



Progressive Rehabilitation and Closure Plan

WARWICK LIMESTONE MINE

prepared by Ausrocks Resource Consultants
for Department of Environment and Science

AUQ00238A



TERREQUIP ENVIRONMENTAL PTY LTD

**WARWICK LIMESTONE MINE –
PROGRESSIVE REHABILITATION AND
CLOSURE PLAN**

10 JULY 2026

AUSROCKS RESOURCE CONSULTANTS

Unit 3, 50 Northlink Place
Virginia, QLD, 4014

Email: info@ausrocks.com.au

Phone: (07) 3161 4108

www.ausrocks.com.au

ABN: 64 056 939 014



WARWICK LIMESTONE MINE PRC PLAN COVER PAGE

A Progressive Rehabilitation and Closure Plan (PRC plan) must contain a cover page and include the following information:

Table 1: Cover page requirements

Required cover page information	Description
Project Title	Warwick Limestone Mine
Client	Terrequip Environmental Pty Ltd
Project Manager	Ausrocks Resource Consultants (Ausrocks Pty Ltd)
Document ID/Ref.	AUQ00238A
Date of Submission	10/07/2026
Tenure No.	ML50083, ML50146, ML50236, ML50237, ML50238, ML50239
EA Reference	EPML00136213
EA Holder Name	Terrequip Environmental Pty Ltd
EA Holder Contact Details	Jacob Fuller (07) 3871 3837 compliance@terrequip.com 10a, 19 Lang Parade, Milton, QLD 4064



Document Control

General Information

Item	Detail
Project Name	Warwick Limestone Mine
Project Number	AUQ00238A
Document Title	Progressive Rehabilitation and Closure Plan
File Name	EPML00136213_PRCP_Rehabilitaiton_Planning_Part
File Location	Ausrocks\Project - Documents\00238_Terrequip Pty Ltd\A - Warwick\Mine Planning\PRCP\PRCP 2023
Revision Status	1.8

Revision History

Revision	Issue	Prepared by	Reviewed by	Date
1.0	Draft	CM, NV	CM	22/07/2021
1.0	Revised draft	CM, NV	Client	25/08/2021
1.1	Final	CM, NV	CM, Client	30/08/2021
1.2	Revised Final	CM, NV	CM, Client	31/08/2021
1.3	Full document updated and amended; Sent for Client Review and Comment	CM, NV, RM	CM, Client	29/09/2022
1.4	Final Document for Submission	CM, NV, RM	CM, Client	30/09/2022
1.5	Revised Final (IR Notice)	CM, NV, RM	CM, Client	05/05/2023
1.6	Revised Final (Change Application)	NV, RM	CM	29/09/2023
1.7	Revised Final (Change Application IR Notice)	RM, CM	Client	9/04/2024
1.8	Revised Final (PRCP Approval)	HV	CM, Client	26/06/2026

Issue Register

Date	Distribution List
25/08/2022	Terrequip Environmental Pty Ltd
30/08/2022	Terrequip Environmental Pty Ltd
31/08/2022	Terrequip Environmental Pty Ltd
29/09/2022	Terrequip Environmental Pty Ltd
30/09/2022	Terrequip Environmental Pty Ltd; Department of Environment and Science
05/05/2023	Terrequip Environmental Pty Ltd; Department of Environment and Science
29/09/2023	Terrequip Environmental Pty Ltd; Department of Environment and Science
09/04/2024	Terrequip Environmental Pty Ltd
16/04/2024	Terrequip Environmental Pty Ltd; Department of Environment and Science
26/06/2026	Terrequip Environmental Pty Ltd
10/07/2026	Terrequip Environmental Pty Ltd; Department of Environment, Tourism, Science and Innovation

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This document has been reviewed and signed off by the undersigned:



Carl Morandy (RPEQ22981)

Managing Director, Ausrocks Pty Ltd

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- Appendix 2** Horizon Soil Science and Engineering (16 September 2022): Report on the Soil Survey Leases of the Warwick Limestone Quarry Rev 1.0
- Appendix 3** Epic Environmental Pty Ltd (17 November 2020): Environmental Management Plan – Warwick Limestone Mine
- Appendix 4** Rocktest Rock Engineering Consultants (5 June 2019): Warwick Limestone Mine Geotechnical Risk Assessment and Management for Sibelco Version 1.0
- Appendix 5** Epic Environmental Pty Ltd (20 November 2020): Water Management Plan – Warwick Limestone Mine
- Appendix 6** Australian Laboratory Services Pty Ltd (19 May 2020): Material Testing Certificate of Analysis Ref BR20104442
- Appendix 7** Landholder Agreements
- Appendix 8** BAAM Ecological Consultants: Rehabilitation Plan for the Warwick Mining Leases Areas
- Appendix 9** Plans and Maps

Terms & Abbreviations

AEP	Annual exceedance probability
AHD	Australian height datum
ALC	Agricultural Land Classification
ALS	Australian Laboratory Services
ANCOLD	Australian National Committee on Large Dams
ASC	Australian soil Classification
Ausrocks	Ausrocks Resource Consultants (Ausrocks Pty Ltd)
BoM	Bureau of Meteorology
CEC	Cation Exchange Capacity
DA	Development Approval
DAF	Department of Agriculture, Forestry & Fisheries
DEHP	Department of Environment and Heritage Protection (former department name, now DETSI)
DES	Department of Environment and Science (former department name, now DETSI)
DETSI	Department of the Environment, Tourism, Science and Innovation
DNRME	Department of Natural Resources, Mines & Energy (former department name, now DOR)
DOR	Department of Resources
EA	Environmental Authority
EAT	Emerson aggregate test
EC	Electrical conductivity
EIS	Environmental impact statement
ENSO	El Niño Southern Oscillation
EP Act	Environmental Protection Act 1994
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ERA	Environmentally Relevant Activity
ESA	Environmentally Sensitive Area
ESP	Exchangeable Sodium Percentage
EV	Environmental Value(s)
FoS	Factor of Safety
GQAL	Good Quality Agricultural Land
IA	Improvement area
ICMM	International Council on Mining and Metals
LGA	Local Government Authority
LOD	Land outcome document
MCU	Material Change of Use
MERFP Act	Mining and Energy Resources (Financial Provisioning) Act 2018
ML	Mining Lease
MM	Management milestone
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
NC Act	Nature Conservation Act 1992



NSW	New South Wales
NUMA	Non-use management area
OC	Organic carbon
PMAV	Property Map of Assessable Vegetation
PMLU	Post-mine land use
PRC plan (PRCP)	Progressive Rehabilitation and Closure Plan
QLD	Queensland
RA	Rehabilitation area
RC	Reverse Circulation
RE	Regional ecosystem
RL	Reduced level
RM	Rehabilitation milestone
ROM	Run of Mine
RPEQ	Registered Professional Engineer of Queensland
RPI Act	Regional Planning Interests Act 2014
RZS	Root Zone Salinity
SCA	Strategic cropping area
SCL	Strategic cropping land
SDRC	Southern Downs Regional Council
SMART	Specific, Measurable, Achievable, Reasonable/ Relevant, Time Specific
TEC	Threatened ecological community
Terrequip	Terrequip Environmental Pty Ltd
VM Act	Vegetation Management Act 1999
WMP	Water management plan
WQO	Water Quality Objective(s)

INTRODUCTION

This transitional Progressive Rehabilitation and Closure Plan (PRC plan) has been prepared for the Warwick Limestone Mine (Warwick Limestone) in accordance with the amendments promulgated by the *Mineral and Energy Resources (Financial Provisioning) Act 2018* (MERFP Act) to the *Environmental Protection Act 1994* (EP Act). This PRC plan has also been prepared to meet the requirements of the Progressive Rehabilitation and Closure Plan Guideline (PRCP Guideline)¹.

Environmental Authority Holder:	EPML00136213
Environmental Authority Number:	Terrequip Environmental Pty Ltd
Land description:	ML50083, ML50146, ML50236, ML50237, ML50238, ML50239

Environmentally relevant activities (ERA) at the Warwick Limestone are limited to resource activities under Schedule 2A, 21 and extraction and screening 2 under prescribed ERA 16 per conditions of the site's Environmental Authority (EA) EPML00136213² (**Appendix 1**). The EA is the land outcome document (LOD) for this transitional PRC plan.

Per PRCP Guideline requirements, this PRC plan comprises two parts:

- **Part A: Rehabilitation planning part** – provides information about the site, rehabilitation plans, and evidence and justification to support the development of the proposed PRCP schedule; and
- **Part B: PRCP schedule** – includes maps of rehabilitation and closure for the site and tables of time-based milestones.

Transitional provisions

Part 27, Chapter 13 of the EP Act outlines the transitional provisions following the commencement of the MERFP Act. Terrequip is the 'mining EA holder' for the purposes of the transitional provisions on the basis that, on commencement of the MERFP Act, Terrequip was "the holder of an environmental authority (EPML00136213) for a mining activity relating to a mining lease authorising operation" at Warwick Limestone (section 750, EP Act). Section 6 of the PRCP Guideline makes provision for "existing EA holders who must transition to the new PRC plan framework"¹. The site has an approved EA therefore Warwick Limestone falls under the scope of the requirements of a transitional PRC plan.

Per section 6 of the PRCP Guideline, the following are applicable to this PRC plan:

- A Transition Notice for Warwick Limestone was issued to Terrequip by the Administering Authority, dated 29 September 2020. This Transitional Notice required submission of the Warwick Limestone Mine PRC plan by 31 August 2021.
- The site's Transitional Notice was issued following a pre-notification meeting held between the Administering Authority, Terrequip, and Ausrocks consultants, on 9 August 2020.
- In accordance with transitional provisions (section 750, EP Act), the Warwick Limestone EA is an approved LOD.
- Prior to the submission of the PRC plan, the following meetings were held between the Administering Authority, Terrequip, and Ausrocks:
 - Initial pre-lodgement meeting

¹ Queensland Department of Environment and Science (April 2023) Progressive Rehabilitation and Closure Plan Guideline

² Queensland Department of Environment and Science (April 2019) Environmental Authority (EPML00136213)

- Additional pre-lodgement meetings held on 9 August 2021 and 28 October 2021; and
 - Meeting to discuss extension of PRCP Decision Stage.
- Following the Information Request period from the original submission, this document represents the updated and final version of the Warwick Limestone transitional PRC plan submitted for Administering Authority approval.

Consideration to the above and requirements of the PRCP Guideline, the following process for transitioning rehabilitation and closure outcomes from the Warwick Limestone EA into the site's PRCP schedule was followed:

- Step 1. Identifying rehabilitation and closure outcomes in the LOD (EPML00136213);
- Step 2. Identifying post-mine land uses (PMLUs) or non-use management areas (NUMAs; these are not planned for Warwick Limestone);
- Step 3. Identify rehabilitation areas within PMLUs (improvement areas are not required as there are no NUMAs relevant);
- Step 4. Identify milestones that deliver on SMART principles;
- Step 5. Identify site-specific milestone criteria; and
- Step 6. Identify when the first milestone must commence and completion dates for milestones.

PRCP amendment

The current EA allows for environmentally relevant activities (ERA) under Resource Activity, Schedule 2A, 21 (mining activity) and Prescribed ERA, ERA 16 (extraction and screening). If any changes are made or a decision is made to alter operations outside current approved ERAs, an EA amendment in addition to any associated PRCP amendment will be required. The rehabilitation activities described in this PRC plan relate solely to the mining and extraction and screening activities approved in the current EA.

Future exploration

There is potential for the development of quarry products within mining lease areas of exhausted limestone resource, predominantly the Aspinall Pit. At the time of preparation of this PRC plan, it is not planned to develop these quarry products, however, should this change in future, the holder of the environmental authority is appropriately authorised to carry out such activities under ERA 16(2)(c), 16(2)(b) and 16(3)(b).

No future exploration outside of mining leases is proposed for this PRC plan.

PART A: REHABILITATION PLANNING PART

1 Project planning

Legislative Requirement

In accordance with section 126C(1)(b) and (c)(ii) of the EP Act, the rehabilitation planning part of the PRC plan must include a description of:

- each resource tenure, including the area of each tenure
- the relevant activities to which the application relates
- the likely duration of the relevant activities
- how and where the relevant activities are to be carried out, including maps.

PRCP Guideline

The following spatial information must be submitted as part of the PRC plan:

- the location and maximum extent of disturbance footprint for the mine life
- the PMLUs and NUMAs for the area within the resource tenures
- any sensitive receptors.

In addition to the list above, the PRC plan must include spatial information outlining the rehabilitation and improvement areas that correspond to the proposed PRCP schedule. The spatial information must show the locations of the rehabilitation and improvement areas for a 10-year period (minimum).

All spatial information must be prepared and submitted in accordance with the guideline 'Spatial Information Submission' (ESR/2018/4337).

1.1 Project description

Warwick Limestone mine is located near the Queensland/New South Wales border within the Balone-Condamine basin and approximately 21km south east of Warwick. The site is accessible via O'Deas Road.

The EA holder is Terrequip Environmental Pty Ltd (Terrequip).

EA EMPL00136213 for Warwick Limestone includes Environmentally Relevant Activities (ERA) 16(2)(b) extraction >100,000 to 1Mt/a, 16(3)(b) screening >100,000 to 1Mt/a, and Resource Activity Schedule 2A(21) mining activities.

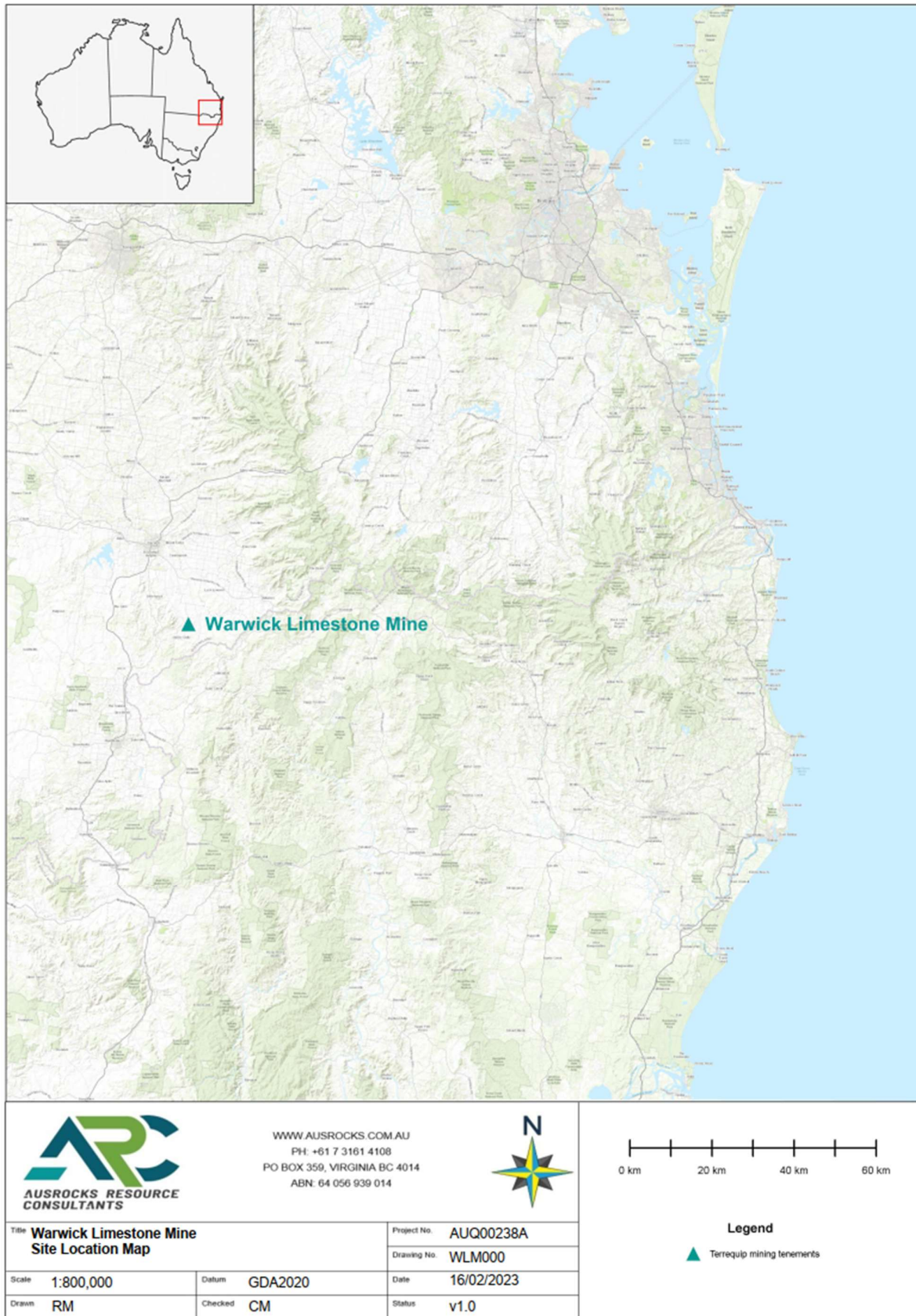


Figure 1: Warwick Limestone location map

1.1.1 Mining tenements

Warwick Limestone operates the mining leases (MLs) provided in **Table 2**.

Table 2: Warwick Limestone mining tenements

Mining lease	Name	EA holder	Purpose	Area (ha)
ML 50083	O'DEA EXTENDED	Terrequip Environmental Pty Ltd	East-West Pit	22.9
ML 50146	WARWICK PLANT	Terrequip Environmental Pty Ltd	Aspinal Pit	50.78
ML 50236	AREA 1	Terrequip Environmental Pty Ltd	East-West Pit	1.85
ML 50237	AREA 2	Terrequip Environmental Pty Ltd	Phoenix Pit	71.31
ML 50238	AREA 4	Terrequip Environmental Pty Ltd	Phoenix Pit	11.2
ML 50239	AREA 3	Terrequip Environmental Pty Ltd	East-West Pit	13.52
Total area				171.56

1.1.2 Primary mine features and infrastructure

Warwick Limestone consists of three (3) operational areas each including an open-cut pit. The main features and infrastructure approved within the EA for Warwick Limestone are summarised in **Table 3** and illustrated in **Figure 2**, to **Figure 4**.

Table 3: Primary mine features and infrastructure

Mine domain	Mine feature name
Ancillary infrastructure	• Mining footprint • Mine infrastructure • Access tracks, ancillary roads and haul roads • Administration, office buildings, carparks and amenities • Laydown areas (including vehicle manoeuvring) • Material storage • Weighbridge • Processing and bagging plant (including building components and silos) • Workshop (including maintenance shed, hazardous chemical storage and transportable buildings)
Dams	• Onsite water storage(s) • Sediment controls
Combined stockpile areas	• Topsoil stockpiles • Waste rock dumps and overburden stockpiles • Product stockpiles / Storage pads
Non-mining areas	• Undisturbed land • Rehabilitation areas (complete and in progress)
Utilities / Services	• Septic sewage • Power lines • Communications

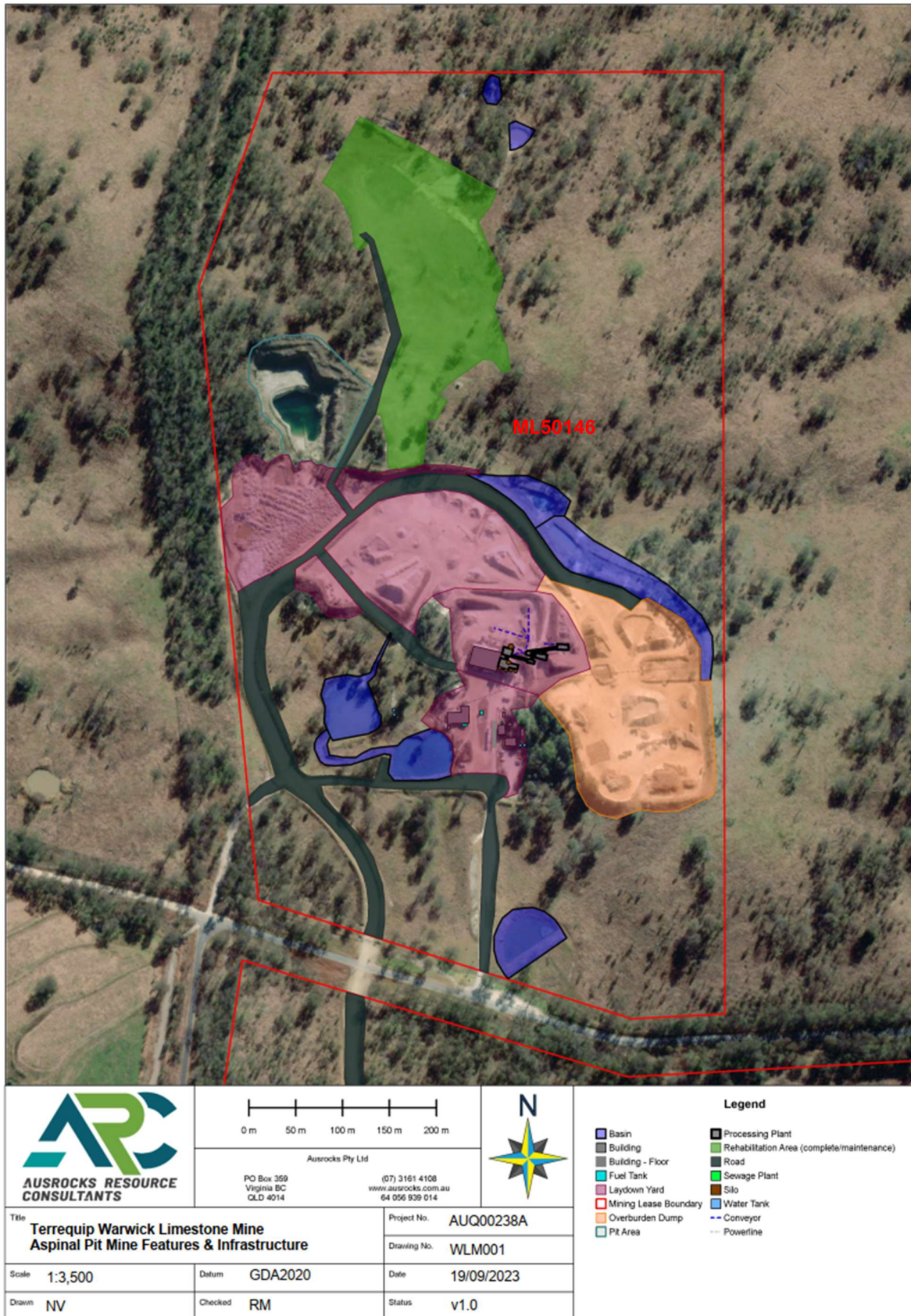


Figure 2: Aspal pit mining tenements including primary mine features and infrastructure

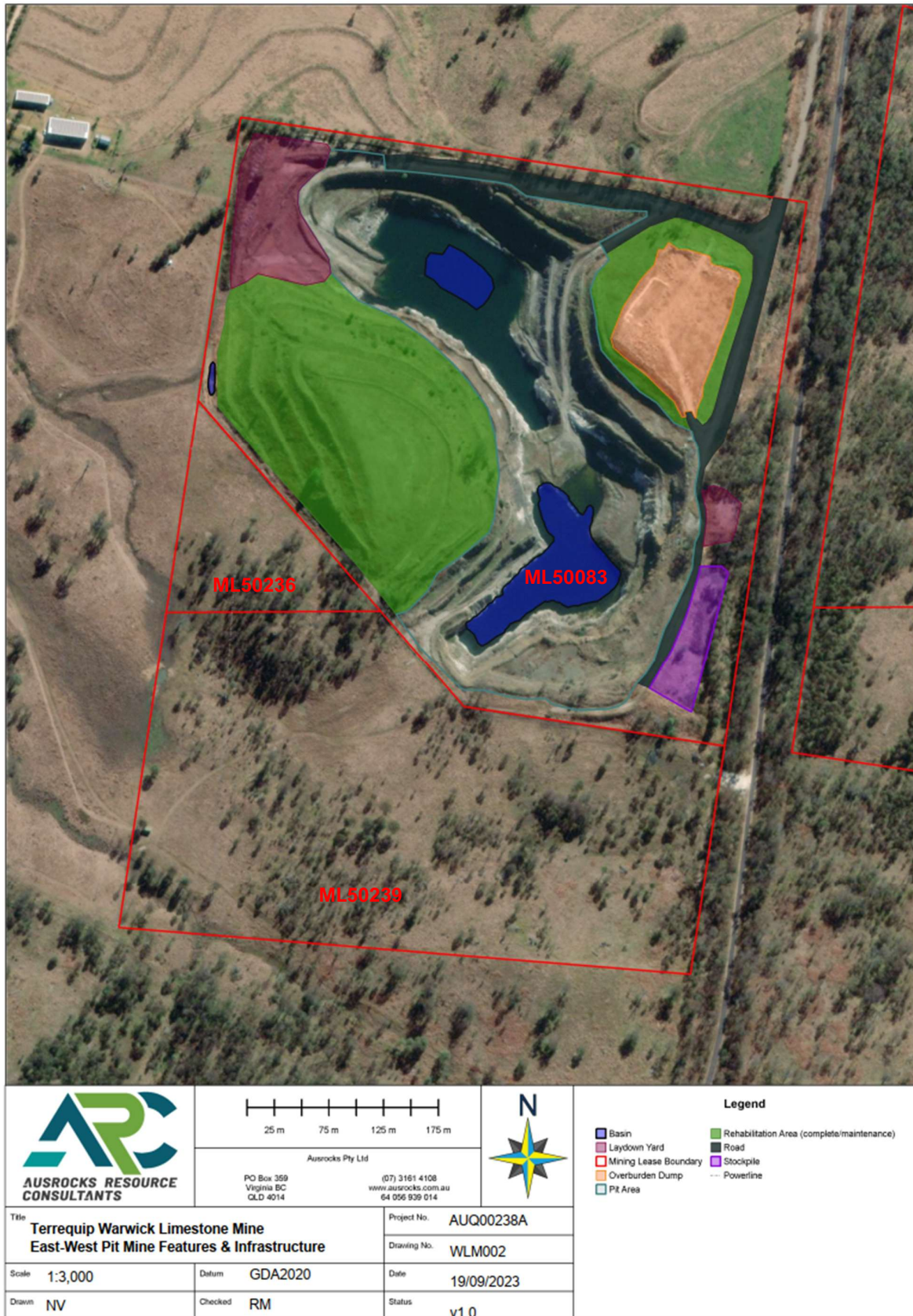


Figure 3: East-West pit mining tenements including primary mine features and infrastructure

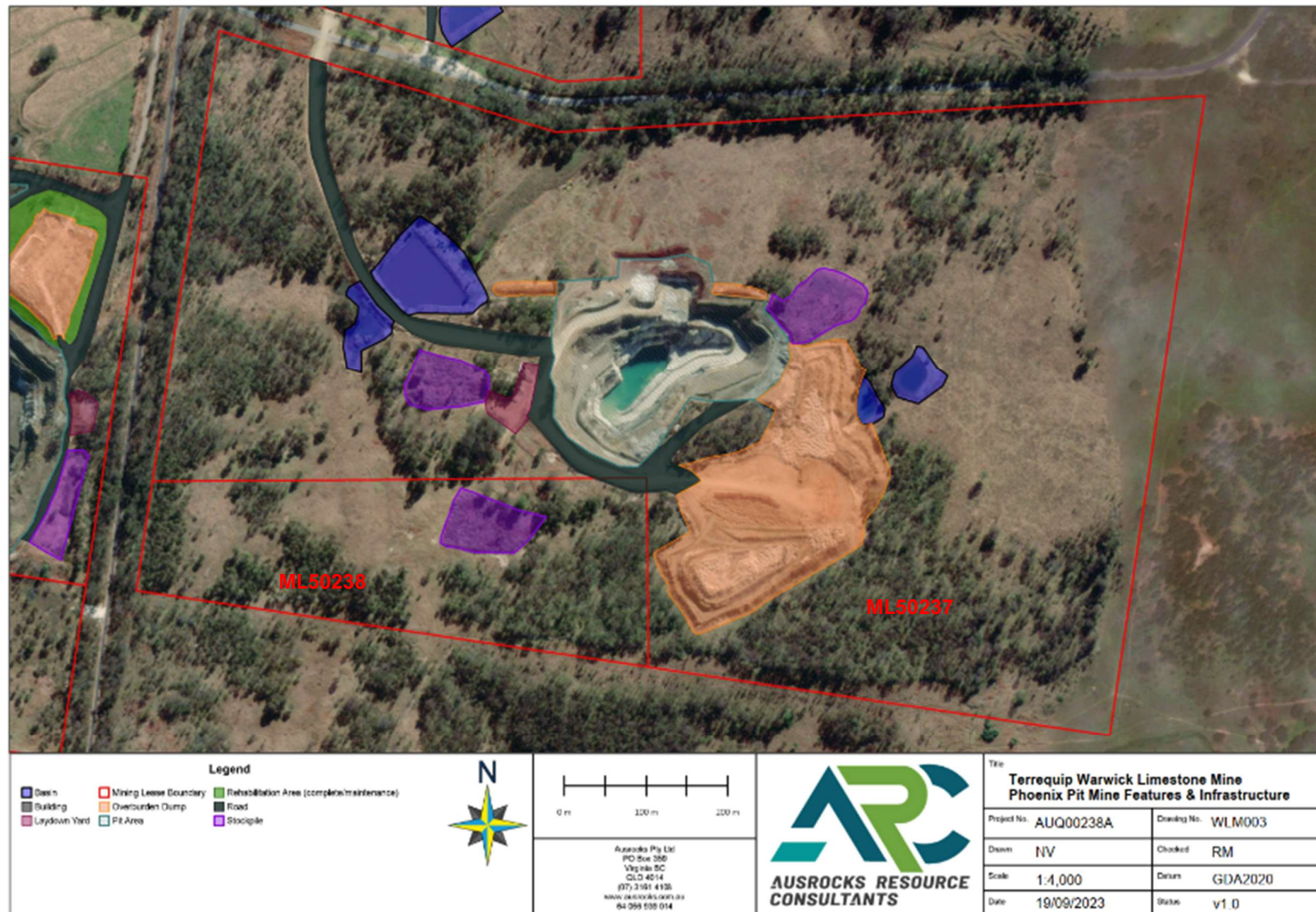


Figure 4: Phoenix pit mining tenements including primary mine features and infrastructure

1.1.3 Type of mining operation

Terrequip at the time of preparation of this PRC plan, is an active mining operation. The EA permits activities associated with ERA's for extraction and screening as well as resource mining activities:

- ERA's Extraction 16(2)(b) >100,000 to 1Mt/a and Screening 16(3)(b) >100,000 to 1Mt/a; and
- Resource Activity Schedule 2A(21) mining activities.

At the time of preparation of this PRC plan, no extraction is occurring within ML50236 or ML50238. There may be potential for future mining in these areas however none are proposed for this PRC plan. The majority of mining occurs within ML50237 (Phoenix pit). Resources have been depleted in ML50083 (East-West pit) and ML50146 (Aspinal pit). Although the current resource has been depleted in the East-West pit there are designs within this PRCP to extend the pit into ML50239 to provide additional resource capacity.

Current mining methods include, but are not limited to:

- open-cut mining methods;
- drill and blast overburden dumps then transport via truck and shovel to waste dumps;
- drill and blast limestone resource then transport via truck and shovel to plant area;
- backfilling pit voids (with overburden); and
- progressive rehabilitation activities (e.g. topsoil, rip, contour, seed, revegetate).

1.1.3.1 Historical mining operation

Warwick Limestone has been in an operation and production phase since the 1990s, previously operated by Sibelco Australia Limited. Mining is conducted via open-cut pits. Historical mining methods are assumed to have included, but were not limited to:

- clearing of vegetation including removal and disposal by dozer;
- excavation and temporary stockpile of topsoil by dozer and/or excavator and/or articulated dump truck;
- removal of overburden via rip and push method by dozer;
- overburden re-used in pit backfill to final landform level and/or stockpiled; and
- mining and transport of limestone resource by excavator to road trucks via haul access road networks to designated stockpile and processing areas.

1.1.3.2 Quarrying

Limestone resource is exhausted in the Aspinal pit (ML50146) however, there is potential for future development of quarry products in this area. At the time of preparation of this PRC plan, there is no plan to further explore this option. Should this change in the future, the PRC plan and PRCP schedule and Environmental Authority will be amended as required.

The EA provides for the establishment of a quarry on ML50239, which is yet to begin extraction. The majority of the proposed disturbances within ML50239 are related to the operation of a quarry and are attributable to ERA16, not a resource activity, and are therefore not covered in this PRCP. However, the quarry will be established when access to the 0.38ha orebody within ML50239 is required with the overburden targeted as quarry material. Waste material from the quarrying of this area will be used to backfill the East-West Pit to the final landform design.

1.1.4 Proposed duration of the operation

Current mining activities at Warwick Limestone are proposed to continue until the limestone resource is exhausted or up to, and including, the expiry dates of each granted mining lease tenement (year 2025 - renewal lodged ML50083, 2028 ML50146, and 2032 ML50236, ML50237, ML50238, ML50239). It is anticipated an application to renew and/or extend the expiry dates of these mining leases will be required to align with the



planned year of completion of mining and rehabilitation (year 2042). When an application is submitted to the administering authority, the PRC plan and PRCP schedule will be amended accordingly.

1.1.4.1 Estimated remaining resource

Majority of valuable resource exists within the Phoenix pit which is estimated to have 15-years of production remaining (estimate correct as of May 2022) therefore, active mining in this area will continue up to 2036. **Figure 5** illustrates an approximate staged extraction plan for the pit.

Limestone resource in the Aspal and East-West pits are exhausted with only low-grade resource remaining. To support mining in the Phoenix pit, it is anticipated a renewal application for ML50146 (Aspal pit) will be required. The Aspal pit will be used to house processing and stockpiling activities until limestone resource in the Phoenix pit has been exhausted.

Undisturbed mining leases ML50236 and ML50239 are known to contain limestone resource, extending south from the East-West pit (ML50083). Future exploration works will be conducted to determine viability of these resources (**Figure 6**).

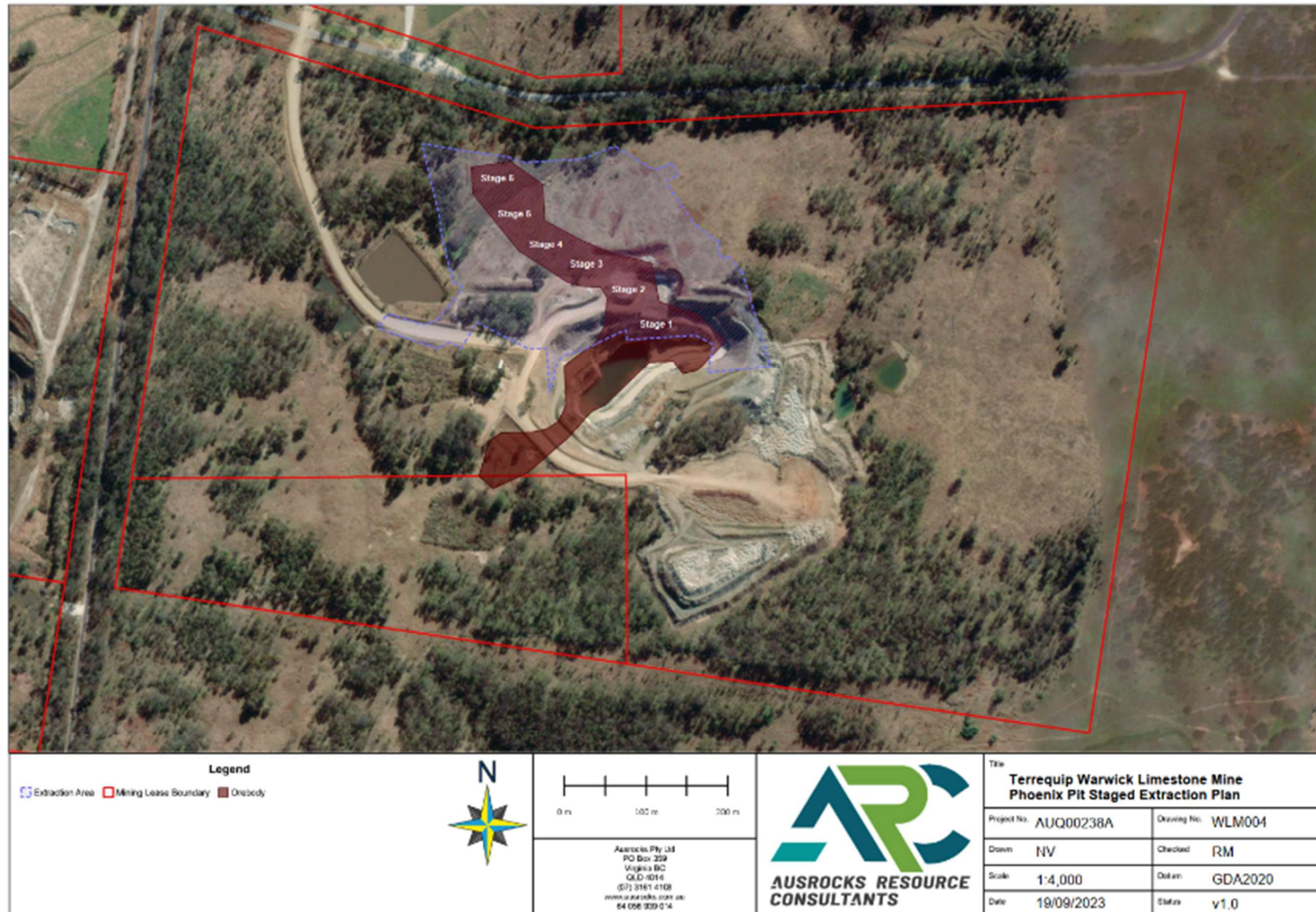


Figure 5: Phoenix pit staged extraction plan



Figure 6: Resource exploration areas at Warwick Limestone

1.2 Baseline information

PRCP Guideline (section 3.1)

In addition to the legislative requirements, the following information about the site, where relevant, is considered necessary by the administering authority (as per section 126C(1)9j) of the EP Act) to decide whether to approve the PRCP schedule:

- site topography (locally and regionally)
- climate (general and specific (rain, evaporation, temperature) including long-term projections)
- geological setting
- site hydrology and fluvial networks
- groundwater levels and properties
- soil types, properties and productivity
- land stability (pre-existing land degradation/erosion and pre-disposition to ongoing stability issues)
- vegetation communities and ecological data (including existing regional ecosystem mapping)
- fauna presence and populations
- pre-mining land use
- identification of underlying landholders

Applicability to Transitional PRC plan

Transitional PRC plans must include any baseline information collected as part of an EIS process or original EA application. If this information is unavailable, the reasons should be explained in this section of the rehabilitation planning part. Transitional PRC plans are not required to demonstrate how aspects of the mine site have been designed for closure for existing or approved disturbance. However, any expansion to an existing site must demonstrate how it has been designed for closure. The rehabilitation/improvement planning must include data from when mining first commenced up until planned surrender. The transitional provisions of the EP Act include an exceptional circumstance for when land is available for rehabilitation.

Under section 126C(1)(j) of the EP Act, transitional PRC plans must also include the following details about any existing rehabilitation already completed at the time of submission of the proposed PRC plan:

- a description of the rehabilitation works previously carried out
- when the rehabilitation works commenced and were completed
- whether the rehabilitation has been applied for or approved as progressively certified under the EP Act

Spatial information outlining the location of all existing rehabilitation must also be submitted as part of the proposed PRC plan.

1.2.1 Site topography

The elevation of the site ranges between 530m to 580m AHD. The regional topography is characterised by low undulating hills comprising of open pastures and isolated patches of mid-high regrowth open forests on crests; the area is mostly cleared for grazing land uses with few large mature trees.

1.2.2 Climate

Warwick Limestone lies in the Darling Downs and Granite Belt weather district and is subject to a semi-arid to subtropical highland climate due to its elevated topography. Monitoring of weather data is not conducted onsite. Data has been collected from the Bureau of Meteorology (BoM) Killarney Post Office (Station no. 041056) and Elbow Valley TM (Station no. 041494). The following climate information is informed from data available from the BoM weather station and historical recorded data.

1.2.2.1 Temperature

Maximum temperatures range from 19°C in July to 34°C in December, and minimum temperatures from 14°C in July to 25°C in December-January³.

³ Accessed from the Bureau of Meteorology (1889 – 2013).

1.2.2.2 Rainfall

Average annual rainfall during the wet season is approximately 90mm per month. Average annual rainfall is approximately 743.8mm.

Table 4: Killarney Post Office (Station no. 041056) monthly average rainfall

Month	Mean (mm)
January	95.5
February	86.4
March	79.5
April	45.0
May	45.0
June	44.4
July	43.6
August	32.0
September	39.2
October	64.1
November	75.4
December	93.7
Annual	743.8

1.2.2.3 Evaporation

Evaporation fluctuates throughout the year but is highest during the warming months and lowest during the cooler months. Average annual solar exposure of 18.8MJm⁻².

1.2.2.4 Wind

The prevailing wind direction is south to south-easterly.

1.2.2.5 Long-term climate projections

Future climate conditions for the Warwick Limestone area are summarised by the 'Climate Change in the Eastern Downs Region'⁴ report to include higher temperatures, hotter and more frequently occurring hot days, harsher fire weather, fewer frosts, less rainfall in winter and spring, and more intense downpours.

Storms

There is no defined storm season or period for when severe storms and severe weather events are most likely to occur in Queensland. It is, however, typical for the State to experience such weather events during warmer months between October to April, and during heatwave events.⁵ It is also common for severe storms to cause significant damage to property and infrastructure by means of destructive and powerful wind gusts, flash flooding, lighting, and large hailstones <4cm diameter.⁶

Cyclones

Whilst the climate influence is predominantly from southeast and southwest air flow, the area may be indirectly impacted, albeit occasionally, by tropical cyclones passing nearby or crossing the coastline. Tropical cyclones are more likely to occur in Queensland between early November to late April.⁶ The likelihood of a tropical cyclone travelling inland depends on a number of external factors and can be strongly influenced by the El Niño Southern

⁴ Department of Environment and Science. (2019). Climate change in the Eastern Downs Region. Version 1.

