28 | CURRENT |
| 720275131 | VEG NOTICE<br>VEGETATION MANAGEMENT ACT 1999 | 17/09/2020 14:38 | CURRENT |
| 721980132 | VEG NOTICE<br>VEGETATION MANAGEMENT ACT 1999 | 16/09/2022 15:13 | CURRENT |

UNREGISTERED DEALINGS - NIL

Corrections have occurred - Refer to Historical Search

Caution - Charges do not necessarily appear in order of priority

** End of Current State Tenure Search **

Information provided under section 34 Land Title Act (1994) or
section 281 Land Act (1994)

COPYRIGHT QUEENSLAND TITLES REGISTRY PTY LTD [2025]
Requested By: D-ENQ INFOTRACK PTY LIMITED

# Appendix D | Owners Consent to the application to Change a Land Use for Non-Resident Workforce Accommodation

BRAVUS
MINING & RESOURCES

BRISBANE
Level 9, 120 Edward Street, Brisbane QLD 4000
GPO Box 2569, Brisbane QLD 4001, Australia
**Tel +61 7 3223 4800**

TOWNSVILLE
2/2 McIlwraith Street, South Townsville Qld 4810
PO Box 967, Townsville QLD 4810, Australia
**Tel +61 7 4430 6800**

23 May 2025

Assistant Coordinator-General
Office of the Coordinator-General
PO Box 15517
City East QLD 4002

Dear Sir / Madam,

**RE: ADANI MINING PTY LTD – CONSENT – LOT 662 ON SP316209**

I, Samir Vora, am the Executive Director and Country Head (Company Director) for Adani Mining Pty Ltd trading as Bravus Mining & Resources (**Adani**). I confirm that I am authorised by Adani to provide its consent as detailed in this letter.

Adani is the registered lessee of a pastoral lease in respect of the land described below (hereafter, the **"Land"**):

| | |
|---|---|
| Title Reference | 40073581 |
| Real Property Description | Lot 662 on SP316209 |
| Address | 3211 Moray Carmichael Boundary Rd, Belyando, Queensland 4820 |
| Local Government Area | Isaac Regional Council |
| Tenure Reference | TL 0/239745 |

As the registered lessee of the Land, Adani, hereby provides its consent to Carmichael Rail Network Pty Ltd applying for, and being granted, approvals, licenses, permits, consents, or permissions under the *State Development and Public Works Organisation Act 1971* (Qld) (**SDPWO Act**), as well as all matters ancillary to the foregoing, to the extent that it relates to the following approval granted under the SDPWO Act:

| | |
|---|---|
| Application Type | Change Application or an SDA approval for a material change of use for non-resident workforce accommodation (rail camp 6) |
| Reference | APC2023/001 |
| Proponent | Carmichael Rail Network Pty Ltd |
| Land subject of the change application for an SDA approval | Lot 662 on SP316209 |
| State Development Area | Galilee Basin State Development Area |
| Decision Date | 22 June 2023 |

Should you have any questions in relation to the above, please contact Joshua Moore (joshua.moore@bravus.com.au).

Yours sincerely,

*Samir Vora*

**Samir Vora**
Executive Director and Country Head

# Appendix E | MCU APC 2023

# Appendix F | Environmental Authority EA 0002209

# Permit

***Environmental Protection Act 1994***

## Environmental authority EA0002209

*This environmental authority is issued by the administering authority under Chapter 5 of the* Environmental Protection Act 1994.

## Environmental authority number: EA0002209

**Environmental authority takes effect on the day the authority is issued.**

The anniversary date of this environmental authority is 26 March each year.

The payment of the annual fee will be due each year on this day.

## Environmental authority holder

| Name | Registered address |
|---|---|
| ADANI MINING PTY LTD | Level 9 120 Edward Street<br>BRISBANE CITY QLD 4000 |

## Environmentally relevant activity and location details

| Environmentally relevant activity | Location |
|---|---|
| ERA 63 - Sewage Treatment – <br><br> 1(b-i) - Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme | 662/SP316209 |

**Additional information for applicants**

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority (EA) is issued is a restatement of the ERA as defined by legislation at the time the EA is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an EA as to the scale, intensity or manner of carrying out an ERA, the conditions prevail to the extent of the inconsistency.

An EA authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the EA specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Contaminated land

It is a requirement of the EP Act that an owner or occupier of land give written notice to the administering authority if they become aware of the following:

- the presence of, or happening of an event involving, a hazardous contaminant on the land that is causing, or is reasonably likely to cause, serious or material environmental harm (notice must be given within 24 hours); or
- if the land is contaminated land – a change in the condition of the land that is causing, or is reasonably likely to cause, serious or material environmental harm (notice must be given within 24 hours); or
- a notifiable activity (as defined in Schedule 3) having been carried out, or is being carried out, on the land (notice must be given within 20 business days).

For further information, including the form for giving written notice, refer to the Queensland Government website www.qld.gov.au, using the search term 'duty to notify'.

Take effect

Please note that, in accordance with section 200 of the EP Act, an EA has effect:

a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority – on the nominated day; or

b) if the authority states a day or an event for it to take effect – on the stated day or when the stated event happens; or

c) otherwise – on the day the authority is issued.

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Planning Act 2016* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect until the additional authorisation has taken effect.

If this EA takes effect when the additional authorisation takes effect, you must provide the administering authority written notice within 5 business days of receiving notification of the related additional authorisation taking effect.

The anniversary day of this environmental authority is the same day each year as the effective date. The payment of the annual fee will be due each year on this day. An annual return will be due each year on 01 April.

If you have incorrectly claimed that an additional authorisation is not required, carrying out the ERA without the additional authorisation is not legal and could result in your prosecution for providing false or misleading information or operating without a valid environmental authority.

| | |
|---|---|
|  | 20/08/2024 |
| Signature | Date |

Claire Atkins

Department of Environment, Science and Innovation

Delegate of the administering authority

*Environmental Protection Act 1994*

**Enquiries:**

Utilities and Government Organisations Assessment

Department of Environment, Science and Innovation

Phone: 1300 130 372

Email: industryanddevelopment.assessment@des.qld.gov.au

**Obligations under the *Environmental Protection Act 1994***

In addition to the requirements found in the conditions of this environmental authority, the holder must also meet their obligations under the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the Act:

- general environmental duty (section 319)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443)

**Other permits required**

This permit only provides an approval under the *Environmental Protection Act 1994*. In order to lawfully operate you may also require permits / approvals from your local government authority, other business units within the department and other State Government agencies prior to commencing any activity at the site. For example, this may include permits / approvals with your local Council (for planning approval), the Department of Transport and Main Roads (to access State controlled roads), the Department of Resources (to clear vegetation), and the Department of Agriculture and Fisheries (to clear marine plants or to obtain a quarry material allocation).

**Obligations under the *Mining and Quarrying Safety and Health Act 1999***

If you are operating a quarry, other than a sand and gravel quarry where there is no crushing capability, you will be required to comply with the *Mining and Quarrying Safety and Health Act 1999*. For more information on your obligations under this legislation contact Mine Safety and Health at www.resources.qld.gov.au, or phone 13 QGOV (13 74 68) or your local Mines Inspectorate Office.

**Development Approval**

This permit is not a development approval under the *Planning Act 2016*. The conditions of this environmental authority are separate, and in addition to, any conditions that may be on the development approval. If a copy of this environmental authority is attached to a development approval, it is for information only, and may not be current. Please contact the Department of Environment, Science and Innovation to ensure that you have the most current version of the environmental authority relating to this site.

**Conditions of environmental authority**

| Environmentally relevant activity | Location |
|---|---|
| ERA 63 - Sewage Treatment<br>1(b-i) - Operating sewage treatment works, other than no-release works, with a total daily peak design capacity of more than 100 but not more than 1500EP if treated effluent is discharged from the works to an infiltration trench or through an irrigation scheme | 662/SP316209 |

The environmentally relevant activity conducted at the location described above must be conducted in accordance with the following conditions of approval.