⁵ Queensland Fire and Emergency Services. (2017). QFES Incident Data.

⁶ Bureau of Meteorology. (2017). Flood warning system for the Condamine River to Warwick.

Oscillation (ENSO). Historical data of the area shows that no cyclones have been known to occur in the vicinity of the Project.

Floods

The main watercourses around Warwick Limestone include Little John Creek (northwest) and the Condamine River (northeast). The Condamine River catchment to Warwick (20km north of site) covers an area of approximately 1300km² where the headwaters of its main tributaries rise in the Dividing Ranges. The fan-like shape of the catchment makes the area susceptible to flooding during heavy rainfall events, particularly in agricultural areas adjacent to waterways and major flooding of residential and commercial areas in Killarney and Warwick.⁶

The Warwick area has a long history of flooding from the Condamine River with records dating back to 1887. The highest flood recorded occurred in February 1976 where waters rose to 9.1m on the Warwick flood gauge at the McCahon Bridge⁷. This flood event caused significant damage to residential homes, leaving many homeless. The most recent flood event recorded in Warwick was caused by a combination of heavy rainfall from Tropical Cyclone Tasha coinciding with the peak of a La Niña Modoki event. The flood occurred two weeks apart over December 2010 and January 2011. **Table 5** summarises historical flood levels of the Condamine River catchment to the most recent significant recent flood of the towns of Killarney, Elbow Valley, and Warwick. Due to its elevated topography, Warwick Limestone has no history of flooding.

Table 5: Historical flood records in the Killarney, Elbow Valley and Warwick area

Flood Event	Killarney (m)	Elbow Valley (m)	Warwick (m)
Jun 1950	6.99	-	7.78
Jan 1974	5.61	5.40	7.01
Feb 1976	6.13	6.8	9.10
May 1983	3.45	4.23	6.25
Jul 1984	-	4.48	5.95
Apr 1989	4.90	5.32	5.45
May 1996	6.15	5.04	6.50
Jan 2008	6.60	6.24	6.04
Dec 2010	6.45*	6.13	7.90
Jan 2011	6.45*	-	8.35
Jan 2013	6.25	6.10	7.21
Mar 2017	6.15	4.61	6.21

*Estimated peak flood heights from flood marks and other information

Bushfires

Bushfire risk is influenced by a combination of factors including increased temperature and wind, and low rainfall particularly in areas of woody vegetation. Southern Downs Regional Council Planning Scheme⁷ provides a Bushfire Hazard Overlay Code to control development in bushfire prone areas minimising risk and danger to people, and damage to property. Warwick Limestone is located in the south-eastern most part of the Brigalow Belt bioregion, adjacent to the New England Tableland bioregion. Eucalypts species are common in both these fire regions and act as good fuel for bushfires.

Earthquakes

Queensland is considered a seismically active State – the highest hazard region lies along the eastern coast near offshore regions.⁸ An average of 110 earthquakes have been recorded by the Queensland Seismic Network

⁷ Southern Downs Regional Council. (2018, 27 June). Southern Downs Planning Scheme. Version 5.

⁸ The University of Queensland. (2012). Earthquake Information for Queensland, Australia.

between 1977 and 2000. Geoscience Australia's Atlas of Seismic Hazard Maps Australia⁹ places Warwick in a zone of low earthquake hazard. It indicates that a ground acceleration of 0.06g have a 10% probability of being exceeded in a 250-year period. This relationship corresponds to a 2500-year average recurrence interval for this intensity of movement. There is therefore a 10% probability that an acceleration (Ae) of less than 0.03g (100/250ths of 0.06g) will be exceeded during a 100-year period. Large (wall) scale instabilities being triggered by earthquakes within any pit are rare; they are not expected to do so at this site.¹⁰

Drought

As of 01 February 2026, Southern Downs Regional Council area is not in a drought declared state.¹¹ Data from BOM indicates the Warwick Limestone area typically experiences low rainfall during cooler months between April and September. Furthermore, the southern downs region experiences drought conditions that vary in intensity and duration. The most recent period where the region was declared in drought was as recent as 2021. The QLD Drought Duration Report¹⁴ indicates that since 1964, 30-40% of the time the site location is classified as 'drought declared'.

1.2.3 Geological setting

There are seven specific geological formations within the operational area contained by the mining leases as shown in **Table 6** and displayed in **Figure 7** and **Figure 8**.

Table 6: Geological formations underlying the Warwick Limestone Mine

Rock Unit Name	Lithological Summary	Period	Map Symbol	Map Colour
Bald Hill Formation/b	Hypabyssal and extrusive metabasites	Early Devonian	Dlb/b	
Bald Hill Formation/f	Basaltic hyaloclastic debris flow deposits	Early Devonian	Dlb/f	
Bald Hill Formation/g	Medium to coarse-grained, hypabyssal metagabbro	Early Devonian	Dlb/g	
Bald Hill Formation/l	Limestone	Early Devonian	Dlb/l	
Bald Hill Formation/s	Thin to medium-bedded turbiditic, partly volcaniclastic arenite and mudstone together with some chert; sporadic deposits of slump melange locally containing large olistoliths of chert, volcanic rocks and limestone	Early Devonian	Dlb/s	
Bald Hill Formation/v	Mafic peperites and associated volcaniclastic sediments; metabasite	Early Devonian	Dlb/v	
Stanthorpe Granite	Pale pink to grey, mainly medium-grained, equigranular to porphyritic, leucocratic, biotite (+ rare hornblende) monzogranite to syenogranite; rapakivi texture common; scattered fine-grained saccharoidal leucogranite	Early Triassic	Rgst	

⁹ Geoscience Australia. (2012). Atlas of Seismic Hazard Map of Australia, Commonwealth of Australia, Canberra.

¹⁰ Rocktest Consulting. (2019). Warwick Limestone Mine Geotechnical Risk Assessment and Management.

¹¹ <https://www.longpaddock.qld.gov.au/drought/archive/> (accessed September 2022)

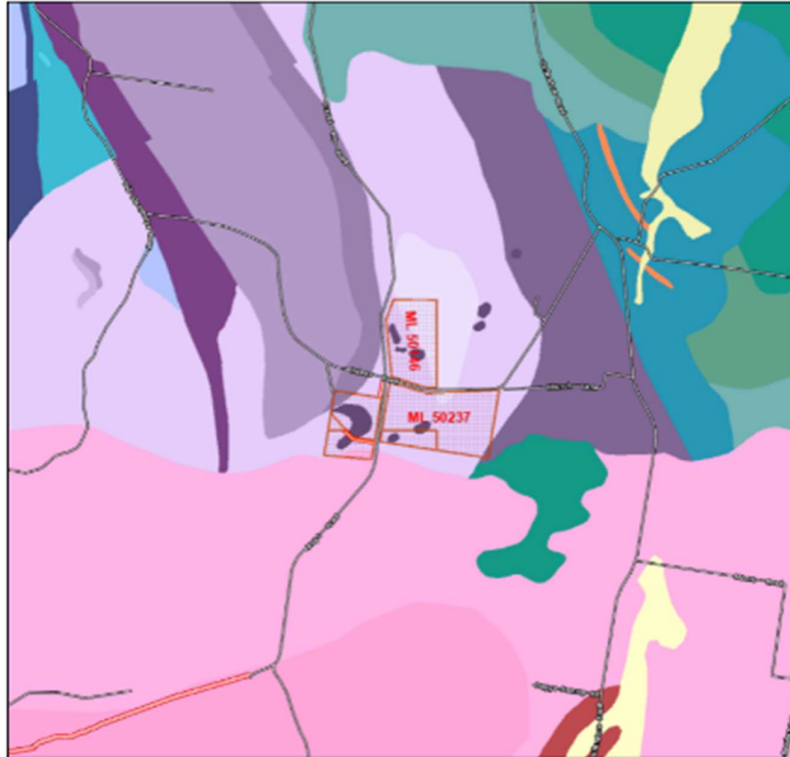


Figure 7: Regional geology¹²



Figure 8: Site geology¹²

¹² <https://qldglobe.information.qld.gov.au/> (accessed August 2022)

1.2.4 Site hydrology and fluvial networks

1.2.4.1 Watercourses and drainage features

Limestones in the area have been metamorphosed and fault-dissected to form small, scattered, steeply dipping lenses of coarse-grained marbles. The marble is mostly near white and generally contains fractures coated with an iron oxide film. There are also large patches of grey marble and a streaky grey-white variety. The host Rosenthal Creek Formation consists of sandstones, siltstones, and volcanic rocks, intersected by green andesite dykes. The marbles are generally massive with no visible bedding as they are likely near vertical to steeply dipping. At places along the western side of ML50083, there is a steep dipping contact between the marbles and the dark greenish-grey shale that strikes roughly north-south. It appears that no limestone occurs beyond this contact. The depth of the marble has not been determined.

1.2.4.2 Regional catchment overview

The Project is located within the Condamine-Balonne River basin which spans a total area of 143,900km² comprising 14.4% of the Murray-Darling Basin¹³ (**Figure 9**). The primary surface water resources include the Maranoa, Condamine, and Balonne rivers as well as numerous wetlands, natural lakes, and man-made reservoirs and dams. Minor waterways in the basin include the Cogoon River, Merivale River, Dogwood Creek, and Bungil Creek.

1.2.4.3 Local catchment overview

Warwick Limestone is located on the southern-most boundary of the Condamine-Balonne River basin (**Figure 9**). This results in the formation of headwaters for minor unmapped tributaries connecting to Little John Creek and the Condamine River.

1.2.4.4 Topography and drainage

The general topography of the site is relatively flat with an approximate elevation of 530mAHD to 580mAHD. The unmapped tributaries on with the Project area drain towards the north to Little John Creek and the Condamine River.

1.2.4.5 Floodplain assessment

Major floods occur in the Condamine-Balonne River, on average, every two-years¹⁴. Under the 'Guideline for Voids in Flood Plains'¹⁵, a flood plain model of the Project area is not required as the watercourses on site are not mapped within the Level 1 Queensland Floodplain Assessment Overlay (**Figure 10**).

Although the unnamed watercourses on site connect to the upper-most tributaries of the Condamine River, the area has no risk of significant flooding and no history of flooding on site.

The site topography is undulating and is predominantly on top of ridgelines, with no risk of 'floodplain' development as water moves across site. Due to the relatively small catchments associated with the site, the risk to final landform structures from floodwaters is considered very low. No constructed landforms have been placed in the path of concentrated stormwater runoff; the majority of waste dumps are located immediately downslope of the pit which limits the flow of stormwater to the waste dump's own surface area. Appropriately sized erosion and sediment controls have been designed to convey surface water away from the landform in a safe manner. Due to these factors, water movement across site is considered very low risk to the long-term stability of the final landforms designed on site.

¹³ Thoms, M.C. & Parsons, M. (2003). Identifying spatial and temporal patterns in the hydrological character of the Condamine-Balonne River, Australia using multivariate statistics, *River Research Applications*, 19(5-6): 443-457. doi:10.1002/rra.737.

¹⁴ Australian Government. (2019, 9 January). *Surface Water Systems*, Australian Government Bioregional Assessments.

¹⁵ Queensland Government. (2020, 11 March). Information Sheet: Voids in flood plains (ESR/2019/4966).



Figure 9: Catchment area and main watercourses

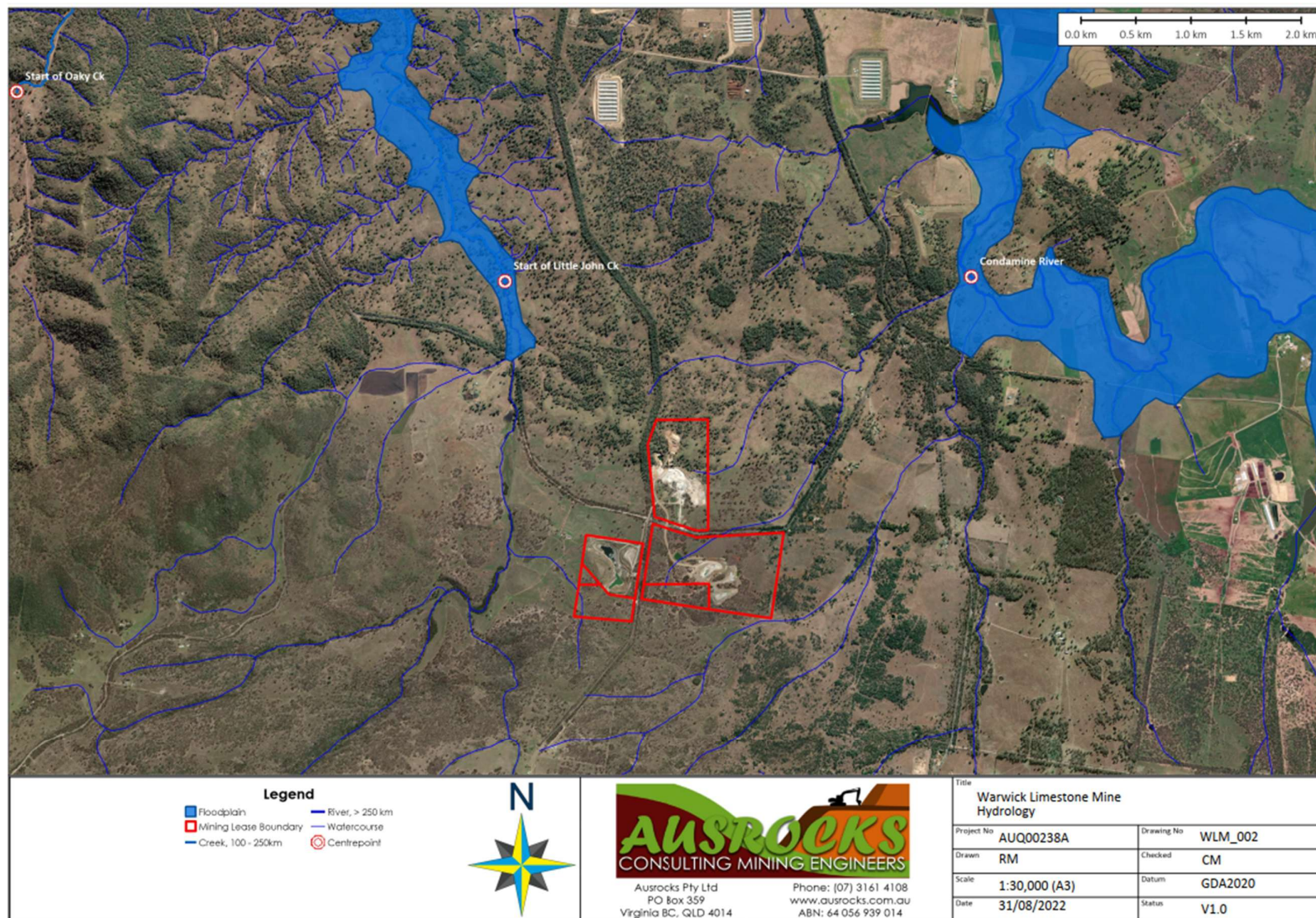


Figure 10: Hydrology and fluvial networks and flood extent

1.2.4.6 Groundwater

Warwick Limestone sits within the Condamine-Balonne Underground Water Management Area¹⁶. The site lies predominantly in an area of aquifer with the following lithologies:

- Acid to intermediate volcanics (e.g. andesite, rhyolite, tuff); and
- Sedimentary strata (e.g. sandstone, shale, conglomerate)

Historical site-specific groundwater modelling has not been undertaken, however local groundwater levels are around 20m to 25m depth below ground level as observed from drill logs and minor seepage in pits. Groundwater flow has been observed to be very slow from minor pit seepage. Rainfall run-off and slow percolation of subsurface drainage is the main source of water to the pits. Mining from the base of the pits suggests that, at shallow depths, groundwater yields may be variable, and that the aquifer system may be discontinuous. Groundwater resources in the vicinity of the project are suitable for most uses, although marginal for human consumption and low for salt-tolerant crops with a salinity range of 500mg/L to 1500 mg/L (total dissolved salts) and a bore yield <5L/sec.

There is no continuous groundwater body present in the limestone deposits in the East-West pit. It is likely that groundwater migrates into the more permeable substrata from a more consistent water body or recharge area hydraulically upgradient of the deposit. Groundwater recharge does not occur in this area. Where perched water or surface water enters the pits, they must be pumped out to allow mining operations to continue. The Aspinall pit is in an area of limited groundwater recharge, and while some infiltration occurs in this area, it is otherwise very slow and has significant surface water ponding after rainfall events.

A groundwater bore (Bore Licence WL86305T; 10ML maximum annual extraction) located on ML50083 has been inactive for several years. A <1L/sec yield has been estimated by site personnel. Groundwater levels are lower than 15m below the surface. Historical data suggests groundwater salinity range between 750µS/cm to 2240µS/cm. Minor groundwater seepage is observed in the Phoenix pit at approximately 20m below ground level.

Aquifer transmissivity in limestone is typically low, i.e. the impacts on other groundwater users in the area are considered negligible due to low transmissivity and proximity to potential mining influence. The nearest bore (Bore No. 86326) in the area is positioned approximately 1.6km to the east, at a surface elevation 40-50m below the site average and in a weathered granite and yields <0.5L/sec. Groundwater water quality is described as potable from a drill depth of 22m; pH 8.4 and 2191µS/cm salinity. The project is surrounded by farmland primarily used for cattle grazing. Hence groundwater is mainly used for agricultural use and cattle drinking water. Considering surrounding boreholes in the area have been installed in varying formations (a result of the limestone deposits), it is unlikely that mining operations will have an impact to the water quality or quantity in these bores. It is therefore determined that further groundwater modelling for the purpose of this PRC Plan will not be necessary as mining operations will not impact on the local groundwater table.

¹⁶ <https://qldglobe.information.qld.gov.au/>

1.2.5 Soil types, properties and productivity

1.2.5.1 Identified soils

The dominant soil type in the immediate area of the Project is mapped as yellow and yellow-grey duplex soils (Dy) on the Soil Map of Australia (Queensland) 5M. These soils are characterised by a sandy or loamy surface horizon with a sharp to clear boundary to a clay subsoil¹⁷.

Terrequip commissioned Horizon Soil Scientists and Engineering (Horizon) to survey and produce a report on the soils present within the MLs of Warwick Limestone (**Appendix 2**)¹⁸. Report findings identified four soil types described by the Australian Soil Classification (ASC) system as Brown and Red Sodosols, Brown Tenosols, Brown Vertosols, and Red Dermosols (Isbell 2021). These are summarised in **Table 7**. Brown and Red Sodosols covered the greatest area of the Project (>80% coverage) (**Figure 11**).

Table 7: Soil types within the Warwick Limestone area

Australian Soil Classification	Mapped area (ha)
Brown and Red Sodosol	143.3
Brown Tenosol	10.4
Red Dermosol	5.1
Brown Vertosol	13.1

1.2.5.2 Strategic cropping area

Strategic Cropping Area is an area of regional interest comprised of Strategic Cropping Land (SCL) under the *Regional Planning Interests Act 2014* (RPI Act). This is land that is or is likely to be highly suitable for cropping based on the land's soil, climate, and landscape features.

It is an offence to carry out a development on SCL or potential SCL that has a permanent or temporary impact on the land with approval, under the RPI Act. Resource developments must therefore avoid and minimise to the maximum extent possible, any temporary or permanent impacts on identified SCL. Where this is not possible, mitigation of permanent impacts may be required.

There are no SCL located within the Project MLs or within the vicinity of the Project¹⁹.

1.2.5.3 Good quality agricultural land

Good Quality Agricultural Land (GQAL) is a system used to determine the ability of the land to sustain agricultural use without causing degradation to the land or to other natural resources. Agricultural Land Classification (ALC) Class A is accepted as GQAL in all areas, whereas ALC Class B and Class C have conditional GQAL.

Local Government uses ALC to inform planning schemes and regional plans as required for agricultural provisions of the State Planning Policy. The implementation of this policy requires awareness of GQAL from Local and State Governments, as well as applicants.

Warwick Limestone GQAL was assessed a desktop study. It was determined that no GQAL is located within the mining leases or immediate surrounding areas of Warwick Limestone.²⁰

¹⁷ Northcote, K. H. (1979). *A factual key for the recognition of Australian soils*, 4th ed., Rellim Technical Publications Pty Ltd., Adelaide.

¹⁸ Horizon Soil Scientists and Engineers. (2022, 16 September). Report on the Soil Survey of Leases of the Warwick Limestone Quarry.

¹⁹ Epic Environmental Pty Ltd. (2020, 17 November). Environmental Management Plan – Warwick Limestone Mine.

²⁰ Epic Environmental Pty Ltd. (2020, 17 November). Environmental Management Plan – Warwick Limestone Mine.

1.2.5.4 Stockpile material

Assessment of topsoil stockpiles was conducted by Horizon as part of their survey of the Warwick Limestone mining leases. Three (3) topsoil stockpiles were randomly sampled (0-100mm depth), and three (3) replicate samples were taken per stockpile.

Stockpiles no. 1 and 3 were found to be similar, with brown to reddish brown medium to heavy clay texture, a few brown mottle, and common medium gravel. Stockpile no. 2 was found to be a light yellowing brown silty sand. The physicochemical characteristics of the sampled stockpiles are summarised below:

Stockpile 1 and 3

- Neutral pH
- Non-saline
- Moderate to high organic carbon
- Moderate CEC, non-sodic with low Ca:Mg ratio
- EAT scores suggest slaking but non-dispersive soils

Stockpile 2

- Moderately acid
- Non-saline
- Moderate organic carbon
- Low CEC, non-sodic with balanced Ca:Mg ratio
- EAT scores suggest slaking but non-dispersive soils

Table 8 summarises the results of stockpile chemistry analysis.

Table 8: Analysis of stockpile chemistry

Stockpile	EC _{se} (dS/m)	pH	ESP (%)	CEC (meq/100g)	Ca:Mg ratio	OC (%)	EAT
1	0.01	6.9	1.8	16.3	3.0	1.1	3
2	0.01	5.8	1.7	2.8	1.4	0.9	4
3	0.01	6.9	0.3	19.7	5.5	2.0	3

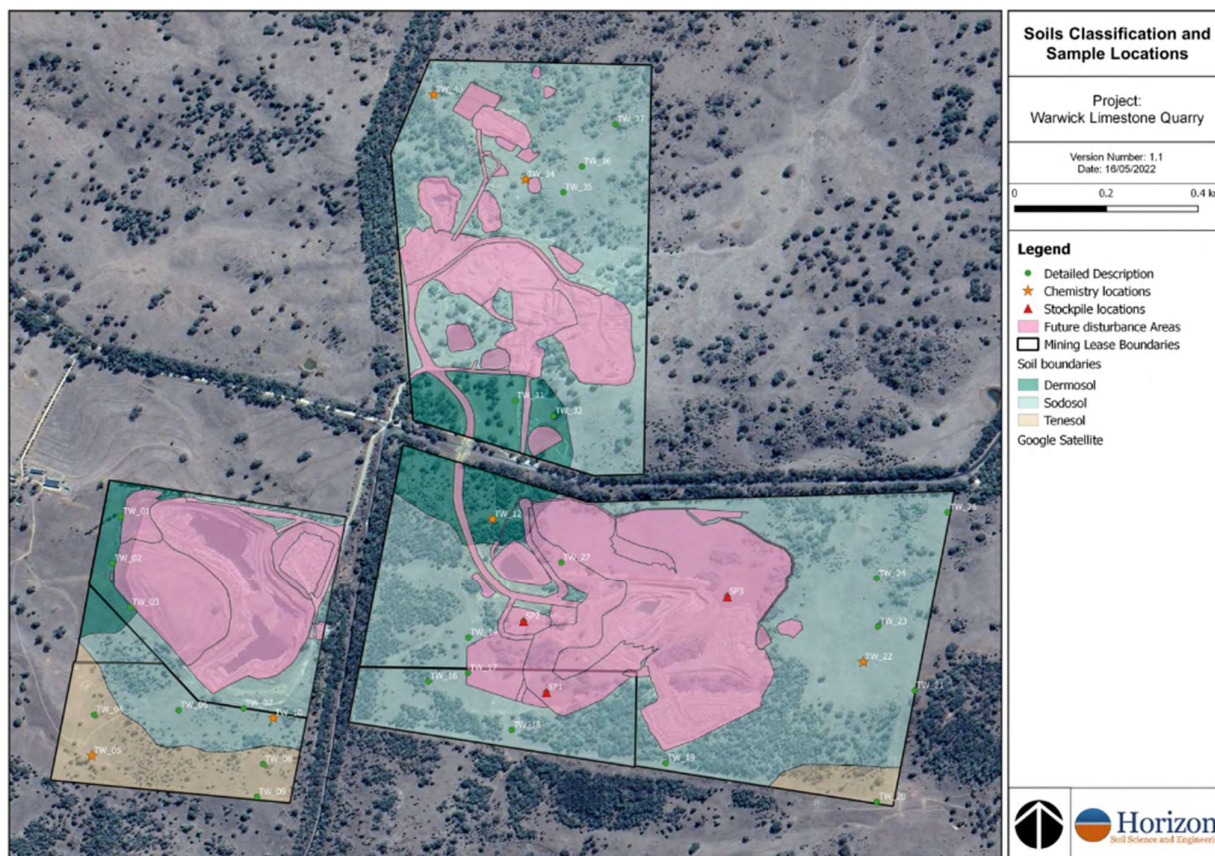


Figure 11: Mapped soil types and sample locations

1.2.6 Land stability

Warwick Limestone sits on land that has been predominantly used as grazing land for many years prior to the operation of the mine in 1930. Native vegetation has been extensively cleared to allow for the cultivation of agricultural grass species for cattle; the primary stock kept on the land. Historical aerial imagery shows vegetation regrowth has occurred in the area, and particularly from the late 1970s onwards.

A few properties adjoining and surrounding Warwick Limestone have installed contour bunding in areas of hilly terrains to slow movement of surface water and direct flows into storage dams. The erosive effects of surface water flows over pastured areas has been generally mitigated in areas where this contour bunding is installed. There is also little evidence of natural land slips in the area, however stability issues are most likely to arise around the walls of remaining pit voids. The stability of these walls have been investigated and are reported in the site geotechnical report (**Appendix 4**).²¹

The EA defines final slope requirements for pit walls, waste dumps, and water storages in the Schedule F tables 1-7. These slope requirements will be used as completion criteria when executing final batters.

1.2.7 Vegetation communities and ecological data

A desktop search was conducted to identify the presence and mapped distribution of vegetation communities at Warwick Limestone. The results of the search are provided in the following sub-sections.

²¹ Rocktest. (2019, June). Warwick Limestone Mine Geotechnical Risk Assessment and Management for Sibelco.

The results of the desktop search are limited by the following factors:

- Lack of historical field-based ecological assessment to confirm accuracy of desktop search data; and
- Data available online is based on reported sightings across a large period of time, therefore reporting is inconsistent.

1.2.7.1 Vegetation communities

Vegetation communities at Warwick Limestone consist of both remnant and non-remnant growth. These are summarised in **Table 9**.

Table 9: Vegetation communities within the Warwick Limestone area

Regional Ecosystem	Short description	Biodiversity status ¹	Condition
11.9.9	<i>Eucalyptus crebra</i> woodland on fine-grained sedimentary rocks	No concern at present	Remnant
11.9.13	<i>Eucalyptus moluccana</i> or <i>E. microcarpa</i> open forest on fine grained sedimentary rocks	Of concern	Remnant
Non-remnant	None	None	Non-remnant

¹ Vegetation Management Act 1999 (VM Act)

1.2.7.2 Threatened ecological communities

The desktop search returned six (6) threatened ecological communities (TECs) listed as Matters of National Environmental Significance (MNES) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act):

- Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions;
- Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland;
- New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands;
- Poplar Box Grassy Woodland on Alluvial Plains;
- Weeping Myall Woodlands; and
- White Box-Yellow Box-Blakely's Road Gum Grassy Woodland and Derived Native Grassland.

There are no specific requirements in the Warwick Limestone EA for the inclusion of TECs in the rehabilitation planning.

The following summarises outcomes from the site Environmental Management Plan (**Appendix 3**).²² Refer to **Figure 12** for mapped ecological features.

Aspinal pit

Previously, the vegetation located on the western side of Aspinal pit was mapped as RE 11.9.9/11.9.13. A ground-truthing vegetation survey was undertaken of the extant remnant vegetation community (under the *Vegetation Management Act 1999* (VM Act)) within the mapped Essential Habitat area on the west side of Aspinal Pit. This vegetation is described as tall grassy woodland whose canopy is dominated by gum-topped box *Eucalyptus moluccana* with associated occurrences of narrow-leaved ironbark *E. crebra*. The shrub layers of this community are very sparse to almost absent and the ground layer is dominated by a mixture of native grasses with very sparse occurrences of native forbs.

²² Epic Environmental Pty Ltd. (2020, 17 November). Environmental Management Plan – Warwick Limestone Mine.

The occurrence of narrow-leaved ironbark throughout this community defines this Regional Ecosystem as the Least Concern (VM Act) RE 11.9.9.

RE 11.9.13 was not present within the area surveyed and was not observed within the neighbouring road reserve. Government based mapping will need to be updated to reflect this ground-truthed mapping change. As at time of writing, a Property Map of Assessable Vegetation (PMAV) Application has not been submitted to DNRME to undertake this change.

Phoenix pit

The grassland located north of the existing pit was potentially considered to be the Commonwealth Threatened Ecological Community (TEC) Natural grasslands on basalt and fine-textured alluvial plains of northern NSW and southern Queensland²³. Whilst the grassland meets several criteria; it is mapped as occurring on sandstone derived sediments (Land Zone 9) and is not associated with an alluvial area. Therefore, the grassland does not qualify as a TEC.

Historical aerial mapping of the site shows that the grassland area has been untouched for over 20 years and site assessment of species composition suggests that the grassland could be regarded as Remnant under the VM Act and in good condition. If mapped as a grassland it could only be RE 11.9.3, a Least Concern (VM Act) with a biodiversity status of “No Concern at present”. It is however more likely to be an open patch of grassland formed by historic clearing of the surrounding grassy woodland RE 11.9.9 and is therefore considered to be a “derived” grassland. Being Least Concern under the VM Act and having a No Concern at Present Biodiversity status, this grassland does not represent a development constraint at the State level.

There appears to be no statutory reason for the identification of habitat trees within the Project area. Review of the threatened species likely to occur on the site, either via online searches or by on-ground confirmation of habitat, suggest that the trees do not provide habitat for threatened species and therefore, do not present a constraint to development of the site.

East-West pit

No ecologically sensitive vegetation values are mapped within the East-West Leases.

1.2.7.3 Threatened flora

Due to the age of the site, historical records of flora ecological assessments are not available. A desktop search was conducted to identify the presence of threatened flora at Warwick Limestone. The search returned ten (10) threatened species listed in the EPBC Act and/or *Nature Conservation Act 1992* (NC Act)²⁴. These are summarised in **Table 10**.

There are no specific requirements in the Warwick Limestone EA for inclusion of threatened flora species in the rehabilitation planning.

²³ BAAM Ecology. (2019). Targeted flora and terrestrial vertebrate fauna assessment.

²⁴ <https://pmst.awe.gov.au> (accessed April 2023)

Table 10: Threatened flora populations within the Warwick Limestone area

Class	Scientific name	Common name	Status ^{1, 2}	Likelihood of occurrence ³
Plant	<i>Arthraxon hispidus</i>	Hairy-joint grass	V	L
	<i>Cadellia pentastylis</i>	Ooline	V	M
	<i>Callistemon pungens</i>	-	V	M
	<i>Dicanthium setosum</i>	Bluegrass	V	L
	<i>Eucalyptus glaucina</i>	Slaty Red Gum	V	M
	<i>Eucalyptus nicholii</i>	Narrow-leaved Peppermint, Narrow-leaved Black Peppermint	V	M
	<i>Lepidium monoplacoides</i>	Winged Pepper-cress	E	M
	<i>Lepidium peregrinum</i>	Wandering Pepper-cress	E	M
	<i>Picris avae</i>	Hawkweed	V	L
	<i>Thesium austral</i>	Austral Toadflax, Toadflax	V	I

¹ Status: Vulnerable (V); Critically Endangered (CE); Endangered (E), Special Least Concern (SL)

² Status: Restricted invasive (RI); Other Invasive (OI)

³ Likelihood of occurrence: Species or species habitat known to occur within area (K); Species or species habitat likely to occur within area (L); Species or species habitat may occur within area (M); Species or species habitat known to occur within area; Foraging, feeding or related behaviour likely to occur within area (F); Pest species has potential to occur within area (P)

1.2.7.4 Protected flora triggers

The site does not have any mapped protected plants on the Protected Plants Flora Survey Trigger Map.

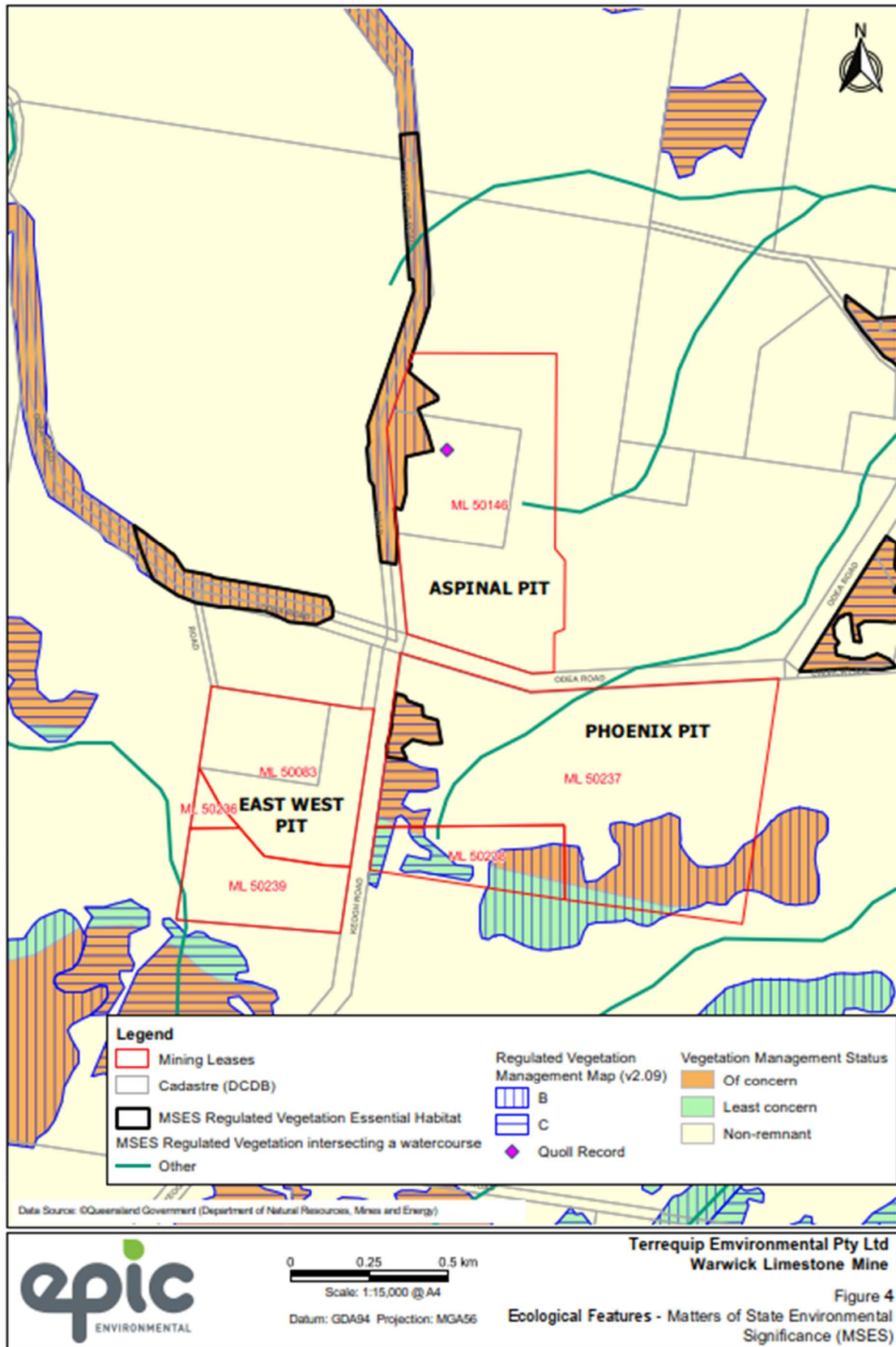


Figure 12: Mapped ecological feature

1.2.7.5 Weeds

According to the WildNet database, there are no listed weed species occurring on or near the Project area. The Queensland Government Weed Map²⁵ records the weed species in Table 8 as known to be present in the Elbow Valley area. The Project implements a Vegetation Management Plan to manage pest and weed infestation regarding the species listed in **Table 11**.

Table 11: Weed species known to occur in the Warwick Limestone area

Scientific Name	Common Name	State Declaration	Category ¹	Notifiable
<i>Lycium ferocissimum</i>	African Boxthorn	Restricted	3	No
<i>Eragrostis curvula</i>	African Lovegrass	Not declared	N/A	No
<i>Ambrosia artemisiifolia</i>	Annual ragweed	Restricted	3	No
<i>Rubus anglocandicans</i> , <i>R. fruticosus</i> agg.	Blackberry	Restricted	3	No
<i>Ligustrum lucidum</i>	Broad-leaf privet	Restricted	3	No
<i>Celtis sinensis</i>	Chinese celtis	Restricted	3	No
<i>Ligustrum sinense</i>	Chinese privet	Restricted	3	No
<i>Pyracantha augustifolia</i> , <i>P. koidzumii</i>	Firethorn	Restricted	N/A	No
<i>Senecio madagascariensis</i>	Fireweed	Restricted	3	No
<i>Baccharis halimifolia</i>	Groundsel bush	Restricted	3	No
<i>Gleditsia triacanthos</i>	Honey locust	Restricted	3	No
<i>Lantana camara</i>	Lantana	Restricted	3	No
<i>Anredera cordifolia</i>	Madeira vine	Restricted	3	No
<i>Bryophyllum delagoense</i> , <i>B. x houghtonii</i>	Mother-of-millions	Restricted	3	No
<i>Opuntia tomentosa</i> , <i>O. stricta</i> , <i>O. monacantha</i> , <i>O. aurantiaca</i>	Prickly pear	Restricted	3	No
<i>Sporobolus natalensis</i> , <i>S. pyramidalis</i> , <i>S. jacquemontii</i> , <i>S. fertilis</i>	Rat's tail grasses	Restricted	3	No

¹ Biosecurity Act 2014

1.2.8 Fauna presence and populations

A desktop search was undertaken to identify the potential presence of native and introduced fauna populations at Warwick Limestone. Due to the age of the mine, there are no historical records of field-based ecological assessments.

There were 31 threatened fauna species and 2 migratory species listed under the EPBC Act and/or the NC Act returned from the desktop search that may occur within the Warwick Limestone Area. Six (6) pest species were also identified. The likelihood and occurrence of each species is based on reported sightings and mapped habitats. This is summarised in **Table 12**. There are no specific requirements in the Warwick Limestone EA for inclusion of fauna habitat planning in the rehabilitation planning.

²⁵ Department of Agriculture and Fisheries. (2019). Online Weed Map Version 2.
<https://qgsp.maps.arcgis.com/apps/webappviewer/index.html?id=6d325b2e476d4113be6490225308428c>

Table 12: Fauna populations within the Warwick Limestone area

Class	Scientific name	Common name	Status ^{1, 2}	Likelihood of occurrence ³
Threatened species				
Bird	<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	F
	<i>Aphelocephala leucopsis</i>	Southern Whiteface	V	M
	<i>Botaurus poasiptilus</i>	Australasian Bittern	E	M
	<i>Calidris ferruginea</i>	Curlew Sandpiper	CE	M
	<i>Calyptorhynchus lathami lathami</i>	South-Eastern Glossy Black-Cockatoo	CE	L
	<i>Climacteric picumnus victoriae</i>	Brown Treecreeper (south-eastern)	V	M
	<i>Erythrotriorchis radiatus</i>	Red Goshawk	E	M
	<i>Falco hypoleucos</i>	Grey Falcon	V	L
	<i>Geophaps scripta scripta</i>	Squatter Pigeon (southern)	V	L
	<i>Grantiella picta</i>	Painted Honeyeater	V	L
	<i>Hirundapus caudacutus</i>	White-Throated Needletail	V	K
	<i>Lathamus discolor</i>	Swift Parrot	CE	L
	<i>Neophema chrysostoma</i>	Blue-winged Parrot	V	M
	<i>Rostratula australis</i>	Australian Painted Snipe	E	L
	<i>Stagonopleura guttata</i>	Diamond Firetail	V	L
	<i>Turnix melanogaster</i>	Black-breasted Button-quail	V	M
Frog	<i>Mixophyes fleayi</i>	Fleay's Frog	E	M
Mammal	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat, Large Pied Bat	V	M
	<i>Dasyurus maculatus maculatus</i>	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (SE mainland population)	E	K
	<i>Notamacropus parma</i>	Parma Wallaby	V	M
	<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat, South-eastern Long-eared Bat	V	M
	<i>Petauroides Volans</i>	Greater Glider (southern and central)	E	L
	<i>Petaurus australis australis</i>	Yellow-bellied Glider (south-eastern)	V	M
	<i>Petrograde penicillat</i>	Brush-tailed Rock-wallaby	V	M
	<i>Phascolarctos cinereus</i>	Koala	E	K
	<i>Pseudomys novaehollandiae</i>	New Holland Mouse	V	M
	<i>Pteropus poliocephalus</i>	Grey-headed Flying Fox	V	F
Reptile	<i>Anomalopus mackayi</i>	Five-clawed Worm-skink, Long-legged Worm-skink	V	M
	<i>Delma torquate</i>	Adorned Delma, Collared Delma	V	M
	<i>Furina dunmalli</i>	Dunmall's Snake	V	M
	<i>Hemiaspis damelii</i>	Grey Snake	E	M
Migratory species				
Bird	<i>Hirundapus caudacutus</i>	White-throated Needletail	V	K
	<i>Calidris ferruginea</i>	Curlew Sandpiper	CE	M
Introduced species				
Frog	<i>Bufo marinus</i>	Cane toad	OI	P
Mammal	<i>Felis catus</i>	Cat	RI	P
	<i>Canis familiaris</i>	Wild dog	RI	P
	<i>Vulpes vulpes</i>	Fox	RI	P
	<i>Sus scrofa</i>	Pig	RI	P
	<i>Oryctolagus cuniculus</i>	Rabbit	RI	P

¹ Status: Vulnerable (V); Critically Endangered (CE); Endangered (E), Special Least Concern (SL)

² Status: Restricted invasive (RI); Other Invasive (OI)

³ Likelihood of occurrence: Species or species habitat known to occur within area (K); Species or species habitat likely to occur within area (L); Species or species habitat may occur within area (M); Species or species habitat known to occur within area; Foraging, feeding or related behaviour likely to occur within area (F); Pest species has potential to occur within area (P)

1.2.9 Matters of state environmental significance

Matters of State Environmental Significance (MSES) surrounding Warwick Limestone are illustrated in **Figure 13** and summarised in **Table 13**. Note, there is inconsistency between Queensland Globe mapping and inherited mining disturbances.

Table 13: Areas of MSES value within the mining tenements of Warwick Limestone

MSES value	Category	Legend	Description
Regulated Vegetation	Category B		- RE 11.9.9/11.9.13 - RE percent 80/20 - Vegetation Management Class Least Concern/Of Concern
	Category C		- RE 11.9.9/11.9.13 - RE percent 65/35 - Vegetation Management Class Least Concern/Of Concern
	Defined Watercourse		2 unnamed drainage features - Stream Order 1
	Essential Habitat		n/a
Wildlife Habitat	Endangered or Vulnerable		n/a
	Special Least Concern Animal		n/a

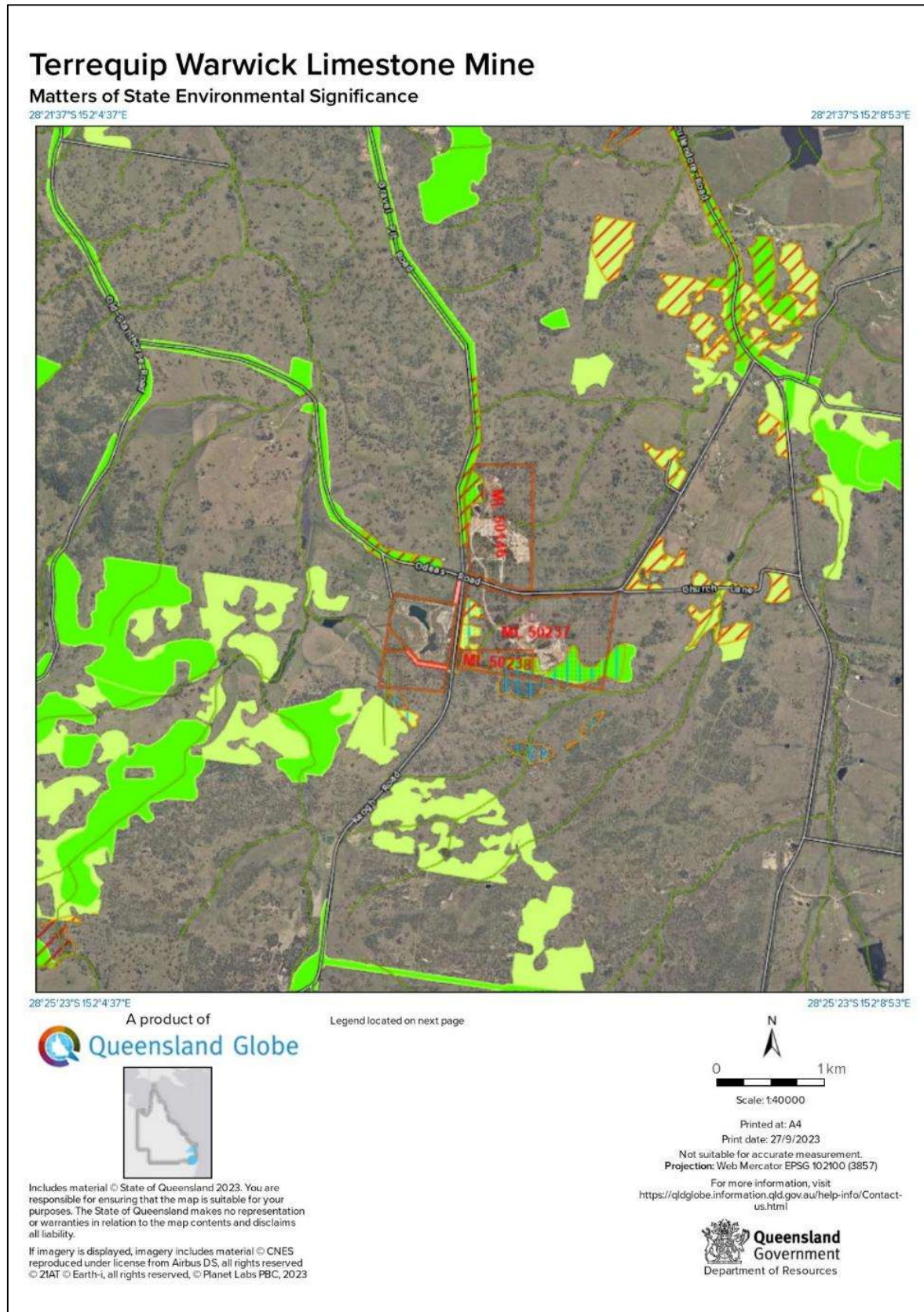


Figure 13: Areas of MSES value within the mining tenements of Warwick Limestone

1.2.10 Pre-mining land use

The pre-mining land use of the area is cattle grazing. Some areas have previously been subject to vegetation clearing. Existing soil erosion is evident across the Warwick Limestone area is attributed to existing land use grazing activities including from historic cleared drainage lines and creeks. Other areas of Warwick Limestone have been used for grazing cattle and sheep since European settlement, with most of the original native vegetation cleared for pasture.

Prior to the acquisition of Warwick Limestone by Terrequip, historical activities in the Aspinall Pit consisted of mining limestone, gold and silver; previously known as the Marberete Quarry. Limestone mining commenced in 1931 after the issue of grant for the first mining lease.

1.2.11 Underlying landholders

The underlying landholders for the Warwick Limestone leases are shown in **Table 14**.

Table 14: Underlying landholders for the Warwick Limestone project area

Mining lease	Property	Landholder
ML 50083	Lot 178 M34534	State of Queensland
ML 50146	Lot 106 ML623 Lot 2 RP36822	Usher family
ML 50236	Lot 5 SP236094	Terrequip Environmental Pty Ltd
ML 50237	Lot 1219 M34519	March Thirteen Investments Pty Ltd (Terrequip related party)
ML 50238		
ML 50239	Lot 5 SP236094	Terrequip Environmental Pty Ltd

1.3 Design for closure

This PRC plan has been developed to proactively manage progressive rehabilitation of the Warwick Limestone site to a stable PMLU, aiming to minimise long-term management requirements as well as associated closure costs. Importantly, a focussed design for closure underpins all sections of this plan from:

- existing operations methods to development of the rehabilitation knowledge base (baseline information);
- engagement with relevant stakeholders to define suitable PMLUs and in accordance with the LOD;
- defining and implementing rehabilitation practices to identify risks that could influence achievements of milestone criteria; and
- demonstrating successful rehabilitation through defined site monitoring to develop a feasible PRCP schedule.

1.4 Spatial information

The following spatial information are submitted to support the development of this PRC plan.²⁶

- Location and maximum extent of disturbance footprint for the mine life;
- The PMLUs and NUMAs for the area within the resource tenures; and
- Any sensitive receptors.

Spatial information is provided to the administering authority via email to spatialssubmit@detsi.qld.gov.au²⁷

²⁶ Queensland Department of Environment and Science (November 2019): Progressive Rehabilitation and Closure Plan Guideline

²⁷ Queensland Department of Environment and Science (January 2025): Spatial Information Submission

1.5 Rehabilitation and improvement planning

Legislative Requirement

In accordance with section 126C(1)(b) and (c)(ii) of the EP Act, the rehabilitation planning part of the PRC plan must include:

- identification of all relevant activities on the mine site
- the predicted duration of each of the relevant activities proposed for the mine site
- the size/extent of the relevant activities; and
- whether the different relevant activities can be progressively rehabilitated.

PRCP Guideline (section 3.1)

Under section 126C(1)(j) of the EP Act, transitional PRC plans must also include the following details about any existing rehabilitation already completed at the time of submission of the proposed PRC plan:

- a description of the rehabilitation works previously carried out
- when the rehabilitation works commenced and were completed; and
- whether the rehabilitation has been applied for or approved as progressively certified under the EP Act.

1.5.1 Relevant activities

Current relevant activities at Warwick Limestone that will require rehabilitation or management are provided in **Table 15**. This table summarises the relevant activities including estimated duration, area size, rehabilitation commenced and/or completed, and availability for progressive rehabilitation. Area extent (ha) listed below is a total of all relevant areas within Warwick Limestone that fall under the RA.

Table 15: Relevant activities requiring rehabilitation at Warwick Limestone

Relevant activity	Estimate availability	Area (ha)	Availability for progressive rehabilitation (including historical works)
Infrastructure (RA1)			
Fixed Plant	2046	1.2	Required to support mining operations. Available for rehabilitation once resources are exhausted.
Office / Maintenance Buildings	2046	0.5	Required to support mining operations. Available for rehabilitation once resources are exhausted.
Crib Hut and Parking	2046	0.6	Required to support mining operations. Available for rehabilitation once resources are exhausted.
Topsoil Stockpiles (RA2)			
Topsoil	2046	5.7	Re-spread as required for rehabilitation works. Available for rehabilitation once mining operations have ceased and final rehabilitation areas are available.
ROM, Laydown areas and Product Stockpiles (RA3)			
ROM, Laydown areas and Product Stockpiles	2046	7.6	Required to backfill portion of Eastern Open Pit to RL 524 (per EA post mine land description). ROM Pad and stockpile areas will be rehabilitated once materials have been used in progressive rehabilitation of other mine areas.
Waste and Overburden Dumps (RA4)			
Waste Dump (East Pit)	2040	13.2	To be used for pit backfill. Area available for rehabilitation once backfilling is complete.
Roads (RA5)			
Roads	2046	7.1	Available for rehabilitation once mining operations have ceased. To remain for use as farm tracks.
Sediment Dams and Stormwater Controls (RA6)			
Sediment Dams	2026	3.9	Required for water management until rehabilitation of pits. All intact water storage will remain as stock dams, per the EA post mine land description and landholder agreement.

Relevant activity	Estimate availability	Area (ha)	Availability for progressive rehabilitation (including historical works)
Catchment Dams	2026	0.8	Required for water management until rehabilitation of pits. All intact water storage will remain as stock dams, per the EA post mine land description and landholder agreement.
Eastern Open Pit (RA7)			
Eastern Open Pit - Backfill (East-West Pit)	2052	3.3	Portion of the pit to be backfilled is available now. Backfill material will be sourced from trimming of waste dumps in the Phoenix Pit (ML50237). Approximately 40,000m ³ of material will be moved over an 8-year period to complete the backfill.
Main Pit Void – Water Storage (RA8)			
Main Pit Voids (Water Storage PMLU)	2061	4.9	The East-West Pit will be available for rehabilitation in 2027. The Phoenix Pit will be available for rehabilitation in 2036. Resource in the Phoenix Pit will be extracted until the end of the mine life. Main pit voids will be rehabilitated to water storage per the EA post mine land description.
Main Pit Void (RA9)			
Main Pit Void (Grazing PMLU)	2026	1.6	Resource in the Aspinall Pit is exhausted, and the pit is available for rehabilitation. Approximately 62,800m ³ of material will be moved over a 15-year period to complete the backfill. Main pit voids will be rehabilitated to grazing land per the EA post mine land description.
Existing Rehabilitation - Grazing (RA10)			
Existing Rehabilitation	Already commenced	3.8	Rehabilitation has commenced and is in various stages of completion and/or repair. The area is yet to be certified.
East West Pit ROM and Laydown Areas (RA11)			
ROM Pad Laydown Areas	2046	2.4	Available for rehabilitation once all active mine operations have ceased.
Topsoil (RA12)			
Topsoil	2066	0.3	Rehabilitation to commence once topsoil has been spread on remainder of mine for rehabilitation purposes.
East-West Overburden Dump/ROM Pad (RA13)			
Overburden Dump and ROM Pad	2060	3.1	Available for rehabilitation once all active mine operations have ceased.
East-West Pit void and walls (IA1)			
East-West Pit void and walls	2060	4.3	Available for rehabilitation once all active mine operations have ceased.
Phoenix Pit void and walls (IA2)			
Phoenix Pit void and walls	2061	8.1	Available for rehabilitation once all active mine operations have ceased.

1.5.2 Rehabilitation areas and milestones

The activities in **Table 15** are grouped by rehabilitation area (RA) and improvement areas (IA). The PRCP Guideline defines a rehabilitation area as ‘An area of land in the post-mine land use (PMLU) to which a rehabilitation milestone for the post-mining use relates’. A rehabilitation milestone (RM) for the rehabilitated land, means each significant event or step necessary to rehabilitate the land to a stable condition (section 115 of the EP Act).²⁶

Rehabilitation milestones are legally enforceable commitments once the PRCP schedule is approved. Therefore, it is essential that milestones be written in a manner that delivers on SMART principles:

- Specific – it is clear what must be done;
- Measurable – it must be possible to know when it has been achieved;
- Achievable – it is capable of being achieved;
- Reasonable / Relevant – there is a clear connection between the milestone and the desired outcomes (i.e. the requirement is reasonable); and
- Time Specific – it is clear when the milestone will be completed.

Warwick Limestone rehabilitation areas (RAs) and rehabilitation milestones (RMs) are summarised in **Table 16**.

Table 16: Rehabilitation areas (RAs) and rehabilitation milestones (RMs) for Warwick Limestone

Rehabilitation Areas (RA)		Rehabilitation Milestones (RM)	
RA1	Infrastructure	RM1	Infrastructure decommissioning and removal
RA2	Topsoil stockpiles	RM2	Landform development and reshaping
RA3	ROM, Laydown areas and Product Stockpiles	RM3	Surface preparation
RA4	Waste and Overburden Dumps	RM4	Revegetation (Grazing / Water Storage catchment areas)
RA5	Roads	RM5	Establishment of Grazing and grassland PMLUs surface conditions
RA6	Sediment Dams and Stormwater Controls	RM6	Establishment of Water Storage PMLU conditions
RA7	Eastern Open Pit	RM7	Establishment of geotechnically stable surface conditions (i.e. water storage, residual voids, backfilled pits)
RA8	Main pit voids (East West Pit and Phoenix Pit)	RM8	Achievement of Grazing PMLU to a stable condition – Without water quality
RA9	Main pit voids (Aspinal Pit)	RM9	Achievement of Water Storage PMLU to a stable condition – Without water quality
RA10	Existing rehabilitation	RM10	Achievement of Grassland PMLU to a stable condition – Without water quality
RA11	East West Pit ROM and Laydown Areas	RM11	Achievement of water quality – Water quality only
RA12	Topsoil	RM12	Landholder is informed of and acknowledges ongoing management
RA13	East-West Overburden Dump/ROM Pad	RM13	Achievement of retained infrastructure PMLU to stable condition

Note, the East West Pit water storage rehabilitation area includes an area outside the pit area and planned abandonment bunds. This area will be vegetated with grazing species to support surrounding rehabilitation areas with a PMLU of marginal grazing (refer to **Section 6.4.6**).

1.5.3 Improvement areas and milestones

The PRCP Guideline defines an improvement area as ‘an area of land in the non-use management area (NUMA) to which management milestones for the NUMA relates’. A management milestone (MM) for a NUMA, means each significant event or step necessary to achieve best practice management of the area and to minimise risks to the environment (section 112 of the EP Act).²⁶

Management milestones are legally enforceable commitments once the PRCP schedule is approved. Therefore, it is essential that milestones be written in a manner that delivers on SMART principles:

- Specific – it is clear what must be done;
- Measurable – it must be possible to know when it has been achieved;
- Achievable – it is capable of being achieved;
- Reasonable / Relevant – there is a clear connection between the milestone and the desired outcomes (i.e. the requirement is reasonable); and
- Time Specific – it is clear when the milestone will be completed.

Warwick Limestone improvement areas (IAs) and management milestones (MMs) are summarised in **Table 17**.



Table 17: Improvement areas (IAs) and management milestones (MMs) for Warwick Limestone

Improvement Areas (IA)		Management Milestones (MM)	
IA1	East-West Pit void and walls	MM1	Achievement of structural stability
IA2	Phoenix Pit void and walls	MM2	Achievement of surface requirements
		MM3	Achievement of sufficient improvement

Figure 14 to **Figure 16** illustrate the rehabilitation areas and improvement areas for Warwick Limestone. It should be noted that there are no improvement areas for Aspinal Pit.

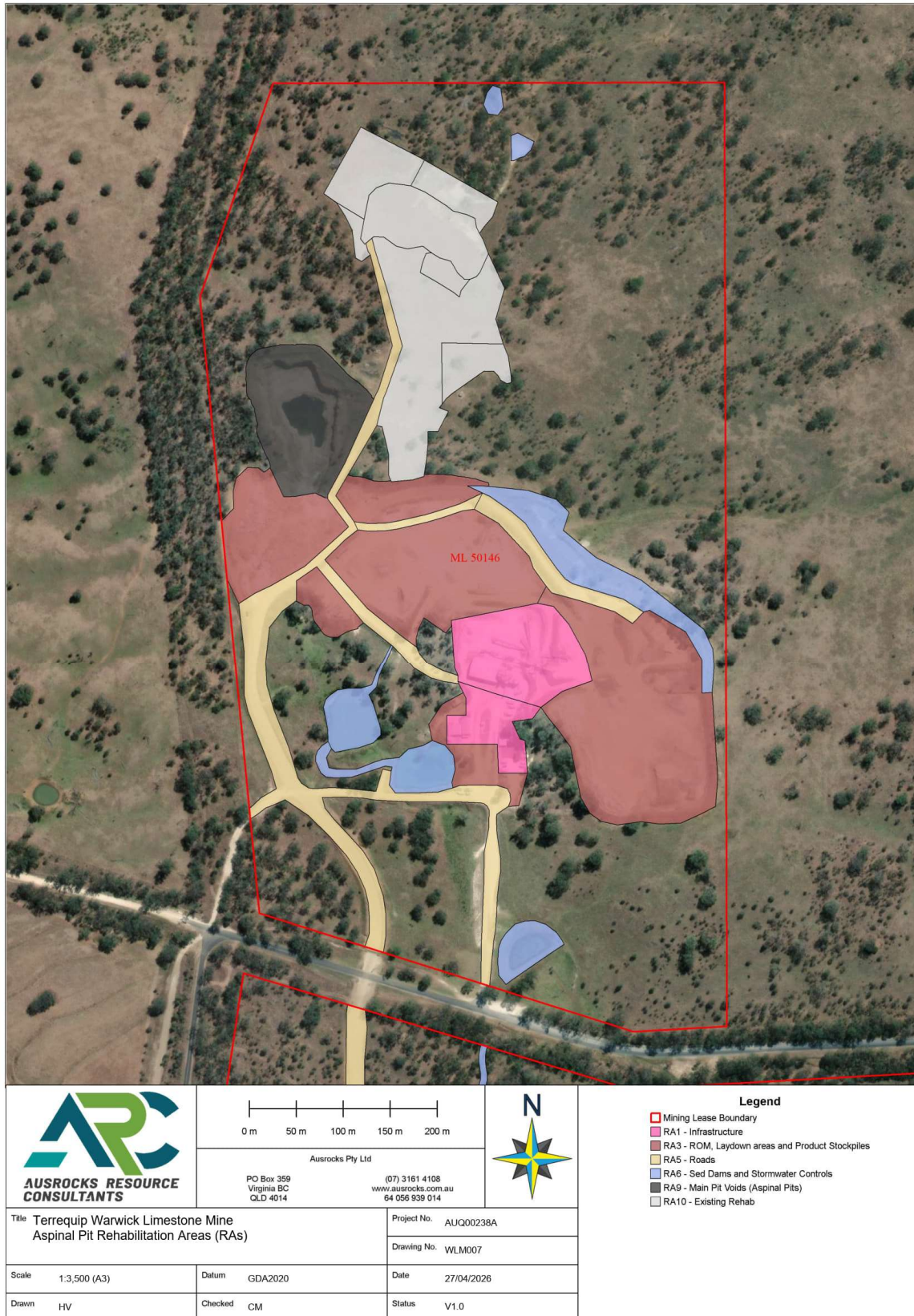


Figure 14: Aspinal Pit rehabilitation areas

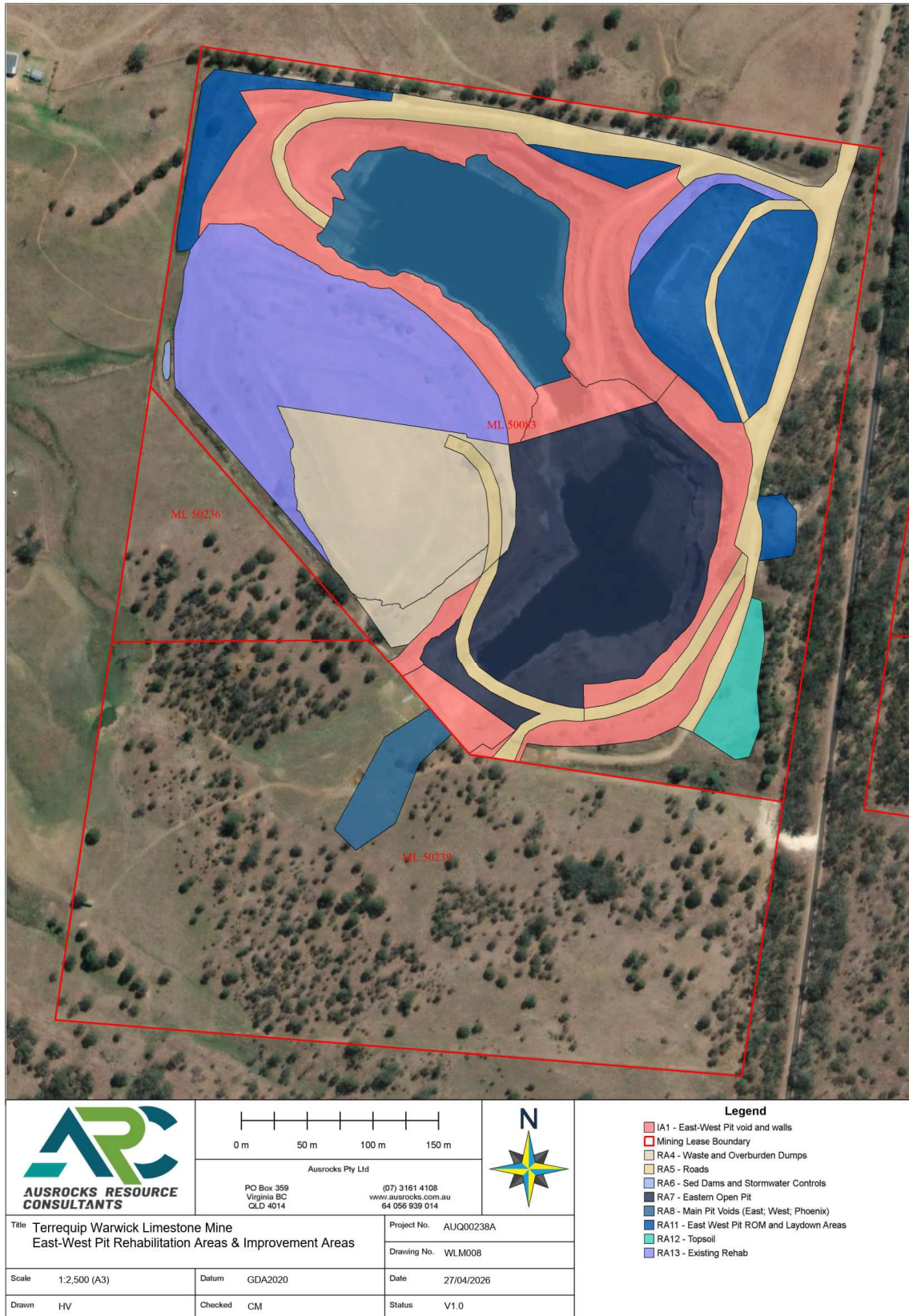


Figure 15: East-West Pit rehabilitation areas & improvement areas

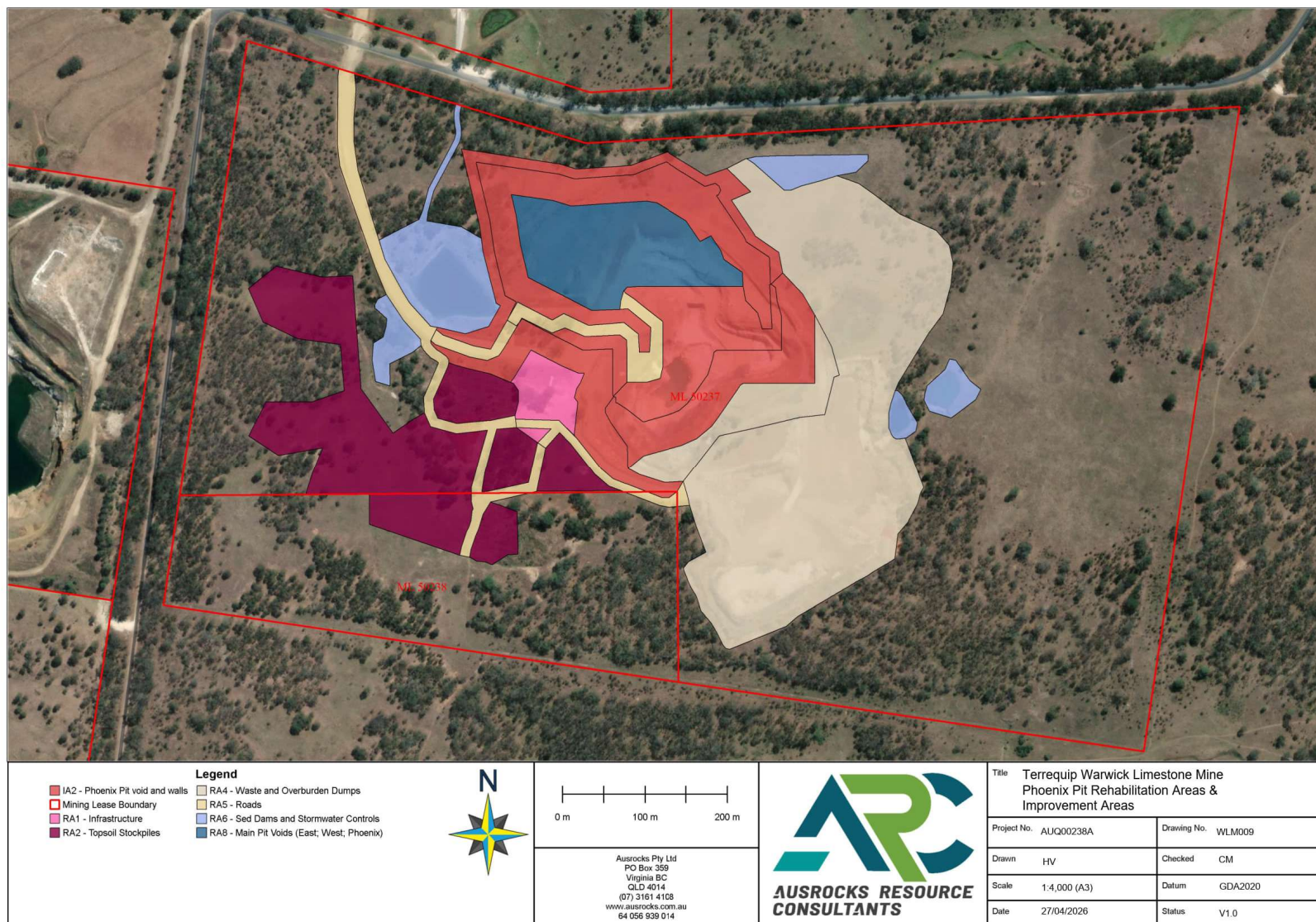


Figure 16: Phoenix Pit rehabilitation areas & improvement areas

1.5.4 Existing rehabilitation

Rehabilitation activities undertaken in existing rehabilitation areas are likely to consist of, but are not limited to:

- backfilling waste and/or overburden material in pits;
- covering and levelling to backfilled pits to allow for settlement, and then covering with topsoil;
- removal of equipment, machinery and all waste/rubbish;
- ripping to promote regrowth;
- re-spreading topsoil (previously removed from the site) over the area;
- contour ripping immediately after topsoil placement for erosion control; and
- seeding and/or tube stock planting the area.

1.5.4.1 Existing rehabilitation

Existing rehabilitation areas are defined within rehabilitation area RA10. These areas consist of mine areas that are in various stages of rehabilitation that are complete and/or requiring repair. It should be noted that the East-West Overburden Dump/ROM Pad (RA13) is defined as existing rehabilitation. However, there is need to use the material for the purpose of backfilling and as such is no longer considered existing rehabilitation.

Existing rehabilitation within Warwick Limestone are summarised in **Table 18**.

Table 18: Summary of existing rehabilitation areas at Warwick Limestone

Year Completed	Relevant Activity	Summary of Rehabilitation Activities
2012 – 2013	Overburden Dump	• dump edge profiled; • seeded; and • rehabilitation maintenance.
2020	Laydown yard (earthen)	• scrap removed to approved waste facility
2021	Laydown Yard Topsoil Stockpiles	• scrap removed to approved waste facility; • re-shaping profile; • rip across contour; • topsoil spread and seed.

1.5.4.2 Progressive certification

No rehabilitation areas have applied for progressive certification under the EP Act.

2 Post-mining land uses

Legislative Requirement

In accordance with section 126C(1)(d) of the EP Act, the rehabilitation planning part of the PRC plan must state the extent to which each post-mining land use or land identified in the PRCP schedule for the plan is consistent with:

- the outcome of consultation with the community in developing the plan; and
- any strategies or plans for the land of a local government, the State or the Commonwealth

PRCP Guideline (section 3.2)

A PMLU is defined under section 112 of the EP Act as the purpose for which the land will be used after all relevant activities for the PRC plan carried out on the land have ended. Relevant activity for a PRC plan is defined in the EP Act as the relevant activities to be carried out on land the subject of the plan. It is not the intention of this definition to include third-party activities or assets that continue to exist once mining activities have ceased, such as third-party pipeline easements, power easements or overlapping tenures for other EAs.

The rehabilitation planning part of the PRC plan must include a detailed description of the nominated PMLU(s) for the site. The description must include (where relevant), but is not limited to:

- a description of the use of the land
- if applicable, the specific vegetation types (e.g. RE 13.2.9) or land suitability classification (e.g. Class 4)
- identification of any permanent or essential management infrastructure to be included as part of the PMLU
- completion criteria for measuring whether the PMLU has been successfully achieved

Applicability to Transitional PRC plans

Where a PMLU has been previously addressed in a land outcome document and is able to be transitioned into the PRCP schedule, the holder is not required to complete the information requirements under section 126C(1)(j) of the EP Act in this section for those PMLUs.

However, the legislative requirements under section 126C(1)(d) of the EP Act still apply. All PMLUs transitioned into the PRCP schedule must still meet the requirements of a PMLU explained in this section, particularly that the PMLU can be rehabilitated to a stable condition.

2.1 Land outcome documents

In accordance with transitional provisions (section 750, EP Act), the Warwick Limestone EA is an approved land outcome document².

2.2 Nominated PMLUs

The Warwick Limestone EA permits PMLUs of grazing / pasture improvement and water storage due to the pre-mining land use of the site and the surrounding existing land uses. Through consultation with the department, it is proposed that a portion of the land is rehabilitated to suit a grassland PMLU instead of grazing. This is supported because grassland PMLU will allow rehabilitation in specific areas to be more consistent with the surrounding landforms including areas characterised by steep slopes and Remnant Vegetation (RE11.9.3). portions of the site intended to be rehabilitated to the grassland PMLU include:

- Waste and Overburden Dumps at East-West and Phoenix Pit;
- Eastern Open Pit;
- East West Pit ROM and Laydown Areas;
- Topsoil at East-West Pit; and
- East-West Overburden Dump/ROM Pad.

It is proposed that grazing is the designated PMLU for the following areas:

- Infrastructure areas at both Aspinall and Phoenix Pit;
- Topsoil stockpiles at Phoenix Pit;
- ROM, Laydown areas and product stockpiles at Aspinall Pit; and

- Main Pit Voids (Aspinal Pit).

The Water storage PMLU is designated for areas of pit disturbance (not being backfilled) and existing sediment dams. These areas are agreed to within landowner statements or pre-existing compensation agreements.

Rehabilitation acceptance criteria have been transitioned to support the milestone criteria in the PRCP schedule with the final milestone of achieving a stable and safe post-mining land use condition. These are summarised in the following tables.

2.2.1 Grazing and grassland PMLU

2.2.1.1 Grazing

The PMLU of grazing is designated for areas that have been disturbed by mining activities. Rehabilitation objectives, indicators and acceptance criteria are summarised in **Table 19**.

Table 19: Warwick Limestone objectives, indicators and acceptance criteria for grazing PMLU

Rehabilitation goal	Objective	Indicator	Acceptance criteria
Safe to humans and wildlife	Safety hazards in rehabilitation are not significantly different to surrounding unmined landscapes subject to the same land use	Hazard assessment	No significant difference
Non-polluting	Rainfall runoff from rehabilitation achieves relevant water quality objectives for receiving surface waters	pH EC Turbidity	No significant difference
Stable	Rehabilitation is geotechnically stable	Factor of Safety (FoS)	FoS $\geq 1.5^2$
	Rehabilitation is erosionally stable	Extent, slope gradient and groundcover	Groundcover $\geq 70\%$ Slope $\leq 17.6\%$
Able to sustain an agreed PMLU	Rehabilitation is suitable for sustainable grazing	Land suitability assessment for grazing pasture	Land suitability ≥ 3 or not different from pre-mining class if ≥ 4
		Species richness	All revegetation species including ≥ 3 desirable pasture species

1. DEHP, Queensland Water Quality Guidelines 2009 (republished July 2013)

2. ANCOLD, Factor of Safety? – Do we use it correctly

2.2.1.2 Grassland

The PMLU of grassland is designated for areas that have been disturbed by mining activities, that will contain rehabilitated slopes that are likely to exceed the grazing slope standards ($>15\%$). These slopes are predominantly associated with the current overburden and waste dumps where slopes can vary up to 57.7% . The grassland will be rehabilitated using the same groundcover species mix as the grazing PMLU. Although there are no requirements for pasture species growth, the decision for the same species mix is intended for the areas to maintain potential as low intensity grazing for the landholder. In time these areas may naturally recruit tree species from the surrounding RE, but due to the land use preference for grazing, tree species are not considered mandatory for the grassland to function.

These areas will also contain marginally different monitoring and rehabilitation milestones to reflect the increased slope characteristics. The justification for modifying the areas is that whilst grazing has been formally accepted as the PMLU under the EA, the rehabilitated slope characteristics do not comply with the advancements that have occurred in the guideline documents. The proposed grassland allows appropriate risk

management of erosion on slopes whilst maintaining the possibility of low intensity grazing (due to using a similar species mix during revegetation). Rehabilitation objectives, indicators and acceptance criteria are summarised in **Table 20**.

Table 20: Warwick Limestone objectives, indicators and acceptance criteria for grassland PMLU

Rehabilitation goal	Objective	Indicator	Acceptance criteria
Safe to humans and wildlife	Safety hazards in rehabilitation are not significantly different to surrounding unmined landscapes subject to the same land use	Hazard assessment	No significant difference
Non-polluting	Rainfall runoff from rehabilitation achieves relevant water quality objectives for receiving waters	pH EC Turbidity	No significant difference
Stable	Rehabilitation is geotechnically stable	Factor of Safety (FoS)	FoS $\geq 1.5^2$
	Rehabilitation is erosionally stable	Extent, slope gradient and groundcover	Groundcover $\geq 70\%$ Slope $\leq 57.7\%$
Able to sustain an agreed PMLU	Rehabilitation is suitable for sustainable grassland	Species richness	≥ 4 species used in revegetation

1. DEHP, *Queensland Water Quality Guidelines 2009* (republished July 2013)

2. ANCOLD, *Factor of Safety? – Do we use it correctly*

2.2.2 Grazing land suitability

The Guideline for Agricultural Land Evaluation in Queensland (Queensland Land Evaluation Guidelines)²⁸ defines land capability and land use suitability in Queensland as follows:

- **Land capability classification:** is the evaluation of land attributes for arable, pastoral and other agricultural land uses involving current technology and agronomic management practices; and
- **Land suitability classification:** is the evaluation of soil and land attributes based on the requirements of a specified land use using current technology and management.

Five land suitability classes are defined for use in Queensland, with land suitability decreasing from class 1 to class 5. Classes 1 to 3 are considered suitable for a PMLU of grazing (**Table 21**). Class 4 and 5 are considered unsustainable for grazing due to one or more limitations where the inputs required to counteract the limitations outweigh the potential benefits.

²⁸ DSITI & DNRM (2015). *Guidelines for Agricultural Land Evaluation in Queensland*, second edition. The State of Queensland (prepared by Department of Science, Information, Technology and Innovation and Department of Natural Resources and Mines), Brisbane.

Table 21: Land suitability classes in Queensland

Class	Suitability	Limitations	Description
1	Suitable	Negligible	Highly productive land requiring only simple management practices to maintain economic production.
2	Suitable	Minor	Land with limitations that either constrain production, or require more than the simple management practices of class 1 land to maintain economic production.
3	Suitable	Moderate	Land with limitations that either further constrain production or require more than those management practices of class 2 land to maintain economic production.
4	Unsuitable	Severe	Currently unsuitable land. The limitations are so severe that the sustainable use of the land in the proposed manner is precluded. In some circumstances, the limitations may be surmountable with changes to knowledge, economics or technology.
5	Unsuitable	Extreme	Land with extreme limitations that preclude any possibility of successful sustained use of the land in the proposed manner.

The Queensland land suitability classes (**Table 21**) are useful for determining pre-mining land use suitability. However, do not provide specific criteria for assessing land suitability classes for grazing land use on rehabilitated lands. The assessment of land suitability for grazing on rehabilitated lands within the Warwick Limestone boundaries, is instead based on the achievement of the post-mine land description and post-mine land capability specified in the EA (i.e. land capability class VI). Land capability classification evaluates the potential of land for broadly defined land uses and is generally only used for broad scale assessment of land in Queensland. The system uses eight classes (I to VIII), with limitations and hazards to agricultural and pastoral use becoming progressively greater from class I to class VIII with decreasing adaptability and choice of use (**Table 22**). Class I to class III are suited to more intense land uses while higher-numbered classes are suited to only low-intensity agriculture use or conservation.

The Queensland Land Evaluation Guidelines provide a comprehensive list of limitations, land use requirements and diagnostic attributes for agricultural land uses in Queensland. However, as class VI is unsuitable for agricultural use, these limitations are not incorporated in the assessment of rehabilitated land suitability for a grazing PMLU.

Table 22: Land capability classes in Queensland

Class	Description
I	Land suitable for all agricultural and pastoral uses.
II	Land suitable for all agricultural uses but with slight restrictions for cultivation.
III	Land suitable for all agricultural uses but with moderate restrictions for cultivation.
IV	Land primarily suited to pastoral use, but which may be safely used for occasional cultivation with careful management.
V	Land that in all other characteristics would be arable but has limitations that make cultivation impractical and/or uneconomic.
VI	Land that is not suitable for cultivation but is well suited to pastoral use.
VII	Land that is not suitable for cultivation but on which pastoral use is possible only with careful management.
VIII	Land that has such severe limitations that is unsuited for either cultivation or grazing.

2.2.3 Water storage PMLU

The PMLU of water storage is designated for pit areas and existing sediment dams. All sediments will be retained by the landholder with the water to be used for stock watering. The Pit areas assigned as water storage PMLUs are to be used by the landholder for the purpose of additional stock watering potential. However, due to slope steepness all Pits will be fenced to restrict all livestock and humans from accessing the water storage. Water will be siphoned via the pipes as required by the landholder following rehabilitation.

Rehabilitation objectives, indicators and acceptance criteria are summarised in **Table 23**.

Table 23: Warwick Limestone objectives, indicators and acceptance criteria for water storage PMLU

Rehabilitation goal	Objective	Indicator	Acceptance criteria
Safe to humans and wildlife	Safety hazards in rehabilitation are not significantly different to surrounding unmined landscapes subject to the same land use	Hazard assessment	No significant difference
			Steep slopes adequately fenced
Non-polluting	Rainfall runoff from rehabilitation achieves relevant water quality objectives for receiving waters	pH EC Turbidity	No significant difference
Stable	Rehabilitation is geotechnically stable	Factor of Safety (FoS)	FoS $\geq 1.5^2$
	Rehabilitation is erosionally stable	Extent, slope gradient and groundcover	Groundcover $\geq 50\%$ Slope $\leq 57.7\%$ (varies based on sediment location)
Able to sustain an agreed PMLU	Rehabilitation is suitable for sustainable water storage	ANZECC 90% stock drinking water threshold	Water quality modelling shows water column is not predicted to dry out
		Water balance	Residual voids are not predicted to dry out or overflow
		Floodplain modelling	Warwick Limestone is not in a floodplain zone 1% AEP modelling.