| **Agency Interest: General** | |
|---|---|
| **Condition Number** | **Condition** |
| **G1** | **Activities** conducted under this environmental authority must not be conducted contrary to any of the following limitations:<br>a) inflows to the sewage treatment plant must not exceed 87,500L on any **day**. |
| **G2** | All reasonable and practicable **measures** must be taken to prevent or **minimise** environmental harm caused by the **activities**. |
| **G3** | Any breach of a condition of this environmental authority must be reported to the **administering authority** as soon as practicable within 24 hours of becoming aware of the breach. **Records** must be kept including full details of the breach and any subsequent actions taken. |
| **G4** | Other than as permitted by this environmental authority, the **release of a contaminant into the environment** must not occur. |
| **G5** | All information and **records** required by the conditions of this environmental authority must be kept for a minimum of five years with the exception of environmental monitoring results which must be kept until surrender of this environmental authority. All information and **records** required by the conditions of this environmental authority must be provided to the **administering authority** upon request and in the format requested. |
| **G6** | An **appropriately qualified person(s)** must monitor, record and interpret all parameters that are required to be monitored by this environmental authority and in the manner specified by this environmental authority. |
| **G7** | All analyses required under this environmental authority must be carried out by a laboratory that has National Association of Testing Authorities **(NATA)** certification, or an equivalent certification, for such analyses. The only exception to this condition is for *in situ* monitoring of pH, Total Chlorine and electrical conductivity. |
| **G8** | An annual monitoring report must be prepared and submitted to the **administering authority** by 30 November each year, for the preceding financial year. |
| **G9** | **You** must record the following details for all environmental complaints received:<br>a) date and time complaint was received; |

| | |
|---|---|
| | b) name and contact details of the complainant when provided and authorised by the complainant;<br>c) nature of the complaint;<br>d) investigations undertaken;<br>e) conclusions formed; and<br>f) actions taken. |
| **G10** | When required by the **administering authority**, monitoring must be undertaken in the manner prescribed by the **administering authority** to investigate a complaint of **environmental nuisance** arising from the **activity**. The monitoring results must be provided within 10 business **days** to the **administering authority** upon its request. |
| **G11** | The **activity** must be undertaken in accordance with written procedures that:<br>a) identify potential risks to the environment from the **activity** during routine **operations**, closure and an emergency;<br>b) establish and maintain control **measures** that minimise the potential for environmental harm;<br>c) ensure plant, equipment and **measures** are maintained in a proper and effective condition;<br>d) ensure plant, equipment and **measures** are operated in a proper and effective manner;<br>e) ensure that staff are trained in and aware of their obligations under the Environmental Protection Act 1994; and<br>f) ensure that reviews of environmental performance are undertaken at least annually. |
| **G12** | You must install and maintain wet weather storage with a volume of at least 400,000L for storage of treated wastewater. |
| **G13** | Chemicals and fuels in containers of greater than 15 litres must be stored within a secondary containment system |
| **Agency Interest: Air** | |
| **Condition Number** | **Condition** |
| **A1** | Other than as permitted within this environmental authority, odours or airborne contaminants must not cause **environmental nuisance** at a **sensitive place** or **commercial place**. |
| **Agency Interest: Water** | |
| **Condition Number** | **Condition** |
| **W1** | Contaminants must not be released to waters. |
| **W2** | Storm water contaminated by the activity must be managed to minimise or prevent any adverse effect on the environmental values of the receiving environment. |
| **Agency Interest: Land** | |
| **Condition Number** | **Condition** |

**L1**

The only contaminants permitted to be **released** to **land** shown in ***Appendix 1 — Wastewater Irrigation Area*** is treated sewage effluent in accordance with ***Table 1 – Contaminant Release Limits to Land*** and the associated requirements.

**Table 1— Contaminant Release Limits to Land**

| Quality Characteristic (units) | Minimum | Median | Maximum | Minimum frequency |
|---|---|---|---|---|
| Volume sewage treated (L/**day**) | - | 57,000 | - | Daily |
| Irrigation Rate (mm/**day**) | - | 2 | - | Daily |
| **Total Nitrogen** (**mg/L** as N) | - | 30 | - | Quarterly |
| **Total Phosphorus** (**mg/L** as P) | - | 10 | - | Quarterly |
| pH (pH units) | 6 | - | 8.5 | Weekly |
| E.coli (cfu/100mL) | - | - | 10 | Monthly |
| Electrical Conductivity (µS/cm) | - | - | 1,600 | Weekly |
| Total Chlorine (**mg/L**) | - | - | 2 | Weekly |
| Total Suspended Solids (mg/L) | - | - | 5 | Monthly |

**Associated requirements**

1. Monitoring must be in accordance with the **administering authority**'s latest Water Quality Sampling Manual.
2. Monitoring must be undertaken when treated sewage effluent is being irrigated, unless irrigation has ceased for longer than the relevant parameters specified minimum frequency (e.g. if TSS was only required to be monitored once a week, then a TSS sample would not be required after the first week following cessation of the release).
3. Indicators for TN and TP are recommended to be done as grab samples.
4. Samples must be representative of the release.
5. Monitoring must be in accordance with the sample point at the outlet of the sewage treatment plant.
6. **Medians** are to be taken as a **Long Term Rolling (limit),** meaning a limit applied to consecutive samples taken over a 3 month period (on a rolling basis for limit calculations) where consecutive samples are taken at the minimum frequency specified in ***Table 1 – Contaminant Release Limits to Land.***

**L2**

The release of contaminants to land is permitted only within the treated sewage irrigation area shown in **Appendix 1 — Wastewater Irrigation Area**, and areas used for dust suppression and earth works.

**L3**

The treated sewage irrigation area must be at least 3.6 ha in area and located in accordance with **Appendix 1 — Wastewater Irrigation Area.**

**L4**

Treated effluent released to **land** must be done in accordance with documentation that ensures:

a) drainage to groundwater and subsurface flows of contaminants to surface waters are prevented;

b) surface pondage and run-off of treated sewage is prevented;

| | |
|---|---|
| | c) treated wastewater must be distributed evenly within the land application area;<br>d) degradation of soil structure is minimised;<br>e) soil sodicity and the build-up of nutrients and heavy metals in the soil and subsoil are minimised;<br>f) spray drift or overspray do not carry beyond treated sewage irrigation areas;<br>g) sufficient buffer zones are maintained between irrigation sites and sensitive environmental receptors; and<br>h) treated sewage irrigation areas are maintained with an appropriate crop in a viable state for transpiration and nutrient uptake. |
| **L5** | When weather conditions or soil conditions preclude the release of treated sewage effluent to land, effluent must not be irrigated to land. |
| **Agency Interest: Noise** | |
| **Condition Number** | **Condition** |
| **N1** | Noise generated by the activity must not cause **environmental nuisance** to any **sensitive place** or **commercial place.** |
| **Agency Interest: Waste** | |
| **Condition Number** | **Condition** |
| **WT1** | All waste generated in carrying out the activity must be lawfully reused, recycled or removed to a facility that can lawfully accept the waste. |

**Definitions**

Key terms and/or phrases used in this document are defined in this section and **bolded** throughout this document. Applicants should note that where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations or environmental protection policies must be used. If a word remains undefined it has its ordinary meaning.

**Activity** means the environmentally relevant activities, whether resource activities or prescribed activities, to which the environmental authority relates.

**Administering authority** means the Department of Environment, Science and Innovation or its successor or predecessors.

**Approval** means environmental authority.

**Appropriately qualified person(s)** means a person or persons who has professional qualifications, training, skills and experience relevant to the environmental authority (EA) requirements and can give authoritative assessment, advice and analysis in relation to the EA requirements using the relevant protocols, standards, methods or literature.

**Commercial place** means a place used as a workplace, an office or for business or commercial purposes and includes a place within the curtilage of such a place reasonably used by persons at that place.

**Environmental nuisance** as defined under Chapter 1 of the *Environmental Protection Act 1994.*

**Day** means any 24 hour period.

**Groundwater** means water that occurs naturally in, or is introduced artificially into, an aquifer.

**Land** in the **land** schedule of this document means **land** excluding **waters** and the atmosphere.

**Long Term Rolling (limit)** means a limit applied to consecutive samples taken over a 6 month period (on a rolling basis for limit calculations) where consecutive samples are taken at the minimum frequency specified in ***Table 1*** of approximately equal periods.

**Measures** has the broadest interpretation and includes plant, equipment, physical objects, monitoring, procedures, actions, directions and competency.

**Median** means the middle value, where half the data are smaller and half the data are larger. If the number of samples is even, the **median** is the arithmetic average of the two middle values.
**mg/L** means milligrams per litre.

**Minimise** by taking all reasonable and practical measures to minimise the adverse effect having regard to the following matters:
a) the nature of the harm or potential harm;
b) the sensitivity of the receiving environment;
c) the current state of technical knowledge for the activity;
d) the likelihood of successful application of different measures that might be taken to **minimise** the
e) adverse effects;
f) the financial implications of the different measures as they would relate to the type of activity; and
g) if the adverse effect is caused by the location of the activity being carrying out, whether it is feasible to carry out the activity at another location.

**N.A.T.A** or **NATA** means National Association of Testing Authorities.

**Records** include breach notifications, written procedures, analysis results, monitoring reports and monitoring programs required under a condition of this authority

**Release of a contaminant into the environment** means to:
(a) deposit, discharge, emit or disturb the contaminant;
(b) cause or allow the contaminant to be deposited, discharged, emitted or disturbed;
(c) fail to prevent the contaminant from being deposited, discharged emitted or disturbed;
(d) allow the contaminant to escape; and
(e) fail to prevent the contaminant from escaping.