1. DEHP, Queensland Water Quality Guidelines 2009 (republished July 2013)

2. ANCOLD, Factor of Safety? – Do we use it correctly

2.3 Community considerations

Community consultation is not required as PMLU outcomes are aligned under the LOD (EPML00136213).

In line with the proposed community consultation plan, however, it is proposed that relevant stakeholders are consulted every 2-years (approximate) prior to the mine closure to provide an opportunity for alternative sustainable PMLU options to be discussed.

2.4 Regional planning integration

The PMLUs at Warwick Limestone consider the pre-mining mining land use, neighbouring land use and EA conditions. Existing land use in the surrounding area consists primarily of cattle grazing. Under the Southern Downs Planning Scheme (2018)²⁹, Warwick Limestone is located in the Granite hills precinct in a 'rural zone'. Definitions for land use in this zone and precinct are consistent with PMLU options prescribed by the LOD

The purpose of the rural zone is to:

- provide for rural uses including cropping, intensive horticulture, intensive animal industries, animal husbandry, animal keeping, and other primary production activities;
- provide opportunities for non-rural uses that are compatible with agriculture, the environmental features, and landscape character of the rural area where the uses do not compromise the long-term use of the land for rural purposes; and
- protect or manage significant natural resources and processes to maintain the capacity for primary production.

Outcomes for the Granite hills precinct that are relevant to the site include:

- The scenic amenity and landscape character values as well as the agricultural values in this precinct are protected from development that could impact in a negative manner on these values;
- Low intensity farming including grazing activities will be the predominant use in this precinct; and
- The scenic values of the land are maintained and new development involving substantial built development is screened and well set back from frontages.

²⁹ Southern Downs Regional Council Planning Scheme 2018 Version 5 Commenced 29 June 2018

3 Non-use management areas

Legislative Requirement

In accordance with section 126C(1)(d), (g) and (h) of the EP Act, for each proposed non-use management area, the rehabilitation planning part of the PRC plan must:

- state the reasons the applicant considers the area cannot be rehabilitated to a stable condition
- include copies of reports or other relevant evidence relied on by the applicant for each proposed non-use management area
- state the extent to which the proposed non-use management area is consistent with the outcome of consultation with the community in developing the plan; and
- state the extent to which the non-use management area is consistent with any strategies or plans for the land of a local government, the State or the Commonwealth.

PRCP Guideline (section 3.3)

A NUMA is defined in the EP Act as an area of land the subject of a PRC plan that cannot be rehabilitated to a stable condition after all relevant activities for the PRC plan carried out on the land have ended. Proposed NUMAs must be justified under the criteria set out in section 126D(2) of the EP Act.

The rehabilitation planning part of the PRC plan must also include:

- a) information demonstrating that the proposed footprint of each NUMA is as small as practicable
- b) an assessment of the NUMA location options, having regard to the constraint of the resource location, with an analysis of the potential environmental harm and sensitivity of the surrounding environment of each option
- c) a description of the proposed location of each NUMA and the environmental values of the surrounding environment
- d) evidence showing how the proposed location will prevent or minimise environmental harm

In accordance with section 126D(1)(c) of the EP Act, the applicant must develop and implement management milestones within the PRCP schedule which achieve best practice management and minimise environmental harm for any NUMAs contained in the proposed PRC plan. As part of the development of management milestones, the applicant must conduct a NUMA specific risk assessment to identify and quantify risks and associated controls. The risk assessment should have an overarching goal of identifying and controlling any significant risks to the community and the environment.

The proposed PRC plan must include a detailed description of the nominated NUMA(s) for the site. The description must include, but is not limited to:

- description of the land at surrender
- any relevant safety features
- completion criteria for measuring whether the NUMA has achieved sufficient improvement

Applicability to Transitional PRC plans

Where a NUMA has already been identified in a land outcome document and is able to be transitioned into a PRCP schedule, the applicant is not required to comply with sections 126C(1)(g) or (h) or 126D(2) or (3) of the EP Act. NUMAs transitioned into the PRCP schedule are not required to complete the information requirements under section 126C(1)(j) of the EP Act in this section for those NUMAs. However, the legislative requirements under section 126C(1)(d) of the EP Act still apply.

Where a NUMA has not been pre-approved and is proposed as part of the transition into the PRC plan, the applicant must include all of the requirements identified in this section.

3.1 Land outcome documents

As outlined in section 6.3.2 of the PRC Plan guideline ‘a NUMA will be taken to be pre-approved if a land outcome, the same of substantially similar to a NUMA is contain in a ‘land outcome document’. This is the case for Warwick Limestone as residual voids are authorised under Schedule F – Conditions F4 and F5 of the Warwick Limestone EA². The approved outcome is that any residual voids are authorised for the land through the above conditions.

Since the NUMAs have already been identified in a LOD as per section 754 (3) of the EP Act, the applicant is not required to comply with sections 126C(1)(g) or (h), or section 126D(2) or (3) of the EP Act and is not required to complete the information requirements under section 126C (1)(j) of the EP Act. However, the legislative requirements under section 126C (1)(d) still apply.

3.2 Nominated NUMAs

The Warwick Limestone EA permits residual voids that comply with the following outcomes:

- Residual voids must not cause any serious environmental harm to land, surface waters or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the residual void itself, and subject to any other condition within the environmental authority; and
- Residual voids must comply with Schedule F – Table 7 (**Table 24**).

Table 24: Residual void design (EA Schedule F – Land)

Void identification	Void wall – competent rock max slope (degrees °)	Void wall – incompetent rock max slope (degrees °)	Void maximum surface area (ha)
ML50239 East-West	70 °	38 °	0.38
ML50238 Phoenix	70 °	38 °	1.50
ML50237 Phoenix	70 °	38 °	11.50
ML50146 Aspinal	70 °	38 °	2.50
ML50083 East Pit	70 °	38 °	1.49
ML50083 West Pit	70 °	38 °	2.56
Total			19.93

Each residual void has a post mine land description of Water storage / Grazing (excluding ML50083 East Pit and ML50146 Aspinal). Aspinal Pit will be backfilled to allow for a PMLU of ‘Grazing’. The remaining Pits (Phoenix and East-West) will remain as Water storage (PMLUs) as per the EA however, due to slope steepness, areas of each pit have been demarcated as NUMAs as they are not viable for a PMLU of ‘Grazing’. This is supported by the outcomes in **Section 6.6**, which are based on the Geotechnical Report (**Appendix 4**).

It is proposed that a Residual void / Water storage is the NUMA designated for Warwick Limestone.

Management acceptance criteria have been transitioned to support the milestone criteria in the PRCP schedule with the final milestone of achieving sufficient improvement. These are summarised in the following table.

3.2.1 Residual void / Water storage NUMA

The NUMAs for both the Phoenix and East-West Pits are generally associated with the pit walls due to shallow instabilities caused by erosion (**Section 6.6.3.3**). Based on the void designs both Pits have minimised the NUMA extents to reduce the environmental impacts. As per **Table 24** Phoenix Pit has a maximum residual void area of 13 ha while the East-West Pit has a maximum residual void area of 4.43 ha, the proposed residual void areas are 8.1 ha and 4.3 ha respectively. Although marked as part of the NUMA designation ‘Water storage’ has been kept as a PMLU area for the purpose of stock watering. Improvement objectives, indicators and acceptance criteria are summarised in **Table 25**.

Table 25: Warwick Limestone objectives, indicators and acceptance criteria for sufficient improvement

Improvement goal	Objective	Indicator	Acceptance criteria
Safe to humans and livestock	Access to highwalls is restricted	Hazard assessment	Bunding erected around entire pit (fences where required) and to require specifications
			Signage is placed appropriately
Non-polluting	Residual void will not present an acceptable risk of environmental harm	pH EC Turbidity	Water storage is not significantly different to local water quality objectives in accordance with the Queensland Water Quality Guidelines ¹
Stable	Pit walls are geotechnically stable	Factor of Safety	FoS ≥ 1.5 ²
	Constructed to design specifications	Slope angle	Highwall slopes in competent rock to a maximum of 70° Highwall slopes in incompetent rock to a maximum of 38° Any backfilling to occur to a maximum slope of 25°
	Erosion will not negatively impact any adjacent rehabilitation areas (stability or ability to sustain PMLU)	Visual assessment	Evidence that if erosion is occurring it does not impact any rehabilitation areas (water storage)
		Flow diversion	Bunding works to divert most overland flow away from highwalls

1. DEHP, Queensland Water Quality Guidelines 2009 (republished July 2013)

2. ANCOLD, Factor of Safety? – Do we use it correctly

3.2.1.1 Water storage access

A road will be constructed between the NUMAs to enable landholder access to the water storages following rehabilitation. All pits will otherwise be secured by abandonment bunds and/or fencing, with a gated entry point provided where the main access road connects directly into the pit. Controls will be implemented on the batters adjacent to the ramps to ensure the road remains safe and accessible (Section 6.6.3.3).

3.3 Community considerations

Community consultation is not required as NUMA outcomes are prescribed under the LOD (EPML00136213). Additionally, the NUMAs have not changed the overall purpose of the land use of water storage.

3.4 Regional planning integration

The NUMAs at Warwick Limestone consider the pre-mining mining land use, neighbouring land use and EA conditions. Existing land use in the surrounding area consists primarily of cattle grazing. Under the Southern Downs Planning Scheme (2018)³⁰, Warwick Limestone is located in the Granite hills precinct in a 'rural zone'. Definitions for land use in this zone and precinct are supported by the NUMA options prescribed by the LOD.

The purpose of the rural zone is to:

- provide for rural uses including cropping, intensive horticulture, intensive animal industries, animal husbandry, animal keeping, and other primary production activities;

³⁰ Southern Downs Regional Council Planning Scheme 2018 Version 5 Commenced 29 June 2018



- provide opportunities for non-rural uses that are compatible with agriculture, the environmental features, and landscape character of the rural area where the uses do not compromise the long-term use of the land for rural purposes; and
- protect or manage significant natural resources and processes to maintain the capacity for primary production.

Outcomes for the Granite hills precinct that are relevant to the site include:

- The scenic amenity and landscape character values as well as the agricultural values in this precinct are protected from development that could impact in a negative manner on these values;
- Low intensity farming including grazing activities will be the predominant use in this precinct; and
- The scenic values of the land are maintained and new development involving substantial built development is screened and well set back from frontages.

The NUMAs support the outcomes as they will provide sources of water that will benefit the purpose of low intensity grazing.

4 Voids in floodplains

Legislative Requirement

In accordance with sections 126D(3) of the EP Act, if land the subject of the proposed PRCP schedule will contain a void situated wholly or partly in a flood plain, the schedule must provide for the rehabilitation of the land to a stable condition.

PRCP Guideline (section 3.4)

Section 41C of the EP Regulation states the decision considerations for a void situated wholly or partly in a flood plain. A void is considered to be located in a flood plain if the flood plain modelling shows that, when all relevant activities carried out on the land have ended, the land is the same height as, or lower than, the level modelled as the peak water level 0.1% AEP for a relevant watercourse under the guideline Australian Rainfall and Runoff (2019)(ARR).

Applicability to Transitional PRC plans

Where a land outcome document has been pre-approved for a void with a location specified, flood plain modelling is not required. If a void has been identified as a NUMA in a land outcome document but the location is not identified, the applicant is required to carry out flood plain modelling in accordance with this section of the guideline. While the provision in the EP Act relating to voids located within a floodplain having to rehabilitate to a stable condition does not apply, the PRC plan must include how the proposed location of the void minimises risks to the environment. Therefore, the flood plain modelling is required to support the assessment of the proposed location of the void.

If there are no land outcomes identified in a land outcome document, the applicant is required to carry out flood plain modelling in accordance with this section of the guideline.

Warwick Limestone is positioned along a ridgeline and is therefore not in a floodplain environment and is unlikely to be at risk of flooding. As per **Section 1.2.4.5** and **Figure 10** the remaining water storages (voids and sediment dams) do not overlap with the Floodplain Assessment Overlay. Flood modelling for the purposes of a void within a floodplain is not required.

5 Community consultation

Legislative Requirement

In accordance with section 126C(1)(c)(iii) and (iv) of the EP Act, the rehabilitation planning part of the PRC plan must include:

- details of the consultation undertaken by the applicant in developing the proposed PRC plan; and
- details of how the applicant will undertake ongoing consultation in relation to the rehabilitation to be carried out under the plan.

PRCP Guideline (section 3.5)

In developing the proposed PRC plan, the community should at least be engaged on the plan for the mine, PMLUs and/or NUMAs, areas of disturbance, rehabilitation and management methods, progressive rehabilitation, and closure timeframes. Ongoing community consultation should continue throughout the stages of the mine life so that progressive rehabilitation and the socio-economic and environmental impacts related to mine closure can be discussed with the community.

Community consultation carried out through different processes, such as an EIS, may be used to address the requirements in section 126C(1)(c) of the EP Act. The details of this consultation must be provided in the rehabilitation planning part of the proposed PRC plan.

Applicability to Transitional PRC plans

Transitional PRC plans are still required to meet the legislative requirements in section 126C(1)(c) of the EP Act. All proposed PRC plans must contain a community consultation plan regardless of whether the site has an existing EA.

Community consultation is a key component of the PRC plan and is intended to ensure that anyone impacted by proposed rehabilitation and closure activities at the site has an opportunity to provide input to the planning process. Rehabilitation and closure activities at Warwick Limestone are informed by post mine land descriptions in the site EA (LOD) and landholder agreement.

Key stakeholders include the landholders on which the mine operates. There are no nearby neighbours in adjoining lots and no other community members to consult. **Figure 17** illustrates the location of sensitive receptors (neighbours) within a 1km buffer of the mining lease boundaries.



Figure 17: Identified neighbours within 1km of the mining tenements of Warwick Limestone

5.1 Consultation to date

Community consultation of this PRC plan was conducted on an as-required-basis due to the small number of impacted and relevant stakeholders (i.e. landholders).

Community consultation and stakeholder engagement aims to assist in the preparation of and to further inform this PRC plan. The objectives of the community consultation process were to:

- identify stakeholders relevant to the project
- facilitate two-way engagement with identified stakeholders
- provide accurate, timely, and relevant information on the project
- identify any concerns and/or potential issues stakeholders may have relating to the project; and
- develop appropriate strategies to mitigate any identified concerns.

In accordance with Section 3.5 of the PRCP Guideline, this section incorporates the following information:

- summary of relevant stakeholders
- overview of consultation tools used throughout the consultation process
- community consultation register
- summary of consultation outcomes; and
- a community consultation plan.

For the purpose of this PRC Plan, the community area has been defined as the three landholders and, where consultation is required, the surrounding areas of the town of Elbow Valley, and the Southern Downs Regional Council area. **Table 26** provides a categorisation of typically relevant stakeholder groups and **Table 27** a summary of the identified stakeholders as part of the identified categories. **Table 28** provides details on community consultation to date.

Table 26: Categorisation of relevant stakeholders

Stakeholder Category	Relevant Stakeholders
Direct landholders	• Landholders whose property the mine infrastructure may be located
Adjoining landholders	• Residents located adjoining the Project area which may experience impacts during the operation of the mine (including but not limited to visual, noise, dust, and traffic)
Federal, State, and Local Government Representatives	• Government representatives at the Federal, State, and Local level including local representatives and Government agencies responsible for the regulation of the Project • Police, emergency services, drug and alcohol services, housing, Indigenous, employment, and social services • All infrastructure and utility providers the Project could have an impact on during operation (including electricity, telecommunication, road usage)
Indigenous Stakeholders	• Traditional owner groups, local land councils, other Indigenous organisations where related to the Project
Business Operators and Representatives	• Business operators and employees in the locality may experience indirect impacts on business operations (e.g. increased trade due to operations) • Regional business groups, local accommodation operators and local Chambers of Commerce
Special Interest Groups	• Community organisations and groups • Schools and Childcare facilities and environmental groups
Local Community	• Residents or visitors to Elbow Valley and the Southern Downs Regional Council Area that may have an interest in the Project

Table 27: Identified stakeholder groups and relevant stakeholders

Stakeholder Category	Relevant Stakeholders
Direct landholders	Two landholders (Ben Usher and March Thirteen Investments Pty Ltd whose properties the mine is located on)
Federal, State, and Local Government Representatives	Federal Department of Climate Change, Energy, the Environment and Water
	State - Department of Environment and Science - Department of Agriculture and Fisheries - Department of Resources
	Local Southern Downs Regional Council (incl amalgamated Warwick Shire Council)

A variety of consultation methods and tools were used to meet the objectives of the community consultation process. These include:

- direct stakeholder contact, including telephone calls, virtual meetings, and in-person meetings
- correspondence via letters
- public notification; and
- landholder meetings (annual).

5.2 Community consultation register

Table 28 details the consultation completed by Terrequip Environmental. The register is aligned with the PRCP Guideline and Section 126C(1)(c)(iii) of the EP Act and includes:

- identification of each community member/stakeholder;
- all recorded previous engagements with the community;
- consultation date(s);
- description of consultation type (e.g. letters, meetings and communication strategies);
- information provided to the community;
- issues raised/discussed;
- how issues raised and the outcomes of engagement have been considered in decision making; and
- commitments made by the applicant.

The community consultation register (**Table 28**) will be a live instrument for recording future consultation on the Warwick Limestone PRC plan.

5.3 Ongoing consultation

Warwick Limestone is relatively small and is located a significant distance from the nearest major populated centre (Warwick approximately >25km by vehicle).

Warwick Limestone operates with a small group of employees (<10 people), and it is therefore, unlikely that the closure of the mine, once end of life is reached, will have a significant impact to the local community.

There are unlikely to be any ongoing environmental impacts to the local community outside of the underlying landholders as the material extracted is benign and water storages left will be open pit voids rather than contaminated tailings dams etc. There are four main community groups that have been identified as requiring consultation as part of the PRC Plan:

Affected landholders for access or operation of the ML

- adjoining landholders
- traditional owners
- local government; and
- local community groups

Affected landholders include the Queensland Government, the Usher Family and March Thirteen Investments Pty Ltd who own land under the Mining Leases. Active consultation is carried out with the affected landholders. Recently, updated landholder agreements were made with both parties which was the result of discussing the rehabilitation requirements for the land. The landholder agreements will form the basis for shaping the final land use and the treatment of land and infrastructure following the completion of mining. Additional consultation is planned with the landholders to discuss the timing for the PRC plan, as this was not actively discussed for the landholder agreements. Records of this consultation will be recorded on the community consultation register once complete.

Table 29 summarises the Community Consultation Plan.

5.4 Public interest considerations

The final rehabilitated landforms at Warwick Limestone will include two NUMA areas. NUMAs are defined under Section 112 of the EP Act as an area of land the subject of a PRC plan that cannot be rehabilitated to a stable condition after all relevant activities for the PRC plan carried out on the land have ended. As the NUMA areas are pre-approved and do not significantly impact the PMLUs at Warwick Limestone a public interest evaluation (PIE) under the EP Act is not required.

Table 28: Community consultation register

Timing	Stakeholder	Format	Information	Issue/Concern Raised	Consideration of Issue/Concern	Outcome	Commitment of Applicant
2001	Warwick Shire Council	Public Notification	Requisite information under the <i>Integrated Planning Act 1997</i>	Development Application	Planning process and outcome requirements	n/a	n/a
May – Jun 2011	Residents of Southern Downs Regional Council	Public Notification	Requisite information under the <i>Sustainable Planning Act 2009</i>	Development Application	Planning process and outcome requirements	No submissions made about the application	n/a
Apr – May 2013	Residents of Southern Downs Regional Council	Public Notification	Requisite information under the <i>Sustainable Planning Act 2009</i>	Development Application	Planning process and outcome requirements	No submissions made about the application	n/a
Jan – Feb 2019	Residents of Southern Downs Regional Council	Public Notification	Requisite information under the <i>Planning Act 2016</i>	Development Application	Planning process and outcome requirements	No submissions made about the application	n/a
28 Jul 2021	State Government, Department of Agriculture, Forestry and Fisheries (DAF) (Landholder) 178/M34534	Letter from Landholder following email discussion	- Rehabilitating lot as per DAF sales agreement; a lesser outcome than EA requirements - Extension to sales agreement not to be sought.	- Rehabilitation of mine disturbance on the lot to EA requirements - Allowing the Sales Permit to expire and not be required to renew	DAF officer assessment	Sales Permit allowed to expire as rehabilitation outcomes are greater with EA conditions	Rehabilitation of 178/M34534 as per EA requirements
2 Mar 2021	Ben Usher (Landholder) 2/RP36822 & 106/ML623	Annual Landholder Meeting	Requirement for Terrequip to produce PRC Plan including PRCP Schedule regarding handing over assets to landholder after mining activities have ceased	- Items that could remain with landholder post-mining, requiring a landholder statement - Future liability after taking over assets	- Advice provided opportunity for landholder to receive assets after mining has ceased - Timeframe provided for landholder to consider their wants and needs with respect to accepting assets post-mining	Infrastructure list, maps, and other information to be provided to landholder to inform forthcoming Landholder Agreement	- Next meeting to be held 30 Mar 2021 to discuss next steps and detail on Landholder Agreement (N.B. meeting did not take place due to COVID-19 restrictions; communication completed via other means)
12 Mar 2021	Liam O'Dea and Andrew O'Dea (Previous Landholder) 1219/M34519	Annual Landholder Meeting	- Requirements for Terrequip to produce PRC Plan and PRCP Schedule - Specifics regarding handing over assets to landholder after mining activities have ceased - Expected life of mine	- Items that could remain with the landholder post-mining requiring a landholder statement - Future liability after taking over assets	- Advice provided opportunity for landholder to receive assets after mining has ceased - Timeframe provided for landholder to consider their wants and needs with respect to accepting assets post-mining	- Infrastructure list, maps, and other information provided to landholder - Landholder returned full acceptance of all infrastructure	None



Timing	Stakeholder	Format	Information	Issue/Concern Raised	Consideration of Issue/Concern	Outcome	Commitment of Applicant
23 Jul 2021	Ben Usher (Landholder) 2/RP36822 & 106/ML623	Letter received from Landholder	n/a	Landholder not willing to provide a landholder statement about receiving infrastructure items post-mining due to concerns around liability	n/a	n/a	- In absence of Landholder Statement, PRC Plan and rehabilitation requirements updated to ensure the removal of all infrastructure items discussed (sheds, plant, buildings, etc.) - This excludes items such as roads/tracks and water storage
30 Jul 2021	Ben Usher (Landholder) 2/RP36822 & 106/ML623	Email to Landholder	Response to letter received from landholder, dated 23 Jul 2021	- Clarification of landholder involvement in the development of the PRC Plan given some rehabilitation outcomes are already determined in the EA (i.e. requirement to provide a landholder agreement if the landholder wishes to take ownership of any infrastructure at the end of the mine life - Advice of the rehabilitation works undertaken on the land	- Checks made against PRC Plan and EA requirements - No indication of communication received from landholder about intention to take over ownership of any infrastructure outside of that set out in the Compensation Agreement	None	None



Table 29: Community consultation plan

Community Group	Objectives	Format	Frequency	Information Provided	Consideration of Feedback
Underlying Landowners	Provide regular feedback on status of operations and landowner statements	- Direct mail - Email - In person meetings - Telephone correspondence	- Monthly - As required	- Mine plans - Landowner Statements - Rehabilitation Plans	- Advice requests relating to changes to mine plans that affect underlying landowners - Comments considered for future mine planning
Adjoining Landowners	Feedback on proposed changes	Direct mail	If PRCP amendment poses likely impact	Overview of changes (e.g. plans, schedule, etc.)	- Comments incorporated in the PRCP Schedule amendment - Comments recorded on the Community Consultation Register
Traditional Owners / Indigenous Groups	Feedback on proposed changes	Direct mail	If PRCP amendment poses likely impact	Overview of changes (e.g. plans, schedule, etc.)	- Comments incorporated in the PRCP Schedule amendment - Comments recorded on the Community Consultation Register
Local Government	- Advice on approval impact - General feedback	- Direct mail - Email - Pre-lodgement meetings	- If any ML renewals - If PRCP amendment poses likely impact	- Scope of proposal (for renewal) - Overview of changes (e.g. plans, schedule, etc.)	Feedback provided considered for the submission of PRC Plan and associated documents
Local Community Groups	General feedback on determined PMLU options	- Terrequip website - Local newspaper	- If PRCP amendment poses likely impact 2-years prior to Mine closure via closure notification	- Relevant information as required - Plans relevant to the feedback required	Feedback reviewed by Mine Management and considered for future mine planning

6 Rehabilitation and management methodology

Legislative Requirement

In accordance with sections 126C(1)(e) and (i) of the EP Act, the rehabilitation planning part of the PRC plan must:

- for each proposed post-mining land use for land, state the proposed methods or techniques for rehabilitating the land to a stable condition in a way that supports the rehabilitation milestones under the proposed PRCP schedule; and
- for each proposed non-use management area, state the proposed methodology for achieving best practice management of the area to support the management milestones under the proposed PRCP schedule for the area.

PRCP Guideline (section 3.6)

The proposed rehabilitation or management methodologies will underpin the development of the milestone criteria and support how the proposed PMLU will be achieved or the NUMA will be managed. As per Section 126C(1)(j) of the EP Act, the administering authority requires information describing how the proposed rehabilitation or management methodologies have been developed and will be implemented.

This section identifies a number of studies that must be provided in the proposed PRC plan. If any of the required information outlined below is not relevant to the specific operation, the applicant must provide justification in the PRC plan outlining why the information is not required.

6.1 General rehabilitation practices

PRCP Guideline (section 3.6.1)

This section outlines the range of information that the administering authority considers is necessary to underpin the development of the rehabilitation or management methodologies applicable to new and existing mines for most domains. The applicant must include the information as appendices to the rehabilitation planning part.

6.1.1 Hydrogeology

PRCP Guideline (section 3.6.1)

Assess the hydrogeology of the site and all connected strata and develop a conceptual model of the mine site's groundwater systems. This information must be integrated into the design of rehabilitation strategies and choice of PMLU or NUMA.

The EA does not require a hydrological assessment for Warwick Limestone; and it is determined the mining activities do not have an impact to groundwater. EA conditions C6 to C8 outline protection measures must be undertaken to prevent groundwater contamination and that draw down is not to impact other users of the groundwater. Should an assessment be required in future, the following steps will be taken as part of the assessment:

- determine the groundwater occurrence including the existence of, and depth to, aquifers and aquitards;
- locate groundwater recharge and discharge locations locally and regionally;
- determine groundwater quality within each of the aquifers and from surface expressions (i.e. seeps and springs);
- determine current and potential future uses of groundwater including existing groundwater extraction bores;
- determine groundwater flow direction and velocity, including field tests to determine hydraulic conductivity;
- develop potentiometric mapping and hydro-stratigraphic cross sections; and
- conduct groundwater modelling to determine contaminant transport and potential changes to groundwater level from dewatering or waste storage.

Groundwater infiltration into all pits is low and de-watering generally is only necessary after a rainfall event.

A bore 38m deep is located adjacent to Dam 1, near the office area. The bore is used for domestic water requirements and has a nominal entitlement of 10ML/p.a. (megalitres per annum). Actual usage from this bore has historically been approximately 0.1ML/p.a. however is rarely used as the flow rate is very low. Drawdown on the local groundwater table is therefore considered to be negligible.

The potential sources of groundwater contamination in the Project area are confined to fuel and chemical storage areas as well as the septic tank. All chemicals and diesel fuel is housed in a self-bunded storage container. The septic tank is a sealed unit connected to a sprinkler which periodically waters lawn and garden areas; a function that is carried out automatically when required. Additionally, the septic tank is inspected and pumped every 3-years by an authorised and qualified contractor.

6.1.2 Flooding

PRCP Guideline (section 3.6.1)

Section 3.4 of this guideline requires flood plain modelling for the purpose of voids located within a flood plain being rehabilitated to a stable condition. In addition to this, the applicant must also assess the flooding susceptibility and influence across the site. If flooding is a consideration, develop a hydrologic model of the catchment and a hydraulic model of the proposed mining area. Knowledge of flooding is integral to the rehabilitation planning process, including the placement and design of mine domains.

The approved activities will create a final landform that closely reflects the surrounding existing and pre-mining topography. With the exception of the Phoenix and East-West pits, all remaining pits will be backfilled to achieve a stable landform that does not present long-term erosion or weathering risks beyond naturally occurring rates. A flood-susceptibility assessment has been undertaken to support a risk-based approach for this flood assessment. In addition to the backfilling strategy and final landform design, the assessment identified the following:

- flood mapping from DNRME (**Figure 18**) shows that the remaining pits within Warwick Limestone are only minimally affected under both the extreme flood event and the 1% AEP flood event;
- the extreme flood event indicates very limited potential for flooding across the site, while the 1% AEP event suggests a slightly higher (but still low) likelihood of flooding. Given the distance from nearby creeks, any predicted impacts are unlikely to result from basin flooding;
- flood mapping from the Southern Downs Regional Council (SDRC) online tool indicates an even lower potential of flooding (**Figure 19**). Although the Condamine River (over 2km to the north-east) and Lord John Creek (approximately 2km north-west) have a recognised flood potential, their distance from the site means they do not pose a significant flooding risk (supported by **Section 1.2.4.5**);
- the approved activities do not require the diversion or disturbance of any creeks or streams;
- no fourth-order or higher streams occur within the mine areas;
- **Section 6.6.4.4** indicates that the remaining pits retain approximately 10% storage capacity over the 100 year assessment period, indicating that if flooding were to occur, significant impacts to the pits are unlikely; and
- overland flow will be redirected away from the pits to further reduce the potential of flooding.

Based on the above findings, the final landform will not adversely affect pre-mining flows and the identified risk associated with flooding is deemed low. As the site is not located within a floodplain and flooding is not a concern, no further modelling is required.

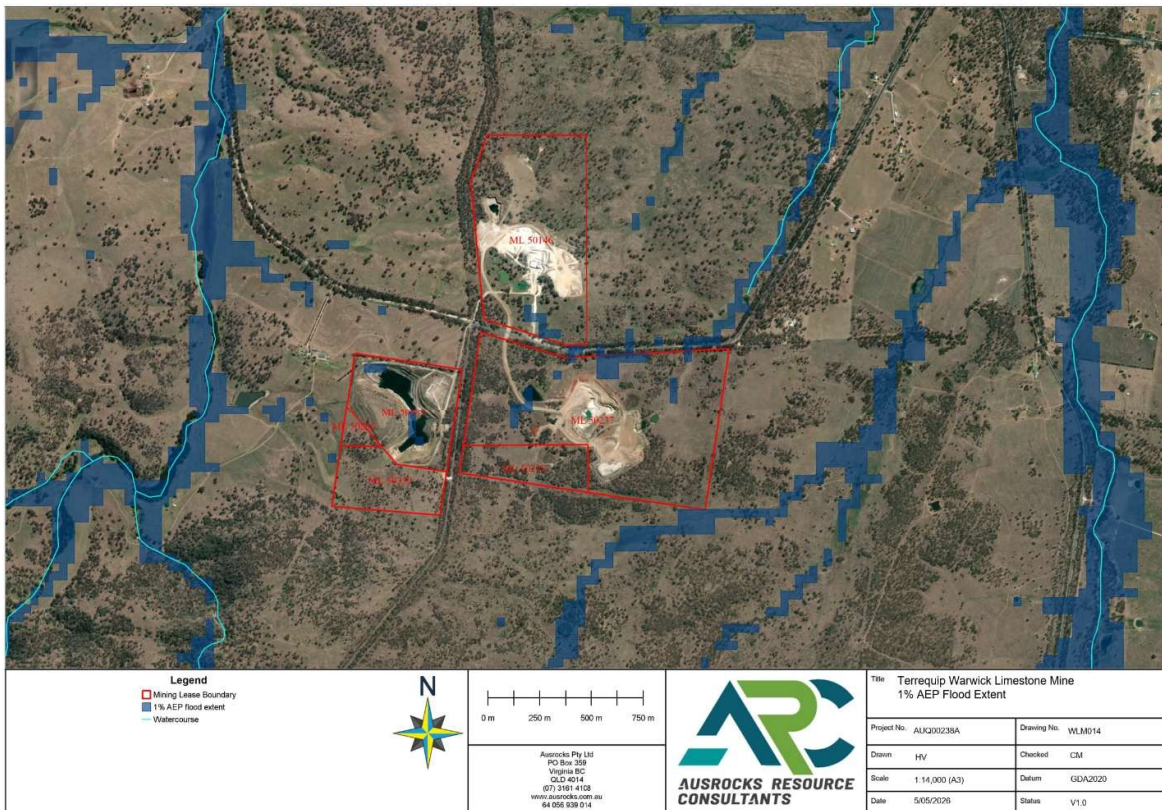
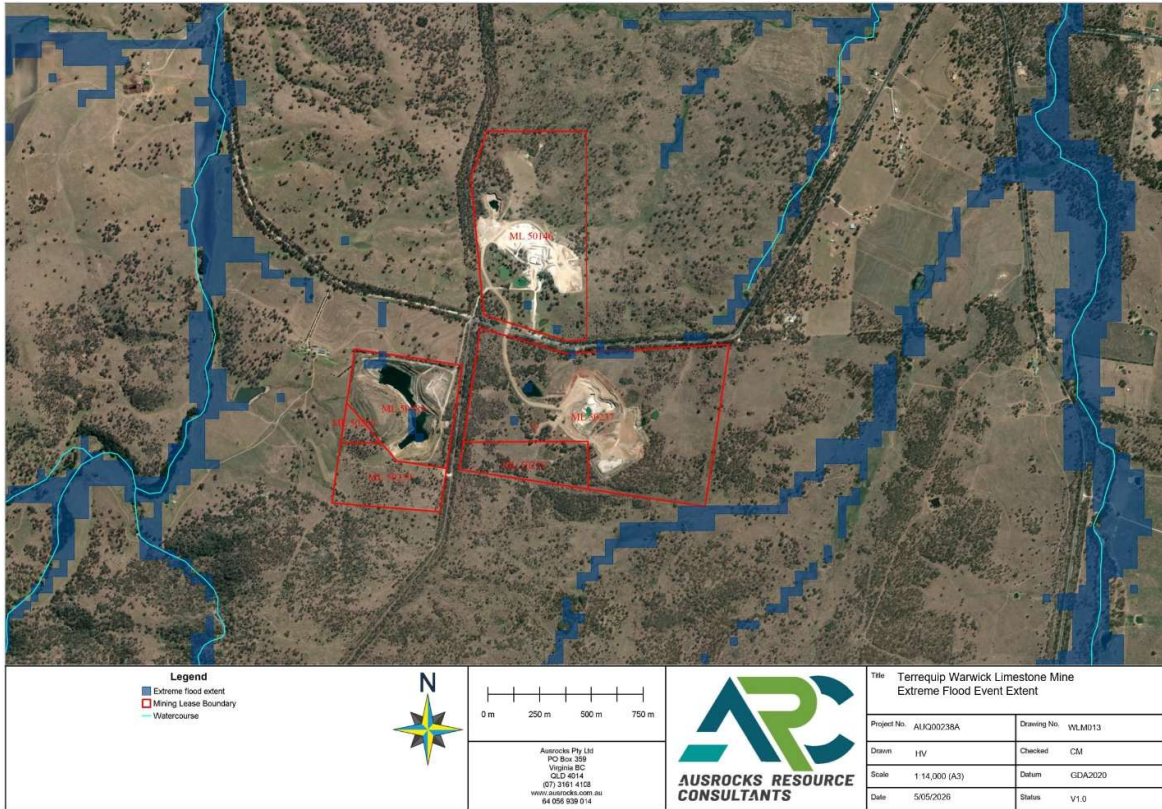


Figure 18: DNRME extreme flood event extent (top) and 1% AEP flood extent (bottom)
Resolution of each extent is from the data source (35m).

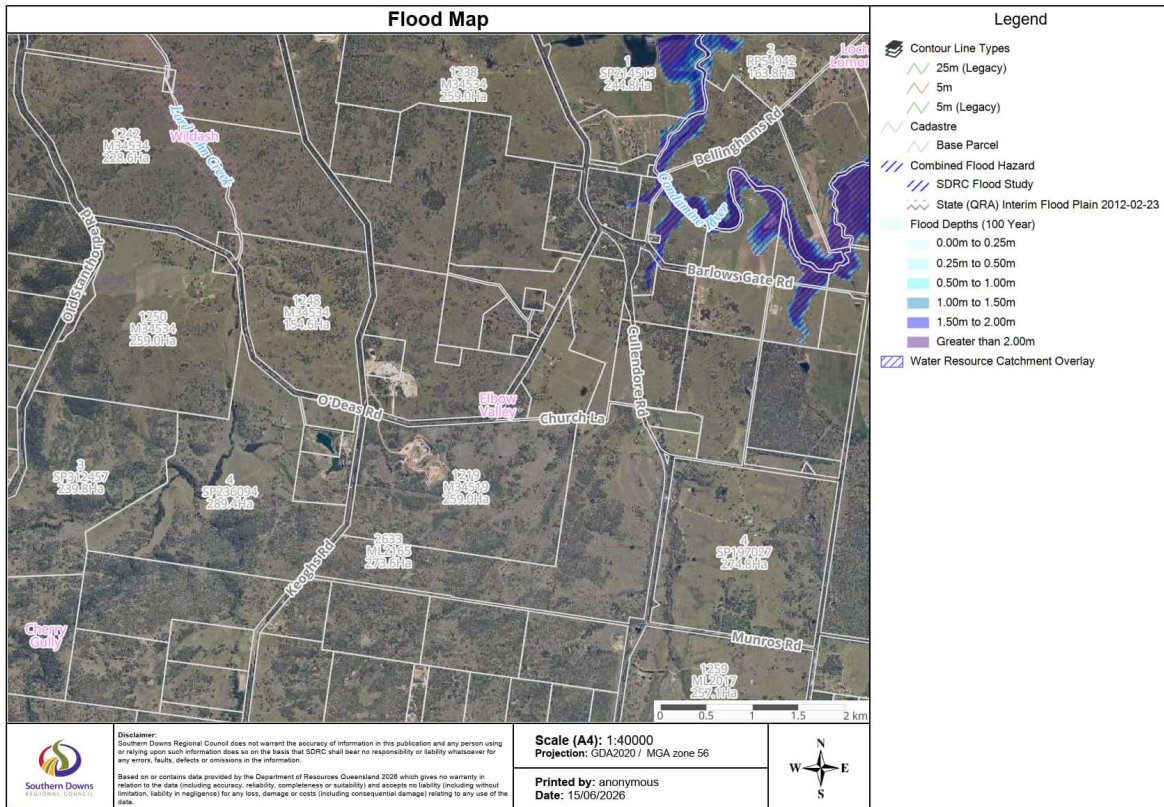


Figure 19: SDRC online tool (flood mapping)

6.1.3 Soil and capping material assessment

PRCP Guideline (section 3.6.1)

The rehabilitation and management methodology should include that soil assessment activities are supplemented by additional surveys conducted at appropriate intervals to assess soil resources in planned disturbance areas. In addition to the assessment of soils, the proposed rehabilitation methodologies in the rehabilitation planning part must also address topsoil management. Topsoil management must ensure sufficient topsoil quantity and quality is available in those instances that waste rock or tailings cannot support the proposed PMLU. Integrated soil and waste rock characterisation and mapping should form the foundation of the rehabilitation strategies. The available soil resources and capping material should be assessed prior to the commencement of operations.

6.1.3.1 Soil erosion

Erosion can have an adverse effect on soil productivity and the associated agricultural value. Additional effects can include downstream sedimentation, and decline in fertility through loss of soil structure, increased dust generation and poor rehabilitation outcomes.

Dispersive clay subsoils with high ESPs, low Ca:Mg ratios are susceptible to tunnel and gully erosion which is particularly difficult to manage once initiated. The subsoils of the Warwick Limestone Mine have clay subsoils that have a low erosion rating when undisturbed. However, as the subsoils can be sodic to strongly sodic, these soils have the potential to erode due to clay dispersion where soil is exposed to rainfall or runoff. Management options involve minimising exposure, careful management of overland flow, maintaining vegetation cover, and where appropriate, the use of soil ameliorants such as gypsum and lime (to reduce the degree of dispersion).

Site erosion control practices are guided by the Water Management Plan (**Appendix 5**). Where applicable, the following general erosion and sediment control measures are to be implemented:

- contour banks or planting of deep-rooted hardy grasses such as Vetiver Monto (*Chrysopogon zizanioides*) should be used at intervals appropriate to the slope and soil type to control the flow of surface water;
- diversion and erosion and sediment control devices fully implemented to provide effective erosion control prior to land disturbance activities, and will be kept in place and maintained fully functional until the area has been effectively rehabilitated; and
- where diversion of runoff water around a construction/rehabilitation site is required, design will need to be mindful of possible erosion effects due to concentration of flow.

6.1.3.2 Soil amelioration strategies

Soil amelioration will vary for different soils depending on soil chemistry. Lower cation exchange capacity soils (i.e. sandy soils) generally have a lower amendment requirement due to less exchange sites for cation transfer. The guiding principles for choosing chemical amendments (i.e. to use lime, gypsum, or sulphur ameliorants) depends on pH, ESP and Ca:Mg ratio.

A summary of the topsoil stockpile characteristics and implications for their use in rehabilitation include:

- in general, the soils were observed to be weakly-structured and possibly hard setting;
- salinity (0.1 dS/m) was low and is not considered to be an issue for use of the material;
- pH (5.8 – 6.9) is unlikely to impact on vegetation growth. We do not recommend any treatment for soil pH;
- Cation Exchange Capacity (CEC) was low (stockpile 2) to moderate (stockpiles 1 and 3);
- sodicity was low (0.3 – 1.8%) but the Emerson Aggregate Test (EAT) scores suggest most soils are slaking, but non- dispersive. Some of the stockpiled topsoil had low organic content; and
- total organic carbon (OC) across the stockpiles varies but recommend that an increase in OC will be useful for long term viability of vegetation.

Given these characteristics, the primary issues around use of the material in rehabilitation will not be due to soil chemistry, but more likely be due to poor aggregation, a lack of root aeration and poor water and nutrient holding capacity. Remediation of these soils needs to therefore focus on improving aggregate stability and building organics within the soil.

Initial establishment is paramount to start the site off on the right trajectory, and therefore rehabilitation areas will have 10-20 t/ha (or approximately 86m³ hay bales per hectare) of pasture hay applied and an application of a broad-based fertilizer (containing N, P, K and S).

Following the application of the pasture hay and fertilizer, the site should have a light offset disking to anchor the material into the surface.

6.1.3.3 Topsoil stripping

Approved disturbance areas that will require topsoil stripping for re-use in rehabilitation areas include the East-West pit (ML50083), Aspinall pit (ML50146), and the Phoenix pit (ML50237 and ML50238). Topsoil stripping is recommended at a depth no greater than 200mm.

6.1.3.4 Topsoil management

Topsoil stockpiles are and will be established adjacent to pit areas to limit handling and transport of the material. Topsoil stockpiles are recommended at a maximum height of 2m to minimise degradation of topsoil material, maintain biological capital and maintain soil fertility.

The use of machinery on stockpiles will be minimised wherever possible to prevent occurrence of topsoil compaction. Coarse stockpile surface textures are preferred to promote infiltration and aeration, and to minimise erosion until suitable cover vegetation is established. Topsoil stockpiles will be positioned in free-draining areas to prevent occurrence of long-term soil saturation. Temporary silt fences and/or cleared vegetation will be positioned around topsoil stockpiles as a means of sediment control and erosion protection.

6.1.3.5 Topsoil application

Topsoil will be spread wherever required to achieve safe and stable rehabilitation areas. All stockpiled topsoil will be used for the rehabilitation of disturbed areas in Warwick Limestone. The following will be considered during topsoil respreading:

- topsoil (all soil units) spread at an average thickness of 150mm;
- respreading on the contour to aid runoff control and increase soil moisture retention for subsequent plant growth (particularly for soils susceptible to erosion and concentrated runoff);
- levelling to an even surface avoiding a compacted and/or smooth surface;
- rip across the contour prior to seeding to promote relationship between topsoil and underlying materials; and
- minimise vehicle traffic accessing rehabilitation areas after topsoil is spread.

6.1.4 Landform design

PRCP Guideline (section 3.6.1)

The final landform design must be based on the proposed PMLUs and NUMAs and demonstrate that the land will be safe and structurally stable.

Landform design considers both the landform structures such as main pit voids, but also the landform development and reshape of all relevant activity areas after removal of infrastructure and wastes, prior to the placement of topsoil.

The following approved activities at Warwick Limestone have no impact on the pre-mining landform:



- topsoil stockpiles;
- plant and workshop area;
- administration areas; and
- roads and tracks.

The following activities have resulted in changes to the pre-mining landform (note, this includes changes occurred from historical mining activities):

- main pit voids;
- waste and overburden stockpiles (any volume remaining after backfilling);
- ROM pads and stockpiles;
- mine water including sediment dams and stormwater controls.

6.1.4.1 Final landform design

Figure 20 to Figure 22 illustrate the final landform contours of each pit area.



Figure 20: Aspal Pit Final Landform Design (1m contours)

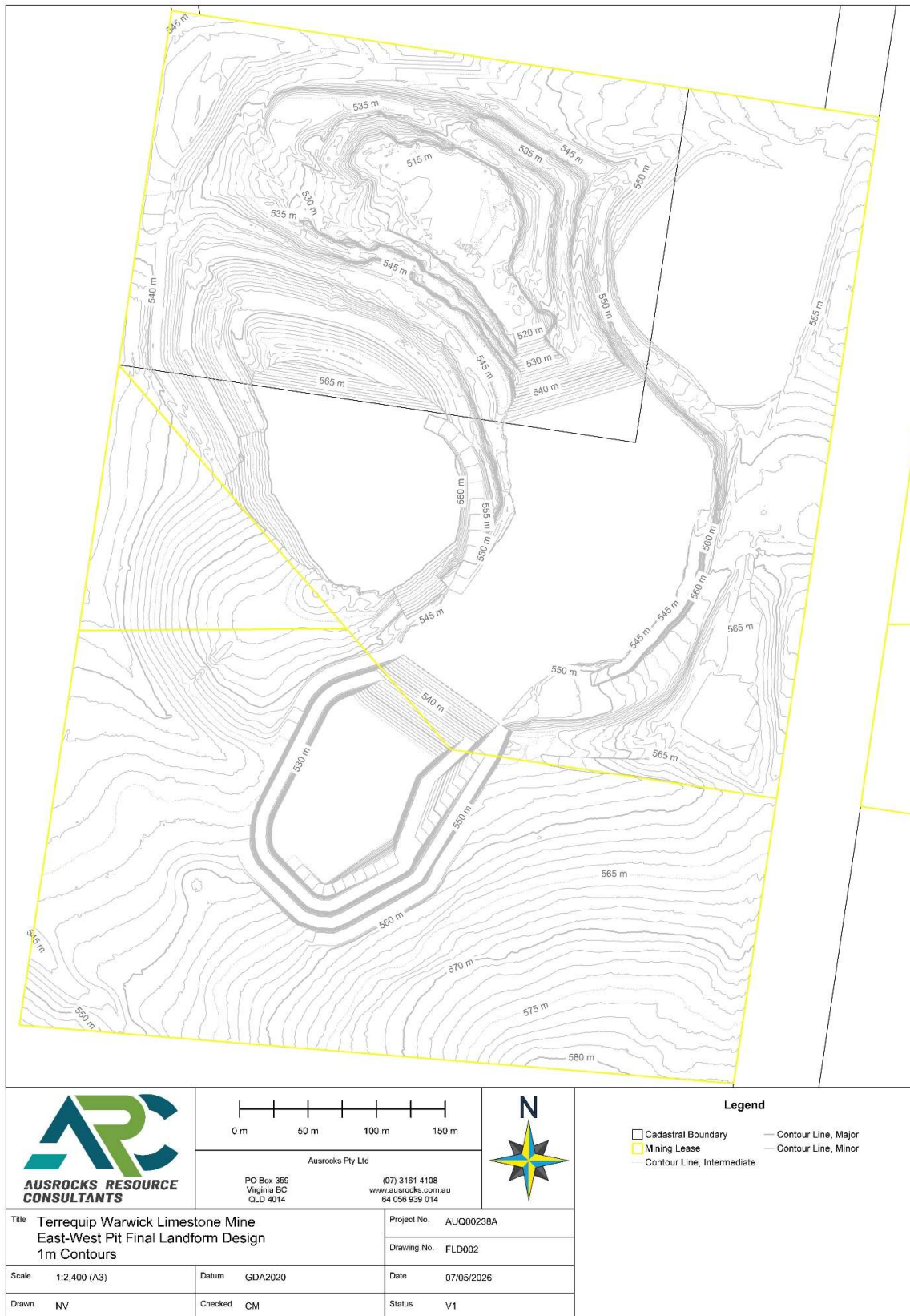


Figure 21: East-West Pit Final Landform Design (1m contours)

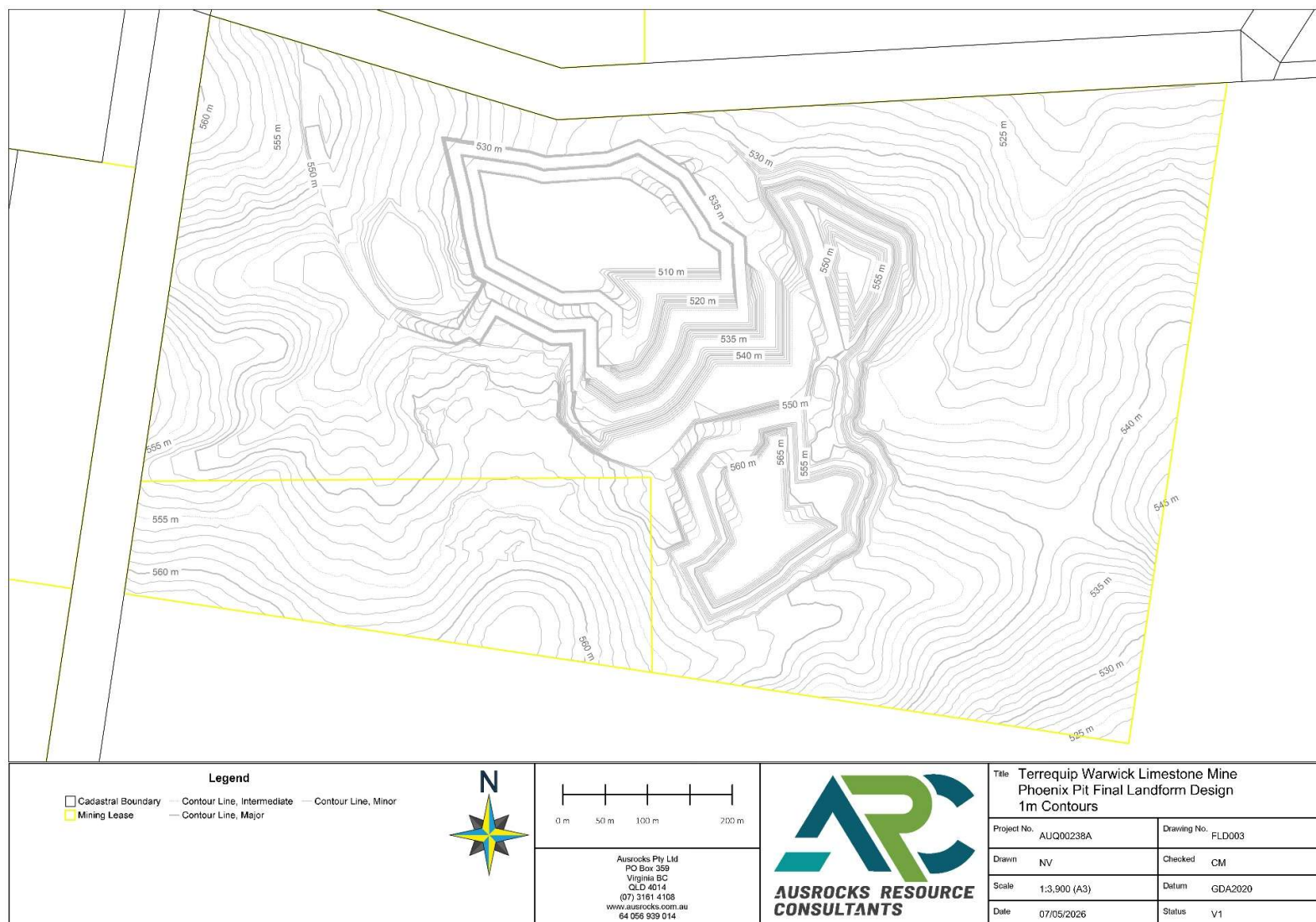


Figure 22: Phoenix Pit Final Landform Design (1m contours)

6.2 Cover design

PRCP Guideline (section 3.6.1)

A cover design is required for the surface treatment of a mine landform or other waste material. Hence, the cover system design must be appropriate for the type(s) of waste the project will generate and reflect a risk-based approach where waste has the potential for AMD, neutral mine drainage or saline mine drainage, an appropriate cover system must be designed.

The cover design should include:

- identification and specification of the objectives of the cover system
- a detailed description of the design including the thickness of each layer
- a detailed description of construction methodology including any proposed staging of the cover system
- a quantitative assessment that identifies the location and quantity of proposed capping material available on site; and
- proposed QA/QC for the construction of the cover system including the timely implementation of corrective actions where deviations from the design are identified.

No cover design is proposed for Warwick Limestone.

6.3 Water management

PRCP Guideline (section 3.6.1)

The rehabilitation planning part must include a description of the following:

- a description of the contaminants that pose a risk to environmental values of the receiving environment
- source, pathway and fate of contaminants that have the potential to impact environmental values
- infiltration and seepage intervention and collection controls
- surface water diversions and long-term management requirements
- dewatering requirements
- on-going water management and reduction requirements (i.e. treatment).

Water management is aimed at minimising the potential for release of contaminants to the surrounding environment. Clean and mine-affected waters are stored separately during active mine operations in stormwater and mine water storage dams and sediment basins in accordance with conditions of the site EA. No ongoing water management requirements are proposed following the establishment of final landforms and the removal of all infrastructure (except where otherwise agreed in writing).

The Water Management Plan (**Appendix 5**) describes monitoring and methods for sediment control in the sediment dams and basins on site.

Recommended performance criteria is based on EA conditions of water quality with pH between 6.0 and 9.0, and EC <1500µS/cm. All surface water sampling will be conducted as per the Queensland Monitoring and Sampling Manual (EHP 2009) as well as per more recent methodologies published by DES (2018).

Assessment of sediment dams in the Project area identified deficiencies in capacities due to the progressive expansion of mine operation as well as discrepancies in EA specifications for sediment dam capacities. No deficiency was identified in 'Sediment Dam 8'. Pump and pipe systems have been utilised to manage uncontrolled discharge and transfer excess run-off to other available water storage areas including voids located in the Aspalpit and East-West pit. The performance criteria to restore sediment capacity to >80% design is based on a target of improving on these deficiencies post-mine.

6.3.1 Potential contaminants

Due to the age of the mine, there is no access to or record of preliminary site investigations. Pre-mining land uses of the Warwick Limestone mining leases are identified to have predominantly been cattle grazing. Activities

associated with cattle grazing that have the potential for contamination such as cattle dips, workshop areas, homesteads or waste disposal areas were not found to be present based on available historical aerial imagery.³¹

Activities related to approved activities that have the potential to generate contaminants, if inappropriately managed, could pose a risk to the environmental values of the receiving environment. These include:

- Mine affected or storm waters stored within water storages or sediment basins; and
- Sewage wastes.

The above potential sources of contamination are determined to have a low risk level.

Main pit voids will be backfilled with mobile infrastructure and plant equipment removed, including water storage and sediment basins. This excludes any infrastructure and selected water storages to remain upon closure (**Appendix 7**). Any remaining infrastructure is not considered a source of potential contamination. Remaining water storages will be made suitable for livestock use therefore, are also not considered a source of potential contamination.

6.3.2 Sources

Approved relevant activities have the potential to create the following sources of contaminants that could pose a risk to the environmental values of the receiving environment:

- backfilling of pits;
- removal of all infrastructure including water storage structures (except where otherwise agreed in writing);
- removal of all ROM and/or product stockpiles from the site;
- revegetation of backfilled areas and/or revegetation of residual overburden stockpiles;
- leaks/spills/discharges from water storage structures used to manage water from disturbance areas; and
- untreated sewage leaks/spills/discharges.

6.3.3 Potential water receptors

The proposed PMLU is marginal grazing, grassland and water storage in main pit voids. Post-mining potential receptors have been identified to include:

- land managers and/or employees;
- cattle;
- residents within nearby properties surrounding Warwick Limestone;
- public users of O'Deas Road and other publicly accessible locations;
- terrestrial ecosystems including rehabilitation areas; and
- groundwater dependent ecosystems (GDEs) (where relevant).

6.3.4 Potential water exposure routes

Potential pathways for contaminant migration between identified sources and receptors with the ability to impact water management upon closure include:

- surface water flows during rainfall events in contact with contaminated material; and
- uptake of groundwater by GDEs (where relevant).

³¹ <https://qldglobe.information.qld.gov.au/> (accessed July 2023)

6.3.5 Potentially complete pathways

The ongoing management of water resources upon surrender is not considered required based on:

- backfilling of pit voids;
- EA limited maximum disturbance areas; and
- removal of all infrastructure (unless where otherwise agreed in writing).

No infiltration, seepage and/or collection controls, surface water diversions or other long-term water management is deemed suitable or required upon surrender.

In accordance with the landholder agreement, on the completion of the mining operations any intact water storage dams on the mining lease land are to remain.

6.3.6 Water storage to remain for livestock use

Per the landowner agreement (**Appendix 7**), all remaining sediment dams will be converted into a water storage suitable for livestock use. The rehabilitation process for these water storages will entail:

- dewatering;
- revegetation of areas outside the water storage to support soil stability and adjacent PMLU areas; and
- rehabilitation monitoring to ensure any clean water contained in the storage dam is suitable for livestock use based on relevant water quality guidelines.

The conversion of the water storages to a suitable PMLU use requires a number of prerequisites to meet the objectives. During the operational phase, water storages on site act as sediment dams to assist in containing stormwater runoff from disturbed areas. This results in a high sediment load in the water due to the exposed catchment area. Therefore, water samples collected during this phase are not representative of the conditions expected post-mining. Once the site is rehabilitated and catchment areas are turned to either PMLU grazing or PMLU grassland, the level of sediment reporting to the water storages will be significantly reduced. It is anticipated that if the catchment areas contain a similar vegetation cover to the pre-mining landscape, the water quality within the water storages will be similar to the surrounding dams.

Additionally, the remaining pit voids (East-West and Phoenix pits) will be left as potential water sources for livestock use. The rehabilitation process for the pits as water storages will entail:

- reshaping to the final landform designs, ensuring long-term stability;
- where applicable successful revegetation of the catchment areas of the water storages; and
- rehabilitation monitoring to ensure any water in the pits is suitable for livestock use based on relevant water quality guidelines.

Neither pit however, is suitable for direct livestock access due to the steep slopes of the pit walls. Provisions have been allowed for a ramp for personnel to access each pit. To ensure each pit is not accessible they will be bunded off with access installed at the pit entrance for personnel use.

The landowner will be responsible for the management and maintenance of the water storages for livestock use.

6.4 Revegetation

PRCP Guideline (section 3.6.1)

The revegetation plan must propose activities that will establish self-sustaining vegetation communities that are appropriate for the intended PMLU (e.g. natural ecosystems, grazing, forestry and some agricultural and other land uses). Revegetation should, therefore, not only establish a ground cover, but also, in some domains, establish associated fauna habitat and other ecological services.

6.4.1 Revegetation objectives

Warwick Limestone rehabilitation objectives are to rehabilitate land disturbed by mining activities to be (as per the Final Land Use and Rehabilitation Plan):

- safe for humans and wildlife;
- non-polluting;
- stable;
- revegetated with species endemic appropriate to achieve the agreed post-mining land use and post-mining land descriptions per the site EA;
- be free of declared pest species; and
- compliant with all conditions of the environmental authority (EPML00136213).

Acceptance criteria to achieve a safe, stable and non-polluting PMLU of grazing are listed in **Table 19** and **Table 20** for a PMLU of grassland.

Where final landforms will not be used for water storage for stock dams, the land will be blended in with the surrounding existing and pre-mining topography. Both PMLUs can be achieved with materials available on-site for rehabilitation. Types of topsoils existing within Warwick Limestone mining leases are described in **Section 1.2.5**. Land suitability requirements for grazing PMLU are described in **Section 1.2.6**.

Based on the final landform, the topsoil materials available for rehabilitation and the pre-mining land use suitability assessment of a marginal grazing PMLU is achievable through revegetation activities associated with pasture seeding and additional soil amelioration (where required).

6.4.2 Revegetation pasture species and seed mixes for marginal grazing PMLU

There are no requirements listed in the EA for the inclusion of any species of conservation significance or fauna habitat and/or analogue sites for the purpose of a PMLU of marginal grazing (improved pasture grasses). The species mix selected for revegetation has been developed based on selecting a combination of both native & endemic pasture grasses listed as perennial productive and palatable (3P).

A large proportion of all topsoiled areas within the Warwick Limestone area will be sown with pasture grass species to meet the final rehabilitated landform outlined by the EA to re-establish the area for light grazing land use. Unless specifically directed by the relevant landowner prior to the seeding event, grass species that will be sown are in **Table 30**:

Table 30: Recommended species and sowing rates for grazing PMLU

Common name	Scientific name	Sowing rate (kg/ha)
Kangaroo Grass (3P)	<i>Themeda triandra</i>	5
Katambora Rhodes Grass (3P)	<i>Chloris gayana</i>	1
Slender Bamboo Grass (3P)	<i>Austrostipa verticillate</i>	5
Barbed Wire Grass	<i>Cymbopogon refractus</i>	5
Creeping Bluegrass (3P)	<i>Bothriochloa insculpta</i>	1
Twitch Grass	<i>Elymus repens</i>	1
Shrubby Stylo	<i>Stylosanthes scabra</i>	5
Fine Stem Stylo	<i>Stylosanthes guianensis var. intermedia</i>	2
Total		25

The seed mix will be liberally sown at a minimum rate of 25kg/ha during favourable conditions that will maximise germination (i.e. prior to rainfall events during the warmer months of the year). The seed mix will also be chemically treated to protect it from ants.

Where applicable, and to increase the success of direct seeding germination, seeding will be undertaken with an annual sterile cover crop species. Cover crops are sterile, and their rapid growth provides competition to minimize the emergence of undesirable weed species and enhance the desirable micro flora and fauna activity in the soil. This practice has been used elsewhere with the Japanese Millet, for example, however it is best to obtain advice from local agricultural seed distributors on the best species to use in the area.

6.4.3 Revegetation species for grassland PMLU

There are no specific EA conditions which describe the rehabilitation of areas to suit a PMLU of grassland. The reasoning behind these areas being specified as grassland rather than grazing is due to the slope characteristics in a portion of these areas. To maintain the intent of the EA conditions, the grassland areas will be rehabilitated using a similar groundcover species mix as the grazing, but also include additional species that are found in the surrounding RE. This is intended to provide potential value as low intensity grazing for the landowner. Revegetation species have been referenced from a variety of sources including:

- Regional Ecosystem Descriptions Database for RE 11.9.3.
- Rehabilitation Plan planting schedule (**Appendix 8**).

The species mix selected for revegetation has been developed based on selecting a range of native and endemic species suited to the site. **Table 31** shows the minimum number of species that are required in the seed mix to ensure rehabilitation milestones can be achieved.

Table 31: Recommended species and sowing rates for grassland PMLU

Common name	Scientific name	Sowing rate (kg/ha)
<i>Required in seed mix</i>		
Kangaroo Grass (3P)	<i>Themeda triandra</i>	5
Katambora Rhodes Grass (3P)	<i>Chloris gayana</i>	1
Slender Bamboo Grass (3P)	<i>Austrostipa verticillate</i>	5
Barbed Wire Grass	<i>Cymbopogon refractus</i>	5
Creeping Bluegrass (3P)	<i>Bothriochloa insculpta</i>	1
Twitch Grass	<i>Elymus repens</i>	1
Shrubby Stylo	<i>Stylosanthes scabra</i>	5
Fine Stem Stylo	<i>Stylosanthes guianensis var. intermedia</i>	2
	Total	25
<i>Need a minimum of six species in seed mix</i>		
Shotgrass	<i>Paspalidium distans</i>	1
Blady Grass	<i>Imperata cylindrica</i>	
Cotton Panic Grass	<i>Digitaria brownii</i>	
Slender Nineawn	<i>Enneapogon gracilis</i>	
Corkscrew Grass	<i>Austrostipa setacea</i>	
Buck Spinifex	<i>Triodia mitchellii</i>	
Brown's Lovegrass	<i>Eragrostis brownii</i>	
Tall Chloris	<i>Chloris ventricosa</i>	
Redleg Grass	<i>Bothriochloa macra</i>	
Finger Panic Grass	<i>Digitaria ramularis</i>	
Wiregrass	<i>Aristida lignosa</i>	
Hairy Panic Grass	<i>Panicum effusum</i>	
Silky Browntop	<i>Eulalia aurea</i>	
Pacific Bent Grass	<i>Lachnagrostis filiformis</i>	

Longhair Plumegrass	<i>Dichelachne crinita</i>	
Need a minimum of five species in seed mix		
Native Rosella	<i>Abelmoschus ficulneus</i>	1
Tarvine	<i>Boerhavia dominii</i>	
Wild Jute	<i>Corchorus trilocularis</i>	
Downs nutgrass	<i>Cyperus bifax</i>	
Native soybean	<i>Glycine latifolia</i>	
Cow vine	<i>Ipomoea lonchophylla</i>	
Madras Leaf Flower	<i>Phyllanthus maderaspatensis</i>	
Yellow vine	<i>Tribulus micrococcus</i>	
Least Snoutbean	<i>Rhynchosia minima</i>	
<i>Not required but recommended</i>		
Queensland Blue Gum	<i>Eucalyptus tereticornis</i>	1
Gum Topped Box	<i>E. moluccana</i>	
Narrow-leaved Ironbark	<i>E. crebra</i>	
	Total	36kg/ha

6.4.4 Establishing and managing revegetation

Selected seed mixes consist of both native and endemic species that are cognisant of grazing best management practices. A pasture of good condition typically has a high percentage of 3P grasses and a high frequency of legumes with low number of weeds.

Sowing campaigns will be planned around the wetter months (October to March). Seed quality will be assessed prior to planting to ensure the greatest potential for vegetation establishment. The seed bed will be ripped on the contour to create a friable base on which seed mix will be directly planted using agricultural equipment. Note, surface ripping may not be required in all disturbance areas. Amelioration and application rates will be determined prior to rehabilitation surface preparation commencing.

Rehabilitation planning and revegetation for grazing PMLU is based on sowing 3P pasture species and species suitable for sustainable cattle grazing, that are aligned to the associated rehabilitation soils and landform topography. The grassland PMLU areas are anticipated to contain a higher portion of non 3P grasses due to landform constraints, the rehabilitation objectives reflect these factors. While not considered mandatory recruitment of native tree species is considered likely, from either the addition in the seed mix and via natural seed distribution.

6.4.5 Topsoil

Sufficient topsoil is available on-site to respread over disturbance areas.

6.4.6 Revegetation around water storage areas

Areas surrounding the water storages will remain as either grazing or grassland PMLU (whichever has been prescribed for the area), excluding areas surrounding the pit water storages (East-West and Phoenix pits). As these areas are considered unsuitable for rehabilitation as a PMLU and are considered a NUMA, revegetation is not required.

6.5 Tailings storage facility

PRCP Guideline (section 3.6.2)

The tailings require characterisation to determine the geochemistry, rheology and geotechnical parameters that influence the rehabilitation or management strategies and the capacity of the site to support revegetation.

The design for a TSF must include relevant elements:

- a) lining of TSF (i.e. embankments and base of structure)
- b) leak detection systems
- c) cellular design of TSF
- d) seepage collection systems
- e) design storage allowance
- f) spillway location
- g) designing TSF for progressive rehabilitation

No tailings storage facility exists within Warwick Limestone.

6.6 Voids

PRCP Guideline (section 3.6.3)

The information requirements of this domain are dependent on the nature of the proposed PMLU or NUMA for the void. For mine sites with voids, the rehabilitation planning part must include a void closure plan, which includes options for minimising final void area and volume; final void dimension; pit wall geotechnical and geochemical stability, final slope angles, void hydrology, groundwater modelling, water balance and predicted long-term water quality.

A geotechnical report should focus on how the void will achieve post-closure slopes that will exhibit stability characteristics consistent with the planning and design of the post-closure mine void.

If floodwaters are likely to move over backfilled material, an assessment of the hydraulic properties must be conducted to assess whether instability may occur.

The rehabilitation and management strategies in the plan must include the supervision, verification and auditing of engineering works carried out to achieve the post-closure void landform, to ensure construction is consistent with the geotechnical design.

The rehabilitation and management strategy must also include confirmation that the post-closure landform demonstrates the level of stability as specified by the design.

Schedule F, Condition F4 and F5 of the EA pertain to the outcomes of residual voids at Warwick Limestone whereby “residual voids must not cause any serious environmental harm to land, surface waters or any recognised groundwater aquifer, other than the environmental harm constituted by the existence of the residual void itself and subject to any other condition within this environmental authority; and residual voids must comply with Schedule F – Table 7.” Furthermore, “the environmental authority holder must complete an investigation into residual voids and submit a report to the administering authority proposing completion criteria outcomes in (F3) and landform design criteria in Schedule F – Table 7, two (2) years prior to the relinquishment of any lease associated with this environmental authority.”

This PRC plan proposes three (3) residual voids will remain on site once mining activities have ceased. These pits are prescribed in the LOD and will be located within the Phoenix pit (ML50237) and East-West pit (ML50238 and ML50239) (Refer to tables in Section 2.2 of this PRC plan).

6.6.1 Minimising final void

The location, size and geometry of final voids are prescribed by the LOD and therefore cannot exceed the limits imposed. The final land use and rehabilitation of these voids are designated as grazing / water storage, with an area in the Eastern Open pit of the East-West pit backfilled to RL 524.

6.6.2 Final void geometry (dimensions, wall stability, wall angles)

Final geometry of residual voids are defined per LOD (EA) requirements and input from landholder consultation.

6.6.2.1 EA void requirements

Residual void requirements are defined per Conditions F4 and F5. These requirements are summarised in **Table 32** and **Table 33** below.

Table 32: Land outcome document prescribed residual void design (EA Schedule F – Table 7)

Pit area	Void identification	Void wall – competent rock max. slope (degrees °)	Void wall – incompetent rock max. slope (degrees °)	Void max. surface area (ha)
Aspinal pit	ML 50146	70°	38°	1.49
East-West pit	ML 50239 East-West	70°	38°	0.38
	ML 50083 East	70°	38°	1.49
	ML 50083 West	70°	38°	2.56
Phoenix pit	ML 50237	70°	38°	1.50
	ML 50238	70°	38°	11.50

Table 33: Land outcome document approved void PMLUs (adapted from EA Schedule F)

Pit area	Void identification	Void max. surface area (ha)	PMLU	Land class	Slope (°)
East-West pit	ML 50239 East-West	0.38	Water Storage / Grazing	VI	70°
	ML 50083 East	5.00	Backfilled to RL 524	VI	70°
	ML 50083 West	5.00	Water Storage	VIII	70°
Phoenix pit	ML 50237	11.50	Water Storage / Grazing	VI	70°
	ML 50238	1.50	Water Storage / Grazing	VI	70°

6.6.2.2 Landholder void requirements

Through consultation and landholder agreement, the landholder will accept residual voids (as a NUMA) post-mining as the PMLU of water storage will still be achieved once rehabilitation is complete. Allowing these areas to be used as potential stock dams.

6.6.3 Void design plan

6.6.3.1 Final void landform design

Final void landform designs are required to meet conditions of the EA and the landholder.

The East-West pit has the greatest surface area and depth of the proposed three (3) remaining voids; note, within all pits the maximum depth occurs centrally reducing towards each end of the pit. The Geotechnical Report summarises the average specifications of each of pit.

6.6.3.1 Final void stability

The site Geotechnical Report (**Appendix 4**) documents qualitative and quantitative analyses of long-term pit stabilities. The investigation identified all pit walls to have propensities to be unstable at bench and wall scales where the primary risk identified is related to rock fall and erosion. The current structure of the pits indicates that a PMLU is likely to be unachievable and as such a NUMA is prescribed for all pit walls (**Section 3.2**). To ensure final void stabilities will be in accordance with the requirements described in the LOD, the following **Sections 6.6.3.2** and **6.6.3.3** discuss the different pit design plans.

6.6.3.2 Partially backfill Aspalpit pit void

The Aspalpit pit is proposed to be partially backfilled to eliminate hazards associated with wall instabilities and to eliminate requirements to install abandonment barriers around the pit. As per Schedule F – Table 6 (Final Land Use and Rehabilitation Approval Schedule for ML50146), the land is not suitable for cultivation, however, is well suited to pasture improvement and determined PMLU of grazing. Partial backfilling of the Aspalpit pit will also significantly reduce long-term residual risks associated with potential rockfalls. In contrast, this risk cannot be reduced in the East-West and Phoenix pits; hence these areas will remain post-mine as residual voids.

It is proposed to backfill the Aspalpit pit to a free-draining landform. Backfill materials are proposed to comprise of superfluous ore, fines, and waste rock materials stockpiled near the Aspalpit pit. Wherever possible, selected materials will be of uniform grade to assist in providing consistent level of compaction. Rock materials <25mm in size will be screened out in the selection process, and oversized rock will be used to construct the rock armour layer. Undersized materials will therefore be used as the primary backfill material. Owing to the nature of this planned material for backfilling, it is expected that the Aspalpit pit void will be gradually backfilled throughout the life of the mine.

6.6.3.3 East-West pit and Phoenix pit voids

The Geotechnical Report findings outline slope stability issues within the East-West and Phoenix pits. Shallow instabilities triggered by erosion were observed to have occurred on batters cut in soil and in highly weathered rocks. Attempting to reduce the level of risk in these pits will not be as effective nor cost effective as mitigation efforts in the Aspalpit pit and will result in a greater risk of environmental harm.

Assessment of overland flows and water occurring within these pits found water flow erosion has cut gullies alongside the sides of all ramps and along some haul roads where gullies are most evident on these sections at the eastern and western side of the East-West pit and Phoenix pit. Water ponding of groundwater has been observed in similar areas of both pits. Due to reasons of inability to reduce inherent risk of rockfall, water flow erosion, and water ponding, and in accordance with the EA, it is deemed acceptable that the East-West pit and Phoenix pit remain as residual voids to be used as stock dam water storage by the Landholder.

The presence of the East-West and Phoenix pits voids will not be promoted and their accessibility by the public and/or unauthorised persons will be limited by the following – a minimum of one (1) physical barrier will be placed beyond potential failure zones behind the crest of each wall and will fully encircle pits per Geotechnical Report:

Abandonment bunds

Bunds will be used rather than fences wherever it is safe and practical and will remain in place for the long-term (>100 years) requiring negligible maintenance. Bunds will be constructed to the following specifications:

- material sourced from unweathered, durable limestones excavated from adjacent waste rock dumps using a top-down method;
- where feasible, rocks will be screened of fine fraction (<5mm) to promote free-draining bunds;
- minimum bund height of 2m with base width of 5-6m; and
- gaps 0.5m wide left at the toes of bund at contour lows where water has obviously been flowing.

An abandonment bund will fully encircle the East-West pit and will be accessible via a gate within the bund to enable access to the road leading to the central ramp. A bund will be placed along the south wall of the East-West pit and along the crest of the north wall of the dump and proceed up the east and west slopes of the dump. This new bund will replace the existing 0.5m bund.

An abandonment bund will fully encircle the Phoenix pit and will be accessible via a gate within the bund to enable access to the road leading to the main ramp. A 316m long and 3-5m high bund has been installed behind the crest of the eastern wall of the Phoenix pit. This is acceptable for an abandonment bund in its current state (**Appendix 4**).

Fences

Fences will be installed where required and where the placement of abandonment bunds is not suitable. Fences will be installed to the following specifications:

- type B style fencing used – 7 plain-strand, high tensile, 2.5mm diameter wires (barbed wires not used);
- upper wire of the fence will be a minimum of 1.15m above ground level to discourage persons from stepping over;
- posts will be spaced no greater than 5.4m apart;
- intermediate start droppers will be spaced no greater than 1.8m apart;
- gates will be placed to allow vehicle access; and
- signage placed along each run of each fence and to gates.

Fences are expected to remain functional for 10 to 15 years and will require routine inspection to ensure integrity is maintained.

Signs

Appropriate signage will be placed at bunds, fences and gates warning of “danger deep void” or similar. Installed signs will require the following:

- incorporate a drawing of the hazard in addition to words to ensure clear interpretation of the sign;
- comprise of aluminium sheets a minimum of 30cm x 30cm in size;
- letters at least 3.5m high and graphics enamelled;
- be placed at a maximum of 20m spacings;
- secured to sturdy posts via galvanised fasteners;
- placement of signs to be visible by persons approaching from any direction and placed wherever an access route and/or track meets a fence; and
- use of secure galvanised fasteners to attach signs to posts, gates and/or fences.

Pit access

Access to the East-West and Phoenix pit voids will be restricted via physical barriers (bunds, fences, gates). All ramps into the pit that are not required by the landholder will be deep ripped. Where pit access is necessary

and multiple ramps into the pit exist, only one (1) ramp will be retained. Other ramps and access routes into the pit will be deep ripped prior to the installation of physical barriers behind the pit crest. Where ramps are to be retained for pit access these will be the least hazardous of available ramps based on the:

- widths of ramps (wider preferable);
- competency of rock underlying benches (surface cracks not present and bench not blast-damaged); and
- conditions and performances of adjacent slopes are evidenced by low numbers and small sizes of rocks on the ramps.

The main ramp along the east pit wall in the Phoenix pit will be used as the main pit access ramp. The central ramp on the north wall or the western ramp on the west wall of the East-West pit will be used as the main pit access ramp.

Gates to pit access ramps will be appropriately signed to warn of “danger rockfall hazard” and “danger deep void” or similar per the sign requirements described above.

Pit floor

Safe access to pit floors will be achieved by the following:

- deep ripping areas around the pit floor that are accessible but are not required;
- placement of toe bunds (rock traps) on the floor out from each wall; and
 - to limit traverses of rocks rolling off walls
 - to reduce the likelihood of rocks entering accessible areas
 - prevent vehicle and persons access from accessing potentially more hazardous areas
- toe bunds constructed to the following;
 - a minimum 1.8m height
 - material sourced from rocks with the same characteristics as those used in abandonment bunds
 - constructed to the same procedure as abandonment bunds.

Pit accessibility restrictions are further detailed in the Geotechnical Report (see report sections ‘7.2 Accessibility to East-West and Phoenix Pits’ and ‘7.4 Access into Pits’) (**Appendix 4**).

6.6.3.4 Long-term management requirements

The Geotechnical Report identifies there will be non-mitigable residual risks for the long-term due to the presence of the pits and waste dumps. Upon surrender of the mining tenements, the landholder must manage these risks over the long-term to ensure they remain acceptable.

Ongoing long-term maintenance will include, but may not be limited to:

- Routine inspections at yearly intervals, or whenever the landholder is nearby and/or onsite, to check for damage and identify other conditions that require maintenance or repair;
- Installation of additional safety measures such as lining gullies with geotextile fabric and check dams; and
- Engagement of mining rock mechanics specialist, or other appropriately qualified persons, whenever an event occurs implying risks to persons.

The landholder will be informed of long-term and ongoing maintenance requirements and acknowledgement of understanding will be obtained prior to the surrender of mining tenements. A more detailed list of ongoing long-term maintenance is described in the Geotechnical Report (see report section ‘9 Inspections and Maintenance’; **Appendix 4**).

6.6.4 Void hydrology

6.6.4.1 Surface water

The Aspal pit areas are located on a natural ridgeline which drains to the northeast via Lucky Valley Gully towards the Condamine Creek, approximately 3km to the northeast. As this pit will be backfilled, there will be no relationship between the hydrology of the environment and the pit (i.e. no water will be stored).

The East-West pit area is located on the western side of a local topographic high; rainfall run-off drains westward via Lord John Creek towards Oak Creek, and north into the Condamine River approximately 9.7km to the north of the mine area. The Phoenix pit area is located on the eastern side of the Keogh Road which is a local topographic high and drainage divide between the East-West and the Phoenix pit areas drainage lines control the run-off in a north-easterly direction via 'Frenchman's Gully' towards Lucky Valley Gully before draining to the Condamine River.

6.6.4.2 Groundwater

The Project area is within the Balonne-Condamine Groundwater Management Area (QLD Globe Mapping). Local groundwater levels are approximately 20m to 25m depth below ground level as observed from dill logs and minor seepage in pits. Groundwater flow is very slow as observed from minor pit seepage. Rainfall run-off and slow percolation and subsurface drainage are the main sources of water to these pits.

A groundwater bore located near the East-West pit (ML50083) (Bore Licence WL86305T) is currently inactive and has been for several years. On site personnel estimate yields are less than 1L/sec (Litre per second). Groundwater levels in the area are below 15m below the surface. Historical data suggests groundwater salinity is in the range of 750µS/cm to 2240µS/cm (electrical conductivity) (ERM 2008). Minor groundwater seepage is observed in the Phoenix pit at approximately 20m below ground level.

Typically, aquifer transmissivity is low in limestone; that is, the impacts on other groundwater users in the area is considered negligible as a result. This is also influenced by the proximity of users to potential mine influence. The nearest bore (Bore Number 86326) in the area sits approximately 2km to the east in weathered granite recorded yields of <0.5L/sec. groundwater quality is described as potable water from a drill depth of 22m, with pH8.4 and salinity 2191µS/cm.

Proposed reshaping and/or bunding of the crest of residual voids will prevent any surrounding or nearby catchment areas from reporting to the final voids as water storage.

6.6.4.3 Surrounding water use

The Project area is surrounded by farmland predominantly used for cattle grazing; hence the primary water users are farmers for stock (cattle) drinking water. Further down the catchment, the Condamine River supplies water used for irrigation, raw drinking water supply, and recreational activities and other activities of environmental value (**Appendix 5**).

6.6.4.4 Water balance

Figure 23 illustrates a conceptual model of a water balance on a void.

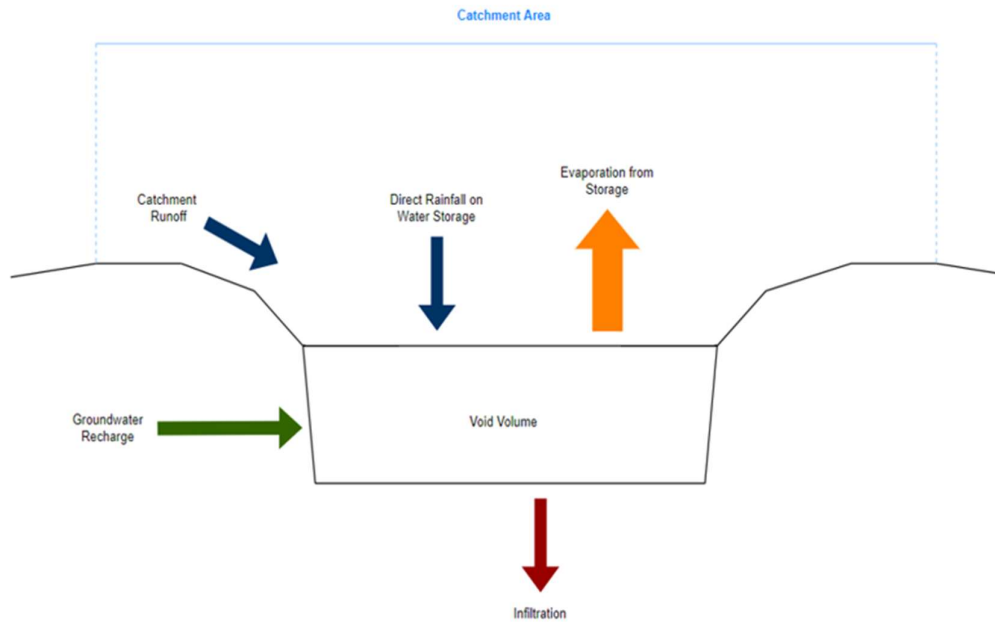


Figure 23: Conceptual water balance model of a void

This model forms the basis for a simple assessment of water balance on residual voids at the site. Water balance assessments consider void catchment inflow versus outflow parameters including daily rainfall, catchment runoff, groundwater recharge, and potential evapotranspiration and infiltration, respectively.

The site water assessment is limited to the available data from site. An assessment of total rainfall and evapotranspiration over a 100-year period indicates a strongly negative water balance indicating there is no risk of overtopping of water storage voids. This is illustrated in the figures below which shows starting with a hypothetical empty void, the water level within voids never reaches the maximum storage capacity of the structures. Similarly, this is the case in a hypothetical full void (i.e. water storage is at capacity). Due to the high evaporation rates, the water is not in a situation to overtop. The figures below illustrate the results of assessment based on two scenarios: starting with an empty pit volume and an at capacity scenario.

It is noted that the pattern in change in storage between pits is the same. This is attributed to the use of the SILO climate data, which is not specific to each pit, but rather for a point area (latitude -28.40 and longitude 152.10). A strongly negative water balance is shown due to low daily rainfall and potential evapotranspiration (based on 100-years of SILO data). There is no risk of residual voids overflowing however, there is a risk for drying out.

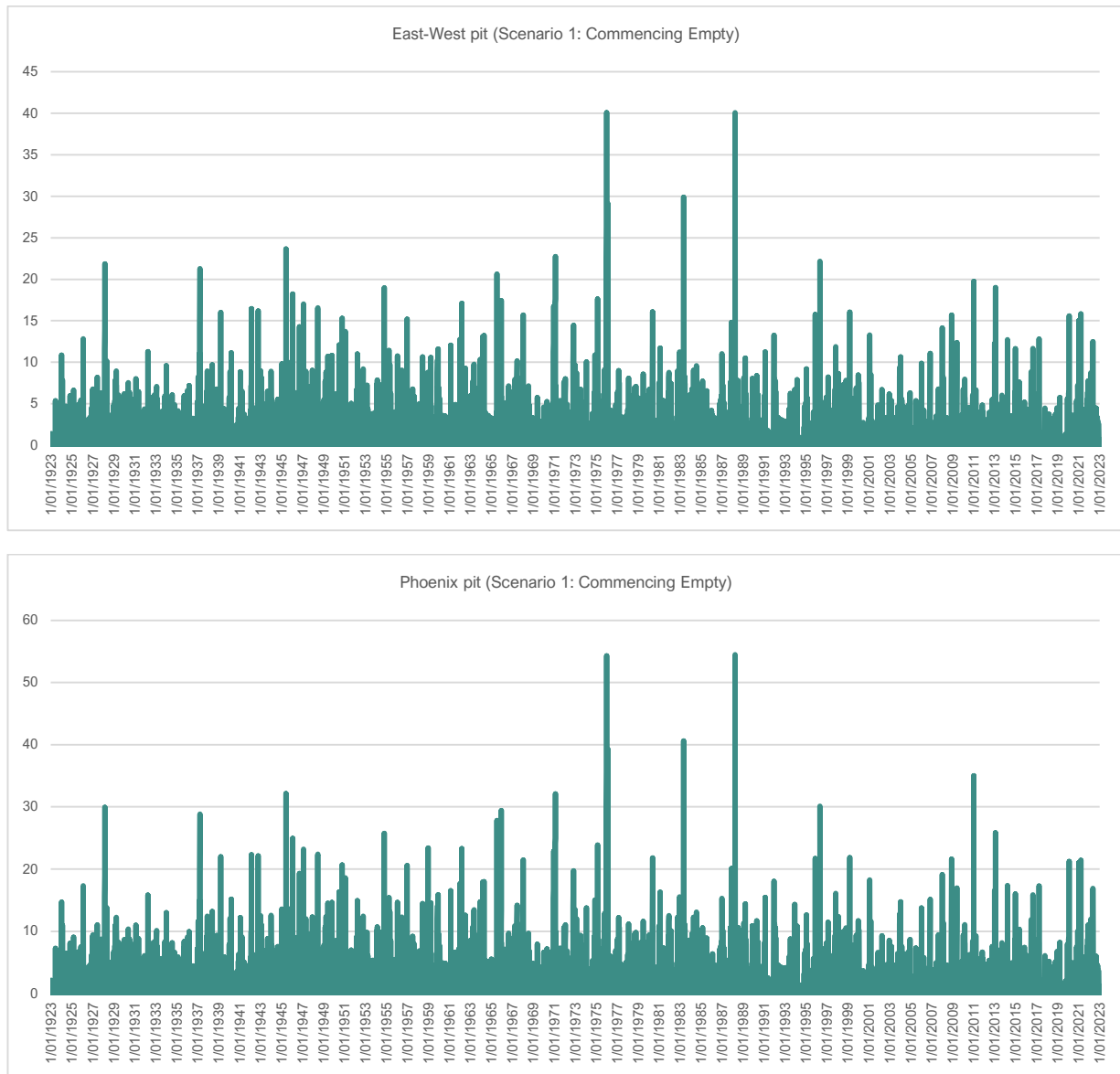


Figure 24: Residual voids water storage assessment scenario 1 (empty): East-West (top), Phoenix (bottom)

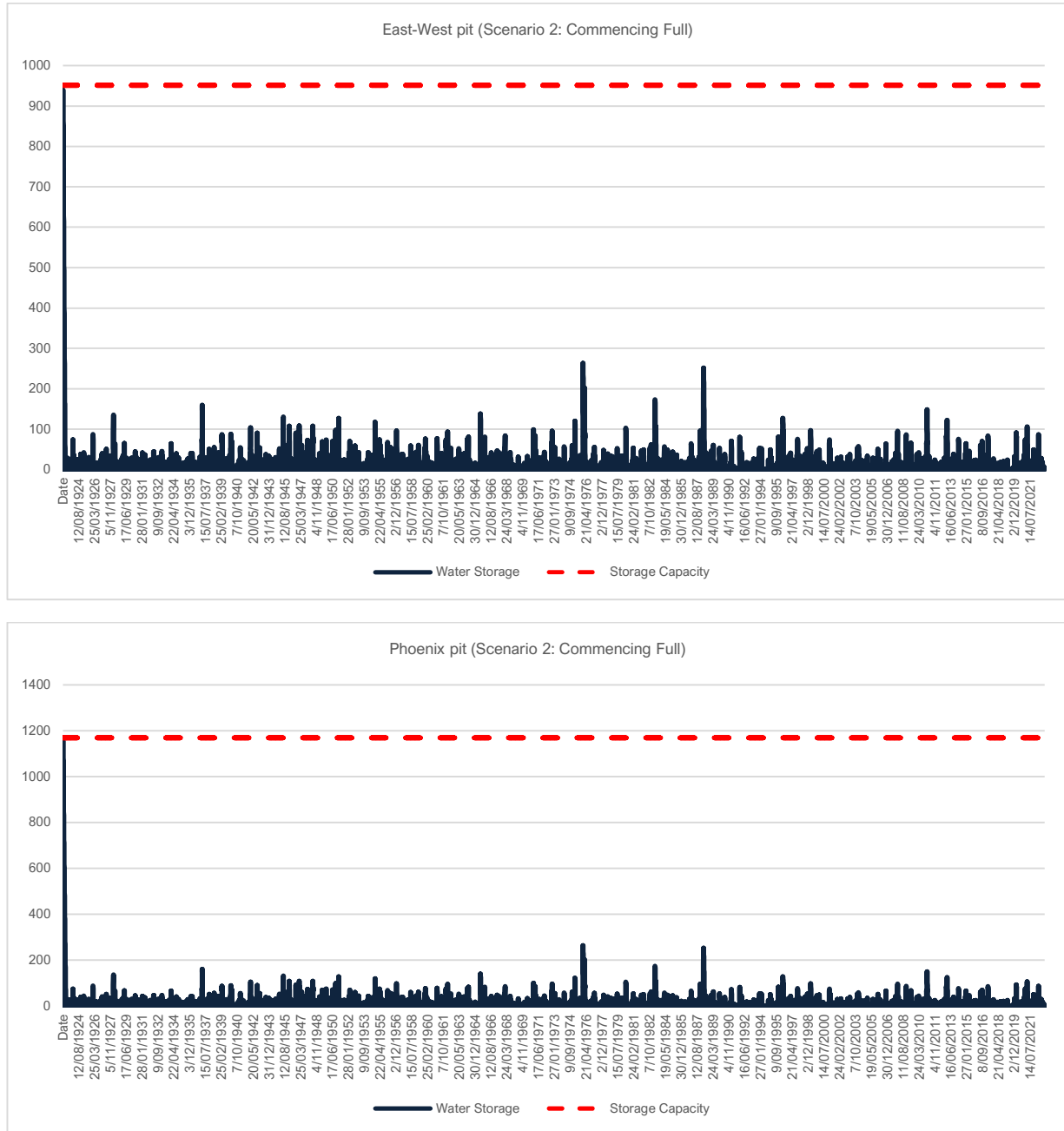


Figure 25: Residual voids water storage assessment scenario 2 (full): East-West (top), Phoenix (bottom)

6.6.4.5 *Water quality*

For the duration of the mine life, Warwick Limestone must comply with the conditions of Schedule C in the EA for water. The site implements and operates under the Unimin Warwick Limestone Deposit Site Water Management Plan (September 2008) to ensure compliance with these conditions.

There is a strongly negative water balance on site due to low rainfall and high potential evapotranspiration, based on 100-years of data. There is potential for evaporation of water from void catchments to slowly increase salt concentrations however, increased salinity is not considered a risk to groundwater as there is no interaction between possible groundwater and residual voids.

Due to the lack of available historical data from site, the rehabilitation of residual voids, up to their surrender, will be monitored during dry periods to ensure practicable measures are implemented to protect wall integrity³². These measures will be planned when required.

6.6.5 *Design plan*

Figure 26 and **Figure 27** illustrate the final void designs and catchment areas.

³² Agriculture Victoria. (2020, July 1). Maintaining your farm dam. <https://agriculture.vic.gov.au/farm-management/water/managing-dams/maintaining-your-farm-dam>

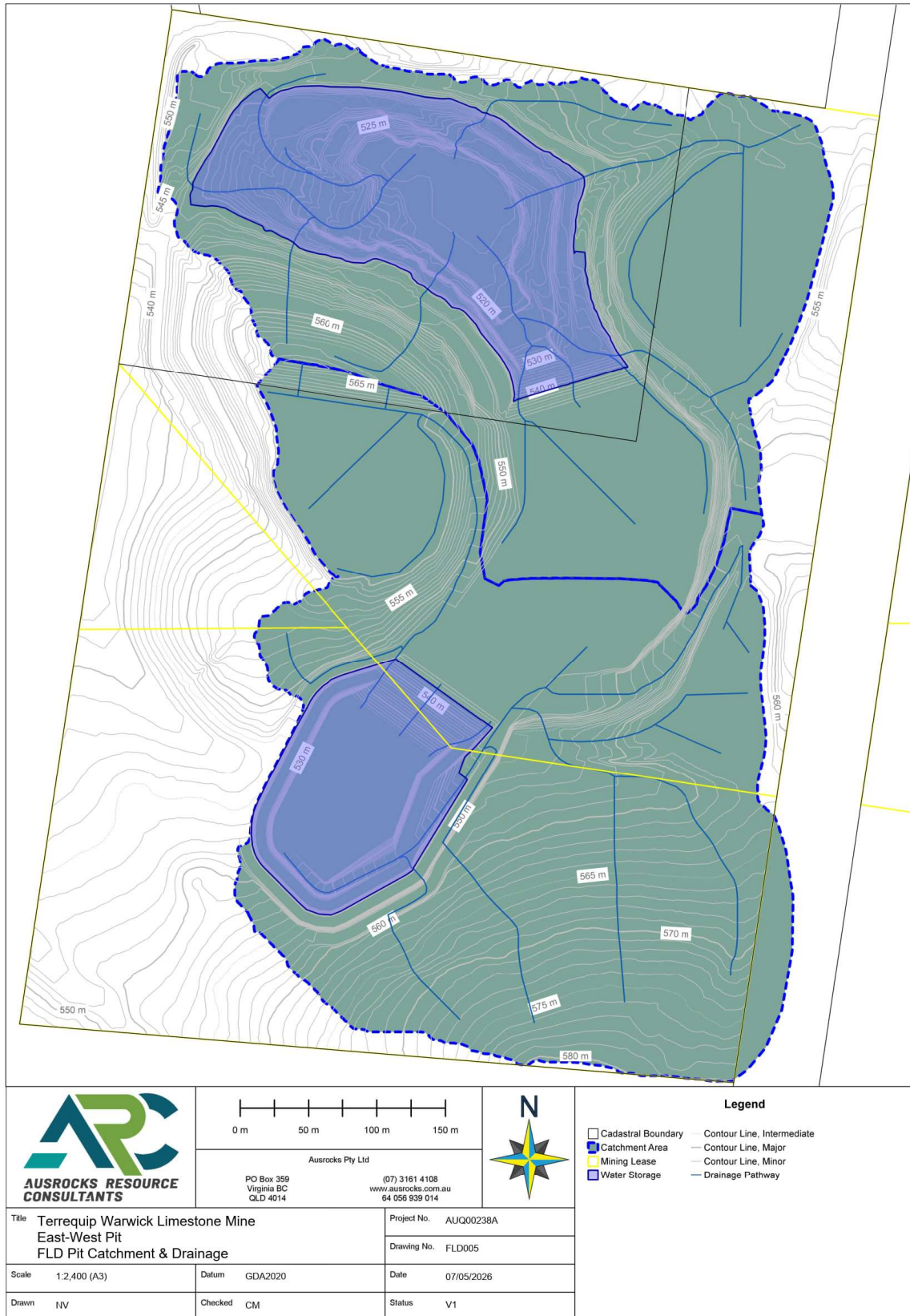


Figure 26: East-West Pit Final Void Design

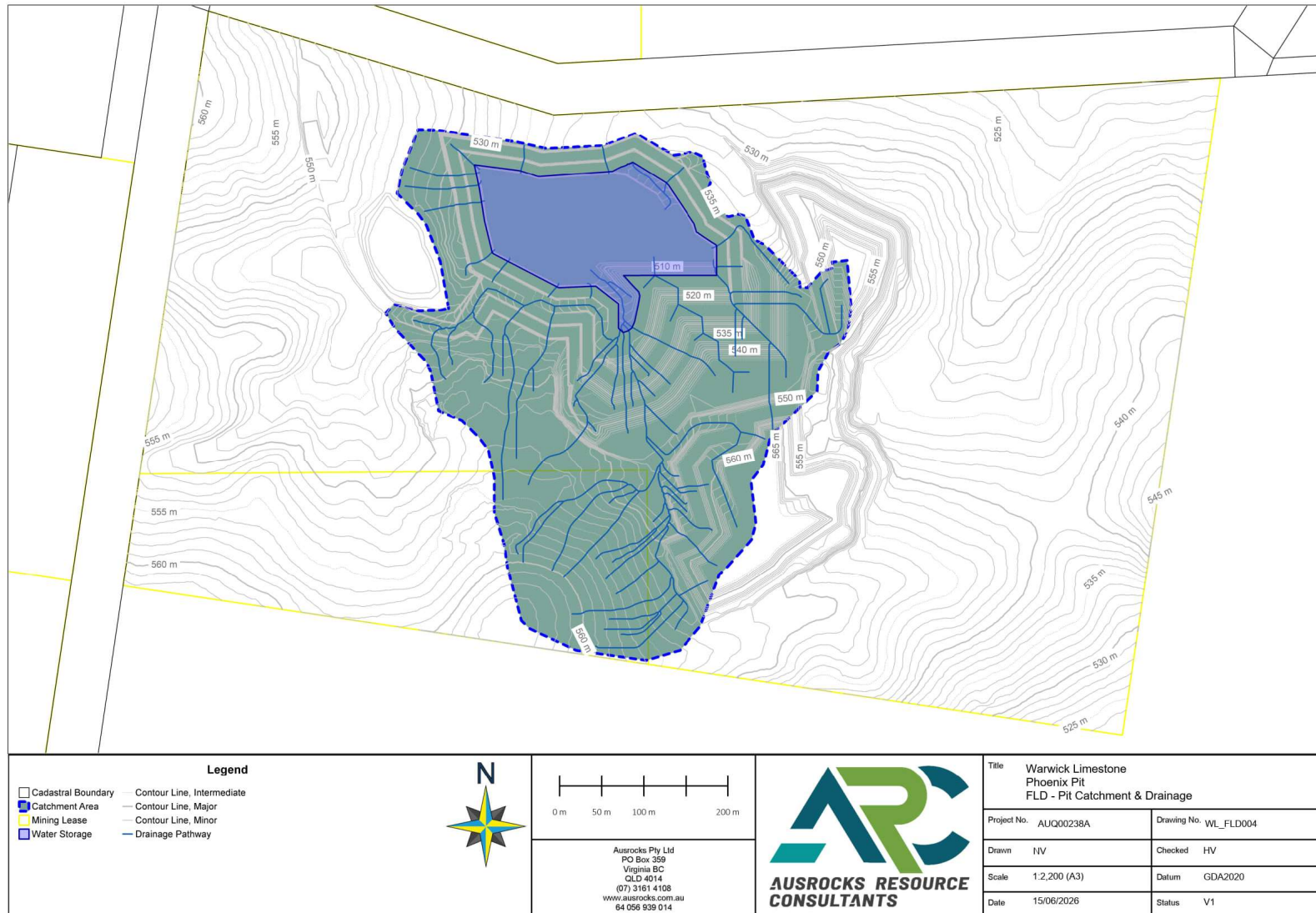


Figure 27: Phoenix Pit Final Void Design

6.6.6 Rehabilitation and management strategies

The rehabilitation strategy for voids remaining as water storage is to ensure water quality suitable for potential use as stock water. Additionally steep slopes around voids have been nominated as a NUMA to ensure acceptance criteria can be met. Including fencing to ensure access is restricted to all slopes and an assessment to ensure the slope remains geotechnically stable.

6.7 Underground mining

PRCP Guideline (section 3.6.4)

For underground mining operations, the rehabilitation planning part must include:

- a geotechnical study
- an assessment of groundwater interactions and potential lower of groundwater levels
- the development of a hydrogeological conceptual model
- subsidence analysis and modelling and a subsidence vegetation/habitat impact assessment
- consideration of how potential entries to underground workies will be sealed (i.e. through some form of capping or back filling)
- how surface ponding and cracking will be mitigated
- identification of post-closure stabilisation of underground workings in order to manage the potential for unplanned surface subsidence and unplanned ground collapse such as sinkholes and pot holing.

Underground mining is not applicable to Warwick Limestone.

6.8 Built infrastructure

PRCP Guideline (section 3.6.5)

The administering authority's expectation of rehabilitation relating to built infrastructure is that it will be decommissioned, demolished, salvaged and/or disposed of unless it is being formally retained by the landholder to achieve an appropriate PMLU.

The rehabilitation planning part must include:

- identification of infrastructure that will be decommissioned and the methods for decommissioning
- a description of infrastructure that will remain post rehabilitation and the identification of ongoing maintenance requirements
- evidence of agreement for any infrastructure that will have ownership transferred.

6.8.1 Decommissioning, demolition and removal

In accordance with the EA Schedule F – Land, all infrastructure not required by the land holder will be removed. Current infrastructure within the Warwick Limestone site is summarised below.

Table 34: Infrastructure associated with approved activities at Warwick Limestone

Infrastructure	Description
Built infrastructure	• Office buildings – administration buildings, sheds, crib hut, parking • Workshop and plant • Associated infrastructure – power, water, communication services
Water storage	• Sediment dams and stormwater controls • Catchment dams
Roads and tracks	• Unsealed dirt roads and tracks connecting mine areas

6.8.1.1 Landholder agreement conditions

Per the landholder agreement, the following conditions must be met for listed infrastructure to be accepted upon surrender:

- repair, reinstate, rehabilitate or make good in respect of any damage done to landholder's fences, gates, buildings, dams, stock, pastures or crops arising from access to or exploration or mining activities on the ML land or gaining access to ML land; and
- on the completion of the mining operations, leave intact any water storage dams on the ML land.

6.8.1.2 Built infrastructure

Except where agreed in writing, decommissioning of built infrastructure will include:

- disconnecting all services;
- demolition and removal of all built and service infrastructure including buildings, pipes, pumps, power lines, etc.;
- removal of all concrete bitumen and aggregate from buildings, roads, carparks, laydown areas, footpaths, etc.; and
- removal of all waste products and rubbish.

6.8.1.3 *Water storage*

Per the EA Schedule F – Land, sediment dams will remain as stock dams. This is in accordance with landholder agreement conditions. Additionally, both the East-West and Phoenix pits will remain as water storages with limited access.

6.8.1.4 *Roads and tracks*

In accordance with EA Schedule F – Land, roads and tracks will remain as farm access tracks or use by the landholder. Additionally, access roads to the Water storage PMLUs will be formed for use by the landholder. Where required, minor rehabilitation repair may be carried out to ensure roads and tracks are in a safe and stable condition suited to their continued use.

6.8.2 **Contaminated land assessment**

In accordance with EA Schedule E – Waste, the handling and disposal of all waste produced on site is to be conducted using methods to avoid contamination of land and surface and groundwater. Contamination at Warwick Limestone is unlikely, however, in the event a contamination is suspected, a contaminated land assessment will be completed on all infrastructure areas listed in **Table 34**, as well as locations adjacent to operational areas, where required. The purpose of such an assessment will be to confirm that no contamination unsuitable for the post-mining land use is occurring.

6.9 **Summary of key rehabilitation and management practices**

Key rehabilitation activities for each relevant activity at Warwick Limestone are summarised in **Table 35**. The rehabilitation activities are aimed to drive achievement of the Warwick Limestone rehabilitation milestones and inform the associated PRCP schedule. **Table 36** summarises the key rehabilitation activities for each relevant activity in regards to the achievement of the Warwick Limestone management milestones.

Table 35: Key rehabilitation activities identified to drive achievement of rehabilitation milestones, per relevant activity

Rehabilitation area	Relevant activities	Area (ha)	Rehabilitation activities (to drive achievement of rehabilitation milestones)	Rehabilitation timing	Rehabilitation milestones
RA1	Infrastructure (grazing)	2.4	- Decommissioning of all infrastructure; - Removal of all bitumen from buildings, roads, carpark, laydown areas, footpaths, etc.; - Where required and/or suspected, conduct contaminated land assessment; - Removal of all waste and rubbish; - Reshape the landform to be free-draining and blended with surrounding topography; - Spread topsoil an average thickness of 150mm; - Assess soil characteristics to determine ameliorant and fertiliser requirements; - Apply ameliorants and fertilisers (where required); - Rip across contour; - Seed; and - Undertake monitoring and maintenance to demonstrate achievement of grazing PMLU.	- Available for rehabilitation after active mining is completed; and - Seeding to be completed by 2051.	RM1 RM2 RM3 RM4 RM5 RM8 RM11
RA2	Topsoil stockpiles (grazing)	5.7	- Load and transport topsoil where required; - Leave remaining volume for topsoil stockpile areas; - Reshape the landform to be free-draining and blended with surrounding topography; - Spread topsoil an average thickness of 150mm; - Assess soil characteristics to determine ameliorant and fertiliser requirements; - Apply ameliorants and fertilisers (where required); - Rip across contour; - Seed; and - Undertake monitoring and maintenance to demonstrate achievement of grazing PMLU.	- Areas available for rehabilitation progressively as topsoil is used on other disturbance areas; - Majority of topsoil should be loaded, transported and spread by 2046; and - Seeding to be completed by 2051.	RM2 RM3 RM4 RM5 RM8 RM11
RA3	ROM, laydown areas and product stockpiles (grazing)	7.6	- Reshape the landform to be free-draining and blended with surrounding topography; - Install erosion and sediment controls (where required); - Monitor backfill material for settlement and repair if low dips arise that will impact achievement of a stable condition; - Spread topsoil an average thickness of 150mm; - Assess soil characteristics to determine ameliorant and fertiliser requirements;	- Most areas are required for the duration of active mining; and - Seeding to be completed by 2052.	RM1 RM2 RM3 RM4 RM5 RM8 RM11

Rehabilitation area	Relevant activities	Area (ha)	Rehabilitation activities (to drive achievement of rehabilitation milestones)	Rehabilitation timing	Rehabilitation milestones
			• Apply ameliorants and fertilisers (where required); • Rip across contour; • Seed; and • Undertake monitoring and maintenance to demonstrate achievement of grazing PMLU.		
RA4	Waste and overburden dumps (grassland)	13.2	• Undertake assessment for contaminated land and remediate (if required / suspected); • Spread remaining overburden over the overburden stockpile (overburden remaining after backfill in pits); • Reshape the landform to be free-draining and blended with surrounding topography; • Install erosion and sediment controls (where required); • Spread topsoil an average thickness of 150mm; • Assess soil characteristics to determine ameliorant and fertiliser requirements; • Apply ameliorants and fertilisers (where required); • Rip across contour; • Seed; and • Undertake monitoring and maintenance to demonstrate achievement of grassland PMLU.	• Most areas are required for the duration of active mining in each pit area; and • Seeding to be completed by 2056.	RM2 RM3 RM5 RM10 RM11
RA5	Roads (to remain)	7.1	• Where required reshape and/or regrade sections of the main road; • Construct new roads into pit for water storage access; and • Monitor and assess geotechnical stability for continued use post-mining.	• Required to remain post-mining per landholder agreement; and • Available for relinquishment by 2086.	RM2 RM12 RM13
RA6	Sediment dam and stormwater controls (water storage)	4.7	• Removal of any embankments impeding natural clean water runoff into the sediment dams; • Reshape water storage where required to support a geotechnically stable structure; and • Undertake monitoring and maintenance to demonstrate achievement of water storage PMLU.	• Sediment dams available at Aspinall pit area for rehabilitation by 2026; • Water storage preparation of remaining areas to commence by 2061; and • Suitable for surrender to the landowner by 2086.	RM2 RM6 RM9 RM11 RM12
RA7	Eastern open pit (grassland)	3.3	• Backfill with overburden from overburden stockpiles; • Backfill to RL of 524m; • Spread remaining overburden across backfilled pit voids and overburden stockpile area (where required); • Reshape the landform to be free-draining and blended with surrounding topography; • Install erosion and sediment controls (where required);	• Pit area available to commence rehabilitation by 2052 after active mining has ceased; and • Seeding to be completed by 2060.	RM2 RM3 RM4 RM7 RM10 RM11



Rehabilitation area	Relevant activities	Area (ha)	Rehabilitation activities (to drive achievement of rehabilitation milestones)	Rehabilitation timing	Rehabilitation milestones
			- Monitor backfilled material for settlement and repair if low dips arise that will impact achievement of a stable condition; - Spread topsoil an average thickness of 150mm; - Assess soil characteristics to determine ameliorant and fertiliser requirements; - Apply ameliorants and fertilisers (where required); - Rip across contour; - Seed; and - Undertake monitoring and maintenance to demonstrate achievement of grazing PMLU		
RA8	Main pit voids (East pit, West pit and Phoenix pit) (water storage)	4.9	- Removal of any embankments impeding natural clean water runoff into the sediment dams; - Reshape water storage where required to support a geotechnically stable structure; and - Undertake monitoring and maintenance to demonstrate achievement of water storage PMLU.	- Phoenix pit void rehabilitation likely to commence in 2061 after active mining has ceased; - Remaining pit voids likely to become available in 2066; and - Suitable for surrender to the landowner by 2086.	RM2 RM3 RM4 RM6 RM7 RM9 RM11 RM12
RA9	Main pit voids (Aspinal pit) (grazing)	1.6	- Backfill with overburden from overburden stockpiles; - Backfill to on average 1.5m below pre-mining levels / surrounding topography; - Spread remaining overburden across backfilled pit voids and overburden stockpile area (where required); - Reshape the landform to be free-draining and blended with surrounding topography; - Install erosion and sediment controls (where required); - Monitor backfilled material for settlement and repair if low dips arise that will impact achievement of a stable condition; - Spread topsoil an average thickness of 150mm; - Assess soil characteristics to determine ameliorant and fertiliser requirements; - Apply ameliorants and fertilisers (where required); - Rip across contour; - Seed; and - Undertake monitoring and maintenance to demonstrate achievement of grazing PMLU	- Gradual backfilling is likely to occur throughout the life of the mine; - Rehabilitation likely to commence as active mining has ceased in this area; and - Seeding to be completed by 2046.	RM2 RM3 RM4 RM5 RM7 RM8 RM11 RM12



Rehabilitation area	Relevant activities	Area (ha)	Rehabilitation activities (to drive achievement of rehabilitation milestones)	Rehabilitation timing	Rehabilitation milestones
RA10	Existing rehabilitation (grazing)	3.8	Undertake monitoring and maintenance to demonstrate achievement of grazing PMLU,	- Rehabilitation completed; and - Awaiting certification.	RM2 RM3 RM4 RM5 RM8 RM11
RA11	East West pit ROM and laydown areas (grassland)	2.4	- Reshape the landform to be free-draining and blended with surrounding topography; - Install erosion and sediment controls (where required); - Monitor backfill material for settlement and repair if low dips arise that will impact achievement of a stable condition; - Spread topsoil an average thickness of 150mm; - Assess soil characteristics to determine ameliorant and fertiliser requirements; - Apply ameliorants and fertilisers (where required); - Rip across contour; - Seed; and - Undertake monitoring and maintenance to demonstrate achievement of grassland PMLU.	- Most areas are required for the duration of active mining; and - Seeding to be completed by 2050.	RM2 RM3 RM4 RM5 RM7 RM10 RM11 RM12
RA12	Topsoil (grassland)	0.3	- Load and transport topsoil where required; - Leave remaining volume for topsoil stockpile areas; - Reshape the landform to be free-draining and blended with surrounding topography; - Spread topsoil an average thickness of 150mm; - Assess soil characteristics to determine ameliorant and fertiliser requirements; - Apply ameliorants and fertilisers (where required); - Rip across contour; - Seed; and - Undertake monitoring and maintenance to demonstrate achievement of grassland PMLU.	- Areas available for rehabilitation progressively as topsoil is used on other disturbance areas; - Majority of topsoil should be loaded, transported and spread by 2046; and - Seeding to be completed by 2071.	RM2 RM3 RM4 RM5 RM10 RM11
RA13	East-West overburden dump/ROM pad (grassland)	3.1	- Reshape the landform to be free-draining and blended with surrounding topography; - Install erosion and sediment controls (where required); - Monitor backfill material for settlement and repair if low dips arise that will impact achievement of a stable condition; - Spread topsoil an average thickness of 150mm; - Assess soil characteristics to determine ameliorant and fertiliser requirements;	- Area will be required to assist in rehabilitation; - Seeding to be completed by 2062.	RM2 RM3 RM4 RM5 RM7 RM10 RM11

Rehabilitation area	Relevant activities	Area (ha)	Rehabilitation activities (to drive achievement of rehabilitation milestones)	Rehabilitation timing	Rehabilitation milestones
			• Apply ameliorants and fertilisers (where required); • Rip across contour; • Seed; and • Undertake monitoring and maintenance to demonstrate achievement of grassland PMLU.		

Table 36: Key rehabilitation activities identified to drive achievement of management milestones, per relevant activity

Improvement area	Relevant activities	Area (ha)	Rehabilitation activities (to drive achievement of management milestones)	Rehabilitation timing	Management milestones
IA1	East-West pit void and walls (residual void / water storage)	4.3	• Ensure all high walls are constructed within the appropriate slope angles; and • Access to high walls/pit is restricted with safety bunding and fencing where required.	• Will become available once active mining in the pit is completed; and • Achievement of sufficient improvement to be completed by 2086	MM1 MM2 MM3
IA2	Phoenix pit void and walls (Residual void / water storage)	8.1	• Ensure all high walls are constructed within the appropriate slope angles; and • Access to high walls/pit is restricted with safety bunding and fencing where required.	• Will become available once active mining in the pit is completed; and • Achievement of sufficient improvement to be completed by 2086	MM1 MM2 MM3

6.9.1 Rehabilitation and management strategies

The primary risks impacting successful rehabilitation of these voids to grazing and/or water storage is erosion and associated rockfalls, and risk of movement of any contaminated waters and sediment off site. The Water Management Plan (**Appendix 5**) outlines best practice methods for managing these risks as does the Geotechnical Report (**Appendix 4**).

The following summarises the strategies presented by these reports to reduce erosion and promote long-term rehabilitation of the voids.

6.9.1.1 *Hydroseeding*

The primary risk of the residual voids is risk of rockfall and slope instability. Both these risks are caused by the process and rate of erosion on the land. Reducing the rate of erosion for the long-term requires the establishment of grasses within the soils where root structures will increase structure and reduce the displacement of rock and soil downslope. Additionally, grasses are known to reduce the rate of runoff and allow water to infiltrate soil rather than flow over it (water flow erosion).

The combination of hydroseeding and hydro-mulching is an accepted method of rehabilitation of mine slopes comprising of soils and weathered materials similar to that of the batter of the East-West and Phoenix pits. This method is particularly cost-effective for the larger area of the steep slopes (approx. 3020m² and 30° to 50°), the crest, and the ripped haul road behind the crest. Hydro-mulching the batter with a product suitable for steep slopes is recommended after hydroseeding will protect grass seeds from rain and wind, reduce soil losses, and prevent further erosion. Hydroseeding is likely to remain effective for 6- to 12-months during which time the seeds will have had time to establish. Spraying is also recommended to occur at a time when the likelihood of regular rainfall is higher, and temperatures are mild to encourage the germination of seeds.

6.9.1.2 *Matting*

Gullying is observed in topsoils, karst fills, and in weathered limestones on the eastern batter of the Phoenix Pit adjacent to the main ramp. This erosion is attributed to waterflows from rainfall directly impacting the batter as well as to surface water flowing over the crest of the wall. If these erosive processes will be ongoing in the medium- to long-term and, if they are not addressed, will trigger future instabilities in the pit wall. The pit ramp as a result may be deemed unusable during mine-operations.

A bund at approximately 1m height along the crest of the pit wall should suffice in preventing surface flows down the batter. Additionally, the rate of erosion and occurrence of gullying can be reduced with the installing of quality erosion control matting. However, this can be a costly venture and without seeding, matting can only offer a medium-term solution to erosion.

7 Risk assessment

Legislative Requirement

In accordance with sections 126C(1)(f) of the EP Act, the rehabilitation planning part of the PRC plan must identify the risks of a stable condition for land described as a post-mining land use not being achieved, and how the applicant intends to manage or minimise the risks.

PRCP Guideline (section 3.7)

As per section 126C(1)(j) of the EP Act, the administering authority considers it necessary for the proposed PRC plan to contain a risk assessment of all proposed NUMAs. The risk assessment must be carried out to identify the risks of the NUMA causing environmental harm and not being safe and structurally stable and detail how the applicant intends to manage and minimise the identified risks.

The AS ISO 31000:2018 Risk Management – Guidelines (Standards Australia, 2018) describes risk assessment as the overall process of risk identification, risk analysis, risk evaluation and risk treatment. Each of these aspects must be included in the risk assessment in the rehabilitation planning part.

Applicability to Transitional PRC plans

Information requirements in this section apply to all applicants whether or not they are an existing EA holder. Existing holders may have the required information available from previously submitted plans/reports/applications that, if still valid, can be used in the PRC plan.

7.1 Identifying, assessing and treating risks

7.1.1 Risk assessment framework

Analysis of the likelihood and consequence of the associated hazards of the PMLU option was conducted to determine both the inherent (no risk treatment applied) and residual risks (risk treatment applied). **Figure 28** details the criteria matrix used in the analysis.

7.1.2 Risk treatment

The risk assessment incorporates a comprehensive list of risks based on events that may impact the rehabilitation of the Project area to a stable condition. These have been explored in **Table 37** where the cause and source of identified risks and their potential negative impacts, the likelihood of their occurrence, and level of consequence for occurring (risks are listed in no particular order but are grouped based on a determined category of risk).

Figure 28: Risk assessment criteria matrix

			Consequence				
			Extreme 5	Major 4	Moderate 3	Minor 2	Insignificant 1
			Severe long-term environment impact, fatalities or permanent injury, major prosecution, extreme financial loss	Major environment impact, requires significant remedy, major prosecution, substantial financial loss	Reversible environment impact, regulation breach, , moderate financial loss	Low environment impact, fines for breach, small financial loss	Very low environment impact, no legal breach, negligible financial loss
Likelihood	Almost certain 5	Expected to very likely to occur in most circumstances	Extreme 25	Extreme 20	Extreme 15	High 10	Moderate 5
	Likely 4	Likely to occur in most circumstance	Extreme 20	Extreme 16	High 12	Moderate 8	Low 4
	Possible 3	Likely to occur more than once during a lifetime	Extreme 15	High 12	Moderate 9	Moderate 6	Low 3
	Unlikely 2	Likely to occur once during a lifetime	High 10	Moderate 8	Moderate 6	Low 4	Low 2
	Rare 1	Unlikely to very unlikely to occur in a lifetime	Moderate 5	Low 4	Low 3	Low 2	Very Low 1

Table 37: Rehabilitation risk assessment for Warwick Limestone

Risk	Hazards	Potential Impacts	Inherent Risk	Mitigation Measure / Risk Treatment (Proposed Actions)	Justification for Risk Treatment	Responsibility	Resource Requirements	Performance Measures	Reporting and Monitoring Requirements	Residual Risk	Applicable Rehabilitation Milestone
General	Insufficient skills and experience and/or insufficient management of rehabilitation personnel	- Poor rehabilitation outcomes - Rehabilitation does not meet standards or requirements of the EA and/or landholder - Rehabilitated areas degrade quickly - Increased cost to rehabilitation works - Delayed PRCP progression	Low 4	- Due diligence checks to ensure consultants, personnel, and/or contractors are suitable qualified to carry out rehabilitation works and planning - Regular meetings with required members to ensure PRCP and rehabilitation progression is occurring as planned	Allow for early identification of skill deficiencies and experience required to complete works and reduce deviations from the PRCP schedule	All personnel	Adequate time allocated for meetings	- Regular reviews and meetings - Active communication throughout PRCP schedule and rehabilitation works	Prior to engagement of consultants, personnel, and/or contractors	Low 2	RM1 – RM10
	Lack of clearly defined responsibilities	- Breakdown of communication - Delayed PRCP progression - Delayed rehabilitation works - Rehabilitation works not actioned to plan - Potential increased cost to PRCP	Low 4	Regular meetings with required members to ensure PRCP and rehabilitation progression is occurring as planned	Allow for early identification of gaps in understanding and/or unfilled roles to complete works and reduce deviations from the PRCP schedule	All personnel	Adequate time allocated for meetings	- Regular meetings and review - Active communication throughout PRCP schedule and rehabilitation works	Throughout PRCP schedule	Very Low 1	RM1 – RM10
	Insufficient funding for or prioritisation of rehabilitation activities	- Delayed PRCP progression - Delayed rehabilitation works - Potential to reject surrender of Project area if rehabilitation does not standards or requirements of the EA and/or landholder	High 12	- Regular meetings with relevant personnel and teams - Financial planning and forecasting with relevant financial team - Stage rehabilitation works instead of leaving until mine closure.	- Allow for best use of Project budget - Allow for suitable allocation and distribution of funds across Project requirements to ensure success and completion of PRCP Schedule - Staging allows costs to be spread and lowers risk of wholesale rehabilitation failure	Project team; Financial teams; and Site management	Adequate budget for rehabilitation works	Regular meetings and financial reviews with relevant personnel and teams	Prior to and throughout PRCP schedule	Moderate 6	RM1 – RM10
	Improper maintenance and/or storage of biological resources and/or soil stockpiles for rehabilitation	- Improper practice can result in WH&S incidents - Biological resources are unusable or of a poor quality - Introduction of weed species resulting in heavy seed burdens - Delayed rehabilitation works - Inappropriate soil mixing techniques	High 12	- Adopt and implement best practice methods for maintaining and storing, limit erosion, and deter weeds - Topsoil stripped and stockpiled separately to subsoil stockpiles with appropriate labelling/signage	- Follow industry standard practice for optimal utilisation of biological resources for rehabilitation phase - Maintaining accurate soil inventory facilitates rehabilitation planning and works	Environment team; Site management; Contractors (rehabilitation)	- Stockpile management procedure - Personnel and/or contractors required for stockpile management, maintenance, and application for rehabilitation	- Rehabilitation monitoring - Inspections by suitably qualified person(s)	- Rehabilitation monitoring and reporting - Inspections and reporting	Moderate 6	RM3; RM6; RM8
	Clearing in adverse seasonal and weather conditions when salvaging biological resources	- Impacts rehabilitation outcomes further down the track - Reduced viability of biological resources for rehabilitation - Increased cost to obtain additional resources	Extreme 15	Confer weather data and predictions to ensure planned clearing does not occur during severe dry or severe wet weather	Clearing during adverse weather conditions can impact rehabilitation success, soil integrity, erosion, etc.	Project team; Site management and personnel; Contractors	- PRCP Schedule - Climate data	Weather monitoring	Rehabilitation monitoring and reporting	Moderate 5	RM6; RM8
Climate Change	Increased severity in weather patterns – extreme and/or prolonged wet and dry seasons, more devastating impacts from natural disaster events, etc.	- Increased cost to meet environmental standards and PRCP requirements - Damage from winds resulting in unsuccessful revegetation - Changes in rainfall patterns - Rehabilitation failure due to severe weather events and patterns	Moderate 5	- Regular monitoring rehabilitated areas to ensure original objectives of the PRCP are achieved - Reasonable adjustments as deemed relevant to adapt to changed weather patterns and/or severe weather events	- Severe weather events are highly variable and infrequent in the area - Due diligence and appropriate action will be determined based on early warning and during the weather event on how to best manage WH&S and protect rehabilitation areas	All personnel; Environment team	- PRCP Schedule - Climate data	Rehabilitation monitoring	Rehabilitation monitoring and reporting	Low 4	RM1 – RM10



Risk	Hazards	Potential Impacts	Inherent Risk	Mitigation Measure / Risk Treatment (Proposed Actions)	Justification for Risk Treatment	Responsibility	Resource Requirements	Performance Measures	Reporting and Monitoring Requirements	Residual Risk	Applicable Rehabilitation Milestone
Climate Change	Increased risk of bushfires and extreme bushfires	- Increased cost to meet environmental standards and PRCP requirements - Fire danger and associated risks to staff and land increased - Potential increased liability	High 12	- Implement and maintain fire breaks around Project area - Continuous monitoring of rehabilitation areas and areas prone to fire risks or near mapped bushfire areas - No siting of infrastructure in high hazard bushfire areas.	- Monitoring of rehabilitation areas and areas prone to fire risk to ensure indication or triggers of fire risks are monitored - Monitoring of rehabilitation areas and areas prone to fire risk to ensure fire breaks are in suitable condition	All personnel	Personnel and equipment required to establish and maintain fire breaks	Rehabilitation monitoring	Rehabilitation monitoring and reporting	Low 4	RM1 – RM10
	Success of long-term vegetation is impacted	- Increased cost to meet environmental standards and PRCP requirements - Degraded environment and poor execution of PMLU option - Increased erosion due to poor vegetation and root structures - Allows for compaction and reduced land stability	Extreme 15	- Ensure revegetation and planting is conducted during a period with expected rainfall sufficient to promote establishment of plants - Sufficient manual watering and monitoring of rehabilitation areas if planting occurs during a drought or severe dry period - Make use of hay or other means to assist in retaining moisture and protecting bare ground from evaporation - Follow progressive rehabilitation schedule of PRC Plan	- Planned planting for a period of expected rainfall allows for natural establishment of vegetation - Monitoring of rehabilitation areas to ensure plants are sufficiently watered and conditions are suitable for fostering growth - Progressive rehabilitation allows for better management of rehabilitation areas to ensure successful long-term outcomes	Environment team; Site personnel; Contractors	- PRCP Schedule - Climate Data - Aerial surveying	Rehabilitation monitoring	Rehabilitation monitoring and reporting	Moderate 6	RM4; RM6+; RM8
	Increased and/or prolonged heavy rainfall events	- Increased cost to meet environmental standards and PRCP requirements - Increased erosion (splash erosion and rain drop impact) - Increased potential for flooding - Potential for overflow of onsite water storage facilities (OSWF) - Collection of water in residual voids and/or pits	High 12	- Regular monitoring or rehabilitated areas to ensure early detection of poor performance - During periods of inadequate rainfall, manual watering can be conducted at regular intervals (e.g. November to February) - Provision of sufficient water to promote establishment - Supplementary seeds and revegetation works may be required if initial rehabilitation is damaged due to inundation of water - Utilise water management via bunds, etc. to direct flow of water - Training provided to relevant site personnel and contractors in accordance with required rehabilitation and management	- Monitoring of rehabilitation areas over the life of the Project will inform on the effectiveness and robustness of rehabilitation strategies - Timing rehabilitation activities so that groundcover is well established prior to wet season reduces rainfall damage.	Environment team; Site personnel; Contractors	- PRCP Schedule - Water Management Plan - Climate data	Rehabilitation monitoring	Performance reporting as part of rehabilitation monitoring and reporting	Low 4	RM1 – RM10
Waste	Improper disposal of waste and/or improper waste management	- Contamination of the receiving and surrounding environment - WH&S risk of waste stockpiling of waste on site - Stockpiling of hazardous material - Disposal of waste rock	High 12	- Regular monitoring of rehabilitation areas for waste and cleaning up where required - Ensure sufficient receptacles for waste available in Project area and waste management plan	- Provision of waste receptacles and waste management plan will promote proper disposal of materials - Regular monitoring of rehabilitation areas over the life of the Project will ensure it is not polluted with improper waste disposal	All personnel	PRCP Schedule	Rehabilitation monitoring	Rehabilitation monitoring and reporting	Low 2	RM1; RM4; RM6; RM8



Risk	Hazards	Potential Impacts	Inherent Risk	Mitigation Measure / Risk Treatment (Proposed Actions)	Justification for Risk Treatment	Responsibility	Resource Requirements	Performance Measures	Reporting and Monitoring Requirements	Residual Risk	Applicable Rehabilitation Milestone
Land Stability & Erosion	PMLU land is degraded and/or is of poorer quality than pre-mining condition	- Unable to achieve PMLU option - Unable to achieve EA final landform requirements - Poor land function - Low pasture diversity and productivity - Increased risk of erosion and/or faster rates of erosion - Revegetation success impacted - Unable to blend PMLU with surrounding and existing landform - Final landform unsuitable for final land use - Extended water ponding	High 12	- Ongoing assessment and monitoring of the stability of landform - Adaptive implementation of PRC Plan and regular monitoring to facilitate early intervention if required - Erosion and sediment control practices to manage soil and landform quality	- Regular monitoring of rehabilitation areas will provide early indicators of failure and allow for adaptive measures - Compliance with requirements of the EA	Contractors (rehabilitation)	- PRCP Schedule - Geotechnical Report - Rehabilitation strategies recommended in the Soil Survey Report	Rehabilitation monitoring	Rehabilitation monitoring and reporting	Low 4	RM2; RM7; RM8; RM10
	Ground compaction	- Results in unplanned residual voids - Impacts success of long-term vegetation - Good quality soil is eroded - Soil integrity and quality is degraded - Extended water ponding	Moderate 6	- Use of reclaimed stockpiled materials to backfill voids - Sufficient time allowed for settlement prior to topsoiling. - Management of temporary stockpiles - Follow soil testing procedure and monitoring metrics	- Regular monitoring of rehabilitation areas to assess quality of soil and provide early indication of significant changes to natural rates of erosion - Proper techniques for storing and maintaining stockpiles of topsoil and subsoil	Environment team; Site personnel; Contractors (rehabilitation)	- Environmental Management Plan - Rehabilitation strategies recommended in the Soil Survey Report	Rehabilitation monitoring	Rehabilitation monitoring and reporting	Low 4	RM2; RM7; RM8
	Subsoil and topsoil deficit for rehabilitation activities	- Physical and structural properties substrate - Substrate inadequate to support revegetation or agricultural land capability	High 12	Implement proper storage of stockpile topsoil, subsoil, and other materials deemed relevant for rehabilitation	Regular monitoring and auditing of stockpile materials to ensure suitability for use in rehabilitation when required	Environment team; Contractors (rehabilitation)	Management and rehabilitation strategies recommended in the Soil Survey Report	Rehabilitation monitoring	- Stockpile monitoring and reporting - Adequate auditing of stockpile quality	Moderate 5	RM2; RM8; RM8
	Residual voids unstable	- Increased risk of rock falls - Wall integrity of residual voids used for water storage impacted - Unable to meet EA conditions - Unable to have rehabilitated areas signed off for completion - Delayed PRCP Schedule - Increased cost to rehabilitation	High 12	- Geotechnical assessment of residual voids - Backfilling Aspinal Pit to avoid residual void	Rehabilitation strategies for void closure plan promotes the use of mulching and matting to reduce void instability risks	Environment team; Site personnel; Contractors (rehabilitation)	- Void Closure Plan - Geotechnical Report	Rehabilitation monitoring	- Rehabilitation monitoring and reporting - Investigation and/or review of residual voids by suitably qualified person	Moderate 6	RM2; RM7; RM8; RM10
Weeds	Poor weed management	- Proliferation of weeds and declared weed species on site and in surrounding area - Rehabilitation progress and success is delayed and impacted - Establishment of desired species for revegetation are inhibited - Unsuitable grazing pasture due to high risk weeds	Moderate 8	- Strict vehicle washdown entering the Project area to limit spread of weeds - Conduct regular weed monitoring programs to allow for early identification of weed communities and allow for early intervention to prevent spread	- Regular monitoring of rehabilitation areas and Project areas (e.g. annual weed monitoring) promotes awareness and vigilance - Prevent the introduction of weed species which may impede on rehabilitation success - Uphold requirements of biosecurity (e.g. for declared weed species)	Environment team; All personnel	- PRCP Schedule - Environmental Management Plan	- Rehabilitation monitoring <10% weed contribution	Rehabilitation monitoring and reporting	Low 4	RM3; RM4; RM8



Risk	Hazards	Potential Impacts	Inherent Risk	Mitigation Measure / Risk Treatment (Proposed Actions)	Justification for Risk Treatment	Responsibility	Resource Requirements	Performance Measures	Reporting and Monitoring Requirements	Residual Risk	Applicable Rehabilitation Milestone
Services & Infrastructure	Breakdown of communication between contractors to remove/disconnect services and/or infrastructure	• Increase cost to project above quote and/or budget • Flow on effect delaying other aspects of the PRCP schedule and rehabilitation works • Increased cost if new contractors are required • Disconnection and/or removal works take longer than anticipated	Moderate 6	• Ensure appropriate contractual agreements are in place and agreed upon/signed prior to the commencement of works	• Contractual agreements are a legal document • Contractors will be obligated to complete works and uphold terms and conditions of contractual agreement to conduct works in a safe and timely manner (as close to schedule as possible)	Project team; Contractors (infrastructure & service)	• Legal advice / Contractual agreements	• Regular review of contracts • Adequate time allocated for meeting with contractors	• Internal reporting and maintenance of contractual agreements	Low 4	RM1; RM8
Contamination	Unidentified contamination during decommissioning activities	• Contamination of groundwater, surface water and/or soil • New cost to the project to rectify and manage contamination • Delays rehabilitation works and achievement of milestones	High 12	• Ensure all personnel working and/or visiting site receive adequate induction and training/awareness of contamination • Maintain accurate records of incidents with potential to result in contamination (e.g. spills and leaks) • Conduct site investigation and/or remediation as required	• To ensure compliance with legislative requirements of EA and <i>Environment Protection Act 1994</i>	All personnel; Environment team	• Environment Management Plan • Incident Reporting System/Record	• Investigation and remediation directed by a suitably qualified person	• Monitoring of incident areas to manage newly identified contamination • Review of documentation	Moderate 6	RM1; RM6; RM9
Rehabilitation & Revegetation	Rehabilitation not completed progressively	• Rehabilitation works not completed to schedule • Impact to ability to meet PRCP requirements and planning/schedule • Increased costs due to reduced time to meet rehabilitation deadlines • Unable to revegetate the land suitable for grazing • PRCP schedule is delayed with potential to increase overall cost and liability	High 12	• Ongoing review of PRC Plan and Schedule • Regular monitoring of rehabilitation areas and Project areas for any issues that may impact rehabilitation timing • Spreading out rehabilitation throughout mine life with hard deadlines	• Budget allocated for rehabilitation will be a driving factor for the achievement of works to schedule	Environment team; Site personnel; Contractors (rehabilitation)	• PRCP Schedule • Rehabilitation Plan • Rehabilitation monitoring data	• Rehabilitation monitoring • Adequate time allocated for meetings to discuss PRCP Schedule	• Rehabilitation monitoring and reporting	Moderate 5	RM1 – RM10
	Incorrect, inappropriate, or unsuitable vegetation species or seed mix used, or poor tubestock used	• Unable to achieve final land use for grazing or grassland • Unable to blend landform with surrounding areas • Rehabilitation works delayed • Increased cost for rehabilitation works to remedy unsuitable species • Plants don't establish due to poor quality tubestock and/or poor seed viability and seed dormancy	High 12	• Contractual agreement with seed supplier to provide specified seeds required for rehabilitation • Seed mix determined based on Landholder input and commonly used grasses in the area for surrounding grazing land • Conduct revegetation and reseeded works during periods of expected rainfall to provide suitable conditions for growth	• Meet rehabilitation requirements of the EA and <i>Environment Protection Act 1994</i> • Meet PMLU required by the Landholder • Budget allocated for rehabilitation sufficient for procuring good quality seed and tubestock, etc.	Project team; Environment team; Site personnel; Contractors (rehabilitation)	• PRCP Schedule • Rehabilitation monitoring • Environment Management Plan • Climate data	• Rehabilitation monitoring	• Rehabilitation monitoring and reporting	Low 4	RM3; RM4; RM6; RM8



Risk	Hazards	Potential Impacts	Inherent Risk	Mitigation Measure / Risk Treatment (Proposed Actions)	Justification for Risk Treatment	Responsibility	Resource Requirements	Performance Measures	Reporting and Monitoring Requirements	Residual Risk	Applicable Rehabilitation Milestone
Rehabilitation & Revegetation	Revegetation does not reach a self-sustaining level	- Unable to achieve rehabilitation goals and sign off as certified rehabilitation - Unable to achieve EA conditions and Landholder requirements for the land - Rehabilitation works prolonged and costs increased - Impacted due to insufficient rainfall and/or poor landform stability - Seed damaged during revegetation process and/or insufficient seed stock available - Ant and insect predation - Topsoil or subsoil deficit - Insufficient availability and/or poor quality of target seed resource including genetic integrity	High 12	- Decision of seed supplier to be made early in the operational phase for rehabilitation of each RA to ensure sufficient stock available - Regular monitoring and reporting of rehabilitation areas to ensure plants are growing suitably and allows for early identification of any impediment to long-term vegetation success - Manual watering and fertiliser if required (e.g. during dry or drought periods) - Variety of seeds used to allow for greatest opportunity for success - Variety of seeds allow for faster growing species to provide cover and protection of slow establishing seeds from pests and prevent colonisation of weeds	- Meet rehabilitation requirements of the EA and <i>Environment Protection Act 1994</i> - Meet PMLU required by the Landholder - Budget allocated for rehabilitation sufficient for procuring good quality seed and tubestock, etc.	Environment team; Site personnel; Contractors (rehabilitation)	- PRCP Schedule - Rehabilitation monitoring - Environment Management Plan	Rehabilitation monitoring	- Rehabilitation monitoring and reporting - Regular monitoring for weeds to prevent invasion	Low 4	RM3; RM4; RM6; RM8
	Stock fence failure	- Intruding livestock destroy and/or compact rehabilitation areas before vegetation has grown to a suitable level to withstand disturbance - Premature grazing impedes rehabilitation efforts - Success and longevity of pasture species inhibited by premature grazing	Low 4	- Regular monitoring of rehabilitation areas will ensure any damage or concern regarding stock fences can be addressed quickly - Implement suitable cattle-proof fencing surrounding rehabilitation areas to prevent cattle access (where applicable as rehabilitation areas are surrendered)	- PMLU of rehabilitated areas will be grazing land for use by the Landholder's cattle - Need to provide rehabilitation areas time to establish strong communities to withstand future grazing	Environment team; Site personnel	- PRCP Schedule - Environmental Management Plan	Rehabilitation monitoring	- Rehabilitation monitoring and reporting - Monitoring of fence infrastructure (where required)	Very Low 1	RM6; RM8
Water	Impacts to aquifers and groundwater loss to water users including the environment	- Surrounding groundwater users will have supply and/or access impacted - Water quality is lowered - EV and WQO are affected	Moderate 6	- Implement monitoring techniques in Water Management Plan - Regular monitoring of rehabilitation areas will ensure occurrence and level of impact is mitigated	Determined low transmissivity to groundwater and aquifers on Project area due to limestone environment	Environment team; Site personnel; Contractors	- PRCP Schedule - Water Management Plan	- Rehabilitation monitoring - Water quality monitoring	- Rehabilitation monitoring and reporting - Water management monitoring and reporting	Low 4	RM2; RM5; RM7; RM8
	Redirection of creek and river flows	Fluvial networks surrounding the Project area are altered affecting hydrology of surrounding Project area	Low 4	- Regular monitoring of rehabilitation areas ensure occurrence or redirection is limited - Monitoring for redirection will protect against water erosion and severe gully formation near pits and bunds	Maintenance of bunds and water management structures on site will ensure surface flows on site are contained and do not affect or interact with waters and fluvial networks outside of the Project area	Environment team; Site personnel; Contractors	- PRCP Schedule - Water Management Plan	- Rehabilitation monitoring - Water quality monitoring	- Rehabilitation monitoring and reporting - Water management monitoring and reporting	Very Low 1	RM2; RM5; RM7; RM8; RM10
Monitoring & Maintenance	Failure to implement program	- PRCP and Rehabilitation goals and milestones are not met - Land is not rehabilitated to planned and/or required state - Unable to surrender land as scheduled in the PRC Plan - Land is not analogous to surrounding land uses - Land does not meet EA final land use conditions	Extreme 15	- Regular monitoring of rehabilitation areas - Periodic regular meetings with relevant teams and personnel to ensure plan is progressing accordingly and rectify any issues raised - Multiple layers of accountability with Site management, consultants and department officers.	Regular monitoring of rehabilitation areas allows for early intervention in the event rehabilitation methods are not implemented correctly or to plan, or amend poor performance	Project team; Environmental team; Site personnel; Contractors	- PRCP Schedule - Adequate time allocated for meetings	- Regular reviews and meetings - Active communication throughout PRCP schedule and rehabilitation works	- Rehabilitation monitoring and reporting - Throughout PRCP Schedule	Low 4	RM1 – RM10



Risk	Hazards	Potential Impacts	Inherent Risk	Mitigation Measure / Risk Treatment (Proposed Actions)	Justification for Risk Treatment	Responsibility	Resource Requirements	Performance Measures	Reporting and Monitoring Requirements	Residual Risk	Applicable Rehabilitation Milestone
	Unsuccessful rehabilitation	- PRCP and Rehabilitation goals and milestones are not met - Land cannot be surrendered as scheduled - Achievement of rehabilitation goals are delayed and prolonged - Increased financial burden to Project - Increased liability to Project - Unable to uphold Landholder agreement and/or EA conditions to surrender land in agreed condition	Extreme 15	Regular monitoring of rehabilitation areas allows for early intervention in the event rehabilitation methods are not implemented correctly or to plan, or amend poor performance	Regular monitoring of rehabilitation areas allows for early intervention in the event rehabilitation methods are not implemented correctly or to plan, or amend poor performance	Project team; Environmental team; Site personnel; Contractors	- PRCP Schedule - Adequate time allocated for meetings	- Regular reviews and meetings - Active communication throughout PRCP schedule and rehabilitation works	- Rehabilitation monitoring and reporting - Throughout PRCP Schedule	Low 4	RM1 – RM10

7.2 Rehabilitation trials

PRCP Guideline (section 3.7.1)

In accordance with section 126C(1)(j) of the EP Act, if rehabilitation trials are planned, the rehabilitation planning part must state:

- the objective of the trial(s)
- the trial design including, but not limited to, the location, underlying land characteristics and potential issues
- the details of how the trials(s) will be carried out
- when trials(s) will commence
- the duration of the trial(s)
- how the trial(s) will be assessed for success
- how the results of the trial(s) will be incorporated into rehabilitation strategies and the development of milestones; and
- where the trials have previously been carried out by the applicant.

Applicability to Transitional PRC plans

The information requirements in this section will apply to all applicants, whether or not they are an existing EA holder, who have planned or commenced rehabilitation trials. Existing EA holders can provide details of any rehabilitation trials that have occurred prior to the submission of the proposed PRC plan.

No rehabilitation trials will be conducted at the site due to the limited size of the operation and variance in the rehabilitation characteristics of the site. There is insufficient data available from existing rehabilitation to accurately predict the timeframe requirements for revegetation outcomes. The proposed revegetation timeframes include up to 5 years to go from establishment of PMLU surface conditions (RM5/RM6) to achievement of PMLU to a stable condition (RM8/RM9/RM10). If future research (i.e. existing or future rehabilitation areas) indicates this is insufficient, an amendment will need to be made to the PRCP to reflect the additional timeframes. Rehabilitation outcomes are considered low risk and extension of timeframes for rehabilitation is unlikely to significantly impact the post-mining land use being grazing or grassland. This is due to the rehabilitation areas being a significantly smaller footprint than the existing land available within the land boundary. Additionally, due to the long life of the site (deadline for rehabilitation to be complete) and the nature of progressive rehabilitation there would be sufficient time to ensure that all RMs are met.

8 Monitoring and maintenance

PRCP Guideline (section 3.8)

In accordance with section 126C(1)(j) of the EP Act, the administering authority considers monitoring and maintenance necessary to decide if the PRC plan is consistent with the requirements of the legislation. The rehabilitation planning part must contain a monitoring and maintenance program that identifies and describes the monitoring systems that will be carried out in order to demonstrate a milestone and milestone criteria have been achieved. the program must include, where relevant to the milestone and milestone criteria (but is not limited to):

- schedule of monitoring, reporting and review for each milestone
- description of methodologies and standards, which could include field-based assessments and the application of new remote sensing, GIS and other relevant emerging technologies
- monitoring that enables the repeatable collection of relevant statistically valid data
- monitoring using appropriate assurance and data management processes and systems
- regular analysis of site data including multi-year comparison trends and bench-marking against analogue/reference sites
- contingency strategies if monitoring data indicates milestone criteria are not being met
- post-closure monitoring to ensure milestone criteria has been demonstrated
- intent of monitoring reports, such as provision of results and key findings

Applicability to Transitional PRC plans

The information requirements in this section will apply to all applicants whether or not they are an existing EA holder. However, existing holders may already have the required information available from previously submitted plans/reports/applications that, if still valid, could be used in the PRC plan. If there has/is any monitoring or maintenance of areas already rehabilitated, details must be included in the PRC plan.

8.1 Milestone monitoring

To demonstrate the achievement of rehabilitation milestones, as they relate to achieving nominated PMLUs of grazing, grassland and water storage, a combination of the following approaches will be implemented:

- Rehabilitation reporting requirements; and
- Ongoing rehabilitation monitoring, including desktop and field-based assessment with associated reporting requirements.

Table 38: Rehabilitation and management milestones and relevant reporting requirements

Milestone reference	Rehabilitation milestone	Reporting requirements
RM1	Infrastructure decommissioning and removal	• Visual inspections • Document inspections
RM2	Landform development and reshaping	• Survey landform • Analyse final landform against design
RM3	Surface preparation	• Survey landform and extent after topsoil is placed • Document topsoil depth • Document soil assessment • Document soil ameliorants and/or physical treatments applied
RM4	Revegetation (Grazing / Grasslands / Water storage catchment area)	• Document seed mix, planting rates and areas
RM5	Establishment of Grazing and Grassland PMLUs surface conditions	• Undertake rehabilitation monitoring • Document acceptance criteria achieved / failed
RM6	Establishment of Water Storage PMLU surface conditions	• Undertake rehabilitation monitoring • Document acceptance criteria achieved / failed

RM7	Establishment of geotechnically stable surface conditions (i.e. water storage, residual voids, backfilled pits)	- Visual inspections - Document inspections - Analyse final landform against design
RM8	Achievement of Grazing PMLU to a stable condition – Without water quality	- Undertake rehabilitation monitoring - Document acceptance criteria achieved / failed
RM9	Achievement of Water Storage PMLU to a stable condition – Without water quality	- Undertake rehabilitation monitoring - Document acceptance criteria achieved / failed
RM10	Achievement of Grassland PMLU to a stable condition – Without water quality	- Undertake rehabilitation monitoring - Document acceptance criteria achieved / failed
RM11	Achievement of water quality – Water quality only	- Undertake rehabilitation monitoring - Document acceptance criteria achieved / failed
RM12	Landholder is informed of and acknowledges ongoing management	Document handover / relinquishment information to landholder
RM13	Achievement of retained infrastructure PMLU to stable condition	Document acceptance achieved
MM1	Achievement of structural stability	- Visual inspections - Document acceptance criteria achieved / failed
MM2	Achievement of surface requirements	- Visual inspections - Document acceptance criteria achieved / failed
MM3	Achievement of sufficient improvement	- Visual inspections - Document acceptance criteria achieved / failed

8.1.1 Selection of analogue sites

Although monitoring of analogue (or reference) sites is not a requirement of the current EA, five (5) analogue sites have been selected as being representative of marginal grazing and two (2) analogue sites have been selected as being representative of grassland in areas surrounding Warwick Limestone. Coordinates of analogue sites are provided in **Appendix 9** (refer to plan titled '*Terrequip Warwick Limestone Mine Rehabilitation Areas, Improvement Areas & Analogue Sites*'). The selection of these areas are based on the following:

- area is representative of marginal grazing land use in the surrounding area;
- located within areas of similar soils to rehabilitation areas; and
- within or near areas that have had soil assessments.

In addition to qualitative assessment of achievement of acceptance criteria, the analogue sites will also be used in BioCondition Assessments (**Section 8.4.3**) of rehabilitation areas using appropriate attributes (e.g. for grasslands)³³. Assessable attributes may include, but are not limited to:

- non-native plant cover;
- native perennial grass cover (%)

³³ Treeless or non-woody species dominant ecosystems (e.g. grasslands) cannot suitably be assessed against woody-type BioCondition attributes. Woody-type attributes should therefore be discounted from final assessment scores where these attributes are naturally absent. Queensland Herbarium BioCondition Assessment Manual.

- litter cover;
- size of patch;
- context; and
- connectivity or distance to artificial water.

8.1.2 Grazing and grassland PMLU monitoring

Monitoring of Grazing and Grassland PMLUs is proposed to be undertaken by site personnel at regular intervals (minimum 6-month periods) until specific site criteria are met and a stable and safe condition is achieved.

The following information will be collected as part of the monitoring program:

- photo images of existing and new rehabilitation areas (RAs) for comparison with surrounding areas of similar land use;
- records of treatments used for each new RA including seeding rate, soil treatment, and topsoil source;
- summary of plant species within RAs including cover percentage and species diversity;
- presence and abundance of weed species;
- soil testing program for each uniform RA (testing >1 sample locations per 6ha, and >3 sample locations per RA) – samples taken at max. 100mm increments and depth no less than topsoil capping depth;
- soil testing conducted by NATA accredited laboratory for pH, ESP, ECse and OC;
- summary of any fauna re-settling;
- landform monitoring (slope angle, contour bank spacing, waterways, presence/absence of severe rill or gully erosion); and
- summary of poor rehabilitation activities, maintenance applied and/or proposed for each affected RA.

Rehabilitation monitoring will also be conducted by an appropriately qualified and experienced person(s) at regular intervals depending on the RA and its progress in relation to the PRCP schedule. It is anticipated yearly monitoring will be required in initial stages of rehabilitation. New RAs will be added as they become available and is dependent on establishment success. This form of AQP monitoring will continue until all rehabilitation activities achieve relevant completion criteria and reach a safe and stable condition, and until the surrender of the Warwick Limestone mining tenements.

The rehabilitation performance of RAs with a designated grazing or grassland PMLU will be assessed against the analogue site and the acceptance criteria outlined in **Table 19** and **Table 20** respectively. Additionally, a monitoring and maintenance plan for both PMLUs is summarised in **Table 39**.

Table 39: Grazing and grassland PMLU monitoring and maintenance plan

Monitoring item	1 to 3 months after planting	3 to 24 months after planting
Weed Control	- Monthly check for weeds - Control via removal by hand, spot spraying - Take care not to damage planted and re-generating native species including grasses and forbs	- Monthly check or weeds - Control as required as per methods used in monitoring between 1 to 3 months after planting
Watering	- Water each seedling with a minimum of 5-10L of water weekly, especially during the first month - Depending on prevailing weather conditions, water to continue monthly as required until seedlings have established (in approx. 3-6 months)	- Continue watering seedlings as required as per methods used in monitoring between 1 to 2 months after planting - Frequency dependent on prevailing weather conditions
General Site Maintenance	- Remove waste dumped on site - Monitor for signs of erosion	- Remove waste dumped on site - Monitor for signs of erosion
Replacement Planting	Replace dead or senescent plants as per methods described in the Rehabilitation Methodology of this PRC Plan	Replace dead or senescent plants as per methods described in the Rehabilitation Methodology of this PRC Plan
Monitoring	- Conduct frequent and regular monitoring - Take photographic records of reference points	- Conduct frequent and regular monitoring - Take photographic records of reference points
Mulching	Replace as required on site	- Replace mulch as required - If mulch is depleted and weeds are present, replace mulch in affected area with coarse forest mulch or sugar cane mulch to a depth of 100mm and diameter of 1m - Ensure weed preventing mulch does not come in contact with native species

8.1.3 Water storage PMLU monitoring

Monitoring of the water storage PMLUs is proposed to be undertaken by stie personnel at regular intervals (minimum 6-month periods) until specific milestone criteria are met and a stable and safe condition is achieved.

The following information will be collected as part of the monitoring program:

- photo images of existing and new rehabilitation areas (RAs) for comparison with surrounding areas of similar land use;

- records of treatments and/or works applied for each new RA including, but not limited to backfilling, re-profiling, geotechnical and/or safety inspections;
- all requirements approved and prescribed in the Site Water Management Plan;
- landform monitoring (slope, angle, contour bank spacing, waterways, presence/absence of severe rill or gully erosion); and
- summary of poor rehabilitation activities, maintenance applied and/or proposed for each affected RA.

Rehabilitation monitoring will also be conducted by an appropriately qualified and experienced person(s) at regular intervals depending on the RA and its progress in relation to the PRCP schedule. It is anticipated yearly monitoring will be required in initial stages of rehabilitation. New RAs will be added as they become available and is dependent on establishment success. This form of AQP monitoring will continue until all rehabilitation activities achieve relevant completion criteria and reach a safe and stable condition, and until the surrender of the Warwick Limestone mining tenements.

The rehabilitation performance of RAs with a designated water storage PMLU will be assessed against the analogue site and the acceptance criteria outlined in **Table 23**.

8.1.4 Rehabilitation monitoring phase

Permanent monitoring points will be established at the start of the rehabilitation monitoring program. These points will be used as markers for assessing rehabilitation progress and performance against the analogue sites.

8.1.5 NUMA monitoring

Monitoring of the NUMAs is proposed to be undertaken by site personnel at regular intervals (minimum 6-month periods) until specific milestone criteria are met and a safe condition is achieved. The following information will be collected as part of the monitoring program:

- landform monitoring (erosion, landslides, road damage) to ensure no negative impacts on adjacent PMLUs;
- safety infrastructure (safety bunding, fencing, signage) to ensure they remain effective;
- photo images of any areas that require maintenance (before and after maintenance), including the use of unmanned aerial vehicles where access is limited; and
- summary of any maintenance required.

8.2 Monitoring program

8.2.1 Grazing and grassland PMLU monitoring program

Proposed rehabilitation monitoring will be conducted in 6-month intervals (minimum of two programs a year) and assessed by an appropriately qualified person (AQP) until acceptance criteria are met and a safe and stable landform is achieved. Informal assessment of rehabilitation will be conducted by site personnel to minimise, wherever possible, requirements for additional and/or urgent repair (e.g. weed infestation).

To be able to adequately compare the rehabilitation against the analogue sites, the analogue sites should be included in the Grazing and Grassland PMLU monitoring program. This will ensure that the rehabilitation is being compared against the proper analogue criteria, as seasonal fluctuations will impact both the rehabilitation areas and the analogue sites.

8.2.2 Water storage PMLU monitoring program

In addition to the above water storage PMLU monitoring (**Section 8.1.3**) water quality monitoring is required to ensure water storage and receiving environments are not contaminated. Water storage quality should be monitored quarterly (3-month intervals) to ensure water quality physico chemical indicators do not exceed

trigger values for livestock (beef cattle) drinking water defined in Australian and New Zealand Guidelines for Fresh and Marine Water - Volume 3 Primary Industries (ANZECC and ARMCANZ, 2000). In addition, water storages monitored quarterly must be on a trajectory to achieving the following:

- i. pH – 7.0-8.0;
- ii. Electrical conductivity – 280µS/cm; and
- iii. Turbidity – 50 nephelometric turbidity unit (NTU).

Additional water quality monitoring will be required if there is flow from any watercourse downstream of the water storages. Downstream locations in **Table 44** (and **Figure 5 & 6** of the EA) indicate where samples should be taken if flow occurs (monthly only). If any downstream sample exceeds the limits above the applicable upstream location/s must be collected and compared to the downstream result.

8.2.3 NUMA monitoring program

Although no specific monitoring plan is required for the NUMA areas it is recommended that monitoring should be completed inline with the grazing and grassland monitoring program (i.e. 6-month intervals) and assessed by an AQP. This will ensure that upon relinquishment the NUMAs have reached an achievement of sufficient improvement.

8.3 Maintenance

Maintenance will be engaged if rehabilitation issues are identified during monitoring, or if milestone criteria are not being met. Determination of the most appropriate remedial action will be based on the likely cause of the issue. For example, these may be due to, but are not limited to:

- climate conditions (e.g. droughts, prolonged wet seasons);
- weed infestation;
- poor drainage design;
- insufficient vegetation cover;
- influence from adjacent land use(s); and/or
- soil type and/or soil deficiencies.

8.4 Data analysis and reporting

Rehabilitation monitoring data will be collected and analysed by an appropriately qualified and experienced person(s). The aim of data analysis and reporting will be to identify changes and trends to identify if rehabilitation progress is on schedule to meeting milestones or identify if remedial and/or maintenance works are required.

Rehabilitation monitoring data will be collected and managed by Terrequip and/or their nominated environmental manager(s).

8.4.1 Annual reporting

Annual rehabilitation reports will be provided to the administering authority with the submission of each annual return. This report will provide qualitative data comprising of photographic records of previous and current rehabilitation works in planned RAs.

The annual rehabilitation report will include the following details:

- summary description of visual monitoring for severe rill and/or gully erosion within the first 12-months after seeding and heavy rain events;
- photographic records of the works undertaken to establish new rehabilitation areas;
- photographic records of the new rehabilitation areas from permanent reference points;
- summary record of rehabilitation treatments including seeding rates, soil treatment, topsoil source

- a summary description of any failure of rehabilitation works and maintenance conducted or proposed to be conducted for these areas; and
- assessment of existing rehabilitation areas against their milestone criteria to determine if steps to achieve progressive rehabilitation certification should commence.

8.4.2 BioCondition assessment method

Warwick Limestone will implement an annual rehabilitation inspection to evaluate the success and progress of rehabilitation works in accordance with the submission of annual rehabilitation reports with each annual return. The scope of inspection includes all existing and recently completed rehabilitation across the site.

The BioCondition Assessment Framework³⁴ will be used to assess ecosystem condition in addition to assessing rehabilitation against completion criteria. A BioCondition Assessment is a site-based and quantitative assessment that can be used in any vegetation state and is therefore repeatable. Annual inspections will allow for easy and comparable assessment to be made between inspection years, allowing rehabilitation to be monitored and adapted where required.

The BioCondition Assessment Framework aims to provide simple, robust and easy to follow monitoring program for rehabilitation to marginal grazing land. Using the BioCondition Assessment in rehabilitation monitoring rehabilitation is useful for tracking progress, mitigate issues and allowing adaptation of rehabilitation methods to reduce and/or prevent risk of failure. The primary goal of rehabilitation is to create an environment that is safe, stable, and able to sustain an ecosystem condition that is similar to that existing pre-mining.

8.4.3 BioCondition assessment for rehabilitated areas

The BioCondition Assessment Method will be used to evaluate rehabilitated areas. The assessment unit will consist of a 50m x 5m plot along which established photo monitoring points will be used to track the progress of rehabilitation at a designated point along the transect. Along a 50m transect the relevant indicators will be recorded per the BioCondition Assessment Manual³⁵ (the manual) and each attribute will be scored according to manual descriptions with corresponding weightings (assigned as a percentage). Field assessment techniques are further outlined in the manual.

8.4.4 Field sheets

Completed field sheets and photographs (taken at established photo monitoring points) will be filed for each BioCondition Assessment. Record keeping this information will be useful for informing future reports that must be prepared in order to surrender the EA and reclaim financial assurance. Information gathered from previous BioCondition Assessments will form useful lesson learned and can be used to inform future rehabilitation efforts.

In the event any issues are identified during or following a BioCondition assessment, Warwick Limestone will engage a suitably qualified and experienced person to assist in rectifying and managing the rehabilitation issue. The engagement of a suitably qualified and experienced person will be dependent on the type of expertise required to mitigate the rehabilitation issue.

8.5 Quality assurance and quality control

Figure 29 illustrates the quality assurance and quality control (QA/QC) process to be followed as part of ongoing rehabilitation monitoring at Warwick Limestone. The process allows for:

- initial execution of rehabilitation in accordance with rehabilitation measures;

³⁴ Office of the Queensland Mine Rehabilitation Commissioner (March 2023): Evaluating Methods For Assessing Native Ecosystem Mine Rehabilitation Success (Technical Paper).

³⁵ Queensland Herbarium, Science Delivery (February 2015): BioCondition Assessment Manual.

- verification of how the execution was conducted in accordance with rehabilitation measures;
- if required, the implementation of corrective action/maintenance in rehabilitation areas; and
- further rehabilitation monitoring of rehabilitation and corrected/maintained areas.

The QA/QC process allows for repetition for an execution/verification/monitoring approach to ensure rehabilitation areas continue to progress towards achieving rehabilitation milestones and future certification.



Figure 29: Quality assurance and quality control processes to be followed to support ongoing rehabilitation monitoring at Warwick Limestone

PART B: PRCP SCHEDULE

9 PRCP Schedule

Legislative Requirement

In accordance with sections 126D(1) of the EP Act, the PRCP schedule in the PRC plan must:

- a) describe the area of each resource tenure either a post-mining land use or non-use management area, and
- b) for each post-mining land use state:
 - i. each rehabilitation milestone required to achieve a stable condition, and
 - ii. when each rehabilitation milestone is to be achieved, and
- c) for each non-use management area state:
 - i. each management milestone required to achieve a stable condition, and
 - ii. when each management milestone is to be achieved, and
- d) include maps showing the land mentioned in (a), (b) and (c).

9.1 Final site design

The final site design for Warwick Limestone, including maximum disturbance extent, tenure boundaries, PMLUs and NUMAs is illustrated in **Figure 30**.

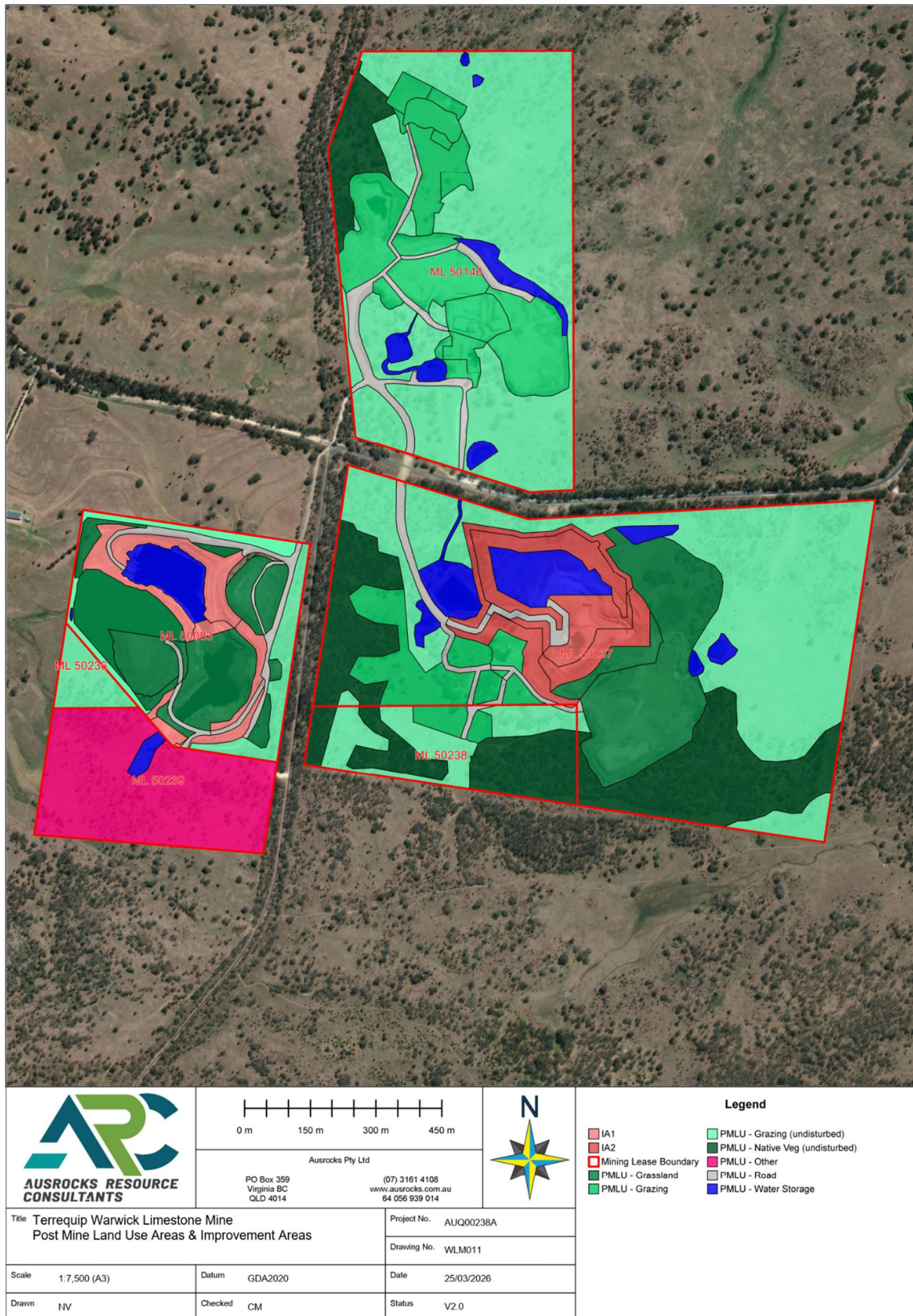


Figure 30: Warwick Limestone Mine final site design

9.2 Post-mining land use milestones

The Warwick Limestone rehabilitation areas and relevant rehabilitation milestones are listed in **Table 40**. Reference maps provided in **Section 9.4** illustrate these.

Table 40: Warwick Limestone rehabilitation areas and relevant rehabilitation criteria

Rehabilitation area	Relevant activities	PMLU	Relevant rehabilitation milestone
RA1	Infrastructure	Grazing	RM1 RM2 RM3 RM4 RM5 RM8 RM11
RA2	Topsoil stockpiles	Grazing	RM2 RM3 RM4 RM5 RM8 RM11
RA3	ROM, Laydown areas and Product Stockpiles	Grazing	RM1 RM2 RM3 RM4 RM5 RM8 RM11
RA4	Waste and Overburden Dumps	Grassland	RM2 RM3 RM5 RM10 RM11
RA5	Roads	Road	RM2 RM12 RM13
RA6	Sediment Dams and Stormwater Controls	Water Storage	RM2 RM6 RM9 RM11 RM12
RA7	Eastern Open Pit	Grassland	RM2 RM3 RM4 RM7 RM10 RM11
RA8	Main Pit Voids (East Pit, West Pit, Phoenix Pit)	Water Storage	RM2 RM3 RM4 RM6 RM7 RM9 RM11 RM12
RA9	Main Pit Voids (Aspinal Pit)	Grazing	RM2

Rehabilitation area	Relevant activities	PMLU	Relevant rehabilitation milestone
			RM3 RM4 RM5 RM7 RM8 RM11 RM12
RA10	Existing Rehabilitation	Grazing	RM2 RM3 RM4 RM5 RM8 RM11
RA11	East West Pit ROM and Laydown Areas	Grassland	RM2 RM3 RM4 RM5 RM7 RM10 RM11 RM12
RA12	Topsoil	Grassland	RM2 RM3 RM4 RM5 RM10 RM11
RA13	East-West Overburden Dump/ROM Pad	Grassland	RM2 RM3 RM4 RM5 RM7 RM10 RM11

Rehabilitation milestones and milestone criteria are provided in **Table 41**.

Table 41: Warwick Limestone rehabilitation milestones and milestone criteria

Milestone reference	Rehabilitation milestone	Milestone criteria
RM1	Infrastructure decommissioning and removal	a) All services disconnected, terminated and removed. b) All built and service infrastructure demolished and removed (except where agreed in writing by the post-mining landholder). c) All concrete bitumen, aggregate and roads removed (where not owned or required post-mining by the landholder). d) All fencing and associated foundations, other than those required for stock and land management purposes has been removed. e) All waste not authorised to be disposed of on-site under Environmental Authority EPML00136213 is removed. f) All water within mine storages and sediment basins removed (except where agreed in writing by the post-mining landholder). g) A contaminated land investigation assessment to be completed in accordance with the Environmental Protection Act 1994, including a site investigation report, and, where required, a Validation Report and/or a draft Site Management Plan is prepared. h) A declaration from a SQP that no contamination unsuitable for the PMLU remains or is occurring. i) An independent AQP has certified the achievement of RM1a) to RM1h).
RM2	Landform development and reshaping	a) An AQP certifies that the material used in backfilling East pit is suitable for achieving safe stable landform. b) All bulk earthworks and landform reshaping/reprofiling works are completed in accordance with the design specification provided by an AQP. c) Pit voids requiring backfill completed to final landform designs with fully co-mingled and mixed material (ore, waste rock, overburden): i) Pit $\leq 35^\circ$ batters; and ii) Waste dumps 3-5⁰ crowns and $\leq 25^\circ$ batters. d) Pit voids intended as water storage re-shaped to final landform designs. e) Landform is reshaped to be free-draining and blend in with surrounding topography slopes. f) Abandonment bunds placed around pits and dumps per geotechnical¹ specifications. i) Material sourced from unweathered, durable limestones from the waste rock dump; ii) Nominal minimum height ~2m with base width ~5-6m; and iii) Leave 0.5m wide gaps at the toes of bunds at contour lows in areas where water has obviously been flowing. g) Erosion and sediment controls installed to AQP design specifications (if applicable). h) All waste, rubbish and mobile equipment and machinery not required for rehabilitation works removed from site.

Milestone reference	Rehabilitation milestone	Milestone criteria
		i) Roads required post-mining will be appropriately graded and compacted to provide a stable, all-weather running surface suitable for light vehicle access. j) An independent AQP has certified the achievement of RM2a) to RM2i).
RM3	Surface preparation	a) Assessment of growth media characteristics and the development of an amelioration and physical treatment plan is completed by an AQP. b) Topsoil is placed an average thickness of not less than 150mm in areas where topsoil has previously been removed. c) Where the growth media health and suitability assessment identify a deficiency, a recommendation is made for ameliorants to ensure sodicity, salinity, pH and fertility levels are suitable to achieve the relevant PMLU. d) Ameliorant and physical treatments such as fertiliser, lime, gypsum and/or organic matter are applied as identified in criteria RM3a). e) Rip across contour $\geq 300\text{mm}$. f) Following amelioration as per criteria RM3 a), representative soil testing of growth media confirms: i) pH in the range of 6 - 8.5; ii) Electrical Conductivity (saturated extract) (dS/m) ≤ 2 (2,000 $\mu\text{S/cm}$); iii) Exchangeable sodium percentage (ESP) (%) < 6; iv) Emerson aggregate class: ≥ 4. g) Growth media health and suitability is assessed and documented by an AQP as suitable for the PMLU and target vegetation establishment. h) Independent AQP has certified the achievement of RM3a) to RM3h).
RM4	Revegetation (Grazing / Grasslands / Water Storage catchment area)	a) Completed seeding in accordance with recommended pasture species mix (grasses, cover crops and legumes) and seeding rates described in Appendix 1 Table 5. b) Seed spread and raked ($\leq 1\text{cm}$ depth). c) Independent AQP has certified the achievement of RM4a) and RM4b).
RM5	Establishment of Grazing and Grassland PMLUs surface conditions	a) Species used in revegetation remain present and show evidence of natural recruitment. Evidence of flora recruitment from rehabilitation monitoring data. b) Vegetation groundcover $\geq 75\%$ and/or is comparative to analogue site as per Appendix 1 Table 2. c) Cover crops and pasture species are established. d) Bare ground cover does not exceed 200% of the comparable analogue site level, as assessed by transect-based ground cover monitoring. e) No evidence of erosion classified as 'moderate' or 'severe' as defined by the 'Erosion Classification Network Appendix 1 Table 1. f) Any erosion present will not compromise the achievement of a PMLU to a stable condition.

Milestone reference	Rehabilitation milestone	Milestone criteria
		g) Erosion requiring intervention has been remediated and does not impact achieving the PMLU. h) Persistent weed² cover $\leq 10\%$ above weed cover in analogue site (Appendix 1 Table 2). i) Weed² presence is a less than 5% of total vegetative cover. j) Weeds² are being appropriately managed. k) Absence of ecosystem altering weeds². l) Carrying capacity is $\geq 75\%$ of carrying capacity in an analogue site for grazing PMLU as defined by Appendix 1 Table 2. m) Surface water runoff has been collected across representative areas of rehabilitation when surface flows occur and it is safe to do so. n) Surface water quality results monitored monthly during flow at, but not limited to, downstream locations specified in Table 3, are on trajectory to achieving the following: i) pH – 7.0-8.0 ii) Electrical Conductivity – 280 $\mu\text{S}/\text{cm}$ iii) Turbidity – 50 NTU o) The growth media (topsoil and subsoil) physical, chemical and biological properties does not limit vegetation cover performance or restrict the potential effective depth of rooting. p) A BioCondition assessment is completed by an AQP using the methodology outlined in the latest version of the Queensland Herbarium's 'BioCondition Assessment Manual'. q) The outcomes from the BioCondition assessment completed under RM5p) are comparable to the BioCondition benchmarks derived by an AQP from the reference sites specified in Appendix 1 Table 2 for grazing PMLU and Appendix 1 table 6 for grasslands PMLU. r) Independent AQP certifies achievement of RM5a) to RM5q).
RM6	Establishment of Water Storage PMLU surface conditions	a) Void crests and walls are monitored by an AQP2 to ensure long-term stabilities are achieved. b) Vegetation/ground cover within water storage catchment areas are increasing $\geq 50\%$; c) Water quality physico chemical indicators do not exceed trigger values for livestock (beef cattle) drinking water defined in Australian and New Zealand Guidelines for Fresh and Marine Water - Volume 3 Primary Industries (ANZECC and ARMCANZ, 2000). d) All retained water storages to be assessed and approved as safe and stable by an AQP. e) Water storages monitored quarterly are on trajectory to achieving the following: i) pH – 7.0-8.0; ii) Electrical Conductivity – 280$\mu\text{S}/\text{cm}$; iii) Turbidity – 50NTU f) An independent AQP certifies achievement of RM6a) to RM6e)
RM7	Establishment of geotechnically stable surface	a) Assessment of backfilled areas (pits, waste dumps) as geotechnically stable by a SQP, and i) No evidence of slumping; ii) Final slope status and geometry suitable (pit face slopes $< 70^\circ$);

Milestone reference	Rehabilitation milestone	Milestone criteria
	conditions (i.e. water storage, residual voids, backfilled pits)	iii) Backfill condition and engineering characteristics suitable; and iv) Failure mechanisms. b) Assessment of backfilled areas (pits, waste dumps) are in accordance with final landform designs by a SQP. c) Independent AQP certifies achievement of RM7a) and RM7b).
RM8	Achievement of Grazing PMLU to a stable condition – without water quality	a) AQP assessment confirms safety hazards in rehabilitation area are not significantly different to surrounding unmined landscapes subject to the same land use. b) Rehabilitation is assessed as geotechnically stable, by an AQP, with FoS ≥ 1.5 (ANCOLD, 2017). c) AQP assessment confirms rehabilitated land is erosionally stable with groundcover (vegetative and litter) $\geq 70\%$. d) No evidence of erosion classified as 'moderate' or 'severe' as defined by the 'Erosion Classification Network Appendix 1 Table 1. e) Surface water quality results monitored monthly during flow at, but not limited to, downstream locations specified in Appendix 1 Table 3, are on trajectory to achieving the following. a. pH – 7.0-8.0; b. Electrical Conductivity – 280μS/cm; c. Turbidity – 50NTU. f) Land suitability for grazing pasture is assessed ≥ 3 or not different from pre-mining class if ≥ 4. g) Species used in revegetation remain present and includes at least 3 desirable perennial pasture species (3P grasses³). h) A BioCondition assessment is completed by an AQP using the methodology outlined in the latest version of the Queensland Herbarium's 'BioCondition Assessment Manual'. i) The outcomes from the BioCondition assessment completed under RM8h) are comparable to the BioCondition benchmarks derived by an AQP from the reference sites specified in Appendix 1 Table 2. j) Independent AQP certifies achievement of RM8a) to RM8i)
RM9	Achievement of Water Storage PMLU to a stable condition – without water quality	a) AQP assessment confirms geotechnical stability, with FoS ≥ 1.5 (ANCOLD, 2017), has been achieved to facilitate safe access by humans and livestock for RA6 only. b) AQP assessment confirms rehabilitated land is erosionally stable with groundcover $\geq 50\%$, and 70% of slopes $\leq 20\%$ gradient. c) Water quality physico chemical indicators do not exceed trigger values for livestock (beef cattle) drinking water defined in Australian and New Zealand Guidelines for Fresh and Marine Water - Volume 3 Primary Industries (ANZECC and ARMCANZ, 2000). d) All retained water storages to be assessed and approved as safe and stable by an AQP.

Milestone reference	Rehabilitation milestone	Milestone criteria
		e) Water storages monitored quarterly must be on trajectory to achieving the following: a. pH – 7.0-8.0; b. Electrical Conductivity – 280µS/cm; c. Turbidity – 50NTU; f) For RA8, water level must be monitored biannually. g) An AQP certifies that residual voids do not impact ground water quality or levels outside of the relevant tenure boundary. h) Vegetation/ground cover ≥50% achieved in areas surrounding the water storage catchment and/or outside abandonment bunds i) Independent AQP certifies achievement of RM9a) to RM9f)
RM10	Achievement of Grassland PMLU to a stable condition – without water quality	a) AQP assessment of backfilled areas (pits, waste dumps) as geotechnically stable; and i) No evidence of slumping; ii) Final slope status and geometry suitable iii) Backfill condition and engineering characteristics suitable; and iv) Failure mechanisms. b) AQP assessment of backfilled area in Eastern Open Pit is in accordance with final landform designs. c) AQP assessment confirms safety hazards in rehabilitation area are not significantly different to surrounding unmined landscapes subject to the same land use. d) Rehabilitation is assessed as geotechnically stable, by an AQP, with FoS ≥1.5 (ANCOLD, 2017). e) AQP assessment confirms rehabilitated land is erosionally stable with groundcover (vegetative and litter) ≥70%. f) No evidence of erosion classified as ‘moderate’ or ‘severe’ as defined by the ‘Erosion Classification Network Appendix 1 Table 1. g) Species density includes ≥4 of species used in revegetation h) A BioCondition assessment is completed by an AQP using the methodology outlined in the latest version of the Queensland Herbarium’s ‘BioCondition Assessment Manual’. i) The outcomes from the BioCondition assessment completed under RM10h) are comparable to the BioCondition benchmarks specified in Appendix 1 Table 6. j) Independent AQP certifies achievement of RM10a) to RM10i).
RM11	Achievement of water quality – water quality only	a) Surface water quality results monitored monthly during flow at, but not limited to, downstream locations specified in Appendix 1 Table 3, must not exceed the following, for a minimum of 5 consecutive years: i) pH – 7.0-8.0; ii) Electrical Conductivity – 280µS/cm; iii) Turbidity – 50NTU.



Milestone reference	Rehabilitation milestone	Milestone criteria
		b) If surface water quality exceeds criterion e) the applicable upstream site must be compared to the downstream site result; and quality measured at a downstream site must be equal to or less than the quality measured at the applicable upstream site. c) Water storages monitored quarterly must not exceed the following, for a minimum of 5 consecutive years. i) pH – 7.0-8.0; ii) Electrical Conductivity – 280µS/cm; iii) Turbidity – 50NTU; d) For RA8, water level must be monitored quarterly. e) Hazard and safety assessment completed by an AQP demonstrates hazards in RAs are consistent with the type and severity of hazards typical of the adjacent equivalent land use. Remaining hazards are considered to be low risk with no significant increase in risk expected over time. f) An independent AQP has certified the achievement of RM11a) to RM11e).
RM12	Landholder is informed of and acknowledges ongoing management	a) Landholder is informed of the long-term and ongoing maintenance requirements relating to abandonment bunds, fences, signs, pit floor, and pit access as described in the Progressive Rehabilitation and Closure Plan for Warwick Limestone. b) Landholder acknowledges understanding of the long-term and ongoing management requirements. c) Independent AQP certifies achievement of RM12a) and RM12b).
RM13	Achievement of retained infrastructure PMLU to stable condition	a) Infrastructure to be transitioned to a future landholder is deemed fit for purpose (verified by an AQP) and accepted, by signed agreement, with the future landholder. b) An AQP certifies that all infrastructure to be retained onsite is safe, stable and will not cause environmental harm. c) Independent AQP certifies achievement of RM13a) and RM13b).

1. Appendix 4: Rocktest Rock Engineering Consultants (5 June 2019): Warwick Limestone Mine Geotechnical Risk Assessment and Management for Sibelco Version 1.0.
2. Weeds are defined by the *Biosecurity Act 2014*.
3. 3P species – palliative productive and perennial.



Table 42: Erosion classification framework

Erosion classification	Minor	Moderate	Severe
Sheet erosion	Shallow soil deposits downslope	Partial exposure of roots; moderate soil deposits downslope, etc.	Loss of surface horizon; root exposure etc.
Rill/gully erosion	<15 rills and <0.3m deep	15-30 rills and <0.3m deep	>30 rills and/or any >0.3m deep
Tunnel erosion	-	-	Present
Mass movement	-	-	Present

Source: NCST (2009) *Australian Soil and Land Survey Field Handbook*, 3rd edition. The National Committee on Soil and Terrain. CSIRO Publishing, Collingwood, Australia.

Table 43: Analogue sites

Analogue Site	Corner 1				Corner 2				Corner 3				Corner 4			
	Easting	Northing	Lat	Long	Easting	Northing	Lat	Long	Easting	Northing	Lat	Long	Easting	Northing	Lat	Long
1	413,368	6,859,562	-28.3874	152.1157	413,378	6,859,562	-28.3874	152.1158	413,378	6,859,552	-28.3875	152.1158	413,368	6,859,522	-28.3875	152.1157
2	413,496	6,859,024	-28.3923	152.1170	413,506	6,859,024	-28.3923	152.1171	413,506	6,859,014	-28.3924	152.1171	413,496	6,859,014	-28.3924	152.1170
3	412,693	6,858,231	-28.3994	152.1088	412,703	6,858,231	-28.3994	152.1089	412,703	6,858,221	-28.3995	152.1089	412,693	6,858,221	-28.3995	152.1088
4	413,182	6,858,298	-28.3988	152.1137	413,192	6,858,298	-28.3988	152.1138	413,192	6,858,288	-28.3989	152.1138	413,182	6,858,288	-28.3989	152.1137
5	414,115	6,858,357	-28.3983	152.1233	414,125	6,858,357	-28.3983	152.1234	414,125	6,858,347	-28.3984	152.1234	414,115	6,858,347	-28.3984	152.1233
6	412,414	6,858,335	-28.3984	152.1059	412,424	6,858,335	-28.3984	152.1060	412,424	6,858,325	-28.3985	152.1060	412,414	6,858,325	-28.3985	152.1059
7	413,001	6,858,379	-28.3981	152.1119	413,011	6,858,379	-28.3981	152.1120	413,011	6,858,369	-28.3982	152.1120	413,001	6,858,369	-28.3982	152.1119

Table 44: Receiving environment surface water monitoring locations

Monitoring locations	Receiving water's location description	Easting (GDA2020)	Northing (GDA2020)	Latitude (decimal degree, GDA2020)	Longitude (decimal degree, GDA2020)
MP1	Frenchman's Gully	413563	6859382	-28.38906	152.11771
MP2		413436	6858840	-28.39394	152.11638
MP3		413764	6858783	-28.39448	152.11972
MP4		414071	6858765	-28.39466	152.12285
MP6	Tributary of Lord John Creek	412268	6858532	-28.39664	152.10443
Upstream 1 (US1)	Upstream of Sediment Dam 8	413187	6858397	-28.39792	152.11380
Upstream 2 (US2)	Near southern ML50239 boundary	412413	6858068	-28.40084	152.10588



Table 45: Sediment and water storage dams

Water Storage ID	East (GDA 2020)	North (GDA2020)	Latitude (decimal degree, GDA2020)	Longitude (decimal degree, GDA2020)	Mining Lease
Sediment Dam 1	413378	6859379	-28.38907	152.11582	ML50146
Sediment Dam 2	413397	6859342	-28.38941	152.11602	ML50146
Sediment Dam 3	413350	6859771	-28.38553	152.11557	ML50146
Sediment Dam 4	413321	6859814	-28.38514	152.11528	ML50146
Catchment Dam 1	413248	6859102	-28.39156	152.11448	ML50146
Catchment Dam 2	413169	6859154	-28.39109	152.11367	ML50146
Sediment Dam 6	412421	6858553	-28.39646	152.10599	ML50083
Sediment Dam 7	413363	6858918	-28.39323	152.11564	ML50146
Sediment Dam 8	413298	6858587	-28.39622	152.11495	ML50237
Sediment Dam 9	413843	6858437	-28.39761	152.12050	ML50237
Sediment Dam 10	413900	6858469	-28.39732	152.12109	ML50237
Sediment Dam 11	413733	6858739	-28.39487	152.11940	ML50237
West Pit	412653	6858640	-28.39570	152.10837	ML50083
Phoenix pit	413510	6858633	-28.39581	152.11711	ML50237
East Pit Extension (MP5)	412581	6858272	-28.39959	152.10753	ML50239

Table 46: Species and sowing rates

Common name	Scientific name	Sowing rate (kg/ha)
Kangaroo Grass	<i>Themeda triandra</i>	5
Katambora Rhodes Grass	<i>Chloris gayana</i>	1
Slender Bamboo Grass	<i>Austrostipa verticillata</i>	5
Barbed-Wire Grass	<i>Cymbopogon refractus</i>	5
Creeping Bluegrass	<i>Bothriochloa insculpta</i>	1
Twitch Grass	<i>Elymus repens</i>	1
Shrubby Stylos	<i>Stylosanthes scabra</i>	5
Fine-Stem Stylos	<i>Stylosanthes guianensis</i> vari. <i>intermedia</i>	2
	TOTAL	25

Table 47: BioConditioning benchmark for Regional Ecosystem

BioCondition Assessable Attributes	Weighting	BioConditioning Scores		Vegetation benchmarks
		RM5	RM8 and RM10	RE 11.9.3 (Grassland)
Grass (native) species richness*	5	1-5	6-9	10
Forb/other (native) species richness*	5	1-4	5-8	9
Non-native plant cover (%)	10	<50%	5-25%	0
Native perennial grass cover (%)	5	2-25%	>50%	53
Litter (%)	5	1-5%	>9%	10
Total score	30			



9.3 Non-use management area milestones

The Warwick Limestone improvement areas and relevant improvement milestones are listed in **Table 48**. Reference maps provided in **Section 9.4** illustrate these.

Table 48: Warwick Limestone improvement areas and relevant improvement milestones

Improvement area	Relevant activities	NUMA	Relevant improvement milestones
IA1	East-West Pit void and walls	Residual Void / Water Storage	MM1 MM2 MM3
IA2	Phoenix Pit void and walls	Residual Void / Water Storage	MM1 MM2 MM3

Improvement milestones and milestone criteria are provided in **Table 49**.

Table 49: Warwick Limestone improvement milestones and milestone criteria

Milestone reference	Improvement milestone	Milestone criteria
MM1	Achievement of structural stability	a) High wall maximum slope of 38° for non-competent rock; b) High wall maximum slope of 70° for competent rock and stable landform; c) Backfill maximum slope of 25°; d) Compaction of backfill to satisfaction of AQP; e) Access to highwalls is restricted by a safety bund constructed to the following specifications: i) The bund's pit-side toe is at a minimum setback distance a minimum of 10 m from the highwall crest which achieves a FoS >1.5. ii) A minimum height of 2m; and iii) A minimum base width of 5m f) The pit walls achieve a FoS ≥1.5 within the NUMA extents. g) Independent AQP certifies achievement of MM1a) to MM1d).
MM2	Achievement of surface requirements	a) Adequate bunding in place, confirmed to be geotechnically stable by an AQP. b) Safety bunds constructed ≥1.5m in height, minimum base width of 5m, battered at 1:3 grade, and located 10m beyond the projected stable crest that achieves a FOS >1.5 of final highwall crests. c) Bunding is confirmed to be capable of maintaining stability under a PMF scenario. d) Bunding to be certified as geotechnically stable by AQP. e) Fencing erected, where required to prevent access to the residual void, around the perimeter of the safety bund. f) Safety signage designed in accordance with Australian Standard is erected at 100m intervals along the fence line. g) Independent AQP certifies achievement of MM2a) to MM2f).
MM3	Achievement of sufficient improvement	a) The final landform has been constructed in accordance with the final design. b) Appropriate safety infrastructure at the geotechnical set-back distance has been installed to prevent access to the NUMA. c) The residual void is safe to humans and stock. d) The residual void will not present an unacceptable risk of environmental harm. e) Erosion of the landform within the NUMA area will not negatively impact on the stability of any adjacent rehabilitation areas, or their ability to sustain their PMLU. f) Monitoring and maintenance of exclusion fences and bunds to be carried out to ensure they remain effective. g) Independent AQP certifies achievement of MM3a) to MM3f).



9.4 Reference maps

Warwick Limestone Mine reference maps showing rehabilitation areas and improvement areas are provided in **Figure 31**.

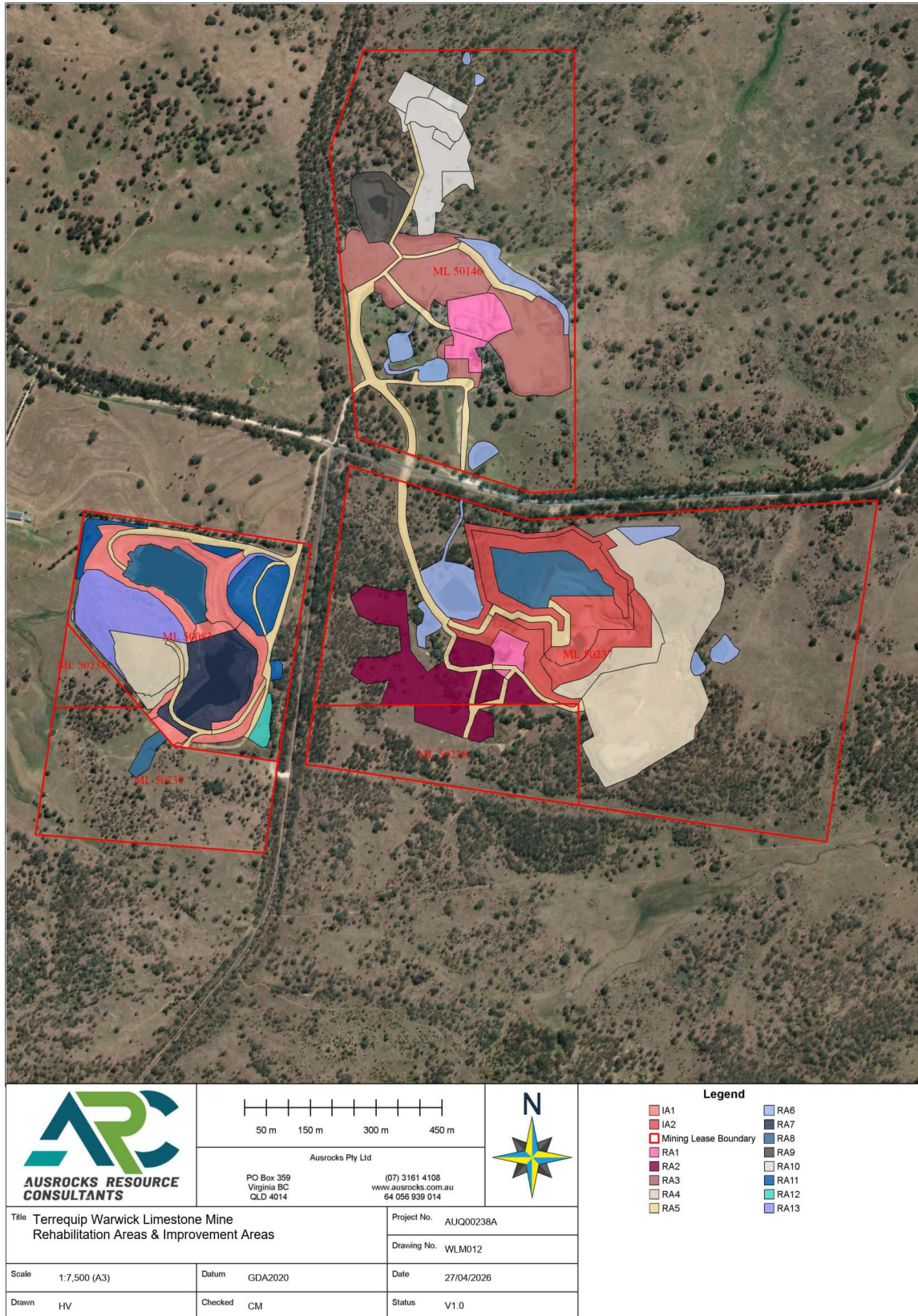


Figure 31: Warwick Limestone Mine rehabilitation and improvement areas reference map

9.5 Schedule

The PRCP schedule is based on the land being rehabilitated as soon as practicable after the land becomes available, as required under section 126D(4) of the EP Act.

Rehabilitation milestones RM1 to RM7 have varying groupings and completion time periods depending on the RA requirements. The general completion time period for each grouping is 5 years, which is based on the nominal timeframes allowed to complete earthworks, working in and around availability of machinery, topsoil amelioration, seed species and favourable weather for seeding.

The completion of RM8 to RM10 are more dependant on varying weather seasonality and undesirable weather periods and have generally been allocated a completion time period of 5 years each. RM11 (water quality) will rely on the completion of RM8 to RM10 as water quality monitoring before the rehabilitation areas are considered stable will result in ineffective results that don't reflect the final landform. RM12 relates to the requirement that the landholder is aware of the maintenance that will be required post-rehabilitation. RM13 relates specifically to the infrastructure that will be left behind and will be completed once all other activities have been completed.

Management milestone MM1 is given a completion time period of over 10 years. This is to ensure that all earthworks to be completed (e.g. reshaping, safety bunding) can be signed off by an AQP and any safety concerns can be amended appropriately. MM2 and MM3 have shorter completion periods (7 and 5 years respectively) as neither rely on completing earthworks.

The proposed PRCP schedule is provided on the following pages.



9.5.1 Rehabilitation area 1 (RA1)

Post-mining land uses (PMLU)			
Rehabilitation area		RA1	
Relevant activities		Infrastructure	
Total rehabilitation area size (ha)		2.4	
Commencement of first milestone: RM1		10/12/2046	
PMLU		Grazing	
Date area is available	10/12/2046	10/12/2051	10/12/2081
Cumulative area available (ha)	2.4	2.4	2.4
Milestone completed by	10/12/2051	10/12/2056	10/12/2086
Milestone Reference	Cumulative area achieved (ha)		
RM1	2.4		
RM2	2.4		
RM3	2.4		
RM4	2.4		
RM5	2.4		
RM8		2.4	
RM11			2.4



9.5.2 Rehabilitation area 2 (RA2)

Post-mining land uses (PMLU)			
Rehabilitation area		RA2	
Relevant activities		Topsoil Stockpiles	
Total rehabilitation area size (ha)		5.7	
Commencement of first milestone: RM2		10/12/2046	
PMLU		Grazing	
Date area is available	10/12/2046	10/12/2051	10/12/2081
Cumulative area available (ha)	5.7	5.7	5.7
Milestone completed by	10/12/2051	10/12/2056	10/12/2086
Milestone Reference	Cumulative area achieved (ha)		
RM2	5.7		
RM3	5.7		
RM4	5.7		
RM5	5.7		
RM8		5.7	
RM11			5.7



9.5.3 Rehabilitation area 3 (RA3)

Post-mining land uses (PMLU)			
Rehabilitation area	RA3		
Relevant activities	ROM, Laydown areas and Product Stockpiles		
Total rehabilitation area size (ha)	7.6		
Commencement of first milestone: RM1	10/12/2046		
PMLU	Grazing		
Date area is available	10/12/2046	10/12/2052	10/12/2081
Cumulative area available (ha)	7.6	7.6	7.6
Milestone completed by	10/12/2052	10/12/2057	10/12/2086
Milestone Reference	Cumulative area achieved (ha)		
RM1	7.6		
RM2	7.6		
RM3	7.6		
RM4	7.6		
RM5	7.6		
RM8		7.6	
RM11			7.6



9.5.4 Rehabilitation area 4 (RA4)

Post-mining land uses (PMLU)						
Rehabilitation area	RA4					
Relevant activities	Waste and Overburden Dumps					
Total rehabilitation area size (ha)	13.2					
Commencement of first milestone: RM2	10/12/2040					
PMLU	Grassland					
Date area is available	10/12/2040	10/12/2046	10/12/2051	10/12/2056	10/12/2061	10/12/2081
Cumulative area available (ha)	11.2	13.2	13.2	13.2	13.2	13.2
Milestone completed by	10/12/2046	10/12/2051	10/12/2056	10/12/2061	10/12/2066	10/12/2086
Milestone Reference	Cumulative area achieved (ha)					
RM2	11.2	13.2				
RM3		11.2	13.2			
RM5			11.2	13.2		
RM10				11.2	13.2	
RM11						13.2



9.5.5 Rehabilitation area 5 (RA5)

Post-mining land uses (PMLU)			
Rehabilitation area		RA5	
Relevant activities		Roads	
Total rehabilitation area size (ha)		7.1	
Commencement of first milestone: RM2		10/12/2046	
PMLU		Roads	
Date area is available	10/12/2046	10/12/2052	10/12/2081
Cumulative area available (ha)	2.3	7.1	7.1
Milestone completed by	10/12/2052	10/12/2057	10/12/2086
Milestone Reference	Cumulative area achieved (ha)		
RM2	2.3	7.1	
RM12			7.1
RM13			7.1



9.5.6 Rehabilitation area 6 (RA6)

Post-mining land uses (PMLU)					
Rehabilitation area	RA6				
Relevant activities	Sediment Dams and Stormwater Controls				
Total rehabilitation area size (ha)	4.7				
Commencement of first milestone: RM2	10/12/2026				
PMLU	Water Storage				
Date area is available	10/12/2026	10/12/2061	10/12/2061	10/12/2066	10/12/2081
Cumulative area available (ha)	0.1	2.7	4.7	4.7	4.7
Milestone completed by	10/12/2031	10/12/2066	10/12/2066	10/12/2071	10/12/2086
Milestone Reference	Cumulative area achieved (ha)				
RM2	0.1	2.7	4.7		
RM6	0.1	2.7	4.7		
RM9			2.7	4.7	
RM11					4.7
RM12					4..7



9.5.7 Rehabilitation area 7 (RA7)

Post-mining land uses (PMLU)			
Rehabilitation area	RA7		
Relevant activities	Eastern Open Pit		
Total rehabilitation area size (ha)	3.3		
Commencement of first milestone: RM3	10/12/2052		
PMLU	Grassland		
Date area is available	10/12/2052	10/12/2060	10/12/2081
Cumulative area available (ha)	3.3	3.3	0.2
Milestone completed by	10/12/2060	10/12/2065	10/12/2086
Milestone Reference	Cumulative area achieved (ha)		
RM2	3.3		
RM3	3.3		
RM4	3.3		
RM7		3.3	
RM10		3.3	
RM11			3.3



9.5.8 Rehabilitation area 8 (RA8)

Post-mining land uses (PMLU)					
Rehabilitation area	RA8				
Relevant activities	Main Pit Voids (East Pit; West Pit; Phoenix Pit)				
Total rehabilitation area size (ha)	4.9				
Commencement of first milestone: RM2	10/12/2061				
PMLU	Water Storage				
Date area is available	10/12/2061	10/12/2066	10/12/2071	10/12/2074	10/12/2081
Cumulative area available (ha)	2.6	4.9	4.9	4.9	4.9
Milestone completed by	10/12/2066	10/12/2071	10/12/2074	10/12/2079	10/12/2086
Milestone Reference	Cumulative area achieved (ha)				
RM2	2.6	4.9			
RM3	2.6	4.9			
RM4	2.6	4.9			
RM6		2.6	4.9		
RM7		2.6	4.9		
RM9			2.6	4.9	
RM11					4.9
RM12					4.9



9.5.9 Rehabilitation area 9 (RA9)

Post-mining land uses (PMLU)					
Rehabilitation area	RA9				
Relevant activities	Main Pit Voids (Aspinal Pit)				
Total rehabilitation area size (ha)	1.6				
Commencement of first milestone: RM3	10/12/2026				
PMLU	Grazing				
Date area is available	10/12/2026	10/12/2046	10/12/2047	10/12/2052	10/12/2081
Cumulative area available (ha)	1.6	1.6	1.6	1.6	1.6
Milestone completed by	10/12/2046	10/12/2047	10/12/2052	10/12/2058	10/12/2086
Milestone Reference	Cumulative area achieved (ha)				
RM2	1.6				
RM3	1.6				
RM4		1.6			
RM5			1.6		
RM7			1.6		
RM8				1.6	
RM11					1.6
RM12					1.6



9.5.10 Rehabilitation area 10 (RA10)

Post-mining land uses (PMLU)			
Rehabilitation area	RA10		
Relevant activities	Existing Rehabilitation		
Total rehabilitation area size (ha)	3.8		
Commencement of first milestone: RM2	10/12/2026		
PMLU	Grazing		
Date area is available	10/12/2026	10/12/2034	10/12/2081
Cumulative area available (ha)	3.8	3.8	3.8
Milestone completed by	10/12/2034	10/12/2039	10/12/2086
Milestone Reference	Cumulative area achieved (ha)		
RM2	3.8		
RM3	3.8		
RM4	3.8		
RM5	3.8		
RM8		3.8	
RM11			3.8



9.5.11 Rehabilitation area 11 (RA11)

Post-mining land uses (PMLU)				
Rehabilitation area	RA11			
Relevant activities	East West Pit ROM and Laydown Areas			
Total rehabilitation area size (ha)	2.4			
Commencement of first milestone: RM2	10/12/2046			
PMLU	Grassland			
Date area is available	10/12/2046	10/12/2050	10/12/2055	10/12/2081
Cumulative area available (ha)	2.4	2.4	2.4	2.4
Milestone completed by	10/12/2050	10/12/2055	10/12/2060	10/12/2086
Milestone Reference	Cumulative area achieved (ha)			
RM2	2.4			
RM3	2.4			
RM4	2.4			
RM5		2.4		
RM7		2.4		
RM10			2.4	
RM11				2.4
RM12				2.4



9.5.12 Rehabilitation area 12 (RA12)

Post-mining land uses (PMLU)				
Rehabilitation area	RA12			
Relevant activities	Topsoil			
Total rehabilitation area size (ha)	0.3			
Commencement of first milestone: RM2	10/12/2066			
PMLU	Grassland			
Date area is available	10/12/2066	10/12/2071	10/12/2076	10/12/2081
Cumulative area available (ha)	0.3	0.3	0.3	0.3
Milestone completed by	10/12/2071	10/12/2076	10/12/2081	10/12/2086
Milestone Reference	Cumulative area achieved (ha)			
RM2	0.3			
RM3	0.3			
RM4	0.3			
RM5		0.3		
RM10			0.3	
RM11				0.3



9.5.13 Rehabilitation area 13 (RA13)

Post-mining land uses (PMLU)			
Rehabilitation area	RA13		
Relevant activities	Existing Rehabilitation		
Total rehabilitation area size (ha)	3.1		
Commencement of first milestone: RM1	10/12/2060		
PMLU	Grassland		
Date area is available	10/12/2060	10/12/2062	10/12/2081
Cumulative area available (ha)	3.1	3.1	3.1
Milestone completed by	10/12/2062	10/12/2067	10/12/2086
Milestone Reference	Cumulative area achieved (ha)		
RM2	3.1		
RM3	3.1		
RM4	3.1		
RM5	3.1		
RM7	3.1		
RM10		3.1	
RM11			3.1



9.5.14 Improvement area 1 (IA1)

Non-use mangement area (NUMA)			
Improvement area		IA1	
Relevant activities		East-West Pit void and walls	
Total size (ha)		4.3	
Commencement of first milestone: MM1		10/12/2060	
NUMA		Residual Void Slopes	
Date area is available	10/12/2060	10/12/2074	10/12/2081
Cumulative area available (ha)	4.3	4.3	4.3
Milestone completed by	10/12/2074	10/12/2081	10/12/2086
Milestone Reference	Cumulative area achieved (ha)		
MM1	4.3		
MM2		4.3	
MM3			4.3



9.5.15 Improvement area 2 (IA2)

Non-use mangement area (NUMA)			
Improvement area		IA2	
Relevant activities		Phoenix Pit void and walls	
Total size (ha)		8.1	
Commencement of first milestone: MM1		10/12/2061	
NUMA		Residual Void Slopes	
Date area is available	10/12/2061	10/12/2074	10/12/2081
Cumulative area available (ha)	8.1	8.1	8.1
Milestone completed by	10/12/2074	10/12/2081	10/12/2086
Milestone Reference	Cumulative area achieved (ha)		
MM1	8.1		
MM2		8.1	
MM3			8.1

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APPENDICES

- Appendix 1** Warwick Limestone Environmental Authority (EMPL00136213) (25 July 2025)
- Appendix 2** Horizon Soil Science and Engineering (16 September 2022): Report on the Soil Survey Leases of the Warwick Limestone Quarry Rev 1.0
- Appendix 3** Epic Environmental Pty Ltd (17 November 2020): Environmental Management Plan – Warwick Limestone Mine
- Appendix 4** Rocktest Rock Engineering Consultants (5 June 2019): Warwick Limestone Mine Geotechnical Risk Assessment and Management for Sibelco Version 1.0
- Appendix 5** Epic Environmental Pty Ltd (20 November 2020): Water Management Plan – Warwick Limestone Mine
- Appendix 6** Australian Laboratory Services Pty Ltd (19 May 2020): Material Testing Certificate of Analysis Ref BR20104442
- Appendix 7** Landholder Agreements
- Appendix 8** BAAM Ecological Consultants: Rehabilitation Plan for the Warwick Mining Leases Areas
- Appendix 9** Plans and Maps



Appendix 1

Warwick Limestone Environmental Authority
(EMPL00136213) (25 July 2025)



Appendix 2

Horizon Soil Science and Engineering (16 September 2022):
Report on the Soil Survey Leases of the Warwick Limestone
Quarry Rev 1.0



Appendix 3

Epic Environmental Pty Ltd (17 November 2020):
Environmental Management Plan – Warwick Limestone Mine



Appendix 4

Rocktest Rock Engineering Consultants (5 June 2019):
Warwick Limestone Mine Geotechnical Risk Assessment
and Management for Sibelco Version 1.0



Appendix 5

Epic Environmental Pty Ltd (20 November 2020): Water
Management Plan – Warwick Limestone Mine



Appendix 6

Australian Laboratory Services Pty Ltd (19 May 2020):
Material Testing Certificate of Analysis Ref BR20104442



Appendix 7

Landholder Agreements



Appendix 8

BAAM Ecological Consultants: Rehabilitation Plan for the
Warwick Mining Leases Areas



Appendix 9

Plans and Maps