**Secondary containment system** means a system designed, installed and operated to prevent any release of contaminants from the system, or containers within the system, to land, groundwater, or surface waters.

**Sensitive place** includes the following and includes a place within the curtilage of such a place reasonably used by persons at that place:
(a) a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
(b) a motel, hotel or hostel; or
(c) a kindergarten, school, university or other educational institution; or
(d) a medical centre or hospital; or
(e) a **protected area** under the *Nature Conservation Act 1992,* the *Marine Parks Act 2004* or a World Heritage Area; or
(f) a public thoroughfare, park or garden for noise, a place defined as a sensitive receptor for the purposes of the Environmental Protection (Noise) Policy 20019.

**Total Nitrogen** (TN) means the sum of Organic Nitrogen, Ammonia Nitrogen, Nitrite plus Nitrate Nitrogen, expressed as **mg/L** as Nitrogen. This includes both the inorganic and organic fraction of nitrogen.

**Total Phosphorus** (TP) means the sum of the reactive phosphorus, acid-hydrolysable phosphorus and organic phosphorus, as **mg/L** of Phosphorus. This includes both the inorganic and organic fraction of phosphorus.

**Waters** includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water natural or artificial **watercourse**, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and **groundwater** and any part-thereof.

**Works** or **operation** means the activity approved under environmental authority.

**You** means the holder of the environmental authority.

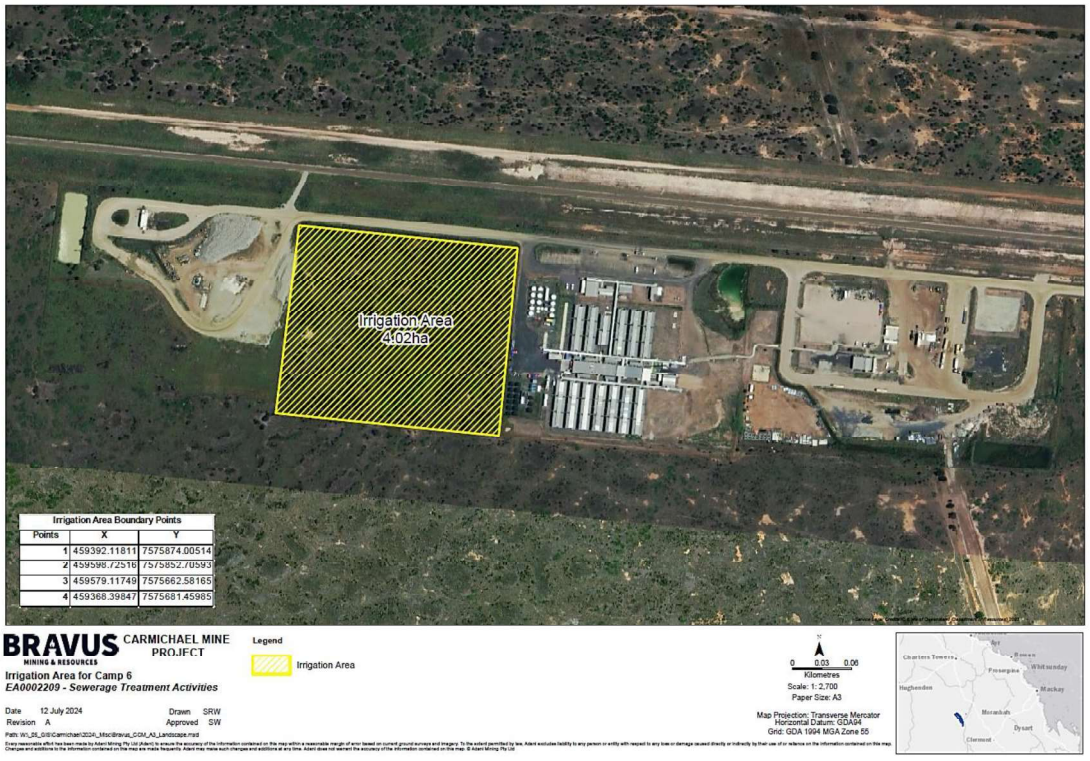



Figure 1: Wastewater Irrigation Area for effluent disposal as part of sewage treatment activities at Carmichael Mine Project Camp 6

**END OF ENVIRONMENTAL AUTHORITY